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PERFORMANCE ON THE TEACHER VINELAND ADAPTIVE SCALE – THE CASE OF CHIPATA

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BY

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This dissertation of Jacqueline Pauline Jere has been approved as fulfilling the requirements for the award of the Degree of Masters of Education in Educational Psychology by the University of Zambia.

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ABSTRACT

Over the past few centuries, the use of psychological tests has become a widespread activity, not only in the Western world, but in Africa as well. Zambia is no exception to this development. In the past few years, the country has experienced an increase in the use of psychological tests in a wide range of fields including clinical psychology, counseling, industrial and organizational psychology (particularly in human resource departments), to mention but a few. Although this trend indicates a positive development in these various fields, much trepidation exits on how culturally appropriate or inappropriate these tests are. One of the causes for this apprehension is the fact that many of these tests have been designed for use in particular populations thereby bringing into question the ecological validity of the test when it is administered in a dissimilar environment. Although many professionals are aware of this fact, not much has been done to try and rectify this discrepancy.

In light of the above, the main objective of this study was to establish the validity and reliability of a psychological instrument used in Zambia to assess adaptive behavior – the Vineland Adaptive Behaviour Scale – teacher version.

The study was conducted in the Chipata District in the Eastern part of Zambia. The study population consisted of all teachers and pupils from Chipata district and the study sample was randomly drawn from both rural and urban schools. The class teacher from each class was expected to respond to the questionnaire for each of the students that were sampled from their class. The total sample size consisted of 484 pupils and 68 teachers. Reliability and validity data analyses were conducted using the statistical package for social sciences (SPSS).

Results from the analysis indicate that reliability values for the instrument were low to average. Results for the internal consistency were as follows: split half reliability coefficients for the sub-domains range between 0.16 and 0.88, while alpha cronbach coefficients range between 0.79 and 0.89 respectively. These results, when compared to the American sample of the same age, the American sample performed better. Validity results were as follows: for age ranges 7-13 inter-correlation coefficients ranged between r=0.22 and r = 70 at the 0.01 level (2-tailed) across the sub-domains. For ages 14-18 inter-correlation coefficients range between r=0.43 and r=0.80 at the 0.01 level (2-tailed). These results indicate that the instrument has very

low validity, especially in comparison to the American sample. An analysis of the inter-item correlation indicates that each domain contains items with very low inter-item correlation values for some r= <. 015. Items with such low values are an indicator of poor cultural appropriateness and relationship with other items within the sub-domain.

The study concluded that although the Vineland Adaptive Behaviour Scale – teacher version has an average reliability, it is not a valid instrument implying that it does not measure the construct it purports to measure – adaptive behaviour in Zambia, Chipata district. This realization is very important as it not only confirms concerns that have been raised about the use of imported psychological instruments but it also provides suggestions and recommendations on how the instrument can be made more relevant to the Zambian population, particularly in Eastern province.

DEDICATION

This study is dedicated to all the psychologists in Zambia who conduct assessments in the various areas of Psychology. It is my sincere faith and hope that they will find useful the information documented in this report.

ACKNOWLEDGEMENTS

Conducting a study requires a lot of time, effort and commitment. This study would not have been possible without the hard work and commitment of many individuals. The authors of the Vineland Adaptive Behaviors Scales, Sara Sparrow, who I had the pleasure of meeting, deserves the utmost gratitude and thanks for her tireless work on the instrument but most importantly for the ideas, inspiration and encouragement she gave me.

Of great importance in this study were the individuals that responded to the questionnaire; the teachers from Chipata district, who took time off their extremely busy schedules. Many thanks to you all for the cooperation and dedication you exhibited. Without you, this study would not have been made possible.

Special thanks also go to the UNZA/Yale Learning Disability team that made it possible to conduct a large-scale study of this nature and succeed. Thank you for the commitment, the hard work and the guidance provided throughout the data collection. Special recognition goes to my supervisor, also a team member of the Learning Disability Project, Mrs. Sophie Kasonde-Ng'andu for the constant support and guidance during the writing of this paper.

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LIST OF ABBREVIATIONS

I.Q – Intelligence quotient

HAD – High functioning autism

LAD – Low functioning autism

DLD – Developmental language disorder

OCD – Obsessive Compulsive Disorder

ADHD – Attention Deficit Hyperactivity Disorder

VABS – Vineland Adaptive Behaviour Scale

K-BIT – Kaufman Brief Intelligence Test

DSM – Diagnostic and Statistical Manual of Mental Disorders

ASD – Autism Spectrum Disorders

CHAPTER ONE

INTRODUCTION

BACKGROUND

The issue of psychological testing in Africa is one that has been debated by psychologists since the beginning of the 19th century. Of great controversy has been the use of internationally imported psychological tests for use in various African countries, whether they are intelligence, personality, aptitude or ability tests. Structured tests of cognitive functioning are probably the most widely marked product of psychology (Greenfield, 1969). Yet, despite their technical sophistication, the most widely known of these tests, which claim to provide an objective index of general intelligence (or I.Q), are often the target of severe criticism. In Africa, the focus of such criticism most often centers on the likelihood of cultural bias (Mpofu, 2004; Serpell, 1991). Indeed the very concept of intelligence is so widely embedded in a complex network of interdependencies among values, practices and technology of a culture (Serpell,1993).

There exist very few psychological tests that have been designed or standardised in various African countries, for use in these countries (Mpofu & Nyamungo, 1998). The assessment of intellectual ability for example has had to rely on tests with norms obtained in the Western world. This method of evaluating intellectual level or ability has been shown to be unjustified for various reasons. High ranking amongst these is the fact that the meaning of intelligence varies from one society to another and even within the same society, and therefore even the manner is which intellectual ability will be measured will also inevitably differ (Mpofu, 2004, Sternberg et al; 2001). Zambia like other African countries has had un-standardized tests, with norms from the Western world used to assess its population. There exists both essential genetic and environmental factors in many psychological processes or constructs such as intelligence, personality, adaptive behaviour and these needs should not be overlooked, but taken into consideration during assessment.

Anthropologists have shown how some aspects of behaviour vary greatly between different cultures and sub-cultures, while other aspects are culturally universal. Whether behaviour appears normal and acceptable to others will depend on the customs and values of society. This inevitably has implications for adaptive behaviour within a particular society and how this adaptive behaviour is measured.

Adaptive functioning, in terms of specific behaviours is developmental in nature, meaning that it varies and increases in complexity as a function of age. For example, when assessing level of adaptive social functioning in infants, one's interest would be to include the development of smiling responses and recognition of familiar faces. For pre-adolescent children, areas of focus would include the adequacy of peer relationships and usage of leisure time. Most studies of social learning suggest that social skills are acquired from childhood onwards, partly through imitation of others, including parents, siblings and peers; partly through reinforcement, that is encouragement or discouragement on the part of the parents and others; partly through opportunity to observe and practice behaviour in a range of situations; partly through the development of cognitive abilities, and partly through innate potential. Therefore, the role played by the ecological niche of the child in the development of adaptive behaviour is of paramount importance.

Individuals who display behaviour which is contrary to the norms and customs of the society in which the individual lives may be considered abnormal. This may be exhibited in their failure to communicate with others, or some of the main symptoms are in the field of interaction and interpersonal relationships. Failure in non-verbal communication, for example peculiarities of looking, posture, gesture, facial expression, tone of voice, together with incoherent speech, lack of affect, poor perceptual sensitivity and also poor empathetic ability are indicators of poor adaptation. Generally, the assessment of adaptive functioning usually includes the following areas: communication, daily living skills, socialisation and motor development. It may also consider the presence of maladaptive behaviours (for example,

temper tantrums, self abusive behaviours) to the extent that they interfere with the individual's ability to attain personal independence and social sufficiency (Sparrow, Balla &Cicchetti, 2005).

Moreover, adaptive behaviour is defined by typical performance, not ability. Therefore, one distinguishes ability (can) from actual performance (does), and it is performance alone that defines whether or not an adaptive behaviour has occurred. Adaptive behaviour is age related and defined by the standards of other people within a community. There is some recent evidence to indicate that adaptive behaviour is modifiable or amenable to intervention.

STATEMENT OF THE PROBLEM

Currently, there are very few psychological tests with norms created for use in Zambia today. Many of the tests that are being utilised for various purposes include placement, diagnosis or measurement of aptitude which do not have Zambian norms. This is so despite the fact that the tests have not been validated or standardised for use within the Zambian population. For example, in international organisations and sometimes even indigenous organisations, prospective employees are screened by means of tests. Performance on these tests usually serves as a determining factor as to whether or not an individual will be employed by that organisation.

In the clinical domain, Chainama Hills Hospital for example, uses various tests to help diagnose their patients with the view of providing appropriate medication and or intervention programmes, depending on the condition. Various assessment centres around the country that deal with children with special needs use various tests to diagnose various conditions with the hope of creating appropriate intervention programmes for children with various physical, emotional and intellectual challenges.

Most if not all of the tests that are used in the above mentioned fields and many others are tests that have been imported from the Western countries

and have not been adapted for use within the Zambian context. This inevitably raises issues of cultural bias, which in turn leads to the questioning of the validity of inferences based on them. Furthermore, amongst the tests that have been used, the Vineland Adaptive Scale (VABS), a very important psychological instrument, which is used to measure adaptive behaviour, has not received much attention in the area of psychological testing in Zambia, despite the fact that it can be easily administered to individuals with various backgrounds and of various ages.

Thus, there exists a vacuum or need in the area of testing or use of adaptive tests with the Zambian population. It is therefore imperative that there be more locally designed or adapted psychological tests for use in various fields.

THE PURPOSE OF THE STUDY

The purpose of the study was to validate a psychological instrument that could be used in the Eastern part of Zambia – the Teacher Vineland adaptive scale. In particular, the study aimed at establishing the general performance of rural children on this instrument, which would then be compared with the results of an already standardized version of the instrument, which was conducted in America. More precisely, the study was aimed at identifying various items within the instrument that may have a negative impact on the validity and reliability of the instrument.

OBJECTIVES OF THE STUDY

The objectives of the study were to:

1. describe the basic features of the data collected for the communication, daily living skills and socialization domains.
2. determine the reliability of the Teacher Vineland Adaptive scale in relation to an already standardized version of the instrument. This was done for the following domains:
    (a) Communication

(b) Daily Living skills and

(c) Socialization

3. select items within the Teacher Vineland Adaptive Scale that were poorly performed on by the Zambian population in Chipata for the following domains:
   (a) Communication sub-domains
   (b) Daily Living skills sub-domain and
   (c) Socialization sub-domains
4. To determine the validity of the Vineland Adaptive Behaviour Scale with the Zambian population in Chipata in comparison to an already standardized population in the United States of America.

RESEARCH QUESTIONS

The following are the major research questions that were being pursued in this study:

1. How reliable and valid is the use of the VABS for use in the Zambian population?
2. What items within the instrument are likely to have a negative impact on the validity and reliability of the instrument?
3. Which domains within the Vineland adaptive Scale correlate with each other?
4. Which items within the VABS may have a negative impact on the performance of children in Eastern Province population?

SIGNIFICANCE OF THE STUDY

One of the greatest challenges being encountered in the field of psychology and special education is the lack of standardized and validated instruments that will cater specifically for the Zambian population. This study will help establish whether or not the Vineland Adaptive Scale is a valid instrument, which can be used for assessment of adaptive behaviour in the Eastern part of Zambia – Chipata in particular. Knowledge that will be generated from this study will contribute significantly to the field of psychological assessments in

Chipata – Zambia by establishing the general performance of children on this instrument and providing suggestions and recommendations on how best the instrument can be improved upon.

Due to its comprehensive content, the VABS is applicable whenever assessment of an individual's daily functioning is required (Sparrow & Cicchetti & Balla, 2005). The scales serve uses in a variety of clinical, educational or research settings. Not only has the instrument be used for evaluation and diagnoses of mental retardation in the United States, it is also designed to aid in the clinical diagnosis of a variety of disorders, various genetic disorders, developmental delays, emotional and behavioral disturbances and a wide range of other mental, physical and injury related conditions (Hayes, 2005).

Furthermore, the instrument can be used hand in hand with other instruments, for example, in some instances, information about adaptive behaviour and intelligence is compared, particularly when an individual is evaluated to determine whether or not the individual should be classified as mentally retarded.

Adaptive behavior should be a major component in assessing current functioning of individuals across a broad range of conditions. Understanding how any disorder, environment or condition affects an individual's everyday life, for example, personal hygiene, domestic conditions, friendships, responsibilities, leisure activities, motor skill, to mention but a few is very important in understanding the development of individuals.

The validation of the Teacher Vineland adaptive scale in Zambia will therefore, help enhance the chances that patients or others are correctly diagnosed, and appropriate intervention programmes are put in place. Those deficient in skills can then be taught directly a new and more socially acceptable repertoire of skills, which will enable them to influence their environment sufficiently to attain basic personal goals.

LIMITATIONS OF THE STUDY

The study faced three major limitations. The first, concerned the lack of adequate resources, which limited the study only to Chipata and a few schools within Chipata. This limitation led to a further limitation including, the fact that the findings from this study cannot be generalized to other parts of Zambia, even though the Eastern Province may have a number of similarities with other provinces in Zambia. The third limitation is that a fairly large amount of information was lost due to incomplete forms. These incomplete forms were caused by lack of sufficient time to complete them or the lack of adequate knowledge of the child by the respondent. Fourthly, some teachers were new to the classes they were teaching and were, therefore, unable to complete the forms for these children because they had not spent enough time with them to confidently respond to the questionnaires, thereby reducing the sample size further.

OPERATIONAL DEFINITIONS

Adaptive Behaviour – this is the effectiveness or degree with which individuals meet the standards of personal independence and social responsibility expected from age and cultural group.

Culture – a program of shared values that govern the behaviour of members of a community or society, and a set of values, beliefs, and attitudes shared by most of the members of that community.

Culture fair tests – these are tests that are designed to be free of cultural bias as far as possible so that no one culture has an advantage over another.

Developmental delays – any condition or disorder that interferes with a child's normal developmental progress when compared to children of the same age. The delays can be in physical and motor disabilities, speech, self-help skills and cognitive or emotional development.

Ecological niche – the status of an organism within its environment and community, affecting its survival.

Maladaptive behaviour - are behaviours that interfere with everyday activities. Behaviour problems are much more difficult to quantify than adaptive behaviours are, because they are not very developmental and because their expression varies more from day-to-day and from setting-to-setting. Behaviour problems do not increase or decrease steadily with age. Nevertheless they can be measured reliably.

Psychological disturbance – refers to significant problems in behaviour, emotions and relationships that are severe and prolonged enough to cause serious discomfort and/ or disability.

Reliability – the degree to which scores obtained with an instrument are consistent measures of whatever the instrument measures.

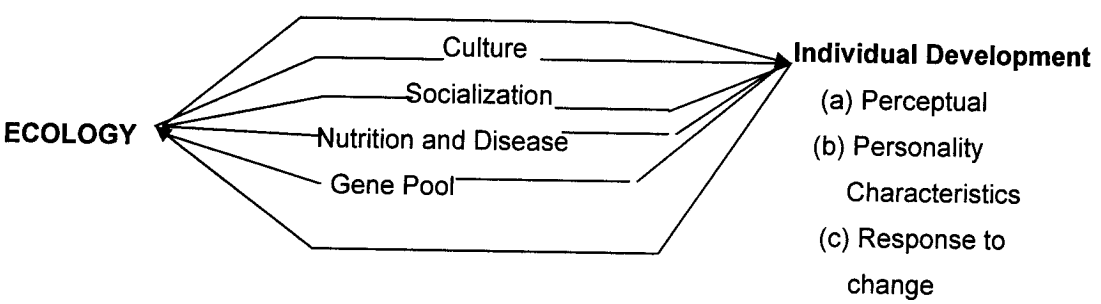
Standardization - is the process of developing a test that reliably and validly measures a specific dimension of behaviour. It involves trying out items and analysing them; revising or discarding those that don't work, adding items where there are gaps in difficulty, and reanalysis. It also involves developing standard testing procedures and materials. The result should be a test that reliably measures the same thing the same way each time, so that scores are comparable. A standardized test should also demonstrate validity, meaning that it actually measures what it portends to measure.

Validity – this refers to the degree to which inferences can be made based on results from an instrument: depends not only on the instrument itself, but also on the instrumentation process and the characteristics of the group studied. It is the ability of a test to measure what it is designed to measure.

CONCEPTUAL FRAMEWORK

The study is grounded on the model relating individual development to ecological and other variables proposed by Berry (1971). The model tries to illustrate what role ecology plays in shaping human behaviour. It emphasizes the systematic interaction that occurs between the behavioral and ecological variables (Vayda & Rappaport, 1968) and asserts some ecological determination of behaviour. It also asserts the ecological limitation of behavioral development and the behavioral adaptation to ecological pressures. The role of ecological factors in human development is one that cannot be ignored. The model tries to explain how the interaction of the various variables and development of behaviour takes place. The model operates on the stimulus-response theory in which case the ecology is the stimulus and how this has a long-term impact on the development of the organism (Berry, 1971).

Fig. 1. Model relating development to ecological and other variables.



The overriding arrow indicates the conventional stimulus impinging on the individual, as well as the culturally unmediated expectancies based on previous interactions with the environment, while the under riding arrow illustrates the potential transformation that the organism can make on his/her physical surroundings (Berry, 1971). The intermediate bonds indicate four of the possible mediating factors present in humankind:

(a) Culture: in the model, this is viewed as group's adaptation to recurrent ecological factors (Vayda, 1969) and as a contributor to the direction of the development of individual human being. It is also regarded as a mediator of the ecology of individuals.

(b) Socialization: although it may be viewed as part of culture, in this model, it is singled out because of the role it has in shaping human behaviour and because of its known adaptive relationship to ecological variables.

(c) Nutrition, Disease and Gene pool: these are included in the model because they have generally accepted roles in mediating ecology and individual development. Aspects of nutrition and disease considered most important include protein availability and parasites (Cravioto, 1968), while the gene pool is held to be adaptive to the ecological pressures, and in turn a contributor to group and individual differences.

The model is functional and greatly emphasizes the interaction that takes place between the various variables stated in the model and acts as a powerful heuristic device for exploring ecological, cultural and behavioral interactions (Berry, 1971). The model is extremely relevant to the study because it helps explain why differences exist in human adaptive behaviour. It highlights four important variables that are present in every society and which undoubtedly interact and have an impact on the individual and the society at large.

ORGANISATION OF THE STUDY

Chapter one of the dissertation comprises the background, statement of the problem, purpose, objectives, research questions, significance and limitations of the study. In addition it consists of operational definitions of the constructs under the study.

Chapter two consists of the literature review.

Chapter three discusses the data collection techniques and also describes the pilot study. This is followed by a description of the final study, which consists of the study design, the population, sample and sampling procedure and data collection.

Chapter four is dedicated to the presentation of results while chapter five discusses the results of the study.

Finally chapter six constitutes a summary, conclusion, recommendations as well as suggestions for further research.

CHAPTER TWO

LITERATURE REVIEW

This chapter reviews relevant literature on the subject of cultural differences in the performance of various psychological tests. Firstly, to provide a context for the reader, a brief explanation of validity and reliability will be given. After that literature based on research conducted on social behaviour, including social acceptance, social competence and social skills in Africa and other parts of the world is presented. Some research conducted on the various uses of the Vineland Adaptive Behaviour Scale is made reference to. It also highlights important aspects of culture or child rearing practices that may have an effect on adaptive behaviour in children.

Validity and reliability

The importance of using valid and reliable instruments in research cannot be over emphasized. Good quality instruments ensure that the data collected and inferences made from these data are accurate. Validity basically refers to the extent to which an instrument actually measures what it is intended to measure; while reliability refers to the consistency of the scores obtained on a test or instrument (wikipedia.org). The subsequent paragraphs explain validity and then reliability in more detail.

When preparing or selecting an instrument for use, validity is the most important thought researchers consider as this helps ensure that the information they obtain using the instrument serves its purpose. There are basically three kinds of reliability that exist. The following paragraphs explain these in detail.

The first is content validity. This refers to the content and format of the instrument, which should be consistent with the definition of the variable and the sample of subjects to be measured (Cozby, 1985). Content validation therefore, is a matter of determining if the content the instrument contains is an adequate sample of the domain of content it is supposed to represent.

The other aspect of content validity has to do with the format of the test and includes effects like clarity of printing, size of type, appropriateness of language, clarity of directions, to mention but a few (Cozby, 1985). Content related validity is mainly obtained by having someone, preferably an expert in the field of research, to look at the content and format of the instrument and judge whether or not it is appropriate.

The second kind of validity is criterion validity, which refers to the relationship between scores obtained using the instrument and scores obtained using one or more other instruments, often called a criterion (Moore, 2000). A criterion may be defined as a second test or other assessment procedure presumed to measure the same variable (Moore, 2000). There exist two kinds of criterion related validity, predictive and concurrent validity. In the former, researchers allow for a specified period of time to elapse between administration of the instrument and obtaining the criterion scores. As the name suggests, the latter occurs when instrument data and criterion data are gathered at almost the same time and the results compared.

The third kind of validity is construct validity, which basically refers to the nature of the psychological construct or characteristic being measured in the instrument (Moore, 2000). It is the broadest of the three categories of evidence for validity. There is no single piece of evidence that satisfies this validity. Instead, researchers attempt to collect a variety of different types of evidence that will allow them make acceptable inferences. Of the three different kinds of validity, construct validity is being applied in this study. The following paragraphs discuss reliability.

Like validity, there are different ways of establishing the reliability of a test or instrument.

The first is errors of measurement. This considers the inconsistency of scores on a test when individuals are given the test more than once. The differences in performance may be due to factors like differences in motivation, energy, anxiety, different testing situations, to mention but a few

(Moore, 2000). This variation in performance is presented as a reliability coefficient, which expresses the relationship that exists between scores of the same individuals on the same instrument at different times. There are mainly three different ways in which this can be obtained; the test-retest, equivalent forms and the internal consistency methods, respectively. The test-retest and equivalent form methods are beyond the scope of this study and therefore, not discussed.

The internal consistency method requires a single administration of an instrument. Methods to verify internal consistency include the split half procedure, the Kuder-Richardson approaches and the alpha coefficient. The split half procedure involves scoring two halves usually even versus odd items and then calculating the correlation coefficient for the two sets of scores, the value of the Pearson product-moment correlation coefficients is adjusted with the Spearman-Brown prediction formula to correspond to the correlation between two full-length tests. The coefficient indicates the degree to which the two halves of the test provide the same results, and hence describes the internal consistency of the test.

The Kuder-Richardson approach requires that the number of items, the mean and standard deviation of the test be present in order to calculate the internal consistency.

The alpha coefficient, also known as Cronbach alpha, is mainly used to calculate the reliability of items that are not scored right versus wrong, as in some tests more than one answer is common. The higher the proportion of variance due to individuals, the higher Cronbach's alpha. Alpha can take values between minus infinity and 1. As a rule of thumb, a proposed psychometric instrument should only be used if an alpha value of 0.70 or higher is obtained on a substantial sample (Wikipedia.org). However the standard of reliability required varies between fields of psychology.

ADAPTIVE BEHAVIOUR IN AFRICA

The literature review for this section is mainly concerned with adaptive behavior in Africa and in particular Zambia in the various areas of adaptive behaviour: communication, daily living skills, and socialization domains. This literature is grounded on the principle that,

> *"...every trait that an individual has and every interaction that he/she demonstrates can in the final analysis, be attributed to his/her heredity and environment" (Ohuchi & Otaala, 1981).*

Disregarding the characteristics inherited at birth, the development of a child is very much influenced by the environment in which he lives. The following paragraphs discuss the above-mentioned notion in relation to adaptive behaviour.

There exist various agents of socialization for the African child. These include the home, school and church environments as well as social gatherings. During the pre-school stage, the child's physical environment is dominated by the home. Gradually this environment expands when the child starts school and includes his/her home, his/her village or town, their physical and social dimensions and interrelationships (Ohuchi & Otaala, 1981). In this context, the neighborhood where the child plays and his/her peers, the market place, the school and the church stand out.

Children in rural areas, peri-urban and high density areas of Zambia and indeed other parts of Africa, get involved in the buying and selling of goods for the family. Many children who attend school are required to assist their parents or guardians in the market or "kantemba" when the school day is over. They may have difficulties adding or subtracting numbers in school, but usually do not make mistakes with change in the market place (Ohuchi & Otaala, 1981). This activity exposes the child to people from different background and builds the child socialization skills. This interaction also helps build the child's confidence and interpersonal skills as well as negotiating and marketing skills.

The school, as earlier indicated is another agent that is used to socialize the African child. This structure, no matter how small or dilapidated it may be, is one that always stands out in a village. Schools are places where children memorize static information provided by teachers, some of whom are just able to keep abreast of their pupils. The attitudes and habits of the children are hardly affected by schooling (Ohuchi & Otaala, 1981). It is important to note that this is not always the case.

Traditional societies were and still are predominantly agricultural (Ohuchi & Otaala, 1981). An important aspect of socialization is to train the child into one of the existing occupations. In Zambia, children are taught skills that are most prominent and pertain to the area where the child is brought up. For example in the Luapula province of Zambia, boys are taught fishing skills because the economic activity there is predominantly fishing, while in the Eastern province of Zambia farming would be taught. Methods used to conduct these activities are usually unsophisticated and can easily be taught to the children in that community. The hoe and the matchet for example, remain the basic agricultural implements used by the small farmers and farming tends to rely upon the rainy season. Yields produced from these activities are barely adequate for the needs of the family, while the little surplus is either sold or traded for other items. Men mostly engage in the farming of the more durable root crops and in tending the animals and perishable items such as vegetables. Children are therefore, taught all the skills that will then help them make positive contributions to the family and the society at large.

Social gatherings are also used as effective methods of socialization, for example, African dances. It is believed that these help to develop the skills needed to function in society. Such groups are used to reinforce discipline and inspire attributes desirable within the communities (Ohuchi & Otaala, 1981). Activities such as initiation ceremonies for both girls and boys are still common. For example among the Chewa people of the Eastern province of Zambia, male adolescents are expected to join the nyau, a group of

traditional dancers with a lot of secret rituals (Ngulube, 1989). It is believed that being a part of this group will help build their self-esteem, how to live with the community and how to take care of their wives when they marry. Girls also undergo a similar initiation ceremony.

Various games that exist in Zambian communities also act as a mode of socialization. Games common to both sexes include *hide-and-seek (Kalondo-londo or ku-bishalana), nyepe*, which consists of one person guessing in which hand the other person has hidden a stone and this game is played by both sexes. Games more confined to the girls include *ciato*. This is played by sitting in a circle around a small hole in the ground. A number of stones are placed in the hole and the player's task is to scoop out specific numbers of these during the time between throwing up another stone and catching it in the same hand. Threading beads and plaiting hair are also activities that are played by girls. On the other hand games confined to boys include *nsolo*. It calls for four parallel lines of holes along which stones are moved in accordance with elaborate rules, which call for considerable planning as well as numerical calculation. Boys only seriously start playing this game in early adolescence. Boys also engross themselves in an activity that involves carving of different artifacts. Most prominent among these are models of operational cars; with wheels and a steering, much like the ordinary cars. These games serve as an important activity in building the child's motor skills, both fine and gross, socialization skills by interacting with other children, moral skills through the rules and regulations that govern the games and which children are expected to follow in order to ensure that there is no cheating or monopolizing.

In traditional Zambian society, the distribution of responsibilities for a child's socialization changes as the child goes up. In the Chewa society of the Eastern Province of Zambia for example, parents are primarily responsible for bringing forth children and the mother feeds the baby till it is weaned. From then on the responsibility for further rearing and education lies with the grandparents (Bruwer, 1949 p. 197). Because of the matrilineal system of inheritance, a maternal uncle tends in the Chewa society to have as great, or

sometimes greater, authority over a young boy as his father. Although the specifics of age and relationships vary from one culture to another, the existence of important roles for grandparents and other adults in the day-to-day control of a child's behaviour is described in ethnographic accounts of many African societies (Serpell, 1993 p. 59). In the earliest phase, before a child is weaned, multiple care taking (or care-giving) is the norm rather than an exception in many parts of Africa. This means that a great deal of the psychology of child-rearing based on the nuclear family typical of middle-class Western societies needs to be reconsidered for its relevance to the context in which most African children grow up.

Wober (1974) undertook research in Uganda aimed at mapping out, by means of the semantic differential technique, the meaning of one Kiganda word "obugezi", which is close to the concept embodied in the English word "intelligence". He found that the two adjectives strongly associated with this word by traditional Baganda were "careful" (as opposed to hasty) and "delayed" (as opposed to "hurried"). He also noted that Kiganda concept seemed to include more of the notion of "wisdom" than does the English "intelligence".

Irvine (1969, in Berry and Dasen, 1974) has noted that

> *".... the shona word for intelligence...is ngware, meaning to be cautious and prudent, particularly in social relationships since the misfortunes of kin always have a spiritual history and a gestalt or field of human relationship" (P. 255).*

His analysis of Shona proverbs, omens, and beliefs regulating behaviour in rural contexts brought him to the conclusion that "...intelligence acts are then of a conforming kind having primary reference to the effective climate of one's own relationships."

The above examples emphasize the need to understand the various meaning of words and the kind of behaviour attached to these meanings within a particular community. Definitions will vary from culture to culture and

therefore, adaptive behaviors associated with these words will consequently vary. It is therefore important to understand the activities, customs, values and norms associated with a particular construct within a particular community if a true measure of that construct is to be obtained, especially if it involves instruments that have been constructed and standardized in a western population, as they should not be treated as equivalent. According to Bronfenbrenner (1979),

> *"The physical environment and a cultural community with a socio-political and economic history jointly structure the ecosystem within which humans develop. The forces, which impinge on the behaviour of the developing child, are mediated by mental processes generated through conscious interaction among the persons who constitute a social group. And this interaction is in turn mediated by their accumulated cultural stock of cognitive resources, language, theories and technology."*

The value placed on social skills is a recurrent theme in studies of child rearing in African societies. In addition to Kibuuka's outline of Kiganda traditional educational goals, one can refer to the research of Read (1968) in Malawi. Read found that the goals of child training enunciated by Ngoni adults revolved around the concept of "respect" (ulemu), which includes the notions of showing honor, being courteous and polite, and knowing the proper forms of etiquette which regulate personal contacts and maintain harmony in the society. Such valued social qualities participate in the definition of intelligence as further evidenced in the work by Serpell (1977) in Zambia. Rural Chewa-speaking adults were asked to select from among a small group of same-sex and age, children with whom they were familiar in their environment, the children they would prefer to take responsibility in various hypothetical situations. They were also asked to rank the members of the same group of children in order of intelligence. Serpell (1974) noted that the adult ratings of the children did not correlate highly with assessments of the children by a series of tests designed to tap cognitive skills and abilities promoted by their environments. Analysis showed that one reason for the low correlations was that these criteria included as a major component, cