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Ivy Nomalungelo Goduka

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BEHAVIORAL DEVELOPMENT OF BLACK SOUTH AFRICAN CHILDREN: AN ECOLOGICAL APPROACH

By

Ivy Nomalungelo Goduka

A DISSERTATION

Submitted to

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ABSTRACT

BEHAVIORAL DEVELOPMENT OF BLACK SOUTH AFRICAN CHILDREN:
AN ECOLOGICAL APPROACH

BY

Ivy Nomalungelo Goduka

The major purpose of this investigation was to determine the relationships between a multiplicity of factors that aggravate malnutrition and the behavioral development and physical growth of children from a family ecosystem framework. A secondary objective was to examine the viability of the ecosystem framework in family studies.

A myriad of ecological factors in the child's environment influence growth and development. Factors included in this study were: area of residence, home environment, the parent's socio-economic status, the type of family structure, and family mobility.

Three hundred black South African school children ages 5-6 years and three hundred parents/guardians were included in the sample. The sample was drawn using a systematic sampling technique from Herschel in the Transkei, the resettlement of Thornhill in the Ciskei, and the farm areas around Queenstown and Orange Free State.

The Junior South African Individual Scale was used as a measure for cognitive development. The Brown-IDS-Self-Concept Referents Test was used as a measure for social-emotional development. Anthropometric measures of height,

weight, and head circumference were used for physical growth. A parent's questionnaire was developed and used to gather background information about the child's family.

The results of the chi square test indicated a significant relationship between the area of residence and parent's/guardian's marital status, educational, and occupational levels. Parent's/guardian's educational and occupational levels also showed a significant relationship. No significant relationship was found between marital status and the occupational level.

The results of the correlation between self-concept, cognitive development, and physical growth for boys and girls separately indicated a significant relationship. Only self-concept and head circumference were related to age for boys, however, the correlations were low. Age showed a very low but significant relationship with only vocabulary, quantitative skills, weight, and height for girls.

The results of the Tukey's HSD test indicated significant relationships between family background information and children's information which included: self-concept, cognitive development, physical growth, and the child's health condition. This study has demonstrated that the family ecosystem framework is a viable means of studying factors that influence the development and growth of black children in South Africa.

DEDICATION

This accomplishment is dedicated
to my mother Nomantombazana
and my late father Gantolo,

who taught us not only the three
R's at school, but also taught us
to have faith in God.

Bhele sibulele nangamso, Alale
ngoxolo no Qhudeni wagqiba.

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Any successful accomplishment of this magnitude results not only from the efforts of a single individual but is a cooperative venture among many individuals. It would have been virtually impossible to conduct a study of this nature without accumulating numerous debts to many people.

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CHAPTER I

INTRODUCTION

Concern for the welfare of children is a priority for many societies, which view children as the legacy of the past, as defining the present, and as foreshadowing the future. This is consistent with a remark made by Margaret Mead on the Year of the Child. She placed children at the center of the world's concern when she commented: "In a darkened world beset by the fear of nuclear holocaust, degradation of our soil and air, and imbalance of population growth that threatens to strangle our human settlements, the Year of the Child stands like a beacon of hope...." (The NFE Exchange, 1980, p.1). However, children can only be a signal of hope when societies make investments in them for the future. By investing and developing children's human capital, society will enable children to make a contribution to humankind.

Notwithstanding the knowledge that the future of the human species depends on children, in developed countries such as the United States and developing countries such as South Africa, large segments of children live in physical and socio-economic deprivation. Some of these children live in dilapidated houses that are often overcrowded. Many of these children have inadequate nutrition, insufficient

medical care, sanitation, and other essentials of life.

Their parents are likely to have obtained low levels of education which often relate to occupations in menial jobs and consequently earn a low income. The parent's level of education, occupation, and income are likely to influence the living conditions for the family. These conditions can in turn affect the physical growth and behavioral development of children.

A family life style is also likely to influence how children grow and develop. Black families in South Africa have varying life styles. For example, while some black children in South Africa live in intact families, other black children live with one parent or no parent at all for long periods of time. These are children who are either born to single parents or whose parents leave the homeland or the resettlement areas to work in urban areas on a migratory labor system. In the homelands or the resettlement areas these children are often cared for by their siblings, relatives, or neighbors who might be too young or too old and frail to meet the children's physical and psychological needs.

The home environment, area of residence, the type of family structure, and the parents' socio-economic status are but a few of the ecological factors that are likely to influence the child's physical growth, self-concept, and cognitive development. These factors are also likely to

affect the child's motivation to break the condition of physical and socio-economic deprivation. Such children are thus likely to be trapped in a vicious circle of deprivation from the womb to the tomb.

Statement of the Problem

A myriad of factors in the child's ecosystem can influence the child's development. These factors may operate on their own or in combination with other factors such as malnutrition to influence both the physical and behavioral development of children. A review of literature (Griesel, 1980; Levitsky, 1979; Scrimshaw and Gordon, 1968) reveals a plethora of studies on the effects of malnutrition on the development of children across cultures. Less well researched are other factors embedded in the matrix of poverty which may equally influence children's growth and development.

One reason for past research studies focusing on malnutrition was that it is readily quantifiable, whereas other factors such as the home environment are more difficult to measure and quantify. Another reason may be due to the fact that malnutrition is often treated as a factor separate from other components within the matrix of poverty.

However, the syndrome of malnutrition of children does not exist in isolation, rather in a contextual milieu. A myriad of ecological factors such as the area of residence, the type of family structure, the socio-economic status of parents, and the home environment may contribute to the growth and development of children. Thus additional information is needed about other factors in the child's ecosystem which relate to physical growth and behavioral development of children.

Purpose of the Study

This study seeks to examine physical growth and behavioral development of black children ages 5-6 in South Africa from an ecosystem perspective. For the purpose of this study a number of selected ecological factors, namely, the area of residence, the type of family structure, parent's socio-economic status, and the home environment will be examined because these may modify the nutritional status, social-emotional, and cognitive development of children.

Specific objectives to meet the primary goal of this study are discussed in Chapter IV under research methodology. A secondary objective of this study is to look at some of the methods that could be used to further develop

the family ecosystem framework. A brief discussion of these methods is included in Chapter VIII.

Significance of the Study

This study is significant at two levels: theoretical and practical. It has theoretical significance for current research in child development and family studies. The family ecosystem model used in this study to examine factors in the child's ecosystem that could aggravate malnutrition can make a contribution to a better understanding of growth and development of black children in South Africa. The use of this model could also help discover the viability of the family ecosystem framework. Holman and Burr (1980) have categorized the family ecosystem framework as playing a minor role in family studies. Its use could thus lead to clarifying methods that could be used to develop it and help bring it to wider use.

The realization of the need for an ecological approach to the investigation of factors affecting growth and behavioral development dates as far back as the late 1960's. For example, Canosa, 1968, Cravioto and De Licardie, 1968, and Kallen, 1968, provided a scheme of interdependent, and interacting factors that determine learning and behavior. Richardson (1973, p. 101) quoting from the report of the International Conference on Malnutrition, Learning, and

Behavior held in 1967 wrote "with the wide variety of determinants already identified, the approach becomes clear, it is ecological, the interplay between man as a biological organism and as a human being and the many-sided environments in which he lives."

S.A. Richardson, (1980) suggested that studies of malnutrition address more and specific questions such as, "What are the range of factors which influence the intellectual development of children and to what extent is malnutrition a contributing factor?" (p. 164). This question suggests an emerging ecological research approach in which many biological, social, economic, and political factors which may contribute to the later level of functioning of children are included.

Brozek (1980) also suggested that researchers move beyond malnutrition per se in the study of children's behavioral and physical growth to the study of micro as well as macro environments in which children live, even if the macro-environment is or appears to be homogenous. "It is generally recognized that endemic malnutrition is embedded in the matrix of poverty. Unquestionably, differences in macro-environment co-determine the child's mental development" (p. 261).

This study also has practical significance for policy making for blacks in South Africa, as well as other minority groups faced with political, economic, and social problems

throughout the country. Results from this study could be used to design programs related to children's welfare. These programs could identify targeted areas of concern for parent education of different age groups, support and establish child care centers aimed at holistic child development, community health programs, as well as other projects for families.

Organization of the Study

This dissertation is organized into eight chapters. Chapter one provides the introduction, statement of the problem, purpose of the study, and the significance of the study. Chapter two covers the review of literature. The first section of Chapter three provides an exposition of the human ecological framework. The second section illustrates the application of the ecosystem model to the study of behavioral development of black children in South Africa. Chapter four covers the research methodology. Chapter five summarizes major findings based on family background variables. Chapter six summarizes major findings based on children's measures and scores. Chapter seven provides the relations between family background and children's variables. Chapter eight gives the summary, conclusions, the mode of rationality used in this study, implications, and future directions in this area.

CHAPTER II

REVIEW OF LITERATURE

The review of literature is organized into four sections. The first section looks at the extent of poverty and malnutrition in South Africa. The second section covers animal studies concerning malnutrition. The third section deals with human studies. The fourth discusses environmental factors aggravating malnutrition.

The Extent of Poverty and Malnutrition in South Africa

South Africa has often been described as a dual economy. On the one side exists a well developed industrial, mining, and agricultural economy. On the other side exist rural slums and underdeveloped, overcrowded homelands that may well be labeled as 'Third World Countries'. The nutritional status of South Africa parallels this dichotomy. As noted by Disler and Oliver (1984) this country has, on the one hand, the typical 'western' picture of obesity, ischaemic heart disease, and hypertension reaching almost epidemic proportions amongst the affluent classes. On the other hand are poverty, malnutrition, and a host of poverty-related diseases, such as kwashiorkor, marasmus,

gastroenteritis, tuberculosis, and pneumonia.

Malnutrition is a chronic condition that affects a large proportion of the population especially in the rural areas of the underdeveloped countries. In South Africa it is estimated that 2.9 million black children under the age of 15 suffer from malnutrition (South African Fact Sheet, 1984). About two thirds of these children live in the rural areas of this country.

In children, malnutrition takes the form of deficiency of both calories and proteins and covers a spectrum of diseases referred to as protein-energy-malnutrition (PEM). Severe forms of protein-energy-malnutrition manifest clinically as marasmus and kwashiorkor; subclinical forms are characterized by growth and developmental retardation (Ndaba, 1984).

Protein-energy-malnutrition can be defined in terms of weight, and the presence or absence of edema (i.e. pathological swelling of the body, face, and limbs due to low protein levels in the blood). The word kwashiorkor comes from the Ga tribe of Ghana in West Africa, and refers to a sickness the oldest child gets when the next baby is born. This sickness coincides with weaning from the protein-rich breast milk diet. Children who suffer from kwashiorkor are those who are taken from the breast milk and placed on a starchy diet (Werner, 1979).

The syndrome of kwashiorkor arises from a diet relatively high in calories and deficient in protein. Clinically, kwashiorkor manifests itself by growth failure and muscle wasting. The patient looks plump, however, closer inspection shows pitting edema of the legs, arms, and the face, which is caused by dietary protein deficiency and low serum albumen level. The patient has a potbelly and has ophthalmic xerosis and Bitot's spots on the conjunctiva of both eyes (Guthrie, 1983). There are sometimes changes in the color, texture, strength, and pluckability of the hair. The patient also shows mental changes such as apathy and irritability. A lack of interest and exploratory desire are features well known to those who treat children suffering from kwashiorkor (Werner, 1979).

Marasmus comes from the Greek word, meaning 'to waste'. It is caused by a continuous restriction of total food intake, including both calories and protein. Marasmus, the child's equivalent of starvation in adults, usually develops in infants younger than 1 year. This disease is characterized by growth retardation with wasting of subcutaneous fat and muscle. There is almost complete lack of subcutaneous fat, and the skin over the buttocks and thighs often hangs loosely in folds and wrinkles. The face is withdrawn, and the infant often looks hungry with a 'wizened monkey ' face. Gastroenteritis often occurs repeatedly. The weight of the child is often less than 60

percent of that considered normal for the child's chronological age, and height is also below average (Werner, 1979).

Another disease common to children in South Africa is pellagra. This is caused by a diet comprised predominantly of maize. Maize is notoriously deficient in the vitamin nicotinamide with an imbalance of the amino acids called leucine and isoleucine. Pellagra refers to a disease characterized by mental disturbance, diarrhea, and a dermatitis condition resembling flaky paint on the exposed parts of the body like the cheeks, neck, arms, and legs. This disease is not only common to black South African children whose staple food is mainly maize, but also has been reported among members of the population in one of the Asian-Indian states whose staple food consists mainly of a variety of millet. Millet is also deficient in vitamins (Ndaba, 1984).

The prevalence of poverty and malnutrition in South Africa has been well documented in recent years (Ndaba, 1984 and O'Keefe, 1984). Children and the elderly seem to be the major victims of poverty, therefore, they are at the greatest risk to malnutrition as is the case in other parts of the world.

Poverty in the United States also seems to affect mostly children and the elderly. As shown by the U.S. Bureau of the Census, Current Population Reports (1983), children

and youth under 18 years and the elderly were more affected by poverty than any other age group. For example, in 1979, there were almost 200,000 more poor children and youth than there were in 1969 in the United States. At the close of the 1960's, the youth poverty rate was less than 14 percent. By the end of the 1970's, it was 16 percent, and it approached 22 percent by 1982. The harsh recession years from 1980 through 1982 added more than three million children to the poverty figures.

As stated by Ogbu (1978) America's poor children may not resemble the emaciated skeletons of Ethiopia and the homelands of South Africa that arouse horrified pity when seen in newspapers or portrayed on TV. However, the plight of these children is as apparent as that of malnourished children from underdeveloped countries, even if less dramatically obvious. The effects of malnutrition on these children could have the same long and lasting consequences that children in the Third World countries show. The effects of malnutrition on children will be discussed later.

Poverty in the United States also seems to hit certain states and areas, and certain racial groups more than it affects others. For example, as stated by Harrington (1984) if one examines the Southern states which constitute the areas between Virginia and Louisiana, in which the black population ranges from 30-82 percent, one finds that more

than 20 percent of the black population is below the poverty line.

In South Africa, the trend seems to be the same. For example, children, the elderly, blacks, coloreds, and people in the homelands and resettlement areas seem to be more affected than any other age group, race, or area of residence.

As stated by Fincham and Thomas (1984) community surveys of ambulant black preschool children in South Africa show that one-third of these children is underweight. O'Keefe (1984) using both urban and rural samples reported that about a quarter of the rural black elderly male and female population is more than twenty percent underweight. He made an important link between malnutrition and unemployment. He pointed out that a significantly higher incidence of malnutrition was detected among unemployed males and females who live in the rural areas in South Africa than among factory employees who live and work in urban areas.

Surveys as well as research studies carried out in South Africa in the 70's and 80's revealed that a large percentage of colored and black children are at risk to malnutrition and show stunted growth. These studies also revealed that a large number of children suffer and die from poverty-related disease (Griesel, 1980; Ndaba, 1984; and Vergnani, 1983).

Moll (1984) divided the at risk children into two broad categories. First are children under the age of two for whom malnutrition is often fatal. Their ill-health is closely related to that of their mothers who frequently suffer from malnutrition themselves. Therefore, the solution to malnutrition among this group of children is almost impossible without attention to pregnant and nursing mothers as well. Second are children over the age of two for whom the consequences of malnutrition tend to be a lack of energy, stunted growth, susceptibility to diseases, and perhaps brain damage.

An indication of the percentage of children at risk to malnutrition was given by Vergnani (1983). This percentage is based on a survey conducted by the Department of Health and Welfare in South Africa on a national sample of 20,000 school children between the ages of six and nine years from all racial groups.

This survey revealed that in 1980 approximately 5 percent of whites, 27 percent of blacks, 36 percent of coloreds (coloreds are people of mixed race with whites, the Khoi-Khoi and blacks), and 44 percent of Asians (Indians, Japanese, and Chinese) fell below the third percentile of the Boston norms of weight for age. However, the use of these norms may not be appropriate for black children in South Africa. The Boston norms were compiled on a sample of

white children (birth to 13 years) who came from affluent families in Boston, Massachusetts.

Using another set of norms this survey also revealed that 2 percent of white, 14 percent of black, 21 percent of coloreds, and 26 percent of Asian children fell below 75 percent of the National Center for Health Statistics Percentiles (NCHS). The data used to compile the NCHS standards were based on a representative sample comprizing some 20,000 American children (birth to 18 years) from all the racial groups in the United States. As stated by Richardson, B. D. (1980) the NCHS norms are the most acceptable norms to many researchers and medical practitioners in South Africa, and they are likely to replace the Boston norms.

Kotze (1980) in a study of South African children from all racial groups, reported that on the average about one third of the population under the age of five years suffered from acute diseases, such as kwashiorkor and pellagra, with the white and Asian population group least affected. In terms of undernutrition (the failure of an individual to take in sufficient calories and protein) the percentage of children aged one or less at risk was found to be 8.5 percent for blacks, 12.9 percent for coloreds, 4.6 percent for Asians and 2 percent for whites (Kibel and Moodie, 1984).

The disparity in the percentages of weight and malnutrition of the Asian children suggests that, although this group appears to be the lightest of all the groups, these children are not at-risk to malnutrition. Their weight could thus be attributed to their genetic make-up. Data from this work also show that malnutrition is more prevalent among colored and black children than Asians and whites in South Africa.

In a survey of black children under five years of age living in a rural Transkei village, Griesel (1980) reported that 36 percent of these children were below the third percentile of the Boston norms of weight for age. Approximately 57 percent of these children were between the ages of 18 and 32 months. Nearly 30 percent of these children died before the age of two years.

Fincham (1982) did a study on the nutritional status of rural black and colored preschool children in the Eastern Cape. His study revealed that even on white-owned farms, where there is enough food, food is not easily available for blacks and coloreds. Height for age, which is a measurement of long-term nutritional status, suggested that a large number of black and colored children were short for their ages and were likely to be at-risk to malnutrition. Data from this study also indicated that nutrition-related diseases, such as tuberculosis and gastroenteritis, were common among these groups.

As stated by Fincham (1985) the resettlement camps within the homelands appear to be particularly hazardous areas in which to raise children. Severe malnutrition in the form of kwashiorkor and marasmus is clearly a major problem in these poverty pockets. For example, in Tsweletswele, a resettlement close to Thornhill in the homeland of the Ciskei, as many as 10 percent of the preschool children surveyed had clinically definable signs of kwashiorkor (see homelands and resettlement areas in the map of South Africa on page 89).

A study done by Thomas (in Vergnani, 1983) in the Postdam resettlement camp reveals that over 90 percent of the Sub A children (Sub A is the equivalent of the first grade in the United States) fell below the third percentile of weight for age of the National Health Statistics Percentiles. Approximately four percent of the seven to eight year olds suffered from kwashiorkor. These figures can probably be considered an underestimation of the prevalence of malnutrition in South Africa. Vergnani (1983) gives two possible reasons for this underestimation: many of the malnourished children were not included in the sample as they did not attend school or they dropped out of school.

According to Verwey (1980) approximately 17.8 percent of black children dropped out of the school system before completing Sub A. Also these surveys focused on children mainly in or around the urban areas. Children in rural areas

were not reached because these places are not easily accessible by cars. The number of malnourished children is probably higher in rural areas than the percentages that are reported. This is due to factors such as the migratory labor system which results in one or two parents leaving children in the homelands to seek employment in urban areas. Conditions such as these increase the likelihood for poverty.

Other factors which provide an indication of the prevalence of overt malnutrition in South Africa are infant mortality rates and deaths of children under the age of five. As stated by Van Rensburg and Mann (1982) the malnutrition problem is probably a major factor in bringing about the high incidence of infectious diseases and death in children in South Africa. For example, based on the statistics from the Department of Health, infant mortality rates per thousand were 20.1 for whites, 34.7 for Asians, 100.2 for blacks and 104.4 for coloreds (Epidemiological Comments, 1978).

Infant mortality rates and death rates for children under the age of five in rural and homeland areas are significantly higher. This is due to a greater number of children who are sent to the homeland and resettlement areas to live with grandparents or relatives, to poorer health services, and other factors creating a matrix of poverty.

Data from a study amongst Xhosa women living in the homeland of the Transkei indicate that approximately 25 percent of all infants from this group died within the first year of birth (Vergnani, 1983). Thomas (1981) also estimates that the infant mortality rate for black children in the rural homeland of the Ciskei is between 180 and 240 per thousand. This rate is substantially higher than that reported by the Department of Health and Welfare.

Whereas infant mortality rates only reflect deaths up to one year, young children up to the age of five years are the most vulnerable groups in poorer populations (Moosa, 1982). Data from the Department of Statistics (in Hansen, 1984) reveal that there is considerable mortality from diseases related to nutrition in the one to five years age group. For example, in 1977 the infant mortality rates per 100,000 were 64 for whites, 247 for Asians, 1,781 for coloreds, and 2,104 for blacks.

An analysis of the main causes of infantile deaths reflects that the high percentages of death are due to low birth weight and the immaturity of these infants caused by malnutrition during pregnancy and after birth. Infectious diseases such as gastroenteritis are another reason for infantile deaths among blacks and coloreds (Vergnani, 1983). Such diseases are not very common in the white and Asian groups.

Fehrson (1975) basing his calculations on the 1970 census, has estimated that between 15,500 and 27,500 colored and black children die annually from malnutrition and malnutrition related diseases. A large proportion of these children live in rural areas and on white-owned farms where food is scarce or not made available to these children.

However, there is evidence to show that conditions for blacks and coloreds living in urban areas are improving. Hansen (1984) shows that infant mortality rates for coloreds in Cape Town and blacks living in Soweto have dropped dramatically. For example, in Cape Town the colored infant mortality rate is almost at parity with that of whites, while in Soweto the black infant mortality rate has fallen from 233 in 1950 to 35 in 1979.

Hospital admission rates and hospital mortality rates also give an indication of the extent of malnutrition among the poorer groups in South Africa. For example, Ndaba (1984) gives a total number of patients admitted to Charles Johnson Hospital in the homeland of KwaZulu in 1981 with malnutrition and nutrition-related diseases. According to the hospital records, a total of 2,084 black children were admitted to the hospital. A total of 416 children died. Of those, 268 were malnourished. According to the hospital records, death rate from malnutrition on the average was about 20 percent in 1984.

Moosa (1982) reported that 6,649 black patients, both children and adults, were admitted to King Edward XII Hospital in Durban, Natal in 1978. Approximately 2,775 of these patients were malnourished and one quarter of the malnourished patients died that year.

Wagstaff and Geefhuysen (in Vergnani, 1983) in a discussion of figures from Baragwanath Hospital in Johannesburg, reported that only a very small number of patients, about nine percent, reached or exceeded the 50th percentile of the National Center for Health Statistics for weight. This was seen as a reflection of the malnutrition problem among some blacks living in Soweto.

Summary

These health statistics as well as research data reveal that there is a severe nutritional problem in the preschool and school-aged children from the black and colored population in South Africa. These statistics and research papers also show a relationship between the geographic location and the nutritional status of black children.

Thus, children's area of residence and race in South Africa seem to be crucial variables influencing children's level of nutritional status. The worst areas with severe forms and large percentages of affected children are in the homeland and the resettlement areas. For example, in rural

areas like KwaZulu, Ciskei, and the Transkei, the nutritional conditions of children seem considerably worse. This could be attributed to a large proportion of young parents who leave children in the homelands and resettlement areas to seek work in urban areas.

Children who live on white-owned farms also show levels of nutrition which are not satisfactory, but better than the levels of nutrition for children from the homeland and the resettlement areas. On the other hand, children from the urban communities, especially well-established townships such as Soweto and Cape Town, show a drop in infant mortality rates.

Animal Studies

Although the animal model used in controlled experiments is limited, animal studies have yielded important findings on malnutrition, functional disorders, and physical growth. These findings allow the researcher to generate research questions about the possible effects of malnutrition in humans. Therefore, while a complete review of literature on animal studies is beyond the scope of this study, a brief summary will be provided.

Barrett (1985) gives a listing of major studies on the behavioral and physical effects of malnutrition in animals.

The investigators, species of study, type of nutritional deprivation and the behavioral outcome are given.

Based on these studies there is evidence across a variety of animal species and procedures that protein calorie deprivation in animals is related to attentional impairments, poor behavioral control, and a lack of interest in social and physical environment. Thus, although researchers cannot extrapolate directly from animals to humans, the findings from the animal research link malnutrition to important functional disorders which might be found in humans who have experienced sub-alimentation or have been exposed to adverse environments.

Human Studies

In addition to animal studies, prospective or intervention as well as retrospective follow-up studies of children who have suffered prenatal and post-natal malnutrition in infancy or early childhood from Latin America, South Africa, and the United States have contributed to our knowledge of this subject. A review of these studies (Brozek, 1985) attests to a causal relationship between undernutrition, early mental development, and school performance.

Based on the findings from experimental (supplemental) studies there is evidence that prenatal undernutrition

results in attentional impairments, reduced social responsiveness, poor state control, low birth weight, dependence, passiveness, and less curiosity. Infants with a history of undernutrition have difficulty tolerating frustration, have low activity levels, lack initiative and independence.

Thus, the same complex of behavioral characteristics associated with undernutrition that were obvious in animal research are seen in human infants as well. These characteristics include reduced social responsiveness, attentional impairment, diminished affect, less involvement, and difficulty to regulate the stimuli. The researcher will elaborate on these studies, for they provide insight into some of the processes whereby early undernutrition may affect the child's later behavior.

Supplementation Studies

The studies that have been done in this area have focused on infancy, comparing the behavioral characteristics of infants with a history of undernutrition, including prenatal nutritional deficit, with those of better-nourished infants.

Four prospective investigations that have employed nutritional and psychological supplementation have been

undertaken in Latin America (Colombia, Guatemala and Mexico). One of the most extensively documented longitudinal studies of the effects of nutritional supplementation in pregnant mothers and young children has been conducted by the Institute for Nutrition of Central America and Panama (Klein et al. 1979).

Four villages from the eastern Spanish-speaking section of Guatemala, where malnutrition is endemic, were matched on a number of demographic, social, and economic characteristics. Two communities were selected at random as experimental villages. A high protein-calorie drink (Incaparina), similar to a popular corn-based gruel (atole) was made available for all residents twice daily at a central dispensary. Two other villages were selected as controls. In each village, a beverage (fresco) similar to Kool-aid with only about one-third of the calories contained in the Incaparina and no protein was made available to all those who wished to participate.

Klein et al. (1977) have reported preliminary results of the relationship that exists between supplemental foods ingested by the mother and infants and these infants' birth weight, infant mortality rates, physical growth and psychological development during the first years of life.

Lechtig et al. (1975) noted a rise in the mean birth weight of infants with maternal caloric ingestion during pregnancy. This association was observed whether the

calories were ingested early or late in pregnancy, but less so when caloric supplementation was limited only to the third trimester. The association between increase in birth weight and maternal calorie supplementation during pregnancy was maintained when the effects of maternal age, birth order, interval since last birth, length of gestation, illness during pregnancy, incidence of intrauterine infection, and maternal socio-economic status (SES) were controlled.

According to Habicht et al. (1974) a significant interaction between maternal SES, stature, and caloric supplementation showed a high incidence of high-birth-weight babies. Mothers who had high caloric supplement, were short in height, and from poor homes had roughly half the risk of delivering low-birth weight babies compared to mothers in the low caloric supplemented group of similar height and SES. It appears that short-statured mothers from the low SES group are most likely to bear the largest proportion of low-birth-weight babies.

Data from this study also show an association between caloric supplementation during pregnancy, stillbirths, and infant deaths during each quarter of the first year of life. In all comparisons made, the proportion of deaths in the low-supplement groups was greater than in the high-supplemented groups, especially during the first three months after birth. According to Lechtig et al. (1975) the

magnitude of the difference is such that the risk of dying during the first year of life in the high-supplemented groups is only half of that observed in the low-supplemented groups.

The relationship between the level of food supplementation and physical-growth retardation was also examined. Lechtig et al. (1975) reported a strong relationship between food supplementation and physical growth. They found that the risk of growth retardation is almost three times greater in the low-supplemented group than in the high-supplemented group. In the villages where fresco (the low-calorie/no-protein drink) was distributed, there was a higher rate of growth retardation than in the villages where Incaparina (high protein-calorie drink) was distributed. These findings raise the question of the separate effects of protein and calorie supplementation on physical-growth rate (Werner, 1979).

Psychological test performance and its relationship to food supplement ingestion was also examined. For the purpose of this analysis two measures of food supplementation were employed. A food supplement was ingested by the mother during pregnancy and lactation as well as by the child up until the age of psychological assessment. The INCAP investigators administered the psychological assessment, Composite Infant Scale, at 15 and 24 months. Data from this study revealed that by 15 and 24 months well-supplemented

children performed significantly better on the mental and motor scales of the Composite Infant Scale than poorly-supplemented infants. The impact of the supplemental ingestion seemed to be more closely related to perceptual-motor and manipulative skills than to language and other cognitive abilities (Klein et al. 1977).

Psychological test performance and its relationship to food supplement was also examined on the same children at 36 and 48 months old. At 36 months, tests on which significant differences in performance were noted included picture naming and recognition, as well as in a verbal reasoning task. In each case, the superior performance was associated with higher levels of food supplement ingested. Two of the tempo measures (timed tests), response time for the discrimination-learning task and time taken to draw a line, also varied inversely with food-supplement intake. Similar differences were found at 48 months. For example, a cognitive composite score differentiated significantly between groups that differed in levels of food supplementation (Klein et al. 1977). Children who received food supplementation did better in this test than those who did not receive any food supplementation.

By age 36 and 48 months, family socio-economic status interacted significantly with the effects of caloric supplementation on psychological performance. The study revealed that the effects of nutrition supplementation on

test performance were more pronounced for economically deprived children than the better off children. In the high socio-economic groups, a poorly supplemented child was about equally likely to fall into the highest quartile of test scores, but in the low socio-economic group, a poorly supplemented child was about three times as likely to be in the lowest quartile test performance.

The results of the INCAP intervention study reflect the interactive effects of endemic mild to moderate protein-calorie malnutrition and a low SES on psychological performance of preschool children. Though the variable range of income resources in the villages studied is limited, the analysis revealed the differential effects of SES on cognitive test scores as early as 36 and 48 months. This study also revealed that children from low SES families were positively affected by nutritional supplementation (Klein et al. 1977).

Other studies of the relationship between nutritional supplementation during pregnancy, lactation, infancy, and early childhood were conducted in Colombia by McKay et al. (1978), Mora et al. (1979), and in Mexico by Chaves and Martinez (1979). Two of these studies had cognitive stimulation programs in addition to their nutritional intervention (McKay et al. 1978 and Mora et al. 1979). All except McKay et al. tested their subjects during infancy and all report that nutrition supplementation during infancy was

positively associated with improved development on test scores.

However, Mora et al. (1979) reported that malnourished children were highly irritable and had difficulty tolerating frustration. Other characteristics shown by malnourished children were low activity level, reduced independence, and diminished affect (Chavez and Martinez, 1979 and Barrett 1982). In another study conducted in Guatemala (Lester and Brazelton, 1975) reported that the behavior of malnourished children was characterized by impaired attentional processes. These children also showed reduced social responsiveness. The same characteristics that were noticed in the malnourished children were previously noted in animals which had been exposed to malnutrition.

In addition to these behavioral and cognitive differences between well and poorly-nourished infants, Mora et al. (1979) reported that babies with nutritional supplementation showed lower levels of irritability, higher levels of visual attention, and habituation to repeated visual stimulus at 15 days of age.

Similarly, the studies by Als et al. (1976) in Boston and Brazelton et al. (1977) in Guatemala compared infants who were prenatally undernourished and had low birth weight with infants who were well-nourished and had normal birth weight at one month of life. Using the Brazelton neonatal examination, the investigators found that the undernourished

infants showed little vigor of movement, moved slowly into higher rates of arousal, and had difficulty orienting toward visual stimuli. The infants were also undemanding and poor elicitors of maternal response.

McKay et al. (1978) in a Colombian city, Cali, provided schooling for malnourished children beginning at age three and half years in addition to supplemental food. By age 5 these children had made some strides in catching up with the intellectual growth of more affluent children, especially in verbal reasoning tasks. However, a second group of formerly-malnourished children who received only supplementary food but no extra schooling did no better than children without supplementation and appeared especially deficient on short-term memory tasks. This study suggests that it is not nutrition alone that affects children's intellectual growth, rather both food and the environment of schooling contribute to intellectual growth.

Summary

All the studies discussed above are supportive of the hypothesis that undernutrition and lack of environmental stimulation in early life may adversely affect the child's physical growth, cognitive, social, and emotional development. Children who received better caloric supplementation during the first years of life, including

prenatal supplementation, were more socially involved, more interested in their environment, had higher levels of activity, and were more capable of affective expression than were children who did not receive such supplementation. These studies also suggest that at the age of 5 years nutrition together with factors associated with schooling made a difference.

Retrospective Studies

Retrospective follow-up studies of children hospitalized because of severe acute malnutrition during the first two years of life have also made an important contribution to our knowledge in this area. In the period from 1955 to 1985, a large number of studies have been carried out which have examined the effects of malnutrition on children's cognitive development. Reviews of these studies (Balderson and Freire, 1981; Brozek, 1985; Griesel, 1980; Kallen, 1973; Levitsky, 1979; Scrimshaw and Gordon, 1968; Wagner and Stevenson, 1982; Warren, 1977; and Werner 1979; show that investigators have studied children around school age with a battery of tests chosen to assess memory, language, perceptual reasoning, learning, and abstract skills. Most of these reviews as well as reports of empirical work argue that the nutritional status of children is related to mental development and physical growth.

Because of the difficulty of controlling for social, economic, and other familial-environmental factors in studies of malnutrition and mental development, sibling pairs have been utilized. Certain variables that have confounded most follow-up studies of children who have suffered from early severe malnutrition have been partially controlled by utilizing sibling pairs for these investigations (Latham, 1974).

One example of a carefully done sibling study is a follow-up of 71 school-age Jamaican boys who were hospitalized for kwashiorkor or marasmus during the first two years of their lives (Birch and Richardson, 1972; Hertzig et al. 1972; and Richardson et al. 1973). The investigators matched 71 previously hospitalized boys with 31 siblings as controls and other children of the same age and gender who had not been previously malnourished.

The researchers followed children between ages 5 and 10 and evaluated them with the Wechsler Intelligence Scale for Children (WISC), a widely used individual intelligence test that yields a full IQ, a verbal IQ, and a performance IQ. In addition, they obtained data on the children's performance in school, such as teachers' evaluation of their behavior, grades and scores on the Wide Range Achievement Test (WRAT).

These investigators found significant differences on the full WISC IQ and the verbal WISC IQ, but no significant difference on the performance IQ, between the previously

hospitalized children and their sibling. They also found a significant difference between the scores from the evaluation of teachers. For example, children who were previously malnourished received a poorer teacher evaluation.

Severely malnourished children had the lowest mean scores on the WISC, their siblings had intermediate scores, and comparison boys who had never been hospitalized had the highest scores on the WISC. On the Wide Range Achievement Test, formerly hospitalized children did significantly less well than the control group. They also received poor grades at school and poor teachers' evaluation.

Another sibling study in Cape Town, South Africa, has been reported by Evans, et al. (1971). Forty previously hospitalized children who suffered from kwashiorkor during the first three years of their lives were compared with 46 sibling controls when they were between 8 and 15 years old. All children were given the South African Intelligence Scale, an adaptation of the WISC,and the Goodenough-Harris Draw-A-Person. Data were also available on their scholastic achievement. These investigators reported no difference on the intelligence scale at these ages, but did find significant differences on the Draw-A-Person Test and in performance on the arithmetic problems subtests on which formerly malnourished children scored lower than the sibling controls. The investigators suggested that lower scores on

the Draw-A-Person test may be due to the interference of emotional-affective factors with the child's cognitive functioning. They also suggested that lower arithmetic problem solving scores might be a reflection of attentional defects and a reduced ability to concentrate among those who had suffered from kwashiorkor during the first three years of their lives.

Summary

Retrospective follow-up studies of children who had been exposed to hospitalization for severe acute malnutrition, either marasmus or kwashiorkor, during the first 3 years of life, suggest an association between such exposure and reduced intellectual functioning levels at school age. What has been neglected by these studies is, however, the question of why one sibling in a family develops severe malnutrition while another or several other siblings do not. As suggested by Werner (1979) this could be due to the fact that one sibling is relatively neglected for physical or emotional reasons, is less desired or less desirable to the mother, or differs in some other respect including gender.

Another reason could be that family income has varied over time leading to fewer resources to maintain the family. This might cause the mother to work outside the home, and

thus, have less time to feed and interact with young children.

Environmental Factors Aggravating Malnutrition

Most of the studies that have been discussed above have focused on the effects of malnutrition on physical growth and behavioral development, while overlooking other factors in the child's ecosystem that could aggravate malnutrition. As stated by Monckeberg (1976) inadequate nutrition is often associated with a host of other negative environmental features such as low income, low educational level, low quality houses, inadequate sanitary conditions, overcrowding, and generally defective and poverty-related circumstances under which the poor live in society.

The poor in South Africa also live in rural, isolated, and remote areas which are often dry, infertile, barren, and not suitable for raising livestock and for growing crops. As stated by Webster (1980) the rural population in South Africa is caught in a downward spiral of intensified underdevelopment. This is caused by the absence of the potentially progressive young men and women who are migrant workers in urban areas and the decline in agricultural productivity due to severe droughts.

Forced removals of blacks by the South African government is another factor which seems to exacerbate

malnutrition. Since 1960, the government has been removing blacks from areas designated for whites to the resettlement areas which are adjacent to the homeland areas. As stated by Disler and Oliver (1984) many of these forced removals have involved the destruction of already-existing housing and have often forced people into a variety of informal settlements with very poor shelter and few or no services. Often these people do not know their neighbors. They are flung into a situation where they are all strangers. The adjustment is an especially traumatic one. They have to get used to a life with limited land, rain, houses and food (Platzky and Walker, 1985). Such an environment could promote risk factors that are likely to impair the children's physical, psychosocial, and cognitive development from conception to maturity.

There is evidence to show that in poverty there are associative factors that have an influence upon physical growth and behavioral development of children. For example, Essen, Fogelman, and Mean (1978) studied the relationship between housing conditions and physical development in a cohort of English, Welsh, and Scottish children. Their morbidity (respiratory disease, headaches, and general ill-health) and their height, used as an index of physical development, were studied in relation to crowding and access to amenities such as a bathroom, hot water, and indoor toilet. Although the investigators concluded that contrary

to expectations the relationships were mostly weak, they found a strong positive correlation between crowding and the rate of growth of these children.

In another study, Graham (1972) showed that height quotient, i.e. height as a percentage of chronologic age, was related to crowding. In this case the population studied consisted of severely malnourished infants and children. Graham's findings suggested that in those homes with more than four persons per room or per bed there is a drop in height quotient. On the other hand, a control group which consisted of malnourished children who came from less-crowded home environments did not show a drop in height quotient. Therefore, in this study, crowdedness was seen as one of the factors that might have contributed to the child's height, rather than only the nutritional status of the child.

Poor housing, overcrowding, loneliness, family breakdown, personal disability, and social instability were all shown by Jenkins, Tuthil, Tannenbaum and Kirby (1977) to be correlates of excess mortality in a study done in Massachusetts, United States. Multiple dwellings, substandard housing, and overcrowding were included in the 76 significant correlations with extremely high mortality rates found among the 39 factors which were studied.

The child's socioeconomic background has also been linked with both physical growth (Eichorn, 1979) and

cognitive development (Bogin and MacVean, 1983). For example, in a study conducted by Griesel and Richter (1986) in South Africa, no significant relationship was found between physical growth as measured by height, weight, and any of the subtest scores of the McCarthy Scales of children's abilities and parental education, occupation, and income. However, lower weight and lower height of preschool black children were both significantly related to large household size and absences of the father from the home.

Mednick, Baker, and Hocevar (1985) investigated the relationship between family structure variables and children's intellectual, psychosocial, and physical growth. Their analyses of data indicated that when social economic status and gender were controlled, family size showed the most systematic relationship with physical growth. Children from one, two, and three child families were tallest and heaviest, whereas children from families of four or more children were shortest and lightest. They also found a significant correlation between family size and intellectual development. For example, children from families of four or more tended to have more academic problems.

The number of people in the household is also thought to have an impact on nutritional levels of children. All members compete for food from the communal family pot, and often children receive what is left by adults (Newman, 1980). This is true especially in some black families in

South Africa. Culturally men and sometimes boys are served first and given the best because they are breadwinners. Women and girls are served last and often get what remains after men have been served. In the past when food was abundant this was not a problem. However, at present there is scarcity of food in the black families especially those living in rural areas, as a result females and young children are at risk to malnutrition.

However, Burney and Shahyar (1980) considered the relationship between family size and the nutritional status of family members as weak. They argued that in larger families there may be more breadwinners to help increase the amount of resources for the family. Another point stated by these investigators was that the overall community conditions, such as endemic poverty, may cut across all community households irrespective of family size and, therefore, affect all family members.

This study does not, however, mention the ages of family members. It is not clear whether this variable was considered in their study. This could account for the weak relationship of their findings. For example, if the majority of family members were very young they would not be in the labor force, therefore, such a family would be more at risk to malnutrition.

Another factor which seems to aggravate malnutrition is the disruption of family life. The exodus of men and women

to urban areas as migrant workers has a major effect on the social system and on family life. Wilson (in Reynolds, 1984, p.1) defines the term migrant in the context of Southern Africa "...as meaning a worker who oscillates between his home and his place of work over a distance which is greater than can be travelled on a daily commuting basis". In terms of this definition, migrant workers in South Africa are black men and women who live and work in urban areas without their children.

When introducing the Child Care Bill in the South African Parliament in 1983, the Minister of Health, Dr. van der Merwe, acknowledged the family as a normal, social, and biological structure in which the child should develop (Reynolds, 1984). However, many black children in South Africa live without their fathers and sometimes without their mothers for their entire childhood due to the migratory labor system. Therefore, black children in South Africa are denied the right to develop in their biological family. For example, Fincham (1981) reports that in the rural areas around Grahamstown, South Africa, about 54.9 percent children do not live with their parents, while in Alicedale, 58.9 percent of children live with either one parent, a grandparent, or with other relatives for their entire childhood while their parents work and live in urban areas.

Previous studies suggest that children raised by their mothers are better nourished than those reared by grandparents, other people, or female relative (Fincham, 1982). For example, a study conducted on the white-owned farms shows that three of the confirmed kwashiorkor cases were children cared for by grandparents. In another study, grandmothers who live in urban areas appeared to be responsible for four of the ten children who were reported to have kwashiorkor (Fincham, 1982).

Based on their personal experience of malnutrition in rural areas Clarke (1982) and Thomas (1973) both cite the disruption of family life as a major factor in malnutrition. Both researchers noted that very high proportions of malnourished children were born to single parents. The researchers also noted a strong correlation between desertion by the father and the occurrence of malnutrition.

Factors such as influx control measures, which force women migrant laborers to leave their children in the care of aged parents in the rural areas, have also been cited as important contributors to the incidence of malnutrition in children in the rural areas (Clarke, 1984). In the urban areas these women are required to live in hostels which are designated for 'single' women only. Their children and their husbands are required by law not to live with them in these hostels.

In a survey in the Ciskei, Thomas (1981) pinpointed family disorganization as the major factor influencing the development of malnutrition. The absence of either one or both parents appeared more important than either cash resources or the educational status of the caregiver, although the latter had been found to be of relevance in the urban setting. Thus the scenario is of an absent father or often absent mother who out of necessity relegates child care to an inadequate guardian. This condition appears to increase the probability of malnutrition occurring in children (Disler and Oliver, 1984).

Adverse effects of father absence on physical and psychological development of children have been well documented by a number of investigators (Biller, 1974; Lamb, 1976; and Lynn, 1974). Griesel and Richter (1986) studying the influence of family background on the growth and development of black preschool children in South Africa found that lower height and lower weight were both significantly related to the absence of the father from the home.

Svanum, Bringle, and Maclaughlin (1982) in a study of father-present and father-absent families could not find any relationship with intellectual performance when socioeconomic status was controlled. These researchers pointed out that it is the antecedents and consequences of father absence which may affect children's development. For

example, if the absence of the father adversely affects the SES of the family by lowering the income, that may in turn have a detrimental effect on the intellectual development of the child. Lack of income could force the mother to seek work outside the home, which would keep her away from the children, and thus decrease the amount of time to interact with children.

Another problem associated with growing up in a one-parent family is a child's low self-esteem. Several earlier studies in the United States have found that black children have low levels of self-esteem both because of blackness and the fact that often they grow up in a home without appropriate role models (Staples, 1976).

However, a number of recent studies in the United States have emerged that are in opposition to the earlier studies of low self-esteem among black children. For example, Staples (1976), concludes that black children today are less likely to suffer from low self-esteem because of countervailing influences, such as religion and positive experiences in the extended family. Thus, it would seem from this statement that black children, although they might not have a present biological father, live in the extended family network with uncles and grandfathers who serve as role models. These role models are also available from the church.

However, Staples (1981) adds that caution be taken not to romanticize the single parent family as a totally functional model. According to him, single parent families, specifically female-headed families are the poorest families and individuals from such families are overrepresented among society's failures in education, and mental health as well as many societies' criminals.

Nonetheless, as stated by Blechman (1982) investigations on the effects of one parent on the psychological development of children are fragmentary. The results based on these studies are often conflicting and inconclusive because of flawed methodology. These methodological problems have also clouded the interpretation of these studies. What emerges from these studies is that father absence has been treated in an over simplistic manner.

Forced removals are other factors which can influence the nutritional and health status of family members. Since 1960 the South African government has removed 3,500,000 blacks from areas designated for whites to resettlement areas. Approximately 1,700,000 blacks are under threat of forced removals (South African Fact Sheet, 1984).

The effects of residential mobility or displacement have been studied by several investigators (Stokols and Shumaker 1983; Newman and Owen 1982). The latter researchers examined the relationship between residential relocation and

health. They found that the impact of forced removals is not necessarily negative. Rather, the consequences of moving depended on how well the new location compares with previously experienced environments in meeting important personal needs.

Fairchild and Tucker (1982) on the other hand, found that the most disadvantaged prior to moving were more constrained in their ability to cope with the disruption. For example, unskilled workers who lose their jobs, face a much smaller set of alternative jobs than skilled workers. Low income or minority families who are displaced from their homes were likely to have fewer housing options than the richer or majority counterparts.

Stokols and Shumaker (1983) found that respondents who reported low levels of satisfaction with the residential setting described themselves as being in poorer spirits and reported a larger number of visits with physicians for medical problems than those characterized by higher levels of residential satisfaction. Those who reported low levels of residential choice also experienced a larger number of illness incidents than those who reported higher levels of residential choice. The effects of residential and job satisfaction were additive; individuals characterized by low levels of satisfaction in both domains reported the greatest number of visits to physicians for health problems.

The above findings are consistent with the report from Dr. Hendrick Beukes, a district surgeon in charge of the Thornhill resettlement. He reports a high incidence of physical and mental problems, particularly psychoses, throughout this resettlement area (Mare, 1980). These problems could be attributed to forced removals and to the depressing conditions under which these people live (for a full description of this resettlement, see page 91).

The structured inequalities in the distribution of resources inherent in the policy of apartheid in South Africa are seen by White (1980) as another major contributory factor in the underdevelopment of the rural areas, particularly the homelands and resettlement areas. He demonstrated that the nutritional status of a sample of children at the squatter camp at Crossroads near Cape Town was better than that of a sample of children in the homeland of KwaZulu. This investigation led him to believe that the community at Crossroads, in spite of the deprived housing conditions, enjoyed an overall better earning capacity and more opportunities for self employment than those in a sample drawn from the rural areas.

The findings suggest that children benefited from the improved economic level of their parents in the squatter camps near Cape Town. These children showed a better health condition and nutritional status. On the other hand, children in the homeland and the resettlement areas who

depend on cash remittance from migrant workers showed worse health condition and nutritional status than the former.

Summary

The syndrome of malnutrition does not exist in isolation, but rather in a contextual milieu. A host of factors coexist with malnutrition. Thus, in examining the physical growth and behavioral development of children, all factors in the child's ecosystem that may create a condition of poverty should be included. All these factors could reinforce each other producing synergistic effects, that properly should be called ecological effects.

CHAPTER III

THEORETICAL FRAMEWORK

The purpose of this chapter is two-fold. The first section presents an exposition of the human ecosystem framework. The second section illustrates the application of the ecosystem model to the study of behavioral development of black children in South Africa. To accomplish the latter, a discussion of the ecosystem framework is necessary. This discussion will include the following: source and origin, focus and scope, basic assumptions, central and germane concepts, mode of rationality, strengths and weaknesses.

An Exposition of the Human Ecosystem

Source and Origin of the Ecosystem Framework

Clarke (1973) gives a full account of the origin of ecology, a concept with a high level of abstraction, from which ecosystem with a lesser level of abstraction is derived. According to Clarke, Ernst Haekel, a world renowned biologist, and the founder of "new zoology", coined the names for nearly a dozen sciences. As early as the late 1860s, Haekel is credited with suggesting that a science be developed which would study organisms in their environment.

He coined the word "Oekologie". However, he left this for others to develop and he concentrated on other sciences.

Ellen Swallow, a chemist, aided by her fluency in German, traced the German word "Oekologie" to its Greek origin. "Oik" stands for house, "Oek" stands for every man's house or environment, and "logie" stands for science. According to Swallow, "Oekology" was the science of the House. Home Economics was to her Human Ecology before it acquired the former name.

The concept of ecology did not evolve and remain only in biological sciences. Historically this concept has been used in sociology also. The ecological approach was introduced into sociology in the 1920's by Park and Burgess. This concept has also gained popularity and use in disciplines such as geography, anthropology, psychology, and human ecology. The development of this concept in human ecology will be dealt with later.

Definition of Ecology

Webster's New World Dictionary (1978) gives two definitions of ecology. The first one has a biological base and the second one has a sociological base. The first definition is: "the branch of biology that deals with the relations between living organisms and their environment" (p. 442). The second definition is: "the study of the

relationship and adjustment of human groups to their geographical environment" (p. 442). Both these definitions emphasize the relationship between the living organisms or human groups to their environment.

Odum (1962) deviates from this definition which he sees as vague and too broad. According to him ecology is the study of structure and function of an ecosystem. In a less technical way he views this term as the study of the structure and function of nature. By structure he means the composition of the biological community, the quantity and distribution of the non-living materials such as nutrients, and the physical matter. By function he means the rate of energy, matter, and information flow through the ecosystem.

Incorporated in Odum's definition is the concept of ecosystem. The inclusion of the concept of ecosystem serves to narrow this definition to a more concrete level. This ecosystem could be that of a family, child, plant, or animal depending on the subject under study. For example, in this study the concern is for the ecosystem of the black child in South Africa.

Having traced the source and the origin of ecology from which ecosystem evolved, a discussion of the concept of ecosystem will be covered.

The Concept of Ecosystem

The term ecosystem was formally proposed by Tansley in 1935, as a general term for both the total complex of interacting organisms and their habitat. According to him, all the parts of an ecosystem, organic and inorganic, biomass or habitat, may be regarded as interacting factors which in a mature ecosystem are in approximate equilibrium. It is through their interaction that the system is maintained.

The term ecosystem as discussed by Tansley (1935) includes the whole idea of dynamic interaction, exchange, or interdependence between an organism (O) and the environment (E). "Eco" which is derived from "ecology" means "environment" and "system" which is derived from general systems model indicates an interacting interdependent complex of organisms.

As stated by Havelock (1971) a system can be conceptualized as a set of components which act with and upon one another to bring about a state of balance, interdependence, or wholeness. For example, in the study of black children in South Africa, the child's physical, cognitive, and social-emotional domains form a system of individual development. These domains are interdependent and act with and upon one another to bring about equilibrium or a wholeness in the growth and development of the child.

Although these domains form a system, they do not form the child's ecosystem. These domains are only part of the child's ecosystem.

Factors selected for investigation in this study which also comprise part of the child's ecosystem are: the child's area of residence, home environment, parent's socio-economic status, type of family structure and family mobility. These factors represent the components of the natural, human constructed, and human behavioral environments. It is the interaction of these factors with the developing child that form an ecosystem of the child.

Systems may be characterized as either "semi-closed" or "closed". Closed systems are isolated from their environment in that there is no exchange of matter, energy, and information across system boundaries. In contrast, semi-closed systems exchange matter, energy, and information with their environment within a limited to broader range of possibilities.

Living entities such as the child or the family most certainly demonstrate the complexity of semi-closed systems i.e. they have inputs and outputs. For example, in the child's system the ecological factors represent what Broderick and Smith (1979) call the environmental inputs and the behavioral development and physical growth represent the outputs.

Systems may be further described as "static" or "dynamic". In a static system, components of a system exist in a more or less fixed relationship with one another. In contrast, components of a dynamic system act upon one another; they force changes in a pattern of action and reaction that maintain a dynamic equilibrium or balance of forces. Systems of the child or family contain both dynamic and static components.

Two types of systems may be considered in the study of growth and development of black children in South Africa, namely the family and the individual child. The family as a system acts as a processor or convertor of inputs, goods, and services from the environment to meet the needs of individual family members, and produces an output flow of converted products such as waste or surplus. Since resources are scarce, South African black families establish survival goals as high priority and manage the available resources according to those goals in order to meet the needs of individual family members.

A second type of system is that of the individual child. The individual child may be viewed as a semi-closed system which also processes matter, energy, and information from the nearby environment. These are utilized to provide sustenance to meet the child's physical growth, cognitive, and social-emotional development.

An ecosystem can be visualized as a grouping of components linked by flows of energy and connected to the surrounding environment by its system of inputs and outputs (Bormann and Likens, 1970). All ecosystems, including the family ecosystem, are permeable so that matter, anergy, and information flow continually in the course of life processes for the survival of the system of family (Evans, 1956).

The environment of the ecosystem provides resources potentially useful for the maintenance of life. Three types of environmental factors may be distinguished: natural, human constructed, and human behavioral (Bubolz, Eicher, and Sontag, 1979). These environments interact with families and provide resources (matter, energy, and information) necessary for the survival of the families.

Adoption and Use of Ecosystem in Human Ecology

Precedence for the approach of viewing the family as an ecosystem in Human Ecology was provided by Hook and Paolucci (1970). These authors suggested the use of this approach because it forces one to emphasize interdependent relationships between people and their environment. According to these authors, the family is a life support system which is dependent upon the environment for the physical sustenance and upon social organizations which are related to humanness and give quality and meaning to life.

The human ecosystem approach utilizes concepts from general system theory which have been suggested and promulgated by some family scholars such as Parsons and Bales (1955) and Kantor and Lehr (1975). However, their approach restricts the study of the family to social, psychological, and cultural aspects only. For example, Parsons and Bales (1955) studied the socialization processes and the personality development of children within the family. Their approach emphasizes the interaction between family members. Part of the total environment, which includes the physical and the biological components in which the family is embedded, is overlooked. The relationship in a social system is symbolized in Figure 1.

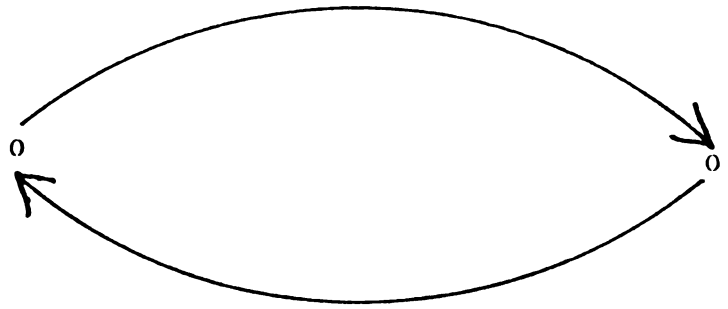

Figure 1. Organism and organism relationship

Such a relationship from an ecosystem perspective is insufficient because it overlooks the total environment. As stated by Andrews, Bubolz, and Paolucci (1980) the social system approach to the family studies has sometimes assumed the biological and the physical dimensions as given or when considered has given them little attention.

An ecosystem approach, on the other hand, considers the biological, physical, psychological, and sociophysical dimensions of the organism and their interdependence in an ecosystem.

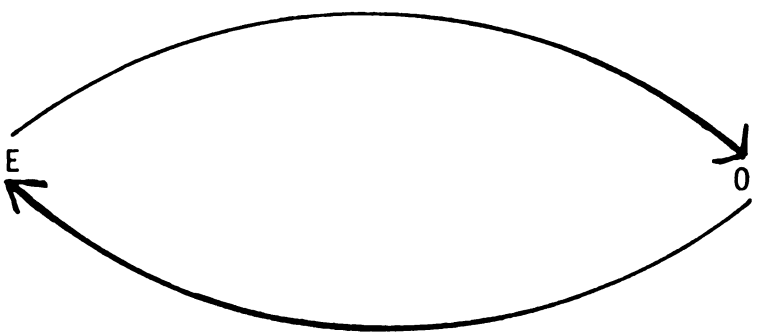

Figure 2. Environment and organism interrelationship.

Many individuals have contributed to the development of the ecosystem approach for studying the family in the field of Human Ecology. However, the names of the following scholars deserve mention (Bronfenbrenner, 1979; Bubolz et al. 1979; Deacon and Firebaugh, 1975; and Hook and Paolucci, 1970). As discussed in a seminar by Bubolz (1985b) the

development of this paradigm is, however, in its infancy; much still needs to be done in terms of building, developing, and refining this model in order to bring it to the level of a theoretical framework.

Focus and Scope

To understand the focus of the ecosystem approach, it is helpful first to detail the essential elements of this approach. An ecosystem model is based on a systems perspective which focuses on the interrelationships, input and output, and processes within a system. A change in any part of the system affects the system as a whole and its other subparts, creating a need for a system adaptation or morphogenesis. Also, an ecosystem model denotes an interdependence and interrelatedness of organisms in their environment. Thus, this model focuses on the organism in its environment composed of the natural, man-built, social, and psychological factors.

Bronfenbrenner (1979) has described the individual's environment as "a set of structures, each inside the next like a set of Russian dolls" (p.22). In addressing the scope of the ecosystem framework, Bronfenbrenner posits four general levels of environmental systems: micro-, meso-, exo-, and macro-system. These systems are differentiated on

the basis of their immediacy with respect to contact with the individual specifically the child.

Microsystem

Most immediate to the developing child is the microsystem. This system consists of the settings and the behavioral interactions in which individuals experience and create day-to-day reality. Thus the home which gives shelter to the child and family members who feed, bathe, and cuddle the child form the child's microsystem.

Mesosystem

This system forms the relationship between the contexts of microsystem in which the developing person experiences reality. An important mesosystem for school children includes relationships between the school and the child's home.

Exosystem

An exosystem is a situation which has a bearing on the child's development but in which the developing child does not actually play a direct role. For example, the workplace of parents has power over the life of the child, yet the

child does not participate. The exosystem enhances the development of the child when it makes life easier for parents; conversely, it undermines development when it makes life harder for parents.

Macrosystem

Micro-, meso-, and exosystems are embedded in the broad ideological and institutional patterns of a particular culture or subculture. These patterns are the macrosystems, the 'blueprints' for that culture's ecology of human development. These blueprints reflect a people's shared assumptions about 'how things should be done'. Thus a macrosystem is the norm about how development proceeds, and the appropriate nature and structure of micro-, meso-, and exosystem. Macrosystems are overarching institutions of a society which include religious, political, economic, and educational systems. These represent not only the structural characteristics of society, but also the carriers of ideology and symbolic meaning that give character to life at the micro-, meso-, and exosystem levels (Melson, 1980).

These four types of environmental systems provide the scope for studying children and families. As shown in these types, one can delineate boundaries that are very broad, limited, or very limited within the range of phenomena about children or the family.

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Basic Assumptions of the Ecosystem Framework

Assumptions are part of people's everyday life. They are those things that people perceive as 'givens'. They are based on faith, factual knowledge, previous experience, or ignorance. Assumptions are also part of the world of science. "Scientific assumptions are statements taken as given and not subject to direct empirical verification" (Chafetz, 1978, p.33). As stated by Klein (1979) delineation of assumptions basic to the theoretical framework form the foundation for the theory.

The assumptions delineated in this section are drawn from several sources (Andrews, Bubolz, and Paolucci, 1980; Bubolz, Eicher, Evers, and Sontag, 1980; and Bubolz, Eicher, and Sontag, 1979).

Assumptions about Human Life

A major premise underlying an ecosystem approach is that humans are a part of the total life system, and cannot be considered apart from the natural, human constructed, and human behavioral environments. This statement is consistent with what John Donne said three centuries ago. 'No man is an island, entire of itself; every man is a piece of the continent, a part of the main' (Warnke, 1963). This statement suggests that all individuals interact in the

drama of human ecology, and in relation to other living plants and animals in the environment. The model in Figure 3 serves to illustrate the interconnectedness of humans and the environment in which they are embedded. This Figure is adapted from (Bubolz, Eicher, and Sontag, 1979).

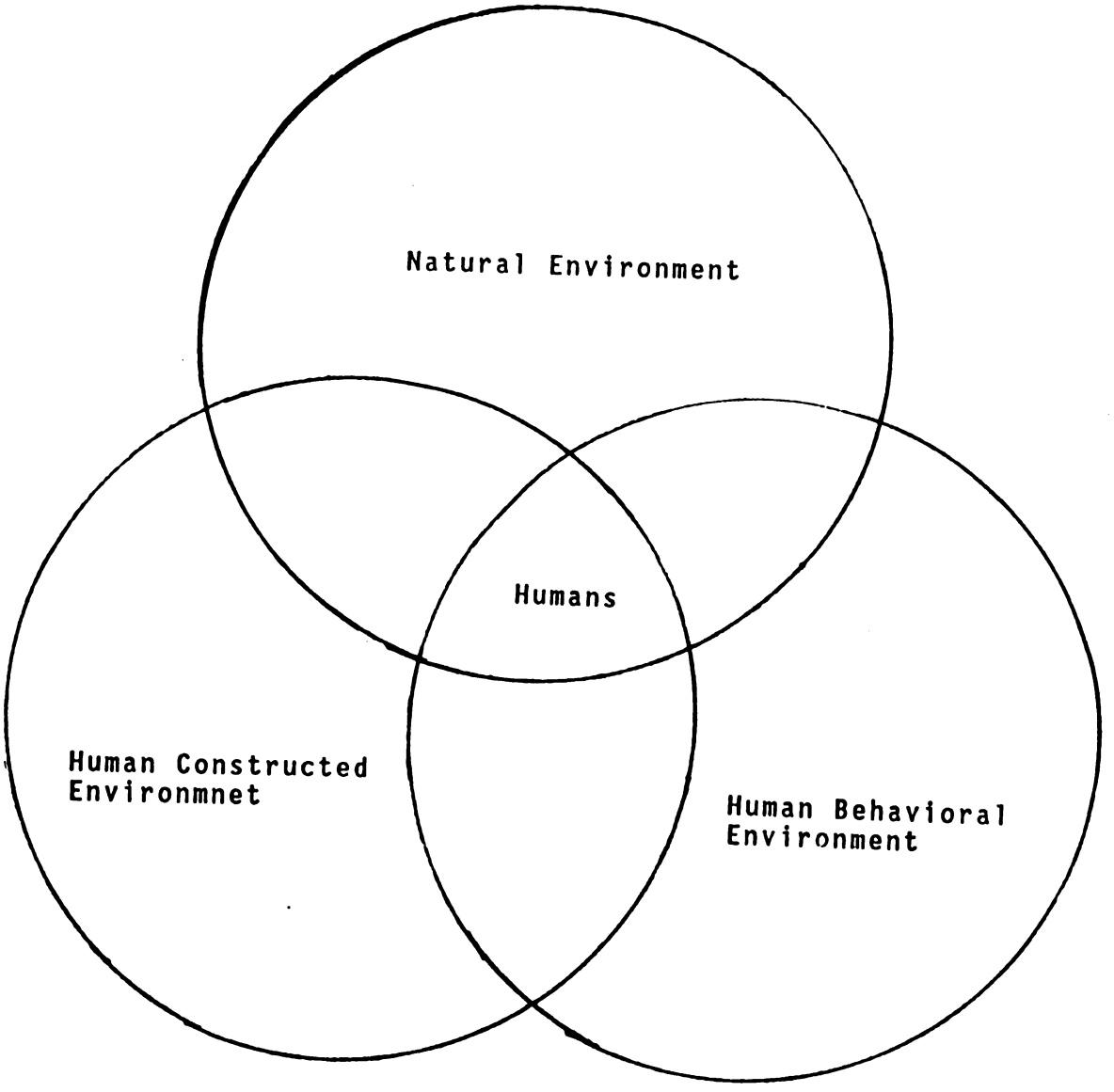


Figure 3: A Human Ecosystem Model

Assumptions about the Family

The family is a goal-directed system. It consists of structures, functions, and processes. These structures form a whole system in which the parts function in relation to each other to reach the family's goals.

Family systems are organizationally complex, relatively open and to some extent adaptive. Families also differ in degree of complexity, openness, boundary maintenance, and adaptability. Two critical dimensions of families which influence their capacity to deal with change and to cope are adaptability and cohesion. Family adaptability refers to the ability of a family system to change its power structure, roles, relationships, and rules in response to change and stress. Family cohesion refers to the degree of emotional bonding which members have towards one another and of individual autonomy that a person has in the family system.

Another assumption is that families must be studied in their own natural and social contexts rather than in an artificial environment like the professional office or laboratory. It is this natural milieu which provides the richest possible context for studying the family. This perspective also assumes that phenomena about the family must be studied in their wholeness of interaction or interdependedness rather than by simple, linear cause and effect relationships.

Assumptions about Energy, Information, and Communication

Energy, both physical and psychic, is the basic resource necessary for the survival of the family. Ellen (1982) discussed another essential component to matter and energy; this is information. According to him, an ecosystem is a set of organic relationships in which matter, energy, and information are in continuous circulation. Any alteration through the family system requires adaptive change.

Family systems are information processing systems. Families can elaborate and/or change action patterns because of information processing capabilities. Families differ in degree and nature of the information processed. For example, some families process more information than others, perhaps because family members have higher levels of education, or because family members have ease of access to news media.

Communication is a key process of a family system. Families have rules about communication, i.e. meta communication indicates unwritten, and usually unstated rules about what can be communicated, and who can communicate about certain things.

Central and Germane Concepts

As stated by Klein (1979) a theory is an architectural creation. Basic to this architectural creation are concepts which are the building blocks. Concepts are ideas composed of symbols (terms, labels) and their meanings (definitions).

Organizational Concepts of the Ecosystem Framework

Major configurational concepts used in the ecosystem framework and also related to the application in this research will be listed below. These concepts will not be defined, since they are not the focus of this research. However, it is necessary to list them as these concepts are central to the ecosystem framework.

Configurational elements are those which are present in all ecosystems. These include: boundary, energy, environment, information, interaction, interface, organism, system, and transaction. Included in this list are also those elements which describe the ecosystem: semi-closed or semi-open.

The ecosystem framework also includes concepts which define elements that describe interaction and transaction in the ecosystem. Included are adaptation, cybernetic, entropy, equilibrium, feedback, homeostasis, morphogenesis,

morphostasis, and negentropy. Concepts that are germane to this study will be defined in Chapter IV.

Mode of Rationality Implied or Assumed by the Ecosystem Framework

The concept of Rationality

Brown (1985) in considering the concept of rationality states that there is a connection between rationality and knowledge. Rationality, however, has less to do with having knowledge than with how we acquire and use that knowledge. A person is called rational when the person can exercise good judgment and can reason logically. A rational action connotes the absence of emotionalism.

Habermas (see Brown, 1985) holds that there are modes of rationality or ways of examining phenomena. Each is associated with types of knowledge. The first mode of rationality is 'technical' which is used when the goal is to predict and control the environment. This mode gives rise to the empirical-analytical sciences. This science focuses on objective phenomena. The second mode is 'hermeneutic' or interpretive rationality, which is used when the goal is to understand human actions and thought. It is the dominant analysis used in cultural sciences such as anthropology, history, and social sciences concerned with interpreting

human communication and action. The third mode of rationality proposed in the Habermas scheme is called 'emancipatory'. This is used when the goal is to free individuals or groups from oppression due to irrational norms or ideas. This mode is associated with 'critical science'.

The emancipatory rationality leads to what Habermas calls 'political-moral action'. This is action which seeks good for people or societies. It is based on the knowledge gained from the careful analysis of the merits and faults of a situation or critical self-reflection and clarification of beliefs. The result is that people are freed from irrational ideas or systems which 'the powers that be' have unconsciously or consciously adhered to because they did not see 'better' ways of dealing with the situation.

Brown (1984) explains that choosing one mode of rationality rather than another is to choose the most appropriate for the kind of understanding desired. Such a choice would, "not pit one against another". Rather, it would help recognize a mode of rationality that best deals logically with a certain problem.

Some frameworks do allow the use of all three modes of rationality. For example, all three modes of rationality (technical, hermeneutic, and emancipatory) are assumed under the ecosystem framework. On a technical level, the phenomena

are explained as multicausal and effect relationships by treating independent variables as outputs. The mechanism of feedback control can be used as contingent variables that give the explanation of how to interpret the relationship and interaction on a hermeneutic level. With more complex control of feedback which leads to morphogenesis of the system or the system rules, an ecosystem framework can assume an emancipatory mode of rationality (Bubolz, 1985b).

The Need for a Critical Science Perspective in Human Ecology

As stated by Bubolz (1985a) a critical science perspective is necessary to develop the knowledge and carry out the practice of Human Ecology. Critical science starts with an assumption which is central to the ecosystem approach, i.e. humans are part of the total system and cannot be considered apart from the natural, human constructed, and human behavioral environments. The purpose of critical science is to bring about self knowledge and reflection to 'powers that be' that will lead to needed social change. By the same token, the oppressed group in society is helped to take control over their lives.

Bubolz (1985a) has suggested ways of developing critical thinking in students in Human Ecology. One way is to participate in interpretive research. As shown by

Habermas' scheme, the emancipatory rationality utilized in critical science is dependent upon knowledge obtained through technical or empirical analytical rationality and hermeneutic or interpretive rationality. Thus the critical scientists begin with the empirical-analytical and hermeneutic methodologies and end up with the emancipatory methodology. This methodology represents an in-depth analysis because it goes beyond the data collected, analyzed, and interpreted to the rationale for an action. This action could include finding means to end oppression or inequality in society and to determine what could be done to set the people free or give people equal opportunity.

Another way would be for students to read research and scholarly materials and attempt to identify the ideological assumptions underpinning the research. These could become the basis for dialogue and plans for social action. The critical scientist according to Habermas seeks to identify activity and thought that are based on erroneous assumptions and thus need rectification. Implied in the concept of critical science is the further step of implementation, that is, working to implement the alternative because it is viewed as the most freeing for the people in society. As the schema states, critical science activity ends in political moral action.

Strengths and Weaknesses of the Ecosystem Framework

One of the intentions and hopes of students and scholars in human ecology is to make a contribution towards the development and refinement of the ecosystem framework. A delineation of the strengths and weaknesses of the ecosystem framework thus serves as an indication of the viability or lack of viability of this framework. For example, the strengths of the ecosystem framework are an indication of the usefulness of this framework for studying systems such as the family and children. On the other hand, the weaknesses show what needs to be done to save this framework from 'demise'. Therefore, it is important to examine the strengths and weaknesses of a framework.

Strengths of the Ecosystem Framework

The human ecosystem framework can be considered as an overarching and all encompassing framework. Under this framework specific frameworks and theories can be used to examine interrelationships and interactions. For example, the structural-functional, interactionist, exchange, and developmental family theoretical frameworks, as well as the cognitive and affective theories can be used under this framework to study interrelationships.

The ecosystem framework is holistic. It compels the researcher or practitioner to examine the phenomena in their entirety. Because it focuses on the interaction between the human and the environment in which the human is embedded, it gives a researcher something concrete and tangible to assess. The ecosystem framework is a heuristic model. It encourages the scholar/student to discover and learn the interaction and the relationship between factors.

Weaknesses of the Ecosystem Framework

The human ecosystem framework is complex and broad, therefore, it is difficult for the researcher to manage the phenomena. This makes it difficult to analyze data statistically, thus, it might be necessary in the future to develop new methods which could be used to analyze data.

Because the ecosystem framework is so complex and broad, it tries to explain everything and may end up explaining nothing. Not everyone can enjoy using this framework because of its complexity. It takes a particular type of personality which enjoys dealing with 'wholes' and how things are related to each other.

The ecosystem framework contains many abstract concepts. Such concepts need to be defined and brought to a concrete level so they can be measured and tested empirically.

Application of the Ecosystem Framework

This section will illustrate the use of the ecosystem model in the study of behavioral development of black children in South Africa. This study utilizes the human ecosystem framework proposed by Andrews, Bubolz and Paolucci (1980); Bubolz, Eicher and Sontag (1979); Hook and Paolucci (1970) and Morrison (1974) for studying the family. This study is also based on the framework proposed by Bronfenbrenner (1979) for studying the ecology of human development. Both these models link individual physical growth and behavioral development to factors in one's ecological niche.

Rationale for Using the Ecosystem Framework

As discussed in the review of literature, a great deal of research on the relationship of malnutrition to physical and cognitive development has been done using animal models. However, these models are limited because of their simplicity. The animal models have focused only on the nutritional aspect of the total environment. They have overlooked the ecological factors in which the individual is embedded. Growth and development of children is influenced by a myriad of factors in their environment, hence the

rationale for utilizing the holistic approach of the human ecosystem.

The review of literature (Griesel, 1980; Richardson, 1980) on the studies of growth and development of children reveals that these authors decry the absence of an ecological approach. They both suggest that studies in this area move beyond malnutrition per se, to include all the environmental factors that might contribute to the later level of functioning of the child. Thus, they suggest a more ecological research approach in which physical, biological, psychological, social, political, and economic factors are considered.

Understanding growth and development of children is particularly well-suited to the ecosystem model. As is increasingly being recognized, growth and development of children are the product of a multiplicity of factors, not of one factor or influence acting alone.

According to the human ecosystem framework, all children and their families live in a natural, human constructed, and human behavioral environment. These environments set the context for the availability of resources to different groups in a society and within families. The availability of these resources will influence the level and the standard of living of groups and families. This condition will in turn have an effect on the physical

growth, cognitive, and social-emotional development of children in that society.

Bronfenbrenner (1979, p. 21) defines the ecology of human development as:

> the scientific study of the progressive mutual accommodation between an active, growing human being, and the changing properties of the immediate settings in which the developing person lives, as this process is affected by relations between these settings, and by the larger contexts in which the settings are embedded.

Thus, as it can be seen, the ecological or ecosystem framework is useful not only in the biological sciences, but also in social sciences for studying social systems such as the family. The model in Figure 3, on page 62, serves to illustrate the interaction within the family and the environments in which it is embedded. The framework suggests a relationship among the three environments that helps one to keep a holistic and integrative view, rather than a fragmented view of interaction taking place.

The ecosystem framework is used in this study because it provides a holistic framework for the study of children. As suggested by Sims, Paolucci, and Morris (1972) it allows the investigator to identify contributory factors as systems and subsystems and to focus on the transactional patterns or exchanges that exist among the systems of the child, the

family, the community, and the geographic area as a whole. The ecosystem framework is appropriate for the study of growth and development of black children in South Africa.

Assumptions Used in the Study of Black Children in South Africa

Four assumptions undergird the study of black children in South Africa.

Children develop holistically. All developmental domains (physical, cognitive, and social-emotional) are interrelated and interactive. Thus, when children are being studied, these domains cannot be separated. Each affective behavior has a physical and cognitive counterpart, and for every cognitive outcome there are changes in affect (Goodwin and Driscoll, 1980).

Children are part of the total environment and cannot be considered apart from these ecological factors. These factors provide opportunities for the development of children. As stated by Garbarino (1977) there is no pure context-free development.

Studies about children's physical and behavioral development cannot be conducted in the professional office or laboratory. Such studies should be done in the child's natural and social contexts. It is these ecological factors

which provide the richest possible context for understanding behavioral development and physical growth.

The family acts as the immediate environment (microsystem) for the developing child. The family plays a key linking role in providing the conditions for interaction between the child, the meso-, exo-, and the macrosystem.

The ecosystem model will be particularly useful in explaining factors that impinge on the welfare of black children in South Africa. This approach compels the investigator to consider the many environmental forces and the ecological balance among these forces that interact over time with the family or individual child. The diagram in Figure 4 is an example of the use of the human ecosystem framework proposed by (Bubolz, Eicher, and Sontag, 1979). This diagram identifies variables that will be investigated in the ecosystem model.

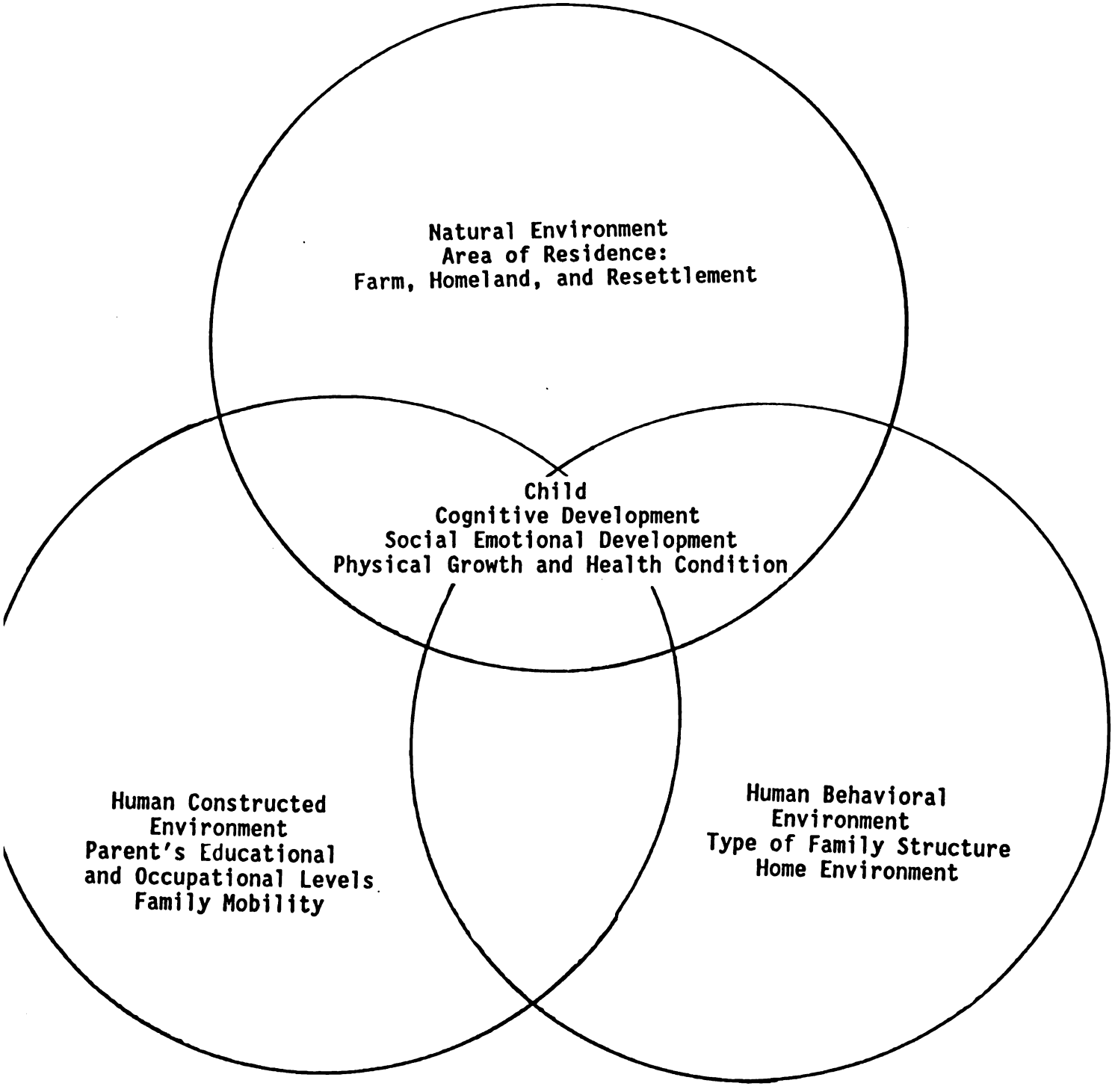


Figure 4. A Model for Studying Black Children in South Africa

Mode of Rationality Used in the Study of South African Children

As stated in section 1, in the discussion of the mode of rationality, all three modes of rationality, namely technical, hermeneutic, and emancipatory can be assumed under the ecosystem framework. This research starts with the empirical analytical perspective. This helps to explain the relationships of the ecological factors on the behavioral development and physical growth of black children in South Africa. Following data collection, analysis, and interpretation, a critical science perspective which involves the emancipatory mode of rationality will be used. The emancipatory rationality will lead to what Habermas calls political-moral action. This is action which seeks good for the people. This would be achieved by getting members of the community involved in policy making that would bring about social, political, and economic changes.

Also implied in the concept of critical science is implementation, that is, working to design and implement programs for children and families which would improve their quality of life. One focus in this dissertation is to uncover and discuss those data that could be later used for community involvement in policy making.

CHAPTER IV

RESEARCH METHODOLOGY

This section provides a discussion of the research design, objectives, variables, questions, selection, and the description of the population. The instruments, methods for data collection, and data analysis used in this study are included in this discussion as well as the ethical principles and ethical problems.

Research Design

This is an exploratory cross-sectional study. Due to limited data on these children and their ecological context, it was considered appropriate to conduct an exploratory study. The design chosen for this study is not experimental, but rather it is quasi-experimental. In this research the independent variables are not under the control of the experimenter who randomly assigned individuals to conditions of exposure or non-exposure. In studying reactions to naturally-occurring events such as area of residence, family structure, and socio-economic status of the family, this control is not possible. Investigations of this type are best viewed as quasi-experimental, a term used by Campbell and Stanley (1963). The unit of analysis investigated in

this study is a black South African child, 5-6 years of age.

Specific Research Objectives

1. Investigate the relations between the area of residence and the parent's marital status, educational, and occupational levels.
2. Determine the relationship between the area of residence and the child's self-concept, cognitive development, and physical growth.
3. Determine the relationship between the parent's marital status and the child's self-concept, cognitive development, and physical growth.
4. Determine the relationship between the parent's educational level and the child's self-concept, cognitive development, and physical growth.
5. Determine the relationship between the parent's occupational level and the child's self-concept, cognitive development, and physical growth.
6. Determine whether the self-concept of the child is related to cognitive development.
7. Investigate the relationship between physical development, self-concept, and cognitive development.
8. Determine whether the child's health condition is related to physical growth, self-concept, and cognitive development.

9. Investigate the relationship between the home environment and the child's self-concept, cognitive development, and physical growth.
10. Determine whether family mobility is related to the child's self-concept, cognitive development, and physical growth.

Research Variables

Conceptual and Operational Definitions

This section gives the conceptual and operational definition for each variable.

Area of residence: Area of residence means the place where the child lives at the time of the interview or where the child has lived since birth. In this study the area of residence could either be the homeland, resettlement, or farm area.

Family mobility: Family mobility is a process of moving from one residential area to another. Family mobility will be measured by the number of times the interviewee and the child have moved.

Socio-economic status (SES): Involves social and economic factors that distinguish people in society. The term often assumes that there are distinct social classes based on education, income, and occupation (Theordorson and

Theordorson, 1969). For the purpose of this study income will not be included since information regarding income is sensitive and difficult to obtain. The parent's educational and occupational levels will be considered as indicators of SES. According to Goodwin and Driscoll (1980) occupation has been typically the single best predictor of SES.

Family structure: The U.S. Census defines a family as: two or more persons living together who are related to each other by blood, marriage, or adoption. Thus by this definition a husband and wife, two sisters living together, mother and child, father and child, or grandparent and child would be considered a family. Family type is based on family structure. Seven types of families are considered in this study, namely, married, married but not living with a spouse, never married, divorced, widowed, separated, and living together not married. Types of families in this study only included those that had a child or children who were enrolled in a primary/elementary school.

Home environment: Home environment includes both physical and social factors. In this study home environment includes the structure of the house, the number of people in the household, the availability of books, toys, and games for the child, and parent-child interaction. The parent-child interaction includes activities such as working together, reading books together, and telling stories.

Nutritional status: Sims (1971) defines nutritional status as the state of health of an individual or group as conditioned by choice and amounts of foods or more specifically, nutrients eaten. In this study, the child's nutritional status is inferred from his/her physical growth. Physical growth is based on standardized anthropometric measures of height, weight, and head circumference. Height is generally the best indicator of extended nutritional deficiency. Weight indicates the present nutritional status of the individual. Head circumference is the most sensitive to malnutrition that has occurred before the age of two years (Yarbrough et al. 1974; Freeman et al. 1977).

Health condition: Health condition denotes the state of well-being or the state of illness of the child. In this study health condition refers to the child's state of health as perceived by the parent/guardian. This will be measured by whether the parent/guardian reports that the child has been hospitalized within the past year or past six months, and what the reasons for hospitalization were.

Behavioral development: Development is a process whereby an organism changes in complexity over time. A change in the thought processes of young children from sensory-motor intelligence to preoperational thought would be an example of development. Behavioral development as used in this study refers to cognitive and social-emotional development of the child.

Cognitive development is a process by which an individual comes to know and interprets his/her environment. Cognition is a process of knowing and includes not only sensation and perception, but other phenomena such as recall, reasoning, problem solving, thinking, and an ability to learn (Lorton and Lorton, 1984). For the purpose of this study three areas of cognitive development will be measured. These are verbal, quantitative, and performance.

Social-emotional development is a process by which an individual acquires emotions, preferences, interests, attitudes, values, mores, and a conception of him/herself (Goodwin and Driscoll, 1980). Social-emotional development as used in this study refers only to the dimensions of self-concept i.e. the perception(s) the child has of him/herself. For example, does the child consider him/herself pretty or ugly. There were also other attributes that were used to measure the child's self-concept (See Appendix A for a scoring sheet for Brown-IDS-Self-Concept Referents Test).

Research Questions

Fourteen questions are formulated for this research. These questions give specific focus to the research activities and help ensure that the major goals of the study are met. In exploratory research, research questions are more appropriate than hypotheses because the directions of

the relationships are not known. In this study the investigator has an interest in a topic which does not have a substantial body of data upon which to predict relationships among the variables. As stated by Babbie (1979) in some cases the investigator may start out with a concern or curiosity. This investigation explores variables previously unresearched in regard to South African context of ecological factors which have an impact on children's growth and development, therefore, research questions are appropriate. The researcher realizes that the use of questions rather than hypotheses makes for weaker relationships in findings. Following the analysis of data collected in this study, the researcher can generate hypotheses which might be formulated for future research studies.

Question 1:
Is area of residence related to the child's self-concept, cognitive development, and physical growth?

Question 2:
Is the child's self-concept related to his/her cognitive development and physical growth?

Question 3:

Do children from families with a low socio-economic status differ on the self-concept measure from children whose family SES is high?

Question 4:

Is the child's health condition related to self-concept?

Question 5:

Is the child's health condition related to cognitive development?

Question 6:

Is the child's health condition related to physical growth?

Question 7:

Is the child's home environment related to self-concept and cognitive development?

Question 8:

Is family mobility related to the child's self-concept and cognitive development?

Question 9:

Do children from single parent families differ from children who come from two parent families in cognitive development?

Question 10:

Do children from single parent families differ from children who come form two parent families in self-concept?

Question 11:

Do children from single parent families differ from children who come from two parent families in physical growth?

Question 12:

Is the child's home environment related to physical growth?

Question 13:

Is the socio-economic status of parents related to cognitive development of children?

Question 14:

Is the socio-economic status of parents related to physical growth of children?

Research Sample

The population being studied consists of 5-6 year old black South African Xhosa speaking male and female children. Three hundred (300) children were assessed for cognitive, social-emotional development as well as measures of physical growth. The parent/guardian of each child was interviewed

for demographic data. A group of one hundred (100) children was selected from each of the areas in which blacks are assigned or in some cases work. The method used by the South African government to assign the four different racial groups is covered in Appendix B.

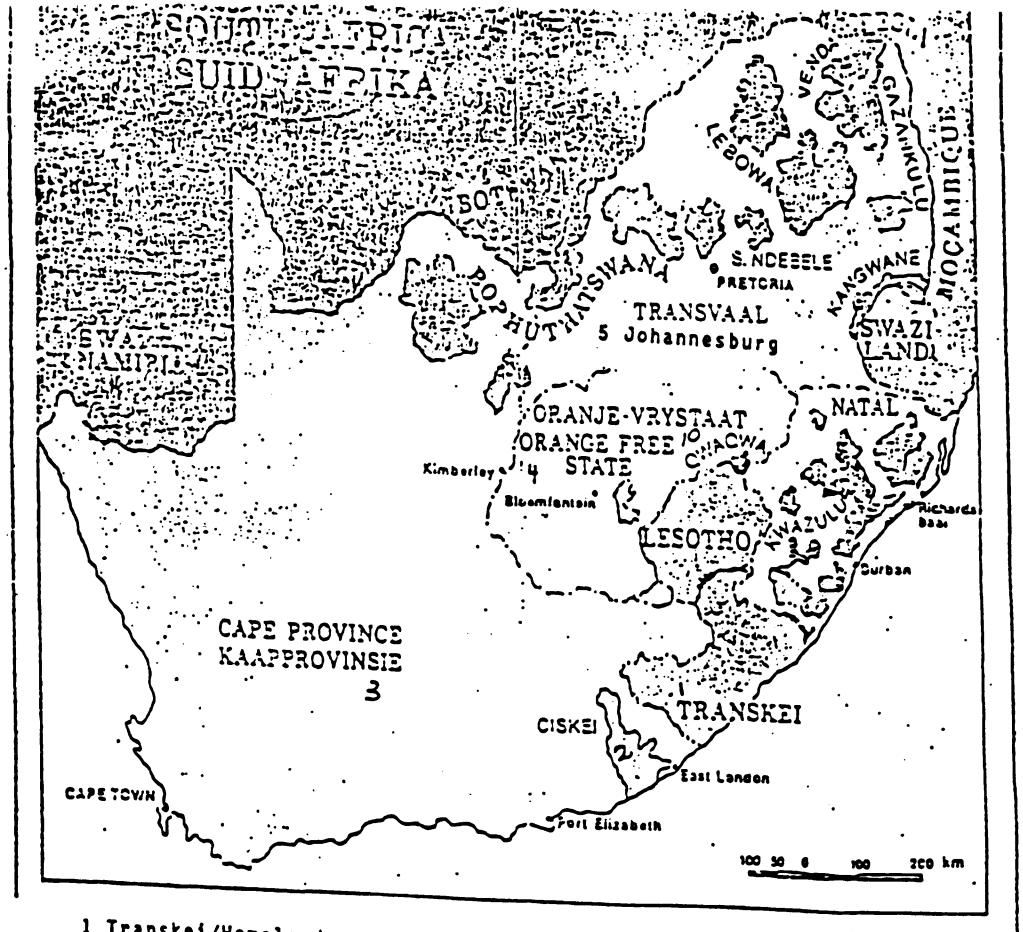
The areas from which the sample was drawn were as follows: Herschel in the homeland of the Transkei, the resettlement of Thornhill in the homeland of the Ciskei, the farm areas around Queenstown and in the Orange Free State (see map of South Africa for homeland, resettlement, and farm areas on page 89).

Brief Description of the Three Areas from which the Sample was drawn

This section presents salient features of the social, economic, political, and physical environment of the homeland, resettlement, and white-owned farm areas.

Homeland of the Transkei

A key piece of apartheid legislation passed in the 1970's was the Bantu Homelands Citizenship Act. This act states that every black in South Africa is a citizen of one of the ten homelands. These homelands were created to assume responsibility for millions of blacks who according to the



1 Transkei/Homeland

2 Ciskei/Homeland

3&4 Farm Areas

5 Johannesburg

act would cease to be citizens of South Africa. This act applied to all black people, even those who had always lived in urban areas, and had no knowledge of any "homeland" and had no relatives there.

Ten homelands have been designated according to the U.S. Policy Toward Southern Africa, (1981). Of these ten, four are now officially classified as independent. These are: Transkei, Ciskei, Bophuthatswana, and Venda. Four of these homelands, Lebowa, Gazankulu, Qwaqwa, and Kwazulu are classified as self-governing territories. The other two, Kangwane and Ndebele are in an early stage of self-government. They have only begun to organize their governments in the late 1970's. As of 1983, 46 percent blacks lived and worked in urban areas and on white-owned farms and about 54 percent blacks lived in the homeland and resettlement areas (South African Fact Sheet, 1984).

The homelands are for the most part situated in barren, dry, and infertile areas. They are poor in resources and lack exploitable mineral resources. The major mineral resources are all located in the urban areas of South Africa (U.S. Policy Toward Southern Africa, 1981).

Economically and politically homelands are inextricably tied to the South African government despite the fact that they have been given a form of "independence" as self-governing states. The homelands function as reserves of labor for South African industries. Black workers are

recruited from the homelands and the resettlement areas on a migrant labor system to go and work in urban areas. They leave their families for a period of one to two years and return to the homelands at the end of the contract.

For the purpose of this study the homeland of the Transkei and Ciskei will be discussed. The resettlement of Thornhill is in the homeland of the Ciskei. These are the homelands from which two thirds of the sample was drawn.

According to the South African Legislation the homeland of the Transkei became fully independent on October, 1976. The Transkei has an area of 43,798 square kilometers of land. The population is 2,323,650 and population density is 53.1 per square kilometers (Platzky and Walker, 1985).

As stated by Muller (1984) the homeland areas contain some of the worst victims of South African polarized development. The following characteristics depict the conditions of the Transkei. Sixty percent of the adult population in this homeland is illiterate. Two thirds of households had cash incomes below the estimated household subsistence level of R1509 or $754 in 1982. Tuberculosis is the greatest killer. Two thirds of the male labor force is permanently absent working as migrant laborers in urban areas in South Africa. The mortality rate in children up to five years of age ranged up to 261 per thousand and averaged 190 in 1980 (Muller, 1984).

Another factor that adds to the problem of Transkeians is severe drought. Drought in the homeland of the Transkei means that few crops are sown, and even those that are sown fail to grow because of drought. Cattle deaths in this homeland provide the best index of the severity of drought. Another important effect of drought has been an increase of water borne diseases. For example, cases of cholera and typhoid were reported during 1982-1983. Infant and child mortality due to kwashiorkor, measles, and gastroenteritis were also reported (Muller, 1984).

Because of excessive drought throughout the year in the Transkei, food cultivation and stock raising are a futile effort. Another reason which makes cultivation and stock raising difficult is that a large proportion of those living in the homelands are either very old or too young, or those who cannot be considered under the migrant labor system because of illness or some other reason.

Resettlement Area of Thornhill

The root of forced removals of blacks by the South African government from areas designated for whites to resettlement areas stretches as far back as the seventeenth century. In many ways the removals of the past thirty years in South Africa form but one phase in a long history of

dispossession and displacement of blacks by whites in South Africa (Platzky and Walker, 1985).

One of the first things that Jan van Riebeeck did after he arrived at the Cape in 1652, to establish a base for the Dutch East India Company, was to drive out the local blacks who were known as the Khoi-khoi from their grazing land below Table Bay near Cape Town. Two years later Van Riebeeck formalized the displacement of the Khoi-khoi from their lands in the Cape Peninsula by means of an agreement.

This agreement stated that only the Khoi-khoi who were prepared to work for the Dutch East India Company or the first white settlers were allowed to remain on their former grazing land. The removal of all blacks not working for whites in the Cape to the central or eastern part of South Africa was one of the ways by which the white settlers set about controlling access to land and to wealth in South Africa. The displacement of black natives of South Africa is similar to what happened to the natives of the United States after Columbus claimed to have "discovered" America in 1492.

The removals of blacks to their "homelands" have resulted in several resettlement areas. Thornhill, Sada, and Ntabethemba in the homeland of the Ciskei are but a few examples of these resettlement areas.

The homeland of the Ciskei became fully independent in December, 1981. The homeland of the Ciskei is comprised of about 5,300 square kilometers of land. The population is

666,000 and population density is about 126 persons per square kilometer, representing a dramatic rise of 126 percent over the period between 1975 and 1980 (Daniel, 1981). This increase can be explained by the South African policy of forced removals of blacks to their "homelands".

The overall standard of living in the Ciskei is low. The gross national income for 1977 was R303 or $151 per capita, compared with R530 or $265 in South Africa as a whole (Charton, 1982). The lack of employment opportunities in both the homeland and the resettlement areas has forced breadwinners especially adult men and women to migrate to urban areas leaving dependents such as the elderly and young children behind.

In the Ciskei Commission report of 1980 data illustrate high infant mortality and widespread malnutrition in these resettlement areas. Previous studies done in the Ciskei suggest that about 27 percent of the population under 24 months of age suffer from kwashiorkor (Gordon, 1981).

Thomas (1981) states that most Ciskeians live in poverty and lack financial resources. Thus residents of Thornhill have the same problems that the Ciskeians are exposed to. These residents came from Glen Grey and Herschel after the Transkei government took over in 1976. About 15,000 people left and were resettled in Thornhill. Some of these people have been evicted from farm and urban areas around this resettlement area.

This exodus from the Transkei seems to have been in response to Transkeian repression of opposition groups. Also because residents of the Transkei had experienced severe drought and unemployment, they had hoped that the resettlement of Thornhill would offer them better living conditions.

At the initial stage of the resettlement residents are provided by the government with tin huts and basic food rations. After a while, residents are expected to fend for themselves and build a community as part of the Ciskei homeland. The first and important hurdle is usually faced by the breadwinners of these families. No consideration whatsoever is usually given to the creation of employment opportunities, services such as schools and clinics prior to the resettlement of these families. The economically active find themselves with no alternative but to become migrant workers in urban areas.

The residents of Thornhill, Sada, and Ntabethemba resettlement areas comprise seven to eight percent of the territory's population, yet they have only one clinic which has one doctor who visits twice a week. This clinic is run for eight hours a day by nurses. According to Mare (1980) a high incidence of psychosis particularly schizophrenia has been reported in this area. This is attributed to the depressing conditions under which residents of the resettlement areas live.

White-owned Farms

An estimated 1.3 million black families live and work on white owned farms. In 1980, the average wage for an African farm worker was $28 to $40 per month. Farm workers also receive pay in kind such as minimal housing facilities and dietary staple food such as corn or mealie meal (South African Fact Sheet, 1984).

Historically, whole families resided on the land of white farmers who provided accommodation and some ground for cultivation in exchange for the labor of all members of the family as required. In many areas in the Orange Free State and around Queenstown this system still operates and farm children, who may or may not be provided with schooling, are obliged to work in the fields weeding, harvesting, and performing tasks like potato-picking.

Living conditions on the farm areas are very poor. Workers including children are often housed in large unfurnished sheds with no internal walls or beds. Families live in corrugated iron huts. There may or may not be piped water and there is in general a lack of sanitation.

In a survey conducted by the University of South Africa on behalf of the Theron Commission in January and February 1975, Wilson et al. (1976) gave a full description of the working and living conditions of laborers on the Karoo farms. According to this survey, the average number of hours

worked by both black and colored employees is 53.8 per week. Cash wages for blacks averaged $8.36 or $4.18 a week, cash wages for coloreds were $9.77 or $5.36 a week. Workers also received payments in kind. The main items supplied to laborers were: meat, milk, clothing, medical care, grazing rights, and rights to grow vegetables on a piece of land.

Almost all the laborers surveyed lived in farmer-built houses of one to four rooms, built with brick, stone or cement, with asbestos, zinc, tin, or corrugated iron roofs. Floors were generally of cement, earth or dung. Only a few houses had running water inside the house. Most black farm laborers had to carry water from a distance of 30-100 meters to the house. The average size of family was 5.02. About 75 percent of the workers who were interviewed had not been to school at all. Reasons given for the lack of education were that there were no schools on the farms, lack of money, or lack of time.

In conclusion, farm life is characterized by what Nasson (1984) labels as acute squalor, chronic poverty, and almost total lack of alternative employment opportunities. Farm laborers learn to be dependent on white farmers for jobs, food, and housing. What makes this area seem worse off than the other areas, namely the homeland and the resettlement areas is the isolation of farm laborers from the mainstream culture. This is so because farms are usually miles apart to ensure more grazing land or big acres for

growing crops. Thus, the world of farm laborers is characterized by an intense and confining localism, a crippling dependency, and encapsulation in poverty (Nasson, 1984).

Summary

These areas were included in the study because of their homogeneity in terms of ethnicity i.e. Xhosa. They also have common and diversified conditions imposed by the natural, human constructed, and human behavioral environments. In the original research proposal Soweto in Johannesburg was also included, however, children from this area were left out due to the political turmoil in urban areas of South Africa at the time of this research.

Approval and Selection of Sample

An approval was obtained from the Ministries of Education to enter the primary/elementary schools and work with children who were included in the sample. A letter explaining the purpose of the research and requesting an approval to work in schools was sent by the researcher to Ministries of Education in each area in March 1986 (see letter in Appendix C).

No response was received by the researcher from the Ministries of Education before leaving the United States. Upon arrival in South Africa in June 1986, the researcher visited the different inspectors' offices to follow-up on the letters that were sent to the Ministries, and to request written permission to enter the schools that were included in the study.

The researcher obtained a memo from each inspector's office giving permission to enter the schools and work with the children. This permission was then taken by the researcher to different school principals (see Memos in Appendix D) in various areas of the homeland, resettlement, and farm areas.

Upon arrival at each school the researcher was introduced by the principal to the class teacher(s). A brief description of the purpose of the study was given to both the principal and teachers by the researcher. During this session the time and room in which the testing was going to take place were established. The researcher was then given the class register from which the sample was drawn. The drawing of the sample was done at school. The permission was given on the condition that the class register was not to be taken out of school premises.

A systematic sampling technique was used to select the sample. As stated by Babbie (1979) in systematic sampling,

every Kth element in the total list is chosen for inclusion in the sample. The first step was to select four schools from the homeland area. These schools were selected from a list of all primary/elementary schools in this area, using the systematic sampling technique. The list in the homelands consisted of thirty schools. Using the systematic sampling technique, every 10th school was included in the sample. Because of a limited number of schools on the farm and in the resettlement areas, the sample was drawn from all the schools in these areas. Both these areas have four schools.

From each of these schools an enrollment register for all the children ages 5-6 years was obtained to select the sample. The list consisted of approximately 70-80 children in each class. Twenty five children were selected from each class to make up a total of one hundred children needed for the sample from each area. Every 10th child was included in the sample.

To ensure against any possible bias in using this technique, the first child was chosen at random. Following that every 10th child was included in the sample. This technique ascertains the representativeness of the sample and allows the investigator to make extrapolations about black children ages 5-6 in South Africa from this particular ethnic group in these particular ecological areas.

After the selection procedure was completed, children who were chosen for the sample were given a letter

explaining the purpose of the research and a consent form for the parents. This form was to be filled out and returned the next day to school by the child. In most cases the consent form was filled out and returned to school the next day. However, in a few cases the researcher had to make home visits to explain the purpose of the study to parents/guardians and request their approval.

Research Instruments

The following are the instruments and measurement techniques used in this research: the Junior South African Individual Scale, Brown-IDS-Self-Concept Referents Test, anthropometric measures for height, weight, and head circumference, and the parent's questionnaire.

The Junior South African Individual Scale (JSAIS) was used as a measure of cognitive development. This scale gives a profile of intellectual development for children between 3 and 7 years. For the purpose of this study, three areas of cognitive development were covered. These were verbal, numerical, and performance. The following sub-tests correspond with these areas: vocabulary, number and quantity concepts, and copying.

The following section will give a brief statement of the content, aim, and rationale for the use of each sub-test.

Vocabulary: This sub-test consists of thirty four black and white cards with four pictures on each. The testee chooses the picture that goes best with an object, action, quality, or characteristics named by the tester. The child points to or marks with an "X" a picture on a card to indicate his/her answer. This subtest is similar to the traditional picture vocabulary tests for children.

The aim of this test is to measure recognition, comprehension, identification, and interpretation of verbal symbols. It involves specific processes and functions: retrieval of associations or general information from memory; the eduction of identities or similarities between a verbal stimulus and a picture stimulus; the differentiation of parts of a visual stimulus and the reinterpretation of a possible ambiguous item.

This sub-test is based on the assumption that a testee's comprehension of a word can be determined by the identification of pictorial representation of a word. In this way the child demonstrates the ability to understand spoken language which precedes active language usage. Considerable empirical proof exists for the validity of using picture vocabulary tests to measure general

intelligence. Similar tests (for example, the Peabody Picture Vocabulary Test PPVT) are often used to obtain a rough indication of intelligence. According to Madge (1981) a vocabulary test is also sensitive to neurological deficit and psychological disturbance. Thus, such a sub-test could be used as one measure of the adverse conditions on cognitive development (see copy of the vocabulary test in Appendix A).

Number and Quantity Concepts: This sub-test consists of two parts, namely, parts A and B. Part A comprises 31 items, six of these items test the child's ability to count, sixteen items concern quantity concepts (for example, fullness, length, mass, and quantity), and nine items deal with simple concrete calculations such as, addition, subtraction, division, and simple fractions. The child points to or marks with an "X" a picture on a card to indicate his/her answer. Part B consists of 15 mental arithmetic problems which are presented and answered orally. Part B is intended for 6 and 7 year old children only. Thus, this section was not appropriate for the sample of 5 and 6 year old children included in this study, hence it was left out.

The aim of Part A is to measure understanding and manipulation of quantitative material in a relatively concrete way. The specific processes and functions involved are: counting ability, ability to apply basic mathematical

processes, evaluation of quantity, size, length, fullness, comprehension of relational items, spatial ordering, and relatively concrete mathematical reasoning ability.

This test is based on the assumption that the comprehension of numbers, quantity, and the ability to manipulate number concepts constitute important facets of the child's ability to function adequately in school and in other life situations. To some extent this test is based on Piaget's theory of cognitive development which holds that concepts of quantity begin to develop at about five to seven years. At this age the child begins to differentiate quantity and fullness, size and fullness, and length and fullness. Approximately half of the items in Part A are based on this differentiation of the concepts of quantity.

Since mental alertness is a prerequisite for meaningful manipulation and understanding of numbers, this subtest was considered an appropriate measure of the impact of adverse environmental conditions on cognitive development (see copy of number and quantity concepts in Appendix A).

Copying: This test consists of 12 items. The testee is presented with a booklet with geometrical figures. He/she is required to copy figures from the example presented. The figures to be copied comprise simple figures such as a circle, square, or triangle, sometimes they comprise a configuration of two adjacent figures. This sub-test

measures the ability to reproduce correctly a design presented visually. The following more specific skills are supposed to be involved: hand-eye coordination, perceptual ability, comprehension of spatial relations, and visual-motor organizational ability.

This sub-test is based on the assumption that smaller children are inclined to perceive a figure globally in contrast with older children who take details into account. Perception of the whole is adequate for most simple tasks involving fitting. The process of copying figures demands perception of every detail and the organization of the parts into the whole. According to the literature a good performance in copying figures is significantly related to scholastic achievement.

Wechsler (1967) points out that scores in this type of test positively correlate (in the particular ages) with the scores in other measures of intelligence. He is of the opinion that correctness of a response depends primarily upon perceptual and visual-motor organization, the development of which is closely tied to increasing chronological age. Since copying requires some degree of concentration, this sub-test was considered appropriate in this study (see copy of copying in Appendix A).

The JSAIS is standardized for 3 to 7 year old children. It was standardized in English on a sample of 1795 white and black children from South Africa. The sample was selected

based on the following criteria: age of the child, gender, socio-economic background, and attendance at a preschool or a primary school. The reliability is .63 for vocabulary, .60 for number and quantity skills, and .80 for copying. For the purpose of this study a Xhosa version was used. This test was translated by the researcher and the research assistants at the National Institute for Personnel Research.

Brown-IDS-Self-Concept Referents Test: The self-concept test as a measure of social-emotional development was chosen because it is appropriate for early elementary children (Goodwin and Driscoll, 1980). This test does not require children to read or write, rather the descriptions and directions are read by the interviewer to children. The stimulus is a Polaroid picture of the child that is taken by the researcher before the interview. The interviewer sits with the child at the table with each child's picture and goes through a list of 14 items which describe what the child thinks about him/herself as he/she sees him/herself on the picture. These items were translated by the researcher and the research assistants into Xhosa which is the language spoken by these children. After the child's response the interviewer marks his/her answer on the answer sheet (see Appendix A for a scoring sheet for Brown-IDS- Self-Concept Referents Test).

This test is normed on a population of 2866 American children from different ethnic groups. Their age ranges from

5-8 years. The reliability for this test is .71 for lower class blacks, .76 for middle class white children, and .55 for K-1st grade. Although this test is not standardized for black South African children, it might yield valuable results as comparisons are done among black children from the Xhosa ethnic group only and not among children from different ethnic groups.

Anthropometric Measures: The anthropometric measures of height, weight, and head circumference were chosen for this study because of their acceptability by researchers in general for measuring physical growth and the ease with which data could be collected. A bathroom scale was used to measure weight. For height and head circumference an anthropometer and a tape measure were used. All these instruments are in the metric system. Measures such as skinfold thickness which were included in the proposal were left out because of the difficulty to use the instruments to measure skinfolds and the unavailability of special equipment such as callipers. The National Center for Health Statistics (NCHS) charts were used as a suitable reference standard against which children's growth was checked (see copy of the NCHS norms for ages 5-6 in Appendix A). The anthropometric measures of height for age, weight for age, and head circumference were used to assess the physical growth of children.

As stated by Fincham (1982) there is a consensus among researchers and medical practitioners in South Africa that international norms such as the NCHS are at present the only acceptable standards against which the nutritional conditions of children in South Africa should be evaluated. These norms are recently compiled from 1963-1975 and are representative samples comprising some 20,000 children from different racial groups in the United States. These are internationally accepted norms and are likely to replace the Boston norms which were widely used in South Africa.

The child's family and home environment information was obtained by a parent's questionnaire designed by the investigator (see parent questionnaire in Appendix A). The parent questionnaire was also translated by the researcher and assistants into Xhosa a language spoken by the respondents.

Data Collection Procedures

Data collection was begun on June 17 and ended on August 30, 1986. The researcher and two research assistants were trained by a psychologist from the testing center of the Human Science Research Council, Pretoria, South Africa in the use of the JSAIS. The training sessions took three days at the National Institute for Personnel Research (NIPR) in Johannesburg, South Africa.

The research assistants had both graduated from the University of Fort Hare, South Africa. One of the assistants majored in psychology and sociology, the other majored in social work and anthropology. They were chosen because they had previously worked with the researcher on a different project in the homeland of the Ciskei.

After the Brown-IDS-Self-Concept Referents Test and the parent questionnaire were translated, the questionnaire was pilot tested with a group of parents and the self-concept test was pilot tested with a group of children whose socio-economic status is similar to the sample being studied. The researcher, who received training in the use of anthropometric techniques at Michigan State University in Summer of 1984, trained the research assistants in the use of this technique.

After receiving written approval regarding schools to visit and informed consent from the parents whose children were in the sample, the team began testing in one school at a time. Working as a team in each school was preferred to working individually for many reasons. For example, only one car was rented for the research, so working in a team eliminated the many stops that would have been costly in terms of time and money. The investigator could help the research assistants if there were problems; this might not have been possible if each researcher worked in one school.

This method also had an advantage of distributing work among the researchers. It also proved to be efficient in terms of time. For example, while one researcher helped the children undress, stand in the line, and get onto the scale, another one took the measurements for weight, height, and finally head circumference. The assessor would call these measurements to the third person who recorded the measurements. A similar team approach procedure was also used for assessing the child's self-concept. For example, one person took the photographs while the other two interviewed children. Also in a country that is politically unstable working in a team was preferred for safety reasons.

The first area in which testing took place was Herschel in the homeland of the Transkei. This area was chosen as the first area because this is where the researcher was born and raised. She also attended one of the primary/elementary schools. Therefore entry was not expected to be a problem. The second area to be visited was Thornhill in the resettlement of the Ciskei. The researcher's brother is a principal in one of the schools in this resettlement. The last area to be visited were the white-owned farms around Queenstown and in the Orange Free State.

The measurements for height, weight, and head circumference and the assessment for cognitive, and social-emotional development were carried out at school. This took

place during school hours or after school in some cases in a classroom separate from their own. Testing was done with a group of 10-15 children at a time except for the self-concept test. For this test interviews were done with one child at a time after the measurements for physical growth and assessment for cognitive development. The measurements for height, weight, and head circumference were taken for each child one at a time. Because it was winter in South Africa at the time of this data collection, children were weighed with their clothes on except for heavy sweaters, coats, and shoes. Each testing session including anthropometric measurements took 60-90 minutes.

The duration for testing did not prove too long nor too tiring for these children because different activities were done during the session. For example, measurements for weight, height, and head circumference which took about 30 minutes for a group of 15 children were taken first. The same group was then given the verbal, the quantitative concept, and the copying tests which took about 30-40 minutes. After these tests a photograph of each child was taken followed by an interview which took about 10 minutes for each child. Each child was given his/her photograph as a souvenir. Children were then thanked for their cooperation. As a token of appreciation candy and punch were offered to children who participated in the research. Although candy

does not have nutrients, it was offered to children because it was not costly and would be appealing to young children.

To administer the parent questionnaire, parents whose children were tested were asked to come to school. The questionnaire was administered by all the researchers to one parent at a time. It took about 15 minutes to administer the questionnaire. For parents who could not come to school because of work or for other reasons, the researchers made after school or evening home visits.

Parents who participated in the study were thanked for their time, especially parents from white-owned farms who were interviewed either during their lunch break or in the evenings. All parents received a box of cookies and two liters of orange juice or punch as a token of appreciation. This was served at school or brought to the home by the researcher in some cases.

Methods used for Data Analysis

The statistical procedures used to test differences between the categorical variables included the chi square test and the multivariate analysis of variance (MANOVA) for the categorical and the continuous variables. The MANOVA was followed by Tukey's test to see if the differences between

the categorical and the children's measures of self-concept, cognitive development, and physical growth were statistically significant. The alpha level was set at .05. To obtain the correlation between the children's measures Pearson Coefficient Correlation was used.

Ethical Consideration

A major consideration of this study concerned the informed consent of the parents/guardians and their children who were involved. A letter describing the purpose of the study was sent to the parents/guardians and the school administrators (see letters in Appendix C). To get an informed consent parents/guardians filled out a form (see informed consent form in Appendix C). These were both used to ascertain that the purpose of the study was understood and that the involvement of the subjects was done voluntarily without any persuasion or any deception. This information was considered important to both the parents and school authorities who in a politically unstable country view 'outsiders' with apprehension and suspicion.

A second ethical issue involved the protection of parents/guardians and the children against any physical and psychological harm. For example, the subjects were not harassed or intimidated if they made mistakes or if they

chose not to answer a question. No fear and no anxiety were induced in the subjects for any reasons.

The third ethical consideration concerned the protection of the subjects' identity. In keeping with the ethical code of confidentiality after the interviews and testing were completed, parents'/guardians' and children's names were replaced by identification numbers. Anonymity was easily maintained especially because the study was not focusing on the child's specific individual behavioral and physical growth, rather on black children in South Africa from the Xhosa group.

The fourth consideration for this study concerned the maintenance of objectivity and guarding against biases. Because of the nature of sample selection a bias was introduced. For example, only school children were included in the sample because of time constraints and the ease of access to the schools. The "invisible" children who are equally malnourished, sick, or who might be working on white-owned farms and may not be attending school were not included in the sample.

Only parents/guardians and children from the Xhosa ethnic group were included in the sample. This is also the ethnic group from which the researchers come. These geographical areas were included because the researcher is familiar with the culture of the groups found in these areas and because the language would not be a problem. On the

other hand if other ethnic groups were included, there would have been a need for interpreters. This would have been a problem in terms of ascertaining validity and would have been also costly in terms of time and money.

Finally, the researcher had to make sure that promises were not made that could not be fulfilled. For example, in all the areas which were visited the researcher was viewed as a "Messiah who was coming to redeem sinners". After the introduction was made all parents were willing to share information with the researcher, even neighbors who were not involved in the study were willing to give information as long as this would help change "the plight of black families in our country", one woman added.

The willingness to share information with the researchers showed how desperate these families were to discuss their living conditions and that they would do anything, even talk with 'strangers'. This also may be an indication that some of the black families in the rural areas have become more aware of the policy of apartheid and are prepared to make a contribution towards change. In spite of the willingness to share information with the researcher, only those who were included in the study were interviewed.

A brief explanation of the purpose of the study was made to those who were not included in the study. They were also told that the researcher might on her return to South

Africa work with families in the rural areas on different projects. No promises were made to anyone whether or not involved in the study.

CHAPTER V

DATA ANALYSIS AND FINDINGS ON FAMILY BACKGROUND INFORMATION

This chapter summarizes the family background information findings which include: area of residence, socio-economic status, type of family structure, home environment, and family mobility.

Demographic characteristics of families were obtained by a parent questionnaire which was administered to the parents/guardians whose children were in the sample. The first step was to obtain a percentage of respondents for each category of variables. The second step was to obtain a breakdown of the following variables: area of residence by marital status, educational and occupational levels of the parent/guardian; marital status by the occupational levels; as well as the level of education by the occupational level of the respondents. A chi square test was used to see whether the relationships between these categorical variables were significant.

Findings on Parent/Guardian Information

The total number of parents/guardians who were interviewed was three hundred. One hundred of these were from each of the three areas from which the sample was drawn. These were the homeland, resettlement, and the farm areas. Thirty two percent of the respondents were males and 68% were females. Their mean age was 42.20 and the standard deviation was 8.32. The range of their age was 24-62.

A breakdown of the respondent's age by area of residence shows that the sample from the homeland represents a mean age of 39.83, the sample from the resettlement area represents a mean age of 42.77, and the sample from the farm areas represents a mean age of 43.99.

This finding suggests that parents in the homeland were younger than parents in the resettlement or farm areas. A few of the respondents in the resettlement and farm areas were grandparents who were taking care of children while parents were working in urban or on white-owned farms.

The majority (65%) of the respondents were married or married but not living with a spouse at the time of this research. Less than one third of the parents/guardians (32%) were never married and a small percentage (3.3%) was widowed or divorced (Table 1).

Table 1

Respondents' Marital Status

Marital Status	Number	Percentage
Married	103	34.3
Never Married	95	31.7
Married no spouse present	92	30.7
Widowed	6	2.0
Divorced	4	1.3
Total	300	100.0

Area of Residence and the Marital Status

A breakdown of the area of residence by marital status shows a relationship between the area of residence and marital status. The chi square was found indicating a significant relationship at $p < .05$ level between the area of residence and marital status.

As shown in Table 2 the homeland had the highest percentage (78%) of marriages both with the spouse living at home and with no spouse living at home. The farm area had a higher percentage (37%) of marriages with a spouse living at

home than the resettlement areas. However, the resettlement area compared with the farm area had a higher percentage (33%) of marriages with no spouse living at home. The resettlement area also shows a higher percentage (40%) of unmarried respondents than the homeland and the farm areas. The divorced and widowed categories show a higher percentage (7%) in the farm areas than in the homeland and in the resettlement area.

Table 2

Contingency Table: Area of Residence by Marital Status

Residence	Marital Status				
	M.	M. no spouse	N. M.	D&W	Total
	%	%	%	%	
Farm	37	22	34	7	100
Homeland	41	37	21	1	100
Resettlement	25	33	40	2	100

Chi Square = 20.13 with df=6

* p<.05 level

These findings suggest that the pattern of marital status differs from residence to residence. All the three

areas show a different pattern of marital status. The high rate of marriages with or without a spouse living at home in the homeland could be attributed to the fact that the homeland communities are more stable than the resettlement and the farm areas. Data from this study indicate that more than half (63%) of residents in the homeland had never moved. More than a third (37%) of residents in the farm area had never moved, and only a small percentage (8%) of residents in the resettlement areas had never moved. These findings suggest the highest rate of family mobility in the resettlement area and the lowest rate of family mobility in the homeland.

Because of a feeling of stability and a sense of belongingness the homeland communities might have established values and mores that are cherished by the group as a whole. Thus marriage could be viewed in these communities as one of the societal institutions that is valued. However, the high percentage of marriages with no spouse at home in the homeland and the resettlement areas suggests that residents from these areas leave the homelands and the resettlement areas to seek jobs in urban areas or on white-owned farms in other cases.

The resettlement area showed the lowest percentage of marriages with the spouse living at home and the highest percentage of unwed mothers. Some of the residents of this area have been forcibly removed by the government of South

Africa from areas designated for whites, others have been forcibly removed from other homelands when a different homeland government took over. Families are usually separated when men or women remain working in urban or farm areas, or when other members of the family decide to remain in the homeland.

Residents in the resettlement area are flung into situations where they are all strangers. They have to start building a new community. These areas also lack opportunities for employment, the land is dry and infertile for farming and for carrying out agricultural activities. Families thus suffer material deprivation, as well as pyschological deprivation. As one woman stated during the visit to the resettlement of Thornhill, "it would be better to live in hell rather than live in the resettlement areas".

Because residents in the resettlement area are highly mobile and reflect little stability they may not have established values that are cherished by the community as a whole. Marriage might thus not be valued by the residents in this area hence there exists a higher percentage of repondents who had children out of wedlock. Evidence from this study shows that these are some of the children who are often malnourished, and who suffer from other preventable diseases.

In the farm areas it is usually a requirement that the husband, wife, and children live and work on white-owned

farms. This arrangement is reinforced by farmers. This is encouraged to ensure family stability which presumably increases job morale and high productivity and lowers the rate of hiring and firing. As stated by Ndaba (1984) white farmers will go to extremes to retain a stable work force. For example, farmers may even encourage single male workers to form relationships with women who work on the farms. These relationships often end up in marriages. However, in the farm area the divorced and widowed category has more cases reported than in the resettlement or homeland areas. But this is a very small percentage (7%) of respondents.

Educational Level of Parents/Guardians

Data in Table 3 indicate that 66.6% of the respondents had six or less years of education. Twenty nine percent of the respondents had a junior secondary school certificate and high school diploma. The lowest percentage (4%) of the respondents had a bachelor's degree.

This finding indicates that about two-thirds of the adult respondents in this study had six or less years of education. Approximately one third of the respondents had a junior secondary school certificate, a high school diploma, or a bachelor's degree.

Table 3

Educational Level of the Respondents

Level of Education	Number	Percentage
<6 years	94	31.3
6 years	106	35.3
Jr. Sec. Sch.	45	15.1
High School	43	14.3
Bachelor's	12	4.0
Total N	300	100.0

Area of Residence by Level of Education

The relationship between the area of residence and the level of education is indicated by a significant relationship at $p < .05$ level. Data in Table 4 indicate that the farm areas had the highest percentage (82%) of respondents with six or less years of education. The resettlement had 65% of residents with six or less years of education. The homeland had 53% of residents with six or less years of education. All the three areas had about

equal respondents with a junior secondary school certificate. All the areas had respondents with a high school diploma. The homeland had 20%, the resettlement area had 19%, and the farm areas had the lowest percentage (4%). Only the homeland had respondents with a bachelor's degree.

Table 4

Contingency Table: Area of Residence by Level of Education

Residence	Level of Education					
	<6yrs	6yrs	JSS	HS	BA	Total
	%	%	%	%	%	
Farm	51	31	14	4	0	100
Homeland	23	30	15	20	12	100
Resettl.	20	45	16	19	0	100

Chi Square = 57.98 with df=8

* p<.05 level

Data from this study indicate that all of the respondents with a bachelor's degree lived in the homeland and 20% of the homeland respondents had a high school diploma. This finding suggests that education in the homeland might be viewed by parents as a means to improving

the quality of life. Education in the homeland is thus viewed as important for adults. For example, two of the respondents who had a bachelor's degree in the homeland reported that they were enrolled in a master's program at the time of this research.

In the resettlement area 19% of the respondents had a high school diploma. Residents of the resettlement areas, as was mentioned earlier, were removed either from an urban area, a different homeland, or farm areas during the late 70s and the early 80s. The process of eviction and forced removals still continues in the late 80s. Residents in the resettlement area showed levels of education that were more or less equal to the levels found in the homeland, however, no one from this area had a bachelor's degree. Thus residents in the resettlement area might have acquired this level of education prior to being resettled. According to personal communication with respondents a few of the respondents from this area were also studying by correspondence at the time of this research.

Data from farm laborers show that they have the least amount of formal education. One reason could be attributed to a lack of schools for blacks in the farm areas. White farm owners make a decision as to the number of schools that are required for their employees as well as the number of teachers that are employed by the school, the type and size

of the building, and the kinds and amounts of school equipment necessary for the education of blacks.

For example, in one of the farm areas that was visited by the research team, the building that was used as a school was a dilapidated house that formally belonged to the farmer. The classrooms in this school were unusually small as these were living space rooms for the farmer's family. Four schools for black children in the farm areas were included in the study. Each classroom in these schools had about 50-70 children. The school equipment, such as tables and desks, was broken and in poor condition; the windows were broken and unattended to.

The highest level of education that the farm residents can usually achieve is standard four (the equivalent of the sixth grade in the United States). Many are required to work on the farm after completing standard four. One parent mentioned that sometimes parents send their children to live with friends or relatives in the homelands in order for their children to get a higher level of education. Such an arrangement is sometimes made with daughters whose services are not as important on the farms. Young men have little opportunity for this type of arrangement.

Nasson (1984) writing on the farm schooling for black South Africans has explored several reasons for the lack of schools on the farm areas. He states that formal schooling is not considered relevant by most farmers when hiring farm

workers. White farm owners are in general indifferent towards schooling and very suspicious of schooling. They think that the possession of too much education is dangerous and would lead to capricious behavior that would threaten the farmer's future labor. The type of education that white farm owners consider appropriate for their laborers is that which enables farm laborers to understand instructions from the master and from the master's wife. One could conclude from Nasson's (1984) statements that the type of education that farm owners promote for their farm laborers is one which makes farm laborers subservient and obedient servants.

Occupational Level of Parents/Guardians

Slightly more than half (53%) of the parents/guardians who answered the questionnaire for this study had no jobs at the time of this research. Of those who were employed, 27% were in menial and unskilled jobs. About 20% of the respondents were employed in semi-skilled, skilled, or semi-professional positions.

Table 5

Employment and Unemployment Rates

Employment	Number	Percentage
None	158	52.7
Menial	51	17.0
Unskilled	30	10.0
Semi-skilled	17	5.7
Skilled	16	5.3
Semi-professional	28	9.3
Total N	300	100.0

Area of Residence and the Level of Occupation

A breakdown of the area of residence by the level of occupation shows a significant relationship at $p < .05$ level. Data in Table 6 indicate that the resettlement area had the highest percentage (62%) of residents without employment. The homeland had 50% of residents without employment, and the farm areas had the lowest percentage (46%) of residents who were unemployed at the time of this research.

A higher percentage (51%) of farm laborers were employed in menial and unskilled jobs than were the

residents from the homeland and the resettlement areas. A small percentage (3%) of farm laborers were employed in semi-skilled jobs. No one from the farm area was employed in skilled or semi-professional positions.

The results suggest that farm laborers who had the least level of education were more likely to be employed in menial and unskilled jobs. On the other hand although the homeland and resettlement residents showed the highest levels of education, the residents of these areas had a higher rate of unemployment than the farm areas, with the resettlement area showing the highest rates.

In the homeland and the resettlement areas respondents were distributed from menial to semi-professional positions. Only residents from the homeland and the resettlement areas were employed in skilled and semi-professional positions. However, a higher percentage (18%) of workers in semi-professional positions were in the homeland. In the resettlement area there were only 10% of residents working in semi-professional positions.

The high rate of unemployment in both these areas suggests that education is not a factor in determining whether residents in these areas will be employed or not, rather the area of residence in which one lives is a related factor. For example, farm areas have the highest rates of employment, yet farm laborers are the least educated.

These results also suggest that the homelands and the resettlement areas lack opportunities for employment. The resettlement area seems worse off compared to the homeland in terms of job opportunities. Previous data indicate that in the homeland and the resettlement areas there were higher percentages of respondents who were married, but not living with a spouse than in the farm areas. A hypothesis is that these individuals might be some of the men or women who leave these areas to seek work in urban areas.

Table 6

Contingency Table: Area of Residence by Occupational Level

Residence	Occupational Level					
	None	Menial	Unskill	S.S.	Skilled	Semi-Prof
	%	%	%	%	%	%
Farm	46	35	16	3	0	0
Homeland	50	13	4	7	8	18
Resettl.	62	3	10	7	8	10

Chi Square = 69.44 with df=8

* $p<.05$ level

Marital Status and the Occupational Level of the Respondents

Although the findings of the relations between marital status and the occupational level of the respondents do not show a significant relationship, a look at the numbers of individuals in the category of married and married but not living with the spouse have more people who work in semi-skilled, skilled, or semi-professional positions than those who are not married and who are divorced or widowed (Table 7).

Table 7

Contingency Table: Marital Status by Occupational Level

Marital Status	Occupational Level											
	None		Menial		Unskill		S.S		Skilled		S.Prof.	
	n	%	n	%	n	%	n	%	n	%	n	%
M .	44	28	14	28	10	33	9	52	8	50	18	70
M.S.	53	34	19	37	8	27	2	11	4	25	6	20
N.M.	54	34	15	29	12	40	6	35	4	25	4	10
D&W	7	4	3	6		0		0		0		0

Chi Square = 26.35 with df=12

not significant

Level of Education and the Occupational Level of Respondents

A significant relationship at the $p < .05$ level exists between the level of education and the occupational level of parents/guardians (Table 8). For example, 83% of those with less than six years of education were unemployed and 17% were in menial jobs. No one with less than six years of education reported that he/she was employed in any other occupational level. Of those with six years of education 61% were unemployed, 18% were in menial jobs, 15% were in unskilled jobs, and 6% were in semi-skilled positions. No one in this category was in skilled or semi-professional occupations. Of the respondents with a junior secondary school certificate there was a distribution in all job levels. Twenty nine of the respondents with a junior secondary certificate were unemployed. Thirty one percent were in menial jobs and the rest were in unskilled, semi-skilled, skilled, and semi-professional levels. Those with a high school diploma only 5% were unemployed and 5% were in menial jobs. Twelve percent were in unskilled jobs and 14% were in semi-skilled jobs. Twenty one percent were in skilled positions, and 43% were in semi-professional positions. Of those with a bachelor's degree all were employed in semi-skilled, skilled, and semi-professional positions. A higher percentage (58%) was employed in semi-

professional positions and a lower percentage (42%) was in semi-skilled and skilled positions. No one in this educational category was unemployed or employed in menial or unskilled jobs.

Table 8

Contingency Table: Level of Education by Occupational Level

Education	Occupation											
	None		Menial		Unskill		S.S.		Skilled		S. Prof	
	n	%	n	%	n	%	n	%	n	%	n	%
<6 yrs	78	83	16	17		0		0		0		0
6 yrs	65	61	19	18	16	15	6	6		0		0
JSS	13	29	14	31	9	20	3	7	4	9	2	4
HS	2	5	2	5	5	12	6	14	9	21	19	43
BA		0		0		0	2	17	3	25	7	58

Chi Square = 241.93 with df=16

* $p<.05$ level

The data indicate that higher education in the homeland and in the resettlement areas is related to employment in semi-skilled, skilled, and semi-professional positions. Residents in these areas were distributed throughout the categories from menial to semi-professional. However, most

respondents were working in semi-skilled, skilled, and semi-professional positions. The farm residents were mostly employed in menial and unskilled occupations, here there was no need for a higher education. Thus it would seem from this finding that the level of education is not the only factor that determines whether residents are employed or not, rather the area of residence seems to be another important factor determining one's employment.

Other Source of Income

In an effort to verify whether parents/guardians had other sources of family income, they were asked whether they had only their wage, were supplemented with the wage of others, or were paid in kind. Forty eight percent of all the respondents who were interviewed had only their own wages as the major source of family income whereas 52% did not have only their own wage as a source of income. Of this group 36% of the respondents were paid in kind and 64% were not paid in kind. For further clarification respondents who reported that they were paid in kind were asked what they received as pay in kind.

Items that were considered in the questionnaire as payment in kind included: food supplies, blankets and other material supplies, cattle, and sheep. Of those who were paid in kind only a small percentage (10%) were given food

supplies, about one fourth (27%) cattle, and (27%) sheep. No one received blankets and material supplies (Table 9).

Table 9

Items Given as Pay in Kind

Pay in kind	Yes		No	
	n	%	n	%
Cattle	82	27.3	218	72.7
Sheep	82	27.3	218	72.7
Food	30	10.0	270	90.0

Data indicate that more than half (52%) of the respondents in this study depended on the wages of others for added source of major income. These were some of the homeland and resettlement residents who may have had family members who worked in urban areas. Farm laborers were those who reported that they depended on the wage of others as well as pay in kind which included food, cattle, and sheep. They also reported that they were offered housing as a fringe benefit.

A breakdown of pay in kind by the area of residence shows that in the homeland and the resettlement areas no one was given food, cattle, and sheep as pay in kind. Only farm

laborers reported that they were offered these items by their employers.

These are some of the methods which white farm owners use to make life on the farm areas more attractive to farm laborers, so as to deter farm laborers from looking for alternative jobs in urban or other areas. Offering meager wages, food supplies, and shelter to hungry persons increases the farm laborers' dependency on the farmer and instills in these black families who work on white-owned farms a sense of security, thereby, limiting the possibilities of searching for alternative opportunities.

This idea is consistent with Maslow's theory of motivation (Crain 1980). According to this theory, there are six kinds of needs: physiological, safety, belongingness, love, self-esteem, and at the highest level are the self-actualization needs. These needs are arranged in a hierarchical order, such that the fulfillment of lower needs propels the individual to the next highest level. For example, a person who has a strong physiological need such as hunger and a need for shelter will not be easily motivated by other needs because his/her mind revolves around the need for food and shelter. However, when this need is satisfied he/she will move on to the next levels. Farm laborers as well as most blacks in South Africa are at the lowest level of Maslow's hierarchy because of inequalities in the distribution of resources.

Home Environment

Included under this category were the following: the structure of the house, house ownership, the number of bedrooms in the house, household size, and the general condition of the house as perceived and reported by the parent/guardian.

The Structure of the House and Ownership

All of the respondents' houses were built with either bricks, mud, or corrugated tin. Thirteen percent of the respondents lived in houses built with bricks, 72% had houses built with mud, and 15% had houses built with tin. Most of the houses built with bricks were in the homeland. Most of the houses built with tin were in the resettlement area, the rest of the houses in this area were built with mud. In the farm areas most of the houses were built with mud.

Based on the findings, the resettlement area had the worst quality of building material for tin is a poor insulator in areas of changing temperatures. As one of the respondents from the resettlement area stated, "these houses are not only small, but they are also not meant for people to live in. These houses are very cold to live in during the winter months and very hot in summer".

Seventy two percent of all the respondents reported that they owned their houses and 28% rented or did not own their houses. Ownership of the house was reported by residents of the homeland and the resettlement areas. Those who did not own their houses lived in houses provided by white farm owners as a fringe benefit.

Rooms in the House

Data as shown in Table 10 indicate that more than half of the respondents lived in a one room house. Less than half of the respondents had two rooms, and a smaller percentage (11%) had three or four rooms.

Table 10

Number of Rooms

Rooms	Number	Percentage
One	157	52.3
Two	110	36.7
Three	28	9.3
Four	5	1.7
Total	300	100.0

A breakdown of the number of rooms by area of residence shows that the homeland had a wider range of accessibility to rooms than the other areas. Most families in the resettlement and the farm areas had only one room in their houses. In one room houses within the resettlement and farm areas the room was used for sleeping, cooking, and for dining. These were also the areas with the highest number of people living in a household. Thus, the results of this study suggest that children from the resettlement and the farm areas often live in overcrowded homes with only one room.

The shortage of houses and the problem of overcrowding among blacks in South Africa has been investigated in recent years. For example, Disler and Oliver (1984) gave an estimation of the shortage of houses in both the urban and the rural areas. According to these authors, in 1981 there was a shortage of 160,000 housing units in urban areas and 260,000 housing units in the rural areas of South Africa.

This shortage inevitably results in overcrowding. For example, up to 17 people were found living in a four room house in Soweto, Johannesburg (Disler and Oliver, 1984). These rooms include two bedrooms, a kitchen, and a living room.

Household Size

To assess the level of crowdedness that might be found in households parents/guardians were asked the question; how many people lived in the household? The mean number of people found living in the household was 7.55, the standard deviation was 2.68. The range in households was from 2 persons up to 12 individuals.

A breakdown of the area of residence by the number of people living in the household indicates that the mean number of people living in the household in the resettlement area is 8.35, in the homeland is 7.31, and in the farm areas is 6.98. Table 11 show the one-way ANOVA used to obtain the difference between the three areas. If the one-way ANOVA was significant it was followed by a Tukey's test to find where these differences occurred .

The Tukey's test indicates a significant difference between the number of people living in the household in the resettlement, homeland, and the farm areas. There is no significant difference between the homeland and the farm areas. These findings suggest that more people live in the household in the resettlement areas than in the homeland and in the farm areas.

Table 11

Analysis of Variance of the Number of People in the Household by Residence

Variable	Source	DF	SS	MS	F
People	Between	2	102.25	51.12.	7
	Within	297	2038.10	6.86	
	Total	299	2140.35		

*p< .05 level

Tukey's Test of Significance

Mean	Group	F.	H.	R.
6.98	Farm (F)			
7.31	Homeland (H)			
8.35	Resettlement (R)	*	*	

*p<. 05 level

Condition of the House

To obtain data on the overall condition of the house, the parent/guardian was asked to give his/her general impression about their house. Less than a quarter of the respondents reported that their house was in good condition. More than three-fourths of the respondents said the house needed renovation or was dilapidated and falling apart (Table 12).

Table 12

Respondents' Impressions about their Houses

Impression	Number	Percentage
Good	66	22.0
Needs Renovation	118	39.3
Dilapidated	116	38.7
Total	300	100.0

Most of the respondents who reported that their houses were in good condition came from the homeland area. Those who reported that their houses needed renovation or were dilapidated lived in the resettlement area and on white-

owned farms. Houses in the resettlement area were built by the government for those who are removed. However, as a respondent from the resettlement area stated, "the government dumps us here, and never looks back to see how we are doing." These uprooted people are expected to stand on their feet and fight to survive in a foreign and hostile environment. Most of the houses for farm laborers are provided by farmers as a fringe benefit. These houses too needed renovation. A few of the houses that were visited by the research team in the resettlement and the farm areas had leaks in the roof, the walls were cracked, and the windows were broken.

Family Mobility

In an attempt to ascertain the mobility of families in the sample, parents were asked how long they had resided with the child at the present address. If the parent and the child had lived at the address fewer years than the child's age, the parent/guardian was asked the number of times he/she and the child had moved. The mean number of months lived with the child at the present address was 67.90 or 5 years and 7 months, the standard deviation was 9.75, and the range was 12-78 months.

Forty five percent of the parents who were interviewed reported that they had never moved with the child, 11% had

moved once, 8% had moved twice, and 36% had moved several times with the child (Table 13).

Table 13

Number of Moves made by Parents/Guardians with the Child

Moves	Number	Percentage
Never	134	44.7
Once	34	11.3
Twice	24	8.0
Several	108	36.0
Total	300	100.0

Parents/guardians were also asked questions related to the reasons for moving. Fifty percent of those who had moved said they were looking for better living conditions, 40% reported that they were forced by the government because the areas in which they previously lived were designated as white areas, 9.7% were forced to move from urban areas by the police, and less than one percent was too old to work in urban areas and were forced to move to the homeland or resettlement areas.

A breakdown of family mobility by area of residence shows a significant chi square at $p < .05$ level. The resettlement area shows the highest percentage of family mobility. All the respondents from this area had moved at least once during the child's life time. About 92% of residents had moved twice, and about 41% had moved several times. About 63% of the residents in the homeland had never moved and the rest had either moved twice or several times. About one third (37%) of the residents on white-owned farms had never moved, 63% reported that they had moved either twice or several times.

In order to clarify the problems associated with the mobility issue of residents in the resettlement area, a follow up question was asked as to whether residents in this area had moved within the area. Data based on this question suggest that residents in the resettlement areas might not have moved only once when they were resettled, these people reported that they had moved within the resettlement areas in search of land for farming or for the livestock to graze.

CHAPTER VI

DATA ANALYSIS AND FINDINGS ON CHILDREN'S INFORMATION

To obtain information about the children, standardized tests were used. The Brown-IDS-Self-Concept Test was used to assess the child's social-emotional development. The Junior South African Individual Scale (JSAIS) was used to assess the child's cognitive development. The sub-tests used were vocabulary, quantitative skills, and copying skills. The child's weight, height, and head circumference were used as measures of physical growth. Information regarding the child's behavior at home and health condition were obtained by the parent's questionnaire.

This section gives the mean, the standard deviation, and correlations of the child's measures of self-concept, cognitive development, and physical growth. Percentages based on the child's behavior at home and health condition are also reported in this section.

The total number of children tested was three hundred. One hundred of these children were from each of the residence areas: the homeland, resettlement, and farm areas. Forty two percent were boys and 57.7% were girls. The mean age in months was 70.03 or five years 8 months and the standard deviation was 3.85.

A breakdown by gender of children and by the area of residence shows that in the homeland and in the resettlement areas an equal number of boys and girls were tested. However, in the farm areas more girls than boys were tested. The difference is significant at $p < .05$ level.

These findings suggest that boys ages 5-6 are not equally enrolled in school on the farm areas. Data indicated that the enrollment showed 42% boys and 58% girls in schools at the time of this research in the farm areas. As was mentioned earlier, children on white-owned farms are expected to work along side their parents. Thus boys join the labor force at an early age either as herders of livestock or work in the field to grow crops. On the other hand, girls do not play a major role in the labor force in the farm areas, thus they may attend school if their parents so choose and can afford to pay for their books and school fees.

A breakdown of the children's age by the area of residence indicates that boys from the farm areas were significantly different at the $p<.05$ level from boys from the resettlement area, but not boys from the homeland. Boys from the farm areas had the mean age of 72.24, boys from the homeland had the mean age of 70.90, and boys from the resettlement area had the mean age of 69.56. The mean age difference between boys from the farm areas and boys from the resettlement areas was three months.

Girls from the homeland were significantly different at the $p<.05$ level from girls from the farm areas, but not girls from the resettlement area. Girls from the homeland had the mean age of 70.78, girls from the farm area had the mean age of 69.00, and girls from the resettlement area had the mean age of 69.63. The mean age difference between girls from the homeland and the farm area was one month.

Findings on Children's Information

The mean and the standard deviation of the total group for self-concept, vocabulary, quantitative skills, copying skills, weight, height, and head circumference are reported in Table 14.

Table 14

Mean and the Standard Deviation for Children's Growth and Development

Growth and Development	Mean	S.D.
Self- concept	6.67	2.77
Vocabulary	12.37	4.79
Quantitative Skills	11.76	4.61
Copying Skills	11.53	6.48
Weight	17.41	2.67
Height	98.66	8.17
Head Circumference	47.37	3.79

N=300

Correlations Between Measures/Scores and Age for Boys

The results of the correlation coefficient of self-concept, cognitive development, physical growth, and age for boys show a significant relationship at $p < .001$ levels. Only the self-concept and head circumference showed a significant relationship at $p < .05$ level with age (Table 15).

Table 15

Correlation Coefficient for Boy's Self-concept, Cognitive, Physical Measures/Scores and Age

	S	V	Q	C	W	H	HC	Age
Self-Con.	1.00							
Vocab. (V)	.69	1.00						
Quant. (Q)	.68	.78	1.00					
Copy (C)	.65	.71	.78	1.00				
Weight (W)	.58	.66	.59	.53	1.00			
Height (H)	.50	.57	.50	.43	.62	1.00		
Head Cir.	.60	.58	.54	.41	.65	.72	1.00	
Age	.20	.09	.14	.06	.13	.10	.18	1.00

* * p< .001 level (Self-concept, cognitive, and physical development).

* p< .05 level (Age, self-concept, and head circumference).

N=300

This finding suggests a relationship between self-concept, cognitive development (vocabulary, quantitative, and copying skills) and physical growth (weight, height, and head circumference) and cognitive development and physical growth for boys. Only self-concept and head circumference were related to age at p< .05 level, however, the

correlations were very low (.20 and .18). This finding suggests that age is not related to cognitive development, weight, and height of boys in this study.

Correlations Between Measures/Scores and Age for Girls

The results of the correlation coefficient of self-concept, cognitive development, physical growth, and age for girls indicate a significant relationship at $p < .001$ level. Age showed a low but significant relationship at $p < .05$ level with only vocabulary, quantitative skills, weight, and height. No relationship was found between age, self-concept, copying, and head circumference (Table 16).

Table 16

Correlation Coefficient for Girl's Self-concept, Cognitive, Physical Measures/Scores and Age

	S	V	Q	C	W	H	HC	Age
Self-Con.	1.00							
Vocab. (V)	.70	1.00						
Quant. (Q)	.57	.74	1.00					
Copy (C)	.57	.66	.71	1.00				
Weight (W)	.58	.56	.47	.49	1.00			
Height (H)	.64	.51	.40	.35	.49	1.00		
Head Cir.	.53	.50	.42	.43	.65	.60	1.00	
Age	.10	.15	.15	-.05	.13	.13	.07	1.00

* * p< .001 level (Self-concept, cognitive, and physical development).

* p< .05 level (Vocabulary, quantitative skills, weight, and height).

N=300

This finding suggests a relationship between self-concept, cognitive development, and physical growth for girls. Age showed a very low but significant relationship at p< .05 level between vocabulary, quantitative skills, weight, and height (.15, .15, .13, and .13).

Correlations Between the Child's Measures/Scores and Crowdedness

The child's measures/scores for self-concept, cognitive development, and physical growth are inversely correlated with the number of people in the household. Although the correlations for all the measures/scores are not high, they are significant at p< .001 level (Table 17).

Table 17

Correlation Coefficient for the Child's Measures/Scores and the Level of Crowdedness

Measures	Number of People in Households
Number of People	1.00
Self-concept	-.30 * *
Vocab.	-.37 * *
Quant.	-.37 * *
Copying	-.40 * *
Weight	-.40 * *
Height	-.26 * *
Head Cir.	-.31 * *

* * p< .001 level N=300

Findings suggest that the more people living in a house the lower are the scores on the measures for self-concept, cognitive development, and physical growth. In the resettlement area the mean number of people per household was 8.35, in the homeland it was 7.31, and in the farm areas it was 6.98.

Gender of the Child by Children's Measures/Scores

The analysis of variance shows a significant difference at $p < .05$ level between the gender of the child and the self-concept. Boys had a higher mean of 7.06 on the scores for self-concept, girls had a lower mean of 6.40. There was no significant difference on the scores for cognitive development and measures for physical growth (Table 18).

The findings of this study suggest that boys and girls ages 5-6 years do not differ significantly on cognitive development (vocabulary, quantitative, and copying skills), and physical growth as measured by weight, height, and head circumference.

Table 18

An Analysis of Variance of the Gender of the Child by the Self-concept, Cognitive, and Physical Development

	Boys	Girls	
Self-concept	7.06	6.40	.05*
Vocabulary	12.18	12.62	
Quantitative	12.33	11.39	
Copy	11.63	11.45	
Weight	17.69	17.49	
Height	100.94	98.12	
Head Cir.	48.01	46.93	

*p< .05 level N=300

Child's Behavior and Parent-Child Interaction

This section provides information regarding the child's behavior at home. This includes how the child interacts with other siblings and with the parent/guardian as perceived by the parent/guardian.

Of the parents/guardians who were interviewed 35% reported that their children were easy to work with. Another 52% said their children were difficult to handle and sometimes fought with their siblings. Thirteen percent

reported that their children mixed freely with other siblings. These findings suggest that about half of the parents/guardians had children whom they felt were difficult to bring up.

The parent/guardian was also asked to respond to a question on how many books, games, and toys the child had at home. Regarding the items that the child had at home, more than half of the parents/guardians reported that their children did not have books, games, or toys. Less than 25% of the parents/guardians said that their children had books, games, or toys at home (Table 19). Parents/guardians who reported that their children had books could possibly be the same parents/guardians who reported the purchase of games and toys for their children.

Table 19

Items the Child has at Home

Items	Yes		No	
	n	%	n	%
Books	66	22.0	234	78.0
Games	69	23.0	231	77.0
Toys	73	24.3	227	75.7

Parents/guardians were also asked questions on the kind of activities that they participated in with the child at home. These activities included: working and playing together, reading, telling stories, and watching T.V. with the child.

Regarding activities that the parent/guardian and the child did together at home, almost all the parents reported that they worked together with their children at home. More than three fourths of the parents/guardians said that they told stories and less than one fourth of the parents/guardians said that they read books to their children. A smaller percentage of the parents/guardians said that they watched T.V. with their children (Table 20).

Table 20

Activities Done together with the Child

Activities	Yes		No	
	n	%	n	%
Work together	296	98.7	4	1.3
Tell stories	231	77.0	69	33.0
Read books	62	20.7	238	79.3
Watch T.V.	23	7.7	277	92.3

A breakdown of respondents who reported that they read stories to their children by area of residence indicates that in the homeland about (35%) of the respondents reported that they read stories with their children. In the resettlement areas (27%) reported to have read stories. None of the respondents on white-owned farms reported that they read stories to their children.

These findings may suggest that parents in the homeland and in the resettlement areas regard the importance of reading to their children more so than parents in the farm areas. Another factor which must be considered is that many families who work on white-owned farms had less than six years of education and therefore, reading may pose a problem. Also since these families work on the farms they might not have the time to read or tell stories to their children.

Child's Health Condition

This section gives information about the child's health condition. This includes the health condition of the child as perceived by the parent/guardian, whether the child has been hospitalized, reasons for hospitalization, and how recently the child has been hospitalized.

More than half of the parents/guardians reported that their children were either healthy or somewhat healthy.

About one third of the parents/guardians reported that their children were sickly (Table 21).

Table 21

Responses to Child's Health Condition

Health condition	n	%
Very Healthy	134	44.7
Somewhat Healthy	61	20.3
Sickly	105	35.0
Total	300	100.0

Child's Hospitalization

Thirty seven percent of all the parents/guardians reported that their children had been hospitalized. Of those who reported that their children had been hospitalized, 33% said the children were hospitalized within the past six months and approximately four percent were hospitalized within the past year.

Reasons for hospitalization were either kwashiorkor, pneumonia, or diarrhea. Table 22 shows that there were more cases of kwashiorkor than cases of pneumonia and diarrhea.

Table 22

Reasons for Child's Hospitalization

Reasons	n	%
Kwashiorkor	68	61.0
Diarrhea	26	23.2
Pneumonia	18	16.1
Total	112	100.0

A breakdown of the reasons for hospitalization by the area of residence shows that 31% of the children in the homeland were hospitalized. Of those 23% were hospitalized for kwashiorkor; 5% had diarrhea; and 3% had pneumonia.

In the resettlement area 32% of the children were hospitalized. Of those hospitalized 25% had kwashiorkor, and 7% had diarrhea. No case of pneumonia was reported.

On the farm areas 49% of the children were hospitalized. Twenty percent were hospitalized for kwashiorkor; 15% for pneumonia. and 14% for diarrhea.

The percentage of kwashiorkor cases ranged from 20%-25% in all these areas. The farm and resettlement areas show more cases of kwashiorkor. However, more cases of pneumonia and diarrhea were reported in the farm areas. Pneumonia and

diarrhea seem to be a problem in the farm areas, however, this does not seem to be a problem in the homeland and the resettlement areas. Pneumonia in the farm areas could be attributed to the mud houses and the size of the house or climatic conditions.

Results for the resettlement area are contrary to expectation for this area has a high percentage of houses built with tin which were reported as very cold in winter and very hot in summer. The parents of children in the resettlement area did not report any cases of pneumonia as one might have expected. This could be attributed to the dry climate within the resettlement area as opposed to the moist climate within the farm areas. However, the researcher did not collect data about the climate or humidity factors, therefore, is unable to make conclusions about the possible effect of climatic conditions on children's health.

Nutritional Status of the Child

The nutritional status of the child was inferred from the physical growth measurements of weight for age. Eighty seven percent of children who were in the sample fell below the 5th percentile of the National Center for Health Statistics growth curves (Hamill et. al 1977) on the measures of height and head circumference. These unexpected data forced the researcher to use other means of inferring

the nutritional status of the child. Therefore, the differences between the malnourished and well nourished children were based on the measures of weight for age only.

Using weight for age, a breakdown of the nutritional status of children by gender shows that 45% of all the boys who were tested fell below the 5th percentile weight for age and 55% fell above the 5th percentile. Fifty five percent of the girls fell below the 5th percentile of weight for age and 45% fell above the 5th percentile.

Table 23

Area of Residence by the Nutritional Status

Residence	Nutritional Status			
	Malnourished		Well Nourished	
	n	%	n	%
Farm	36	66.7	18	33.3
Homeland	32	59.3	22	40.7
Resettlement	44	86.3	7	13.7

Chi Square = 9.75

* p< .05 level

Also using weight for age as a measure, a breakdown of the nutritional status of children by area of residence

shows that 59% of the children in the homeland were malnourished and 41% were well nourished. Eighty six percent of the children in the resettlement area were malnourished and 14% were well nourished. Sixty seven percent of the children in the farm areas were malnourished and 33% were well nourished (Table 23).

These findings suggest that all the three areas had more malnourished than well nourished children, however, the resettlement area had more malnourished children than the homeland and the farm areas. These data are consistent with the previous findings on hospitalization for kwashiorkor an indicator of malnutrition. In the resettlement areas the problem of malnutrition of children can be attributed to lack of resources such as jobs, drought, and the fact that young men and women leave these areas to seek employment in urban areas leaving the dependents behind often to be cared for by the elderly or their siblings.

CHAPTER V11

RELATIONS BETWEEN FAMILY BACKGROUND AND CHILDREN'S INFORMATION

This chapter will provide information about relationships that may or may not be significant between parents'/guardians' and children's information. A number of one-way multivariate analyses of variance of the independent and the dependent variables are reported. The independent variables were the area of residence, the parent/guardian marital status, level of education, level of occupation, and family mobility. The dependent variables were the child's self-concept, vocabulary, quantitative skills, copying skills, weight, height, head circumference, and the child's health condition.

The Manova test was used to find differences between the levels of the independent variables and the dependent variables. If the overall Manova test (Wilk's Lambda) was significant, the F test of the Anova for each dependent variable was checked for significance. If this F test was significant the Tukey's HSD was used to find differences between the levels of the independent variables on that particular dependent variable.

The following Manova Tables will contain four sections. The first section shows the overall multivariate statistic, Wilk's Lambda. The second section shows the univariate F test for each dependent variable. The third section shows Tukey's HSD for self-concept and cognitive development scores with significant univariate F tests, and the last section shows the Tukey's HSD for physical growth measures with significant univariate F tests.

Child's Measures/Scores and the Area of Residence

A one-way MANOVA was obtained for the area of residence and the children's measures and scores. The results of the MANOVA show an overall significance at $p < .001$ and $p < .05$ levels. All of the individual univariate tests of the children's measures and scores are also significant at the $p < .05$ or $p < .001$ levels (Table 24).

Data in Table 24 section 3 indicate that there is a significant difference at $p < .05$ level between the self-concept, vocabulary, quantitative skills, and copying of children between the homeland, the resettlement, and the farm areas. Children from the homeland showed higher mean scores on the self-concept and the cognitive development tests. There was no significant difference between these scores for children from the resettlement and farm areas.

Table 24

One-way MANOVA of the Child's Measures/Scores by the Area of Residence

Section 1: Multivariate Test

Wilk's Lambda	Value	DF	F	P
	0.675	14/58	9.02	

*p< .05 level

Section 2: Univariate F test

Dependent variables	F (2,297)	D.F	P
Self-concept	12.13	.001	* *
Vocabulary	10.37	.001	* *
Quantitative Skills	18.79	.001	* *
Copying	3.56	.029	*
Weight	5.02	.007	*
Height	31.21	.001	* *
Head Circumference	8.77	.001	* *

* *p< .001 level

*p< .05 level

Section 3: Tukey's Test of significant univariate F test

Self-concept, Vocabulary, Quantitative skills, Copying, by the Area of Residence

Mean				Group	F.	R.	H.
SC.	V.	Q.	C.				
6.08	11.68	10.81	11.79	Farm (F)			
6.18	11.35	10.53	10.19	Resettl. (R)			
7.74	14.09	13.93	12.57	Homeland (H)	*	*	

*p<. 05 level

Section 4: Tukey' Test of significant univariate F test

Weight, Height, and Head Circumference by Area of Residence

Mean			Group	F.	R.	H.
Weight	Height	Head Cir.				
17.44	94.67	43.83	Farm (F)			
16.80	98.33	46.65	Resettl.(R)	*		
17.98	102.98	48.63	Homeland (H)	*	*	

*p< .05 level

Data in Table 2 in Chapter V indicated a higher percentage of families with both spouses at home or with no spouse at home in the homeland than on the farm and in the resettlement areas. The higher level of self-concept in children from the homeland could thus be attributed to a more stable home life, intact families, or extended family in other cases, and a sense of a community. The homeland had also a higher percentage of respondents with a high school diploma and was the only area with respondents who had a bachelor's degree.

Findings on books, games, and toys indicated that 22% of the respondents from the homeland and the resettlement areas reported that they had these available for their children. In the homeland 35% of the parents reported that they read stories to their children. All these factors could help children find a more meaningful sense of self.

Children from the resettlement and the farm areas show lower levels of self-concept. The finding suggests that the overall ecological context in the areas of residence as well as other factors may be influencing how children feel about themselves.

As viewed by most blacks in South Africa, the resettlement areas are the "dumping grounds" for marginal black people who neither belong to urban areas nor the homelands. Thus, residents of the resettlement areas are

viewed by residents of the homeland as "amalose". The equivalence of this concept is aliens. They are often treated with suspicion, anger, and are ostracized by the residents of the homelands. One reason for the hostile treatment is that families in the resettlement areas are viewed as coming to take away the limited land from the homeland residents.

Families that are forcibly removed are often "dumped" in these resettlement areas with little or no resources. Lack of resources creates an undesirable social milieu for survival which could influence residents from the resettlement areas to engage in less desirable means for their survival. Such acts could serve to intensify feelings of animosity against this group.

From previous data reported, children in the resettlement areas live with parents who are more poverty stricken than those from the homeland, or farm areas. It is thus possible that parents/guardians of these children also have lower levels of self-esteem. Such negative feelings might be transmitted to the children. However, the conclusions regarding parents'/guardians' self-esteem cannot be made because data regarding parents' feelings were not collected.

The possible explanation for a lower self-concept and cognitive development for black children who live and work

on white-owned farms may be attributed to their daily interactions with the members of the white farm families. These children learn from their parents to address their employer as 'baas' the Afrikaans/Dutch term for master. The sons of the employer are addressed as 'klein baas' or young master. Black children learn early in life to defer and to pay due respect to the white master who provides the whole family with a salary, food, accommodation, and clothing. This all helps the white farm owners to portray a feeling of the "Omnipotent Figure" which serves to perpetuate the black child's respect for these white farm owners.

These black children thus know that their fate is in the hands of the white master. This sense of dependency on white farmers can lead to a lack of confidence in what their own parents can do for them and in what they can do for themselves.

Children in the homelands had higher scores in cognitive development than children in the resettlement and farm areas. Although these children appear to be 'smarter' than their counterparts, this could also be a reflection of how poorly children from the resettlement and farm areas performed in the cognitive development tests.

Children from the resettlement and farm areas showed lower scores in cognitive development. The lower scores on these measures can be a reflection of the depressed

social conditions (see Table 2) under which these children and their families live in these areas. Although both the homeland and the resettlement area had higher percentages of unemployment than farm areas, residents in the homeland were less mobile, had intact families, higher levels of education, and better houses all of which may have contributed to the children's cognitive development.

The deficit in cognitive development in children from the resettlement and farm areas could also be attributed to family mobility. The resettlement and farm areas showed a high percentage of family mobility with the resettlement showing the highest. For example, about 92% of residents in the resettlement area had moved once or twice, 63% of residents on white-owned farms had moved once, and 37% in the homeland had moved once.

Moving from one place to the other might hinder adaptation of children to their environment. It might thus be the failure to adapt or the lack of the necessary time to adjust to the environment that influences children's cognitive development. The high scores in cognitive development of children in the homeland might be due to the fact that children in this area have not moved as much as children from the other areas, thus children from the homeland might have had a more stable influence to adapt to their environment.

Children's physical growth in the homeland was significantly different from children in the resettlement and farm areas. The mean scores on the measures for weight, height, and head circumference for children in the homeland were higher than the mean scores for children in the resettlement and farm areas.

This finding suggests that children in the homeland may be provided with better nutrition, despite the parents' limited access to employment. Better educational levels of parents in the homeland might be helping parents to buy a variety of foods and prepare these types of food in such ways that can enhance children's physical growth.

Children in the resettlement area differed from children in the farm areas. The mean scores for weight were higher for children in farm areas than for children in the resettlement. However, scores for height and head circumference were higher for children in the resettlement area.

Children from the resettlement area show lower levels of physical growth as compared to the homeland children. However, resettlement children show higher levels of growth in height and head circumference than farm children. This may be due to the fact that these children are mainly raised by unemployed single parents who have higher levels of education than residents from farm areas, but lack access to

employment and other important resources to support their children.

The results for the farm children are contrary to expectation. These are some of the children whose parents/guardians or siblings are in most cases employed. Therefore, one would suspect that the data should show a better nutritional status of children from farm areas because food is more likely to be available to them. However, the findings suggest that children in the farm areas are heavier but shorter and have a smaller head circumference than children from the resettlement area. This could suggest that children in the farm area may be getting an imbalanced diet that consists mainly of starchy foods such as maize and little or no protein. As stated by Ndaba (1984) maize is notoriously deficient in amino acids.

Child's Measures/Scores and the Parent's/Guardian's Marital Status

A one-way Manova was obtained for marital status and the child's measures and scores. The results of the Manova show an overall significance at $p < .001$ and $p < .05$ levels (Table 25).

Table 25

One-way MANOVA of the Child's Measures/Scores by the Marital Status

Section 1: Multivariate Test

Wilk's Lambda	Value	DF	F	P
	.798	21/83	.324	

*p< .05 level

Section 2: Univariate F test

Dependent variables	F (3,296)	D.F.	P
Self-concept	8.80		.001 * *
Vocabulary	6.37		.001 * *
Quantitative Skill	3.89		.009 *
Copying	7.0		.001 * *
Weight	3.33		.020 *
Height	6.52		.001 * *
Head Circumference	2.63		.050 *

* * p< .001 level

* p< .05 level

Section 3: Tukey's Test of Significant Univariate F test

Self-concept, Vocab., Quant., Copy by Marital Status

Mean				Group	D&W	N.M	M no S.	M.
SC.	V.	Q.	C.					
4.20	9.70	10.80	12.60	D&W				
6.13	11.79	12.20	11.30	N.M.				
6.42	11.53	11.05	9.39	M.no S.				
7.62	13.92	12.99	12.99	M.	*	*	*	

*p< .05 level

Section 4: Tukey's Test of Significant Univariate F test

Weight, Height, and Head Circumference by Parent's Marital Status

Mean			Group	D&W	N.M.	M no S.	M.
Weight	Height	Head Cir.					
16.80	89.30	44.50	D&W				
17.04	97.53	47.22	N.M.		*		
17.19	99.26	47.27	M. no S.		*		
18.07	100.08	47.87	M.		*		

*p< .05 level

Children who come from married families with the spouse present were significantly different at the $p < .05$ level on the mean scores for self-concept, vocabulary, quantitative skills, and copying from children who come from families which were divorced, and widowed, never married, and married but not living with the spouse. Children from intact families show higher mean scores on all these dependent variables. The mean scores of children from the divorced and widowed, never married, and married but not living with a spouse show the lowest for self-concept, vocabulary, and quantitative skills but not copying skills. The finding suggests that intact families have an advantage in the homeland as reflected by children's high self-concept scores and as well as better scores on the cognitive development tests. Also more families in the homeland than in other areas interacted with their children. This might contribute to higher levels of self-concept and higher levels of cognitive development.

On the other hand, larger numbers of children who come from single-parent homes live in the resettlement area. Children who come from divorced and widowed families come mostly from farm areas.

These results show that children from married, married but not living with a spouse, and never married differed significantly on the physical growth from children whose parents were either divorced or widowed families. This

finding adds to the suggestion that children on farm areas might not be getting the right kind of nutrition that enhances their physical growth or that other factors such as crowding are having an effect on height. As suggested by Graham (1972) crowdedness can be seen as one of the factors that might contribute to the child's height, rather than only the nutritional status of the child.

Child's Measures/Scores and the Parent's/Guardian's Educational Level

A one-way Manova was conducted for the analysis of data concerning the parent's/guardian's level of education and the child's measures. The results of the Manova show an overall significance at $p < .001$ and $p < .05$ levels (Table 26).

The results show that children who come from families in which the parental level of education was sixth grade or less were significantly different on the scores for self-concept, vocabulary, quantitative skills, and copying from children whose parents had junior secondary school certificate, high school diploma, and a bachelor's degree. Children whose parents had a bachelor's and a high school diploma were also different on the measures for self-concept, cognitive development, and physical growth from those whose parents did not have a high level of education.

Table 26

One-way MANOVA of the Child's Measures/Scores by Parent's/Guardian's Educational Level

Section 1: Multivariate Test

Wilk's Lambda	Value	DF	F	P
	.485	28/1043	2.43	

*p< .05 level

Section 2: Univariate F test

Dependent variables	F (4,295) D.F.	P
Self-concept	33.18	.001 * *
Vocabulary	38.05	.001 * *
Quantitative Skills	35.11	.001 * *
Copying	36.39	.001 * *
Weight	16.15	.001 * *
Height	23.34	.001 * *
Head Circumference	18.59	.001 * *

* * p< .001 level

Section 3: Tukey's test of significant univariate F test

Self-concept, Vocab., Quantitative, Copying by Parent's/Guardian's Educational Level

Mean				Group	<6yrs	6yrs	JSS	HS	BA
SC.	Voc.	Quant.	Copy						
5.09	9.78	9.29	9.52	<6yrs					
6.19	11.46	10.89	9.52	6yrs					
7.73	13.44	13.13	13.89	JSS	*	*			
9.34	17.53	16.00	18.23	HS	*	*	*		
9.50	18.25	18.42	19.25	BA	*	*	*		

*p< . 05 level

Parents/guardians who showed higher levels of education were from the homeland and the resettlement areas. This finding thus suggests that families with a better level of education might have had time, other support systems and access to resources and information that helped them to interact with their children thus promoting the child's self-concept and cognitive development.

Section 4: Tukey's Test of Significant Univariate test

Weight, Height, and Head Circumference by Parent's/Guardian's Educational Level

Mean			Group	<6yrs	6yrs	JSS	HS	BA
Weight	Height	Head Cir.						
16.33	93.35	42.28	<6yrs					
16.95	99.26	47.26	6yrs					
18.44	101.71	49.02	JSS	*	*			
19.02	104.72	49.95	HS	*	*	*		
20.17	101.75	49.25	BA	*	*	*		

*p< .05 level

This finding supports earlier studies which show the importance of parent-child interaction in promoting intellectual and social development. This has been clarified in a study by the Harvard Preschool Project (White, Kaban, and Attanucci, 1979). The major finding of their study concludes that the most favourable experience promoting intellectual and social competence in children is listening to live language being directed towards them.

Inspite of their parents/guardians higher levels of education children from the resettlement areas did not show

high mean scores in self-concept and cognitive development. The findings for these children suggest that the level of education alone may not be the only influence in black South African children's self-concept and cognitive development. Other factors such as being a single-parent without a job can influence the development of children.

Farm laborers showed lower levels of education and were mostly employed in menial and unskilled jobs which might have required them to work long hours. Their children showed lower mean scores on self-concept and cognitive development than children from the homeland or the resettlement areas. The data concerning children's measures and scores on white-owned farms suggest a relationship between the area of residence, parent's/guardian's level of education, the child's health condition, self-concept, and cognitive development.

Physical growth of children whose parents/guardians had a junior secondary school certificate, high school diploma, and a bachelor's degree was significantly different from children whose parents/guardians had six or less years of education. These findings suggest that parents/guardians who had higher levels of education probably had more access to resources and information such as knowledge of the types and kinds of food necessary for healthy physical growth.

Child's Measures/Scores and the Parent's/Guardian's Occupational Level

A one-way Manova was obtained for the parent's/guardian's level of occupation and the child's measures and scores. The results of the Manova indicate an overall significance at p< .05 and p< .001 levels (Table 27).

Table 27

One-way MANOVA of the Child's Measures/Scores by Parent's/Guardian's Occupational Level

Section 1: Multivariate Test

Wilk's Lambda	Value	DF	F	P
	.373	42/1712	7.51	

*p< .05 level

Section 2: Univariate F test

Dependent variables	F (6,293) D.F.	P
Self-concept	25.05	.001 * *
Vocabulary	30.13	.001 * *
Quantitative Skills	31.19	.001 * *
Copying	29.59	.001 * *
Weight	19.17	.001 * *
Height	13.41	.001 * *
Head Circumference	19.96	.001 * *

* * p< .001 level

The data indicate that children whose parents were not employed were significantly different on the mean scores for self-concept, vocabulary, quantitative skills, and copying from children whose parents were employed either in menial, semi-skilled, skilled, or semi-professional positions. Children whose parents were employed in menial, semi-skilled, skilled, and semi-professional positions had mean scores which were higher than children whose parents were not employed at all. Children whose parents were working in semi-skilled, skilled, and semi-professional positions were significantly different from children whose parents were in menial jobs or not employed.

Section 3: Tukey's test of significant univariate F test

Self-concept, Vocabulary, Quantitative Skills, Copying, by Parent's/Guardian's Occupational Level

Mean				Grp	None	Menial	S.S.	S.	S.Prof
SC.	Voc.	Quant.	Copy						
5.31	9.99	9.47	8.20	None					
7.01	12.13	11.39	11.92	Menial	*				
7.64	14.71	15.76	16.00	S.S.	*	*			
9.18	16.44	15.93	16.43	Skilled	*	*			
10.38	18.38	17.13	19.45	S.Prof.	*	*			

*p< .05 level

Sixty two percent of parents in the resettlement area were not employed. Therefore more of the children from the resettlement area had parents/guardians who were not employed. These low mean scores on the self-concept, cognitive development, and physical growth could be scores for children whose parents/guardians were not employed. However, this hypothesis cannot be verified at this time, since data collected on parents/guardians and the child were not coded as matched pairs.

Section 4: Tukey's Test of Significant Univariate Test

Weight, Height, Head Circumference by Parent's/Guardian's Occupational Level

Mean			Group	None	Menial	S.S.	S.	S.Prof
Weight	Height	Head Cir.						
16.13	95.70	45.49	None					
18.24	102.64	48.13	Menial					
18.80	104.25	49.69	S.S.	*				
19.25	104.24	49.80	Skilled	*				
20.25	108.13	50.25	Semi.Prof.	*		*		

*p< . 05 level

Fifty percent of parents in the homeland were without jobs. However, children from the homeland showed higher mean scores on self-concept, cognitive development, and physical growth. The findings for children in the homeland thus suggest that there might be other factors in the environment of children in the homeland that might contribute to their development.

Eighty one percent of farm laborers worked in menial and unskilled jobs, and children on white-owned farms had lower mean scores on the self-concept, cognitive

development, height and head circumference. A possible speculation is that parents/guardians who work on the farms usually work long hours, thus may have had only limited time to carry out activities that might have helped to enhance their children's development. However, data on the total number of hours worked by farm laborers were not collected. It is thus not possible to draw conclusions about whether time was an important factor or not in determining the low mean scores on self-concept, cognitive development, height, and head circumference. However, data reveal that the level of education for farm laborers was lower than the level of education for residents from the other areas. Thus the area of residence, the parent's level of education, and occupation have a significant relationship to children's development on white-owned farms.

These results indicate that children of parents who were employed in semi-professional, skilled, and semi-skilled jobs differed significantly at $p<.05$ level from children whose parents were in menial jobs or unemployed on all the measures for height, weight, and head circumference. Children whose parents were working in semi-professional positions also showed higher mean scores on the measures of physical growth than mean scores for children whose parents were working in skilled or semi-skilled jobs. There were no significant differences between children whose parents were

working in semi-professional positions and children whose parents were working in skilled positions.

Child's Measures/Scores and Family Mobility

A one-way Manova was obtained for the number of times the family moved with the child and the child's measures/scores. The results of the Manova show an overall significance at p< .001 and p< .05 levels (Table 28).

Table 28

One-way MANOVA of the Child's Measures/Scores by Family Mobility

Section 1: Multivariate Test

Wilk's Lambda	Value	DF	F	P
	.633	21/833	1.54	

*p< .05 level

Section 2: Univariate F test

Dependent variables	F (3, 296) D.F.	P
Self-concept	19.38	.001 * *
Vocabulary	16.24	.001 * *
Quantitative Skills	25.14	.001 * *
Copying	17.89	.001 * *
Weight	23.78	.001 * *
Height	17.38	.001 * *
Head Circumference	32.32	.001 * *

* * p< .001 level

Section 3: Tukey's Test of significant univariate F test

Self-concept, Vocab., Quant., Copying by Family Mobility

Mean				Number	Several	2	1	0
SC.	Voc.	Quant.	Copy					
5.40	10.57	9.75	8.90	Several				
5.66	9.54	8.16	7.66	Twice				
6.7	13.29	13.20	13.94	Once	*		*	
7.8	14.09	13.64	13.69	None	*		*	

*p< .05 level

Data from this study indicate that family mobility was higher in the resettlement and in the farm areas than in the homeland. Thus low mean scores on self-concept, cognitive development, and physical growth might be due to family mobility as well as other factors in the resettlement and farm areas that were cited as unfavourable for children's development.

Child's Measures/Scores and Health Condition

A one-way Manova was obtained for the child's health condition and measures of self-concept, cognitive, and physical growth. The results of the Manova indicate an overall significance at $p < .001$ and $p < .05$ levels (Table 29).

Table 29

One-way MANOVA of the Child's Measures/Scores by Health

Section 1: Multivariate Test

Wilk's Lambda	Value	DF	F	P
	.476	14/582	18.67	

*p< .05 level

Data from this study indicate that family mobility was higher in the resettlement and in the farm areas than in the homeland. Thus low mean scores on self-concept, cognitive development, and physical growth might be due to family mobility as well as other factors in the resettlement and farm areas that were cited as unfavourable for children's development.

Child's Measures/Scores and Health Condition

A one-way Manova was obtained for the child's health condition and measures of self-concept, cognitive, and physical growth. The results of the Manova indicate an overall significance at p< .001 and p< .05 levels (Table 29).

Table 29

One-way MANOVA of the Child's Measures/Scores by Health

Section 1: Multivariate Test

Wilk's Lambda	Value	DF	F	P
	.476	14/582	18.67	

*p< .05 level

Section 2: Univariate F test

Dependent variables	F (2,297) D.F.	P
Self-concept	76.28	.001 * *
Vocabulary	62.18	.001 * *
Quantitative Skills	57.01	.001 * *
Copying	66.45	.001 * *
Weight	74.57	.001 * *
Height	60.09	.001 * *
Head Circumference	77.35	.001 * *

* *p< .001 level

Section 3: Tukey's test of significant univariance F test

Self-concept, Vocab., Quanti., Copy by Health Condition

Mean				Health	Sick	Somewhat	Healthy
SC.	Voc.	Quant.	Copy				
4.70	9.39	8.86	15.52	Sick			
6.39	11.40	11.16	17.16	Somewhat	*		
8.32	15.14	14.29	18.99	Healthy	*	*	

*p< .05 level

Section 4: Tukey's Test of Significant Univariate Test

Weight, Height, Head Circumference by Health Condition

Mean			Health	Sick	Somewhat	Healthy
Weight	Height	Head Cir.				
16.10	94.81	45.10	Sick			
17.58	101.21	47.71	Somewhat	*		
18.62	102.62	49.27	Healthy	*	*	

*p< .05 level

The results show that healthy or somewhat healthy children were significantly different on the mean scores for self-concept, vocabulary, quantitative skills, copying, weight, height, and head circumference from children who were sickly. Children who were healthy or somewhat healthy as perceived by the parent/guardian showed mean scores that were higher than for children who were reported by their parents as sick. Healthy children were also significantly different on the mean scores for self concept, cognitive development, and physical growth from children who were somewhat healthy. Healthy children had higher mean scores on these measures.

All residential areas had children who had been sick and had been hospitalized within the past six months or year. However, the farm areas had the higher percentage (49%) of children who were hospitalized thán the other two areas. Children on white-owned farms showed lower mean scores on self-concept, cognitive development, and physical growth than children from the homeland. However, when compared with children from the resettlement area, children from the farm area weighed more, but were shorter and had a small head circumference. The lower mean scores on these tests may be due to all the factors in the child's environment already mentioned as well as the child's health condition.

CHAPTER VIII

SUMMARY AND CONCLUSIONS

This chapter gives a summary of the study, conclusions, the mode of rationality used in this study, implications, as well as suggestions for the future.

Summary of the Study

The major purpose of this investigation was to determine the relationships between a multiplicity of ecological factors that aggravate malnutrition and the behavioral development and physical growth of black South African children from a family ecosystem framework. A secondary objective was to examine the viability of the ecosystem framework in family studies and to arrive at suggestions that could help develop this framework.

Three hundred black South African school children ages 5-6 years were assessed for cognitive, social-emotional development, and physical growth. Three hundred parents/guardians were interviewed for background information regarding the child and the family. The residential areas from which the sample was drawn were: Herschel in the homeland of the Transkei, Thornhill a resettlement area in the homeland of the Ciskei, the farm areas around Queenstown, and in the Orange Free State. One

hundred children and their parents/guardians were selected from each of these areas using a systematic sampling technique.

The Junior South African Individual Scale (JSAIS) was used as a measure of cognitive development. Three areas of cognitive development were tested. These included: verbal, numerical, and performance. The Brown-IDS-Self-Concept Referents Test was used as a measure of social-emotional development. Anthropometric measures of height, weight, and head circumference were used for physical growth. A parent's questionnaire was developed and used to obtain the child's family demographic information, home environment, and the child's health condition.

A chi square test was used to determine whether the relationships between the demographic variables were significant. Variables included were, area of residence, home environment, the socio-economic status of parents, the type of family structure, and family mobility. The results of the chi square tests indicated a significant relationship between the area of residence and parent's/guardian's marital status, educational, and occupational levels. A significant relationship was also found between the parent's/guardian's educational and occupational levels (Tables 2-8). No significant relationship was found between marital status and parent's/guardian's occupational level (Table 7).

A Pearson Coefficient correlation was used to examine relationships between gender, self-concept, cognitive development, physical growth, and age. The results indicated a significant relationship between self-concept, cognitive development, and physical growth for boys. Only self-concept and head circumference were related to age, however, the correlations were very low (Table 15).

The results of the correlation between self-concept, cognitive development, physical growth, and age for girls indicated a significant relationship. Age showed a low but significant relationship with only vocabulary, quantitative skills, weight, and height. No relationship was found between age, self-concept, copying, and head circumference (Table 16). These findings suggest that age may not be related to the child's self-concept, cognitive development, and physical growth.

The results of the correlation between self-concept, cognitive development, physical growth, and the home environment as measured by crowdedness indicated an inverse relationship. Although the correlations for all these scores/measures were not high, they were significant (Table 17). This finding suggests that the more people living in a house, the lower the scores on the measures for self-concept, cognitive development, and physical growth.

The results of the analysis of variance between the gender of the child and the child's measures/scores on self-

concept, cognitive development, and physical growth indicated a significant difference between only the gender of the child and self-concept. No significant difference was found between the gender of the child, cognitive development, and physical growth (Table 18). This finding suggests that boys and girls ages 5-6 years old do not differ significantly on cognitive development and physical growth.

Results on the child's behavior and parent-interaction indicated that more than half of the parents/guardians reported that their children were difficult to handle and fought with their siblings. This finding suggests that some of the children in the study showed behavioral problems at home.

Parents/guardians were also asked to respond to a question on how many books, games, and toys the child had at home. More than half of the parents/guardians reported that their children did not have books, games, and toys. Less than one-fourth of the parents/guardians said that their children had books, games, and toys. These findings suggest that most children in the farm, homeland, and resettlement areas do not have books, games, and toys.

Regarding activities that the parent/guardian and the child did together at home, almost all the parents reported that they worked with their children at home. More than three fourths of the parents/guardians said that they told

stories and less than one fourth of the parents/guardians said that they read books to their children. A smaller percentage of the parents/guardians said that they watched T.V. with their children (Table 20).

Most parents/guardians who reported that they read and told stories to their children were from the homeland area, a few parents/guardians were from the resettlement area. None of the respondents from white-owned farms reported that they read stories to their children. These findings may suggest that parents/guardians in the homeland and the resettlement area regard the importance of reading and telling stories to their children more so than parents/guardians in the farm areas.

Regarding the child's health condition more than half of the parents/guardians reported that their children were either healthy or somewhat healthy. About one third of the parents/guardians reported that their children were sickly (Table 21). Of the children who were sickly, about one third had been hospitalized within the past six months. Reasons for hospitalization were either kwashiorkor, pneumonia, or diarrhea. The farm and the resettlement areas showed more children who were hospitalized for kwashiorkor than the homeland. More cases of pneumonia and diarrhea were also reported in the farm areas.

These findings suggest that kwashiorkor which is a syndrome of malnutrition is a problem in all three areas.

However, the resettlement and the farm areas had higher percentages of malnourished children than the homeland. Also suggested by the findings is that diseases such as pneumonia and diarrhea that are related to malnutrition are prevalent in the farm areas.

One way multivariate analyses of variance were obtained for the family background information and the child's self-concept, cognitive development, and physical growth. If the overall MANOVA test was significant, the F test of the Anova for each dependent variable was checked for significance. If the F test was significant a Tukey's HSD was used to find differences between the levels of the independent variables on that particular dependent variable.

The results of the MANOVA test and the Tukey's test HSD indicated a significant difference between the family background information and the children's measures/scores on the self-concept, cognitive development, and physical growth.

The following section discusses the research questions that were addressed in this study.

Question 1: (Research question 1)

Is the area of residence related to the child's self-concept, cognitive development, and physical growth?

The results indicated a significant relationship at the $p<.05$ level between the area of residence and the child's self-concept (Table 24).

Homeland: Children in this area showed the highest mean scores on self-concept, cognitive development, and physical growth compared to children from the resettlement and the farm areas.

Resettlement area: Children in this area showed a higher mean score for height and head circumference than children from farm areas.

Farm areas: Children in this area had the lowest mean scores on self-concept, height, and head circumference. However, farm children had higher mean scores on cognitive development and weight than children from the resettlement area only.

Question 2: (Research questions 9, 10, and 11)
Is the parent's/guardian's marital status related to the child's self-concept, cognitive development, and physical growth?

The results indicate a significant relationship at the $p<.05$ level between the parent's marital status and the child's self-concept, cognitive development, and physical growth. Children from married families showed higher mean

scores on self-concept, cognitive development, and physical growth than children from parents who were married but not living with a spouse, those who were never married, or those who were divorced or widowed (Table 25).

Question 3: (Research questions 3, 13, and 14)
Is the parent's/guardian's socio-economic status as measured by the level of education related to the child's self-concept, cognitive development, and physical growth?

The results indicated a significant relationship at the $p<.05$ level between the parent's/guardian's level of education and the child's self-concept, cognitive development, and physical growth. Children who came from families in which a parent/guardian had a bachelor's degree, a high school diploma, or a junior secondary school certificate had higher mean scores on the self-concept, cognitive development, and physical growth than children whose parents/guardians had six years of education or less. Children who came from families where parents/guardians had a bachelor's degree or a high school diploma also showed higher mean scores on physical growth than children whose parents/guardians had a junior secondary school education or six years of education or less (Table 26).

Question 4: (Research questions 3, 13, and 15)
Is the parent's/guardian's socio-economic status as measured by the level of occupation related to the child's self-concept, cognitive development, and physical growth?

The results indicate a significant relationship at the $p<.05$ level between the parent's/guardian's level of occupation and the child's mean scores on self-concept, cognitive development and physical growth. Children whose parents/guardians were employed in semi-professional, skilled, semi-skilled, or menial jobs had mean scores for self-concept, cognitive development, and physical growth which were higher than scores for children whose parents were not employed. Children whose parents/guardians had semi-skilled, skilled, and semi-professional positions had higher mean scores than children whose parents/guardians had menial jobs (Table 27).

Question 5: (Research question 8)
Is family mobility related to the child's self-concept, cognitive development, and physical growth?

The results indicated a significant relationship between family mobility and the child's mean scores on self-concept, cognitive development, and physical growth. Children from families who had never moved or those who had

moved only once showed mean scores for self-concept, cognitive development, and physical growth that were higher than for children who had moved twice or several times (Table 28).

Question 6: (Research question 4, 5, and 6)
Is the child's health condition related to his/her self-concept, cognitive development, and physical growth?

The results indicated a significant relationship between the child's health condition, self-concept, cognitive development, and physical growth. Children who were healthy or who were somewhat healthy as perceived by the parent/guardian had higher mean scores on the self-concept, cognitive development, and physical growth than children who were sick. Children who were perceived as healthy by their parents were also significantly different from children who were somewhat healthy (Table 29).

Conclusions of the study

The findings of this study have demonstrated that behavioral development and physical growth of children are related to factors in the ecosystem of children. For example, the area of residence, home environment, type

of family structure, parent's socio-economic status, family mobility, and the child's health condition as well as gender show a relationship with the child's self-concept, cognitive development, and physical growth. The following section presents the findings according to residential areas.

Resettlement Children and Families

Children in the resettlement of Thornhill and the farm areas around Queenstown and the Orange Free State showed lower mean scores on self-concept, cognitive development, and physical growth than children from the homeland area.

Both these areas lack the necessary resources and the opportunities for upward mobility. The resettlement area had the highest rate of unemployment and the highest rate of unwed mothers. The home environment as measured by crowdedness was reported as poor and the land as dry and not arable. Most houses in the resettlement area had only one room and were reported by the residents as dilapidated and in need of renovation. The mean number of people found living in the household in the resettlement area was 8.35, this was higher than the mean number of people found in the homeland 7.31 or the farm areas 6.98 .

Physical growth for children in the resettlement area is significantly different from children in the homeland.

These children showed a mean score for height , weight, and head circumference that were less than for children in the homeland. These low mean scores could be attributed to crowdedness in the household of the resettlement areas. This finding is consistent with the findings reported by Essen, Fogel, and Mean (1978). These authors reported a strong positive correlation between crowding and the rate of growth of children. For example, children who were growing up in crowded homes were smaller in stature than children who were growing up in families with one or two children.

The resettlement showed a high percentage of parents/guardians who were married but not living with a spouse. These are some of the young men and women who leave the resettlement areas to seek jobs in urban areas. As stated by Fincham (1985) the resettlement area appears to be a particularly hazardous area in which to raise children. As indicated by data on hospitalization of children for kwashiorkor which is a syndrome of malnutrition, this area has a higher percentage of cases reported than the homeland, but fewer cases than the farm area. Malnutrition of children in this area is aggravated by the absence of young men and women who often leave children in the care of grandparents to seek jobs in urban areas. This area is also plagued by a high rate of unemployment. For example, the resettlement area has the highest rate (62%) of unemployment.

Another factor that seems to influence children's growth and development is family mobility. The resettlement area shows that 92% of the families had moved at least twice and that 41% had moved several times. Data indicated that families in the resettlement area moved more often than families in other areas. Moving from one place to the other with young children might affect their growth and development.

Farm Children and Families

Data from this study indicated that laborers on white-owned farms showed the lowest levels of education, were mostly employed in menial jobs and unskilled jobs, and thus earning a low income. Data also indicated a lack of books, toys, and games for children in these areas. Therefore farm children live on limited resources such as food, shelter, and other resources necessary for developing their human capital. As stated by Fincham (1982) even on white-owned farms, where there is food, food is not easily available for blacks and coloreds.

Data from this study indicated that height for age, which is a measurement of long-term nutritional status, suggested that farm children who were included in this study were short for their age and, therefore, likely to be at

risk to malnutrition. The highest percentage of hospitalization was reported in the farm areas. Reasons for hospitalization were kwashiorkor, pneumonia, and diarrhea.

Data also indicated that most of the houses for black farm laborers were built with mud. The houses had only one room and were offered to farm laborers by the white farm owners as a fringe benefit.

What might be influencing the self-concept and cognitive development of children who live on white-owned farms is their dependency on white farmers for resources. Another factor could be their every day contact with white children who live in houses that are luxurious by anyone's standard.

Another factor that may influence children's self-concept and cognitive development on white-owned farms is the environment of schooling in farm areas. As stated earlier, white farm owners make decisions as to the number of schools, teachers, curriculum, the type and condition of equipment for the schools. More girls than boys were enrolled in school in the farm areas. Boys are usually required to work along side their parents. Boys may be enrolled in school depending on the labor supply on a particular farm.

Black children who live and work on white-owned farms are socialized to treat their white counterparts the same

way they treat their white masters. For example, when riding a van black laborers know that their place is on the back of the van, much as blacks in the United States before the civil rights movement in the 60's knew their place on the bus. This rule cannot be violated at any time even when there is room for two people in the front seat. Thus, black children learn early in life that the color black is associated with an inferior status and little power.

Homeland Children and Families

Children in the homeland showed higher mean scores on measures of self-concept, cognitive development, and physical growth than children from the resettlement and farm areas. However, the findings indicate that families in the homeland experience the same kinds of deprivations as those experienced by the other areas. For example, half of the families in this area were unemployed. A small percentage (7%) of children from this area suffered from kwashiorkor. Thus data in this study indicate that malnutrition might be a problem in the homeland as well, however, not as severe as in the other residential areas. Although the problem is not as severe, it is known that 87% of children in this study fell below the 5th percentile of

the National Center for Health Statistics growth curves on the measures for height and head circumference.

However, the high mean scores of children from the homeland on the measures of self-concept, cognitive development, and physical growth raise many questions as to possible reasons. These could be attributed to social factors available in the homeland area such as parent's/guardian's higher levels of education, the intact families that are not as prevalent in the other areas, the availability of high status jobs for the residents such as teaching in the schools, as well as many other factors that could lead to a sense of belonging to a community. Parents from the homeland also reported that their houses were in better condition than other areas. About one third of the parents/guardians reported that they read books and told stories together with their children. These parents have the highest percentage of interaction with their children.

The homeland also showed the lowest percentage of family mobility as opposed to the resettlement and farm areas. Moving from one place to the other might hinder adaptation of children to their environment. Because children in the homeland had not moved as much as children from other areas, these children might have more easily adapted to their environments even though this area is also characterized by limited resources.

Emancipatory Mode of Rationality

As stated in Chapter three, this research started with the empirical analytical perspective. Following data analysis and the interpretation, critical science perspective which involves the emancipatory rationality is used.

As stated by Bubolz (1985a) critical science starts with the assumption that is central to the family ecosystem framework, that is, families are social products and have mutually interdependent relationships with the natural, human constructed, and human behavioral environments. Thus families cannot be considered apart from these environments. The aim of critical science is to enlighten and educate; to emancipate from false consciousness by uncovering factors in the environment that make people define reality in particular ways. Thus, this perspective might lead to the exploration of the historical social structures that led to the ideology of apartheid in South Africa. Also implied in the concept of critical science is implementation, that is, working to design and implement programs for children and families which would improve their quality of life.

According to Brown (1984) critical theorists hold that the fact that certain social practices exist does not justify them, and the fact that certain conceptions of

social reality exist does not justify them. Thus, where repressive social practices exist and lead to systematic distortions of moral systems of interaction, and of the conceptual meaning of language, emancipation becomes the interest of moving beyond the structures of distorted communication. The use of the emancipatory rationality leads to what Habermas calls political-moral action. This is action which seeks to promote a free and just society.

According to Habermas the social structures and processes which are dominating and repressive need to be changed through political action of citizens. Social evolution, in Habermas' critical theory of society, comes about through the development of individual learning capacities. In this study, learning will be achieved by making community members in and outside of South Africa become aware of the effects of the policy of apartheid on black families and make a contribution towards changing this policy.

This section provides a brief discussion of the roots and the structure of the policy of apartheid. This discussion will benefit readers outside South Africa who might not be familiar with this policy. This might also explain the reasons for the failure of the majority of blacks in South Africa to acquire higher levels of education, the failure to be employed in higher occupational

levels, and the reasons for black families to be concentrated in residential areas which lack resources necessary for the development and growth of children.

The Policy of Apartheid

Apartheid is a form of government that has been in existence in South Africa since 1948. Many laws and acts have been passed by the South African government which serve to entrench and legalize apartheid. The author will elaborate on some of these laws/acts because the findings of this study suggest that it is these laws/acts which influence growth and development. Some of these acts include: the population registration, land reservation, education, and employment acts.

Dr. Hendrik Verwoerd who became Minister of South Africa in 1958 played a leading role as an architect of apartheid. He studied psychology in South Africa and studied philosophy in the late 20's at various German universities. This is where he had close contact with Hitler's system of nazism. When he joined the South African parliament in the early 40's he transplanted the fundamental ideologies that were basic in the system of nazism in the South African parliament. For example, in Germany the Jews were singled out as a race unfit to be citizens, because they did not have 'pure blood'.

In South Africa a justification given for racial discrimination is the preservation of racial purity. In essence racial discrimination in South Africa has been maintained in order to preserve white superiority. The native blacks of South Africa are regarded as inferior and, therefore, as requiring the guidance of whites who are a superior race.

A brief discussion of some of the laws/acts which undergird the policy of apartheid and which were included in the study is provided in this section.

Population Registration Act

This act provides for a rigid system of racial classification. Based on this act everyone in South Africa is classified as either black, colored, Asian, or white. According to this act blacks are required to carry identification documents (passes) which state that they are classified as 'Bantus', a label that is greatly abhorred by blacks of South Africa, because it has the same negative connotation that the label 'Negro' has in the United States. This term has as a result fallen into disuse in South Africa. However, for consistency the term 'Bantu' will be used in this discussion as it was used to name the acts.

These documents are used to monitor and control the movement of blacks in South Africa. For example, the

pass laws are enforced in urban areas more than they are enforced in rural areas to check on blacks who might be in the urban areas 'illegally'.

Land Reservation Act

In 1936, the limited franchise that a few blacks enjoyed was abolished. This disenfranchisement was formalized legally through the Bantu Self-Government Act which stripped blacks their South African citizenship and declared them foreigners in their own country. This act declared a territorial and political segregation of blacks and whites and a separation in residential areas, education, and jobs.

According to this act blacks are relegated to the homelands and the resettlement areas. The conditions under which blacks live in these areas have been already discussed. Blacks cannot buy land in urban areas. Only whites, Asians, and coloreds can buy land in urban areas.

Following the Group Area's Act, the Urban Area's Amendment Act was passed in parliament. This act empowers the Minister of Native Affairs to order the demolition of a black residential area in the urban areas, and to move all blacks in that area to another site without consulting them. This has led to the forced removals from the areas designated for whites to the resettlement areas.

Education Act

In 1953, the white South African government enacted legislation that created for the first time in the history of South Africa a government office to deal exclusively with the education of blacks. The Bantu Education Act gave the government jurisdiction over all aspects of black education. The readers must be reminded that in all these acts blacks were neither consulted nor included at any time when these decisions which concerned them were made.

When the Prime Minister of Education introduced this bill in parliament in 1953, he gave the following reason for the segregated education. "For a white minority to face a large majority of civilized and educated non-Whites, wishing to share our way of life, and striving for equality in all respects would make the fight for a White South Africa immeasurably more difficult" (Mzimela, 1980 p. 177).

This act has led to segregated schools for the different racial groups. In the schools for blacks the curriculum is inferior, is monitored, and censored by the government. Teachers are under qualified and the equipment is inadequate because of a great disparity in the allocation of resources to different racial groups. For example, the expenditure per student during the years 1978-1979 shows $940.00 for a white student and $90.00 for a black student (South African Institute of Race Relation's Report, 1980).

Job Reservation Act

The job reservation act gives the Minister of Labour authority to determine which jobs should be reserved for whites only. For example, in mining blacks may not be employed in the sampling, surveying, and ventilation departments. They also may not by law hold senior positions in industries or supervise whites. Needless to say that even if blacks had a choice in the matter, the type and the level of education that a few blacks manage to receive would not allow them to qualify for these jobs. The South African government has many laws/acts that are used to enforce apartheid. However, for the purpose of this study the acts that have been discussed above will suffice.

Under the policy of apartheid black parents are both rightless and powerless. Consequently, their children are denied all the rights of children as declared by the United Nations General Assembly Act of 1959.

As stated by Kunene (1979) these children are made to suffer not only from malnutrition and from poverty related diseases, they are also made to suffer from a 'victim syndrome'. All these factors interact to influence the social-emotional, cognitive development, and physical growth of children. Some of these children grow up not knowing their own potential talents which are stunted by the laws

that have been created by the South African government. Many of these children do not even live long enough for their parents to enjoy and help them realize the talents in them.

> "Full many a gem of purest ray serene
> The dark unfathomed caves of ocean bear:
> Full many a flower is born to blush unseen
> And waste its sweetness on the desert air."
> Elegy Written in a Country Church Yard by
> Thomas Gray (Starr, 1968).

This passage encapsulates the rich human potential which is available in black children in the homeland, resettlement, and the farm areas, which under the policy of apartheid is ignored, wasted, and rarely developed or utilized.

From this study it can be concluded that black families in the rural areas of South Africa live in a condition of unequal access to resources and knowledge that are found in the natural, human constructed, and behavioral environments in which these families are embedded. Black families are thus trapped in conditions of political, social, and economic deprivation and their children are also likely to be trapped in the same condition. It is these environments that contribute to the culture of deprivation which hinders these families from getting better levels of education,

occupation, and to earn a better income that would enable them to improve their quality of life.

However, despite the conditions of deprivation in the rural areas of South Africa in which black families live, these families show a powerful intrinsic survival mechanism. This mechanism is termed by Davis (1984) a survival dynamic. It is in fact a cultural mechanism used by the poor to counteract the difficulties imposed upon them by the political, economic, and social factors.

This survival dynamic operates on both the individual and the community levels. On the individual level it is evident in how black families especially those from the farm and the resettlement areas survive with the barest minimum resources available to them. These include the lack of political power, land, housing, food, and other essentials of life. It is also evident in how blacks in South Africa have persisted to find ways to restore their identity and selfworth.

At the family and community levels it is shown by the persistence to maintain stable family forms despite the government's efforts to recruit and separate black family members through the migratory labor system. Black families have also persisted to find ways to start building new communities to meet the psychological and physical needs of residents despite the government's efforts to break

communities by demolishing houses and forcing residents to move to 'unknown places'.

The high mean scores of self-concept, cognitive development, and physical growth for children in the homeland also show this survival mechanism which has helped these children to adapt to the impoverished environment of the homeland.

The researcher is not in support of the kind of adaptation that children in the homelands of South Africa and other areas are forced to make in order to survive. Children should be treated equally and be provided with enough food and decent accommodation, and be able to live with their parents, and be provided with educational and health services that will enhance physical growth, cognitive, and social-emotional development. The ability of the poor to adapt to the most hostile environments of the homeland, resettlement, and the farm areas leads the government of South Africa to be convinced that the policy of apartheid is working, and thus there is no need to change it.

Implications of the Study

This study demonstrates two implications: theoretical and practical. This study has shown the viability of the ecosystem framework in studies designed to examine

behavioral development and physical growth of black children in South Africa.

This study suggests that the syndrome of malnutrition is embedded in a multiplicity of factors in the children's ecosystem. Thus any effort to improve the development and growth of black children in South Africa should take into consideration all levels of the child's ecosystem from the micro to the macro level.

The effort to improve growth and the development of these children can be achieved at two levels. The first and a more pressing effort involves the institution of cost-effective strategies within the present social, economic, and political climate, so that the immediate needs of the vulnerable groups can be met. These might include community health care, nutrition, and food information programs, adult education programs, job training skills, community development skills, and preschools which aim at the holistic development of children.

However, for intervention projects in black communities in South Africa to be successful and to have long lasting effects, factors at the macro level should be addressed. Thus the second effort must be a restructuring in the distribution of resources so that there is equal access to political power among different racial groups, allocation of land, educational and job opportunities, health care, and

social welfare services. This action will lead to what Habermas calls political-moral action. This is action which seeks good for the people.

Suggestions for the Future

A secondary objective of this study is to examine ways to further develop and refine the ecosystem framework. The following section gives some of the methods that might be used to improve the ecosystem framework. Some of the most important ways to develop and refine theoretical frameworks were suggested by Nye (1978) and Holman and Burr (1980).

For example, Nye (1978) has suggested a "Causal Analysis Model". This is a very refined system of analysis because the researcher is forced to state the direction of causality between each interrelated variable in the analysis. The findings of this study indicate significant relationships between the variables that were selected for this study. Therefore, a multi-causal model might be the best method for organizing the findings for this study. Causal models that could be used include: a path analysis model, time-series design which is recommended by Schucts and Hicks (1981), and the linear estimation of structural relationships (LISREL) which is recommended by Joreskog and Sorbom (1978). All these models might be suitable methods of data analysis for describing the ecosystem framework.

Cross-cultural studies might also contribute to building new concepts and for testing already existing concepts. This suggests that family scholars in the United States need to look beyond their borders to expand their pool of concepts.

Another way to foster creativity and efficiency in developing the ecosystem framework would be to encourage a network of scholars from different disciplines such as biology, sociology, anthropology, and geography for they can help to clarify the complexities of the human ecosystem framework.

In conclusion then, the ecosystem framework has a place and future in family theory. What needs to be done is to achieve what Christensen (1964) has called theoretically oriented research and empirically oriented theory. Thus, there is a need to focus on building on already existing theoretical frameworks such as the ecosystem framework. This process includes the discovery of new concepts and propositions relevant to this framework. The next step would be the application of this theoretical framework in research.

There is also a need for students and scholars in human ecology to become engaged in critical science. As stated by Bubolz (1985a) in critical science, theory and practice are not separate. She also adds that in critical science the role of a scientist becomes that of political actor.

Therefore, a critical scientist engages in research that has social policy as its implication, in order to influence the political-social milieu and bring about changes in society.

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APPENDICES

APPENDIX A

Instruments

Junior South African Individual Scale (JSAIS)

Vocabulary

Quantitative skills

Copying

VOCABULARY (3 TO 7 YEARS)

Cards a and b are presented to three- to five-year-olds only. Irrespective of the score on these cards, the picture booklet is then presented. Where necessary, help three- to five-year-olds with Items i, ii, v and 1-3 of the picture booklet.

Six- and seven-year-olds start with Item 5 of the picture booklet after they have done the two practice examples. If Example b is done correctly without assistance, give 1 point. If necessary, children in this age group may be helped with Item 5. (See Manual for full details.)

Discontinue after 4 consecutive failures on the items of the picture booklet.

Item	Response	Score 1 or 0	Item	Response	Score 1 or 0
Card a Ex. Key		X	11. friendly b		
i lock (help)			12. swan c		
ii lamp (help)			13. calendar d		
iii drum			14. wool b		
iv cradle			15. sad c		
Card b			16. temperature c		
v going up (help)			17. fear a		
vi pulling something			18. weapon b		
Picture booklet		X	19. freckles b		
Ex. a tree b			20. swarm a		
b boiling b			21. flame a		
1. tortoise (help) c			22. abyss a		
2. gate (help) c			23. funny a		
3. dreaming (help) d			24. vehicle c		
4. tricycle b			25. insect c		
5. sieve (help 6/7y.) d			26. reptile d		
6. turkey d			27. fastest b		
7. fence b			28. pair a		
8. teasing a			29. astonishment b		
9. straight c			30. reflection b		
10. hurrying b			31. aquarium a		
			32. motionless a		

Total raw score	Max. = 39
Scaled score =	

NUMBER AND QUANTITY CONCEPTS: PART A (3 TO 7 YEARS)

Three- to five-year-olds start with the example for which 1 point is given if it is answered correctly.

Six- and seven-year-olds start with Item 8.

Discontinue after 3 consecutive failures.

Item	Score 1 or 0
Ex. balls	
1. sticks (help)	
2. stars (help)	
3. birds	
4. fish	
5. poles	
6. buttons	
7. hearts	
8. ropes (help 6/7 yrs)	
9. ducks	
10. buttons	
11. buttons	
12. dots	
13. ink	
14. ½ of a tart	

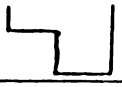
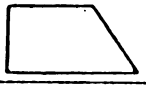
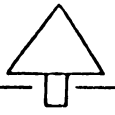
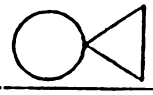
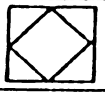
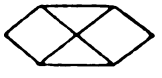
Item	Score 1 or 0
15. stars	
16. glasses	
17. apples	
18. dots	
19. pigs	
20. bird cages	
21. birds	
22. $\frac{1}{4}$ of a tart	
23. scales	
24. birds sitting on fence	
25. cups/saucers	
26. socks	
27. small bags	
28. marbles	
29. walking-sticks	
30. watches	

		Max.=31
A:	Total raw score	
A:	Scaled score =	

Use the A scaled score for calculating GIQ for three- to five-year-olds.

COPYING (4 TO 7 YEARS)

All testees start with Item 1. Discontinue when the child obviously cannot or will not copy any further designs.

Item	Score
1. 	0-2
2. 	0-2
3. 	0-2
4. 	0-2
5. 	0-2
6. 	0-2
7. 	0-2
8. 	0-3
9. 	0-3
10. 	0-3
11. 	0-3
12. 	0-3
	Max. = 29
Total raw score	
Scaled score =	

Self Concept

Scoring sheet for Brown -- IDS Self Concept Referents Test

Example of question format: 1. How tell me, is Johnny Gallager happy or is he sad?

2. Does Johnny Gallager's mother think Johnny Gallager is happy or sad?

Item	Self Score*	Mother Score	Teacher Score	Peer Score
1. Happy-sad	1,0	1,0	1,0	1,0
2. Clean-dirty	1,0	1,0	1,0	1,0
3. Good looking-Ugly	1,0	1,0	1,0	1,0
4. Likes to play with other kids-doesn't like to play with other kids	1,0	1,0	1,0	1,0
5. Likes to have own things-likes to have other kids things	1,0	1,0	1,0	1,0
6. Good-bad	1,0	1,0	1,0	1,0
7. Likes to talk a lot-doesn't like to talk a lot	1,0	1,0	1,0	1,0
8. Smart-stupid	1,0	1,0	1,0	1,0
9. Scared of a lot of things-not scared of a lot of things	1,0	1,0	1,0	1,0
10. Scared of a lot of people-not scared of a lot of people	1,0	1,0	1,0	1,0
11. Likes the way clothes look-doesn't like the way clothes look	1,0	1,0	1,0	1,0
12. Strong-weak	1,0	1,0	1,0	1,0
13. Healthy-sick	1,0	1,0	1,0	1,0
14. Likes the way (my) face looks- doesn't like the way (my) face looks	1,0	1,0	1,0	1,0

*Note: Score values parallel order in which adjectives are presented.

National Center for Health Statistics Norms

Table 4. Observed percentiles of head circumference (in centimeters), by sex and age: Fels Research Institute, birth-7 years

Sex and age	n	Observed percentile						
		5th	10th	25th	50th	75th	90th	95th
Male		Head circumference in centimeters						
Birth	155	32.2	32.6	33.6	34.6	35.5	36.4	37.2
1 month	276	35.2	35.7	36.4	37.3	38.2	39.2	39.6
3 months	436	38.2	38.7	39.6	40.6	41.6	42.5	43.1
6 months	421	41.6	42.0	42.8	43.7	44.7	45.6	46.2
9 months	362	43.6	44.1	44.9	45.8	46.7	47.4	48.0
1 year	366	44.7	45.2	46.1	47.1	47.8	48.8	49.3
1½ years	459	46.2	46.7	47.4	48.3	49.3	50.2	50.6
2 years	415	47.2	47.7	48.3	49.2	50.2	50.9	51.3
2½ years	332	48.1	48.5	49.2	50.0	51.1	51.8	52.3
3 years	240	48.5	48.8	49.6	50.4	51.4	52.2	52.7
3½ years	202	48.9	49.2	50.0	50.9	51.9	52.7	53.3
4 years	185	49.3	49.6	50.1	51.0	52.1	53.0	53.2
4½ years	181	49.5	50.0	50.4	51.4	52.5	53.4	54.1
5 years	158	49.7	50.0	50.6	51.7	52.6	53.6	54.1
5½ years	134	50.0	50.4	51.2	52.0	53.0	53.9	54.5
6 years	138	50.2	50.5	51.2	52.2	53.2	54.0	55.3
6½ years	48	50.5	50.6	51.5	52.5	53.3	54.0	54.2
7 years	130	50.6	50.7	51.6	52.5	53.4	54.2	54.6
Female								
Birth	145	31.5	32.4	33.2	34.1	34.7	35.6	35.9
1 month	243	34.6	35.1	35.8	36.5	37.2	37.8	38.3
3 months	405	37.1	37.7	38.6	39.5	40.4	41.2	41.7
6 months	398	40.4	40.8	41.6	42.4	43.3	44.2	44.6
9 months	341	42.3	43.0	43.6	44.4	45.2	46.0	46.3
1 year	320	43.5	44.1	44.8	45.6	46.4	47.2	47.7
1½ years	439	45.0	45.5	46.2	47.1	47.8	48.2	49.1
2 years	395	46.1	46.6	47.3	48.1	48.8	49.6	50.2
2½ years	332	47.0	47.3	47.9	48.7	49.5	50.3	50.8
3 years	226	47.6	47.9	48.6	49.3	49.9	50.8	51.4
3½ years	177	47.9	48.4	48.8	49.6	50.5	51.2	51.8
4 years	178	48.0	48.5	49.0	50.0	50.8	51.6	52.2
4½ years	157	48.4	48.9	49.5	50.3	51.0	51.9	52.5
5 years	148	48.6	49.0	49.6	50.5	51.4	52.0	52.6
5½ years	129	48.8	49.4	50.0	50.9	51.8	52.4	53.2
6 years	130	49.0	49.5	50.1	51.2	52.0	52.8	53.5
6½ years	51	48.9	49.5	50.1	51.4	51.8	52.8	53.2
7 years	123	49.4	49.7	50.5	51.6	52.3	53.4	54.2

NOTE: *n* = sample size.

Table 6. Observed percentiles of stature (in centimeters), by sex and age: National Center for Health Statistics, 2-24 years

Sex and age	N[1]	Observed percentile						
		5th	10th	25th	50th	75th	90th	95th
Male		Stature in centimeters						
2.00-2.25 years	419	82.6	83.5	86.1	87.8	90.3	91.9	97.3
2.25-2.75 years	945	86.1	87.0	89.0	91.2	93.8	97.3	98.3
2.75-3.25 years	785	88.9	90.5	92.4	95.1	97.2	100.1	101.2
3.25-3.75 years	857	92.1	93.3	95.7	98.2	101.1	102.8	104.4
3.75-4.25 years	856	96.2	97.3	100.0	102.6	105.3	107.5	110.8
4.25-4.75 years	937	98.0	100.2	103.4	105.8	108.6	111.8	113.2
4.75-5.25 years	874	100.7	103.2	105.5	108.8	112.4	115.4	116.5
5.25-5.75 years	878	106.2	107.7	110.1	113.5	116.1	118.2	119.5
5.75-6.25 years	908	108.5	110.1	112.8	117.0	119.4	122.2	123.1
6.25-6.75 years	1,033	108.9	110.0	114.8	118.2	121.9	125.0	127.1
6.75-7.25 years	988	114.1	115.6	118.5	122.3	125.9	128.3	129.8
7.25-7.75 years	1,120	115.6	118.3	120.8	124.5	127.9	131.4	133.4
7.75-8.25 years	1,014	119.3	121.0	123.8	127.9	131.7	134.9	138.0
8.25-8.75 years	902	121.2	123.4	126.2	129.6	133.2	136.4	138.8
8.75-9.25 years	943	121.1	124.5	127.5	132.8	136.3	139.4	141.9
9.25-9.75 years	958	125.2	127.7	131.2	135.0	138.7	142.7	144.7
9.75-10.25 years	1,030	127.3	130.0	133.7	138.6	142.1	145.9	149.0
10.25-10.75 years	1,070	130.5	132.5	135.8	139.4	144.1	148.4	151.4
10.75-11.25 years	1,052	132.5	135.3	138.7	143.5	147.9	151.4	154.0
11.25-11.75 years	952	135.1	138.0	141.4	145.8	150.8	154.5	156.1
11.75-12.25 years	1,010	138.5	140.1	144.1	148.6	153.7	159.4	162.6
12.25-12.75 years	1,092	139.3	141.8	146.4	152.1	157.2	162.6	165.5
12.75-13.25 years	1,155	142.2	144.8	149.7	154.8	159.6	165.3	167.8
13.25-13.75 years	1,056	145.6	148.6	153.6	160.0	166.5	172.2	175.5
13.75-14.25 years	954	149.2	153.0	157.7	164.4	169.9	175.1	177.6
14.25-14.75 years	1,019	152.9	156.4	161.1	167.6	173.1	177.8	179.4
14.75-15.25 years	1,112	155 0	157.6	163.0	169.4	173.8	178.2	181.8
15.25-15.75 years	914	158.8	161.4	166.6	171.6	175.4	180.4	183.4
15.75-16.25 years	1,051	160.5	164.3	169.0	173.5	177.8	181.5	185.8
16.25-16.75 years	876	163.8	165.5	170.6	174.9	179.5	183.3	186.4
16.75-17.25 years	1,054	164.4	166.2	170.7	176.8	181.8	184.6	187.3
17.25-17.75 years	935	163.3	167.7	172.1	176.4	181.0	185.0	187.8
17.75-18.25 years	866	166.5	170.1	173.1	176.0	180.2	186.1	187.3
18.25-19.00 years	1,067	166.8	169.3	172.0	175.8	180.1	185.9	186.8
19.00-20.00 years	1,770	162.8	166.9	171.6	177.2	180.8	185.0	186.2
20.00-21.00 years	1,668	159.4	168.4	172.2	177.4	181.2	183.6	185.8
21.00-22.00 years	1,703	166.2	168.3	172.5	177.3	181.1	184.8	190.0
22.00-23.00 years	1,662	167.2	167.7	171.3	177.1	180.6	187.1	192.0
23.00-24.00 years	1,589	161.3	165.3	172.3	176.8	183.0	188.5	189.2
24.00-25.00 years	1,595	165.4	168.5	172.9	178.1	183.0	186.7	189.5

[1]Sample size expressed in thousands. The *N*'s of those cells containing subjects from both HANES I and HES II or HES III have been cut in half to maintain representativeness.

Table 6. Observed percentiles of stature (in centimeters), by sex and age: National Center for Health Statistics, 2-24 years—Con.

Sex and age	N[1]	Observed percentile						
		5th	10th	25th	50th	75th	90th	95th
Female		Stature in centimeters						
2.00-2.25 years	440	81.3	82.5	84.6	86.8	89.9	93.6	94.6
2.25-2.75 years	972	84.2	85.3	87.1	90.3	93.4	94.8	96.4
2.75-3.25 years	622	90.2	90.7	92.7	95.3	96.7	99.1	100.6
3.25-3.75 years	887	91.8	92.8	95.0	97.4	99.8	102.1	103.6
3.75-4.25 years	775	94.8	96.2	97.9	100.5	103.8	106.0	108.2
4.25-4.75 years	848	96.8	97.6	100.5	103.8	106.2	109.4	112.0
4.75-5.25 years	876	99.1	101.1	105.2	108.1	111.6	113.7	114.7
5.25-5.75 years	890	103.8	106.1	108.4	111.8	115.5	118.7	121.3
5.75-6.25 years	866	107.1	109.0	111.9	115.4	118.8	122.1	124.6
6.25-6.75 years	1,025	109.3	111.6	114.3	117.7	121.7	125.2	126.9
6.75-7.25 years	945	111.7	113.2	117.4	120.8	124.3	126.8	128.6
7.25-7.75 years	952	115.8	117.2	120.0	123.7	127.9	131.7	134.2
7.75-8.25 years	1,004	117.8	119.5	122.8	127.5	130.6	132.9	134.6
8.25-8.75 years	968	118.9	121.4	124.4	129.2	133.4	135.8	138.0
8.75-9.25 years	988	122.2	124.8	128.4	132.7	137.7	141.0	142.3
9.25-9.75 years	885	126.6	127.6	131.1	135.1	139.8	144.4	147.6
9.75-10.25 years	1,092	129.0	130.3	134.4	138.5	143.0	147.0	149.8
10.25-10.75 years	1,086	129.4	131.1	135.2	140.6	144.7	149.8	152.4
10.75-11.25 years	870	132.1	134.8	139.5	143.9	148.8	153.7	157.0
11.25-11.75 years	862	134.5	135.8	141.7	147.3	152.6	157.1	158.8
11.75-12.25 years	1,082	139.4	142.2	146.7	151.8	156.4	161.4	165.9
12.25-12.75 years	1,019	141.7	145.9	150.8	154.8	159.7	164.0	165.7
12.75-13.25 years	1,058	143.7	147.7	153.0	157.5	161.4	165.5	167.4
13.25-13.75 years	1,120	149.4	151.6	155.4	159.6	163.8	165.9	169.2
13.75-14.25 years	1,080	149.8	151.6	155.7	160.0	163.4	167.1	168.7
14.25-14.75 years	951	150.3	153.2	157.4	161.6	165.4	169.5	171.1
14.75-15.25 years	1,012	151.5	153.3	157.2	161.2	166.3	171.2	174.9
15.25-15.75 years	980	152.6	154.8	157.9	162.9	167.6	172.1	176.2
15.75-16.25 years	959	152.5	154.8	158.2	163.6	167.7	170.7	172.3
16.25-16.75 years	836	150.7	153.3	157.6	162.1	166.5	171.5	172.6
16.75-17.25 years	1,108	151.8	154.6	158.0	161.8	166.5	171.6	173.8
17.25-17.75 years	810	150.7	154.3	158.0	162.6	166.6	170.0	172.5
17.75-18.25 years	826	152.2	155.5	159.8	163.9	168.0	171.0	171.8
18.25-19.00 years	1,420	154.9	157.8	161.2	165.3	167.2	172.4	174.2
19.00-20.00 years	1,384	155.0	155.9	159.9	163.0	166.8	170.6	173.1
20.00-21.00 years	1,771	152.3	155.1	159.0	163.2	168.8	172.4	175.3
21.00-22.00 years	1,818	152.0	154.6	158.5	162.5	167.0	170.8	173.0
22.00-23.00 years	1,734	150.4	153.0	156.9	162.8	167.2	171.2	174.5
23.00-24.00 years	1,800	154.2	156.0	158.6	163.1	166.8	170.5	172.6
24.00-25.00 years	1,796	152.3	155.4	158.3	162.3	167.4	170.4	171.6

[1]Sample size expressed in thousands. The *N*'s of those cells containing subjects from both HANES I and HES II or HES III have been cut in half to maintain representativeness.

Table 7. Observed percentiles of weight (in kilograms), by sex and age: National Center for Health Statistics, 2-24 years

Sex and age	N[1]	Observed percentile						
		5th	10th	25th	50th	75th	90th	95th
Male		Weight in kilograms						
2.00-2.25 years	419	9.97	11.10	11.63	12.67	14.05	14.85	15.47
2.25-2.75 years	945	11.31	11.89	12.63	13.53	14.57	15.69	16.80
2.75-3.25 years	785	12.28	12.84	13.55	14.43	15.34	16.39	17.37
3.25-3.75 years	857	12.70	13.34	14.33	15.39	16.46	17.77	18.63
3.75-4.25 years	856	13.83	14.70	15.46	16.64	17.85	18.87	20.62
4.25-4.75 years	937	14.42	15.09	16.02	17.71	19.17	20.45	21.51
4.75-5.25 years	874	14.99	15.52	16.91	18.47	20.22	21.02	22.59
5.25-5.75 years	878	17.01	17.31	18.33	19.88	21.39	23.21	25.32
5.75-6.25 years	908	16.87	17.80	19.53	21.21	22.85	24.98	26.40
6.25-6.75 years	1,033	17.21	17.82	19.70	21.59	23.41	26.21	28.18
6.75-7.25 years	992	18.59	19.39	21.37	22.93	25.22	28.74	30.72
7.25-7.75 years	1,120	18.76	20.07	22.04	24.33	26.48	29.08	32.31
7.75-8.25 years	1,014	20.20	21.47	23.47	25.65	28.70	31.36	35.15
8.25-8.75 years	902	21.71	22.63	24.35	26.31	29.27	33.08	34.96
8.75-9.25 years	943	22.01	22.98	25.13	27.89	31.75	36.62	40.23
9.25-9.75 years	958	23.11	24.30	26.40	29.65	33.63	38.58	45.67
9.75-10.25 years	1,030	24.40	25.63	27.98	31.83	36.09	41.08	43.69
10.25-10.75 years	1,070	26.09	27.73	29.49	32.57	36.39	40.75	45.66
10.75-11.25 years	1,052	27.98	28.79	31.23	35.86	39.68	44.71	51.83
11.25-11.75 years	952	28.17	30.14	34.07	37.48	41.94	47.16	52.45
11.75-12.25 years	1,010	30.10	31.18	34.21	38.75	46.43	55.24	62.43
12.25-12.75 years	1,092	31.72	32.98	36.18	41.98	47.30	54.05	58.45
12.75-13.25 years	1,155	32.17	34.61	38.43	43.62	50 17	59.22	64.29
13.25-13.75 years	1,056	36.24	37.80	42.92	49.23	58.38	63.44	68.39
13.75-14.25 years	954	38.25	41.47	46.98	51.65	60.77	67.04	76.61
14.25-14.75 years	1,019	40.52	43.64	49.70	55.32	62.62	72.69	77.03
14.75-15.25 years	1,112	42.14	44.93	50.35	56.35	63.63	71.27	76.91
15.25-15.75 years	914	46.26	49.12	54.29	58.92	66.68	75.40	81.81
15.75-16.25 years	1,051	46.83	51.29	55.79	61.74	69.33	76.78	86.07
16.25-16.75 years	876	50.46	53.22	56.77	64.71	72.28	81.62	87.57
16.75-17.25 years	1,054	52.15	55.42	60.65	65.90	73.76	81.72	91.23
17.25-17.75 years	935	51.80	55.53	60.81	66.64	75.36	83.35	92.16
17.75-18.25 years	866	54.76	58.18	62.04	68.96	75.49	88.36	94.71
18.25-19.00 years	1,067	54.96	60.35	63.62	69.88	78.67	92.66	99.60
19.00-20.00 years	1,770	55.40	57.38	65.91	70.66	76.43	87.01	96.48
20.00-21.00 years	1,668	55.86	57.71	65.04	71.89	78.44	88.86	94.84
21.00-22.00 years	1,703	52.66	58.17	65.29	72.12	80.96	89.04	96.13
22.00-23.00 years	1,662	55.02	59.14	65.09	71.77	79.66	90.57	96.93
23.00-24.00 years	1,589	59.16	60.69	65.54	74.71	82.44	94.05	105.35
24.00-25.00 years	1,595	60.87	63.96	67.96	79.37	85.69	97.60	103.19

[1]Sample size expressed in thousands. The *N*'s of those cells containing subjects from both HANES I and HES II or HES III have been cut in half to maintain representativeness.

Table 7. Observed percentiles of weight (in kilograms), by sex and age: National Center for Health Statistics, 2-24 years—Con.

Sex and age	N[1]	Observed percentile						
		5th	10th	25th	50th	75th	90th	95th
Female		Weight in kilograms						
2.00-2.25 years	440	10.06	10.66	11.41	12.21	12.86	13.84	14.57
2.25-2.75 years	972	10.77	11.20	11.98	12.76	13.94	14.74	15.09
2.75-3.25 years	622	12.14	12.40	13.12	13.93	15.61	16.84	17.74
3.25-3.75 years	887	12.29	13.03	13.58	14.60	15.93	17.54	18.28
3.75-4.25 years	775	13.13	13.63	14.51	15.68	17.15	18.22	18.94
4.25-4.75 years	848	13.45	14.05	15.04	16.57	17.78	19.35	20.26
4.75-5.25 years	876	14.33	15.21	16.48	17.73	19.66	21.23	22.10
5.25-5.75 years	890	15.18	16.20	17.47	18.92	20.96	23.44	25.01
5.75-6.25 years	866	15.99	17.09	18.21	20.19	22.39	24.88	28.71
6.25-6.75 years	1,025	17.02	17.71	19.24	21.06	23.55	26.17	27.89
6.75-7.25 years	945	17.86	18.74	20.20	22.13	23.98	26.91	29.58
7.25-7.75 years	952	18.84	19.60	21.33	23.72	26.54	29.61	31.55
7.75-8.25 years	1,004	20.11	20.79	22.49	24.89	27.73	32.63	35.20
8.25-8.75 years	968	20.47	21.50	23.30	26.39	29.69	33.65	36.45
8.75-9.25 years	988	22.20	23.17	25.27	28.79	33.40	39.66	42.69
9.25-9.75 years	885	23.29	24.72	26.92	30.26	34.54	39.87	43.62
9.75-10.25 years	1,092	24.34	25.25	28.03	31.68	36.38	43.16	45.92
10.25-10.75 years	1,086	25.28	26.69	29.42	33.00	37.63	45.90	48.37
10.75-11.25 years	870	26.73	28.32	32.09	36.13	42.27	47.72	54.49
11.25-11.75 years	862	27.44	29.45	32.88	37.97	44.38	50.77	58.09
11.75-12.25 years	1,082	29.72	32.74	36.42	41.70	48.78	57.77	64.79
12.25-12.75 years	1,019	32.59	34.97	39.46	45.37	51.40	58.10	63.21
12.75-13.25 years	1,058	34.21	37.17	41.44	47.06	54.79	62.20	66.61
13.25-13.75 years	1,120	37.72	39.45	45.00	50.30	56.81	67.05	75.78
13.75-14.25 years	1,080	37.74	39.86	44.86	50.22	56.44	66.44	74.70
14.25-14.75 years	951	40.77	42.96	47.21	53.03	60.95	68.88	78.43
14.75-15.25 years	1,012	41.14	43.65	47.48	53.29	59.72	71.57	75.36
15.25-15.75 years	980	42.99	46.11	48.98	55.25	60.80	71.45	77.78
15.75-16.25 years	959	43.64	45.74	49.22	54.92	61.58	67.70	78.03
16.25-16.75 years	836	43.86	45.69	49.46	54.97	62.64	72.37	83.10
16.75-17.25 years	1,108	43.87	45.57	50.76	56.49	62.22	72.45	84.19
17.25 17.75 years	810	42.90	45.36	50.56	55.23	61.59	70.62	84.82
17.75-18.25 years	826	45.05	47.89	52.68	57.68	62.32	69.62	75.86
18.25-19.00 years	1,420	44.83	45.89	51.03	56.97	63.16	72.62	78.70
19.00-20.00 years	1,384	48.65	48.83	51.62	57.24	63.48	76.33	83.48
20.00-21.00 years	1,771	44.40	47.23	51.70	57.22	63.94	72.15	75.89
21.00-22.00 years	1,818	46.08	48.54	52.15	58.36	64.64	72.88	81.76
22.00-23.00 years	1,734	42.86	46.18	51.35	58.82	67.38	75.54	85.35
23.00-24.00 years	1,800	45.59	47.77	52.16	59.87	64.64	72.80	84.62
24.00-25.00 years	1,796	46.65	48.13	52.06	58.88	66.33	77.17	86.04

[1]Sample size expressed in thousands. The *N*'s of those cells containing subjects from both HANES I and HES II or HES III have been cut in half to maintain representativeness.

Parent Questionnaire

PARENT INTERVIEW QUESTIONNAIRE

Background Information

1. Name of Parent/Guardian

2. Sex: M F

3. Date of Birth: Month _____ Day _____ Year _____Age

4. What is your religion:
   ____ Methodist
   ____ Catholic
   ____ Anglican
   ____ Apostolic Church
   ____ Other, what is it?
   ____ None

5. Which of the following best fits you?

   ____ Married, living with spouse
   ____ Married, but not living with spouse
   ____ Never married
   ____ Divorced
   ____ Widowed
   ____ Separated
   ____ Living together, not married

6. People living in the household besides yourself.

Number	Sex/Age	Relationship	Education	Job	Part-time
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					

7 How long have you and child lived at this address?
How long have you lived in this area?

If family has lived at current address fewer years than age of child, ask:

7.1 How many times have you and child moved?

____ Several times

____ Twice

____ Once

____ Never

7.2 Where have you and child lived before?

____ Same place, different location

____ Different place

____ Rural area

____ Urban

____ Other

7.3 What were the reasons for moving?

1.
2.
3.
4.

7.4 If you had a choice, where would you rather live?

Socio Economic Status

Level of Education

8. What is the highest level of formal school that you have completed?

____ no schooling
____ less than standard 6 of primary schools
____ six years of primary school
____ completed junior secondary school
____ completed high school
____ Bachelor's degree
____ Master's degree

____ Ph.D.
____ Other (please specify)

8.1 Have you had any other training other than one mentioned above?

____ Yes
____ No

8.2 If yes, please specify your field of training

1.
2.

Occupation

9. Are you presently employed: ____ yes
____ no

9.1 If yes, are you working: full-time or half-time?

____ full-time
____ half-time

9.2 What is your job?

1. No job (if 1 go to next line).
2. Menial service work (janitor, private household worker, farm laborer)
3. Unskilled worker (bartender, gas station attendants).
4. Semi-skilled worker (barber, dressmaker, except factory workers).
5. Skilled manual worker (blacksmiths, bakers).
6. Clerical and sales worker (bank tellers, billing clerks).
7. Semi-professionals (advertising agents, teacher aides).
8. Professionals (teachers, administrators).

10. What is your source of income: ____ my own wages

____ wage of another

____ pay in kind

10.1 If pay in kind, what is it?

Structure of House

11. What is the house you live in built of?

1. Brick, concrete wall, cement floor, zinc/asbestos roof
2. Mud and thatch
3. Tin/zinc

4. Other

House Ownership

11.1 Do you own/rent the place you live in?
_____ Own
_____ Rent

11.1.1 Do you have this house as a fringe benefit?
_____ Yes
_____ No

11.2 How many bedrooms in the house?
____ one room
____ two rooms
____ three rooms
____ four rooms
____ Over

11.3 Where does child X sleep?
____ In a room with other siblings
____ In a room with parents
____ In a room by him/herself

11.4 What is your general impression about the house?
____ Good condition
____ Needs to be renovated
____ Dilapidated/falling apart

Child X's general behavior at home

11.5 How would you describe X's behavior
1. Easy going
2. Difficult
3. Mixes freely with siblings
4. Fights with siblings
5. Other

11.6 Does child X have books to read at home?
____ Yes
____ No

11.7 Does child X have toys to play with?
____ Yes
____ No

11.8 Does child X have games to play with?
____ Yes
____ No

11.9 What things do you and child X do together?
____ Work together
____ Read stories

____ Tell stories
____ Watch television
____ Other

12. Approximately how often do you do things together?
____ 1 hour/day
____ Twice a week
____ Once a week
____ Never

Child's health condition

13. How would you describe the condition of X's health?
____ Very healthy
____ Somewhat healthy
____ Sickly

13.1 Has X been hospitalized?
____ Yes
____ No

13.2 What was the reason for hospitalization?

13.3 How recently has X been hospitalized?
_____ Within last 6 months
_____ Within the last year
_____ Within the past 3 years

APPENDIX B

Methods Used by the South African Government to Assign Different Racial Groups to Different Residential Areas

Population

The population of South Africa is 31.3 million. Twenty two million or 72% are blacks, 4.8 million or 16% are whites, 2.8 million or 9% are colored, and .8 million or 3% are Asians (Africa South of the Sahara, 1986).

In order to get a better understanding of how land is divided among the four racial groups of South Africa, a brief discussion of the elements of the policy of apartheid is necessary.

Under the policy of apartheid, a rigid racial segregation is enforced. This segregation is in all aspects of life. For example, segregation in South Africa among the four racial groups is in the residential areas, education, and occupation. To achieve this segregation yet at the same time to maintain the policy of apartheid, land and other resources have been distributed unequally among the four racial groups. Eighty seven percent of the country's territory has been reserved for whites, coloreds, and Asiatics who make up 25 percent of the total population. These groups may buy land in the urban areas. Blacks who make up 75 percent have been separated based on ethnicity and assigned to the 13 percent of the country's territory.

The fragmented areas designated for blacks are called homelands/bantustans (See Map on page 98). Thus, based on the land reservation act, a person's racial classification

or color of his/her skin determines to a large degree his/her area of residence. Black families are relegated to the homelands. These homelands are similar to the Indian reservations in the United States, which are isolated, remote, and less productive in terms of farming and agriculture.

Other black families have been forcibly removed by the South African government from areas designated for whites and "dumped" in the resettlement areas which are adjacent to the homelands. Other blacks live and work on the white-owned farms, and in urban areas. Blacks are prohibited by law to buy land in white areas. They may also remain in the white areas for as long as they serve the interests of whites as miners, domestic servants, or farm laborers.

APPENDIX C

Letters to Ministries of Education

Letters and Consent forms to Parents

Dear Sir/Madame:

I am Nomalungelo Ivy Goduka. I was born in Herschel in South Africa. I graduated in Psychology from the University of Fort Hare in April 1979. Since then, I worked as a research assistant at the National Institute for Personnel Research (N.I.P.R.) in Johannesburg, South Africa.

In 1981, I came to study for a Master's degree in the United States at Michigan State University in the Department of Family and Child Ecology. Presently, I am enrolled in a Ph.D. program in the same department.

As part of the Ph.D. requirements, I have chosen to study factors that influence children's physical growth and behavioral development. This study is being conducted among children in South Africa from thefollowing areas: Herschel, Thornhill, the farm areas around Queenstown, and in the Orange Free State.

Children of ages 5-6 years will be selected from different schools in your district.

To gather the information, I will need to test children, who have been selected for the sample in their school. The tests are for social, emotional, and mental ability and physical growth.

In order to do this, I am requesting your approval to enter the schools and work with children during school hours or after school.

I see this type of research as valuable for your own information as an educator. This information could be used by teachers to better understand the children's development.

I will be more than willing to share with you the findings of the study, if you so desire.

Dr. J. M. Verster, Deputy Director of the N.I.P.R. will supervise my work while I am in South Africa collecting data. If you have further questions about this project, please feel free to call him at 339-4451 at the Institute.

Thank you.

Nomalungelo Ivy Goduka

Dear Mr. and Mrs.

I am Nomalungelo Ivy Goduka. I was born in Herschel in the homeland of the Transkei. I graduated in Psychology from the University of Fort Hare in April 1979. Since then, I worked as a research assistant at the National Institute for Personnel Research (N.I.P.R.) in Johannesburg.

In 1981, I went to study for a Master's degree in teh United States at Michigan State University, in the Department of Family and Child Ecology. Presently, I am enrolled in a Ph.D. program in the same department.

As part of the Ph.D. requirements, I have chosen to study factors that influence children's physical growth and behavioral development. This study is being conducted among Xhosa speaking families from the following areas: Herschel, Thornhill, the farm areas around Queenstown, and in the Orange Free State.

To gather the information, I will need to give your child tests for social-emotional, mental ability, and physical growth at school. I will also need to visit your family for less than an hour on a day and time that is most convenient to you. I will bring a questionnaire which I will help you fill out.

This letter is to request your cooperation in providing information about you, your spouse, and your child.

The information gathered from you and your child will be kept confidential and anonymous. Information specific to a family is not an important issue, rather the overall results of family differences are important in this study.

I will be more than willing to share with you the findings of the study.

Dr. J. M. Verster, Deputy Director of the N.I.P.R., will supervise my work while I am in South Africa collecting data. If you have further questions about this project, please feel free to call him at 339-4451 at the Institute.

Thank you.

Nomalungelo Ivy Goduka

Consent Form

Child's Name: _____

As the legal parent/guardian of the above named child, I hereby give my permission for her/his participation in a study conducted by Nomalungelo Ivy Goduka, a Ph.D. candidate, under the supervision of Dr. J. M. Verster of the N.I.P.R. and Dr. L. Phenice of the Department of Family and Child Ecology, Michigan State University.

Parent/Guardian's Name: _____

In addition, I freely give consent for my child and I to take part in this study.

I understand that my child and I are free to discontinue our participation in the study at any time.

I understand that my participation and my child's participation in the study does not guarantee any beneficial results to me or to my child.

I understand that at my request, I can receive additional explanation of the study after my participation is completed.

I understand that the results of the study will be treated in strict confidence and that I will remain anonymous. Within these restrictions, results of the study will be made available to me at my request.

Signed _____

Date_____

APPENDIX D

Memos from School Administrators

RECEIVED
1986 -07- 14
TRANSVAAL
DEPARTMENT OF EDUCATION

OFFICE OF THE CIRCUIT INSPECTOR
DEPARTMENT OF EDUCATION
PRIVATE BAG X5026
STERKSPRUIT
5560

8 JULY 1986

TO: ALL PRINCIPALS OF JUNIOR PRIMARY SCHOOLS

This is to notify you that Miss IVY N. GODUKA has been given approval by the Circuit Office to do research in your school.

For the purpose of this research Miss Goduka will work with children in Sub. A. The tests will take 30 - 45 minutes. Children will also be measured to obtain their weight and height.

This letter is to request you to give Miss Goduka permission to do this research at your school.

We see this type of a study as very helpful for the education and development of the child.

Your co-operation is highly requested in this regard for the effective success of this exercise.

CIRCUIT INSPECTOR

C 12

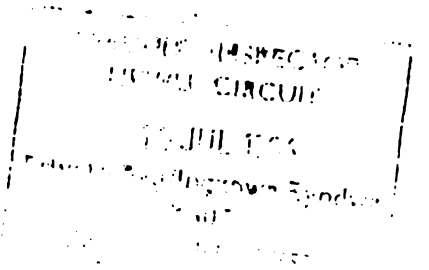
IRIPHABLIKI YECISKEI
REPUBLIC OF CISKEI

Irefrensi:
Ref. No. .....

Iloni:
Telephone: 1 Whittlesea

Inibuza:
Enquiries: Mr Lekhehle C.I.

I-Ofisi ka – Office of the



TO : ALL PRINCIPALS OF PRIMARY SCHOOLS

This is to notify you that Miss IVY N. GODUKA has been given approval by the Circuit Office to do research in your school.

For the purpose of this research Miss Goduka will work with children in Sub. A. The tests will take 30-45 minutes. Children will also be measured to obtain their weight and height.

This letter is to request you to give Miss Goduka permission to do research at your school.

We see this type of a study as very helpful for the education and development of the child.

Your co-operation is highly requested in this regard for the effective success of this exercise.

.....
CIRCUIT INSPECTOR

G.P.-S. 30-0140

81/172589
(Z 14)

REPUBLIEK VAN SUID-AFRIKA

REPUBLIC OF SOUTH AFRICA

Verw. Nr./Ref. No.

NAVRAE/INQUIRIES: P.G. STAHR

Tel. No. 7107

KANTOOR VAN DIE-OFFICE OF THE
Circuit Inspector Of
Education and Training
Private Bag X7053
[illegible]
5320

1 August 1996

Miss Ivy Nomalungelo Godula will be visiting the following schools for research purposes :-

Irvani Farm School
Bongolo Farm School
Prospect Farm School

Please give her all the assistance you can give her.
She has the permission of the Director General to visit these three schools.

P.G. STAHR
ACTING CIRCUIT INSPECTOR

G.P.-S. 30-0140 81/172589 (Z 14)

REPUBLIEK VAN SUID-AFRIKA REPUBLIC OF SOUTH AFRICA

Verw. Nr./Ref. No. 9/1/7

NAVRAE/INQUIRIES: GT/dr

Tel No. 84211

Mrs. Ivy N. Goduka
C/o Manxeba Junior Secondary School
Private Bag X16
HERSCHEL
5542

KANTOOR VAN DIE-OFFICE OF THE
Kringinspekteur
Bloemfontein-Ooskring
Privaatsak X20513
BLOEMFONTEIN
9300

1986 - 08 - 12

BESOEK AAN SKOLE : BLOEMFONTEIN-OOSKRING

1. Toestemming word verleen dat mev. Ivy N. Goduka Zastron Openbare Skool ~~skole~~ in die Bloemfontein-Ooskring mag besoek.

2. Besoeke is onderhewig aan die volgende:

2.1 Die goedkeuring van die skoolhoof moet verkry word.

2.2 Geen inbreuk mag op die normale skoolprogram gemaak word nie.

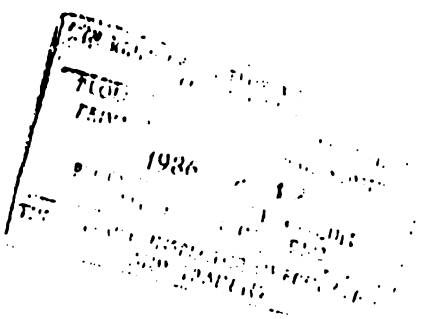
2.3 Besoeke moet buite skoolure plaasvind.

2.4 Die Departement van Onderwys en Opleiding mag op geen wyse benadeel of betrok word nie.

3. U samewerking sal opreg waardeer word.

Die uwe

G. THOM
KRINGINSPEKTEUR : BLOEMFONTEIN-OOSKRING



Raad vir Geesteswetenskaplike Navorsing
Human Sciences Research Council

RGN HSRC

Nasionale Instituut vir Personeelnavorsing (NIPN)
National Institute for Personnel Research (NIPR)

Navrae
Enquiries

Telefoon (011)339-4451 Bylyn
Telephone Extension

Verwysing Verster/fm
Reference

U verwysing
Your reference

Posbus 32410
Braamfontein
2017 Republiek van Suid-Afrika
Teleks: 4-25459 SA
Telegramme NAVORSPERS

P O Box 32410
Braamfontein
2017 Republic of South Africa
Telex: 4-25459 SA
Telegrams NAVORSPERS

21 July 1986

The Director General
Education and Training
Private Bag X212
PRETORIA
0001

For Attention : Mr J H Bester

Dear Sir,

Ms IVY GODUKA

As discussed with you telephonically this morning, Ms Ivy Goduka, a PhD student at Michigan State University, East Lansing, USA, has requested permission from your department to undertake fieldwork for her thesis at farm schools in the OFS and Cape Province. Her university has appointed me as supervisor of her fieldwork in South Africa. I would be grateful if you could give her the assistance she seeks with a view to completing fieldwork of her PhD research.

Yours sincerely,

J M VERSTER
for EXECUTIVE DIRECTOR
NATIONAL INSTITUTE FOR PERSONNEL RESEARCH

Raad vir Geesteswetenskaplike Navorsing

Human Sciences Research Council

HSRC

Nasionale Instituut vir Personeelnavorsing (NIPN)
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Posbus 32410
Braamfontein
2017 Republiek van Suid-Afrika
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Telegramme NAVORSPERS

P O Box 32410
Braamfontein
2017 Republic of South Africa
Telex: 4-25459 SA
Telegrams NAVORSPERS

TO WHOM IT MAY CONCERN

Miss Ivy Goduka is a PhD student at Michigan State University, East Lansing, U.S.A. She is conducting research for her PhD thesis on "Behavioural development of black children in South Africa : an ecological approach". I have been asked by her university to supervise her fieldwork in South Africa. Any assistance you are able to give her in the course of her fieldwork would be greatly appreciated.

Yours sincerely

J M VERSTER D.Litt et Phil
for EXECUTIVE DIRECTOR
NATIONAL INSTITUTE FOR PERSONNEL RESEARCH

Raad vir Geesteswetenskaplike Navorsing

Human Sciences Research Council

HSRC

Nasionale Instituut vir Personeelnavorsing (NIPN)
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Telegramme NAVORSPERS

P O Box 32410
Braamfontein
2017 Republic of South Africa
Telex: 4-25459 SA
Telegrams NAVORSPERS

AAN WIE DIT MAG AANGAAN

Mej Ivy Goduka is 'n Ph.D.-student aan die Universiteit van die staat van Michigan, East Lansing, V.S.A. Sy doen navorsing vir haar Ph.D.-proefskrif oor "Gedragsontwikkeling van swart kinders in Suid-Afrika : 'n ekologiese benadering". Ek is deur haar universiteit gevra om toesig te hou oor haar veldwerk in Suid-Afrika. Enige hulp wat u aan haar kan verleen tydens haar veldwerk sal hoog waardeer word.

Die uwe

J M VERSTER D.Lit. et Phil.
vir UITVOERENDE DIREKTEUR
NASIONALE INSTITUUT VIR PERSONEEL NAVORSING

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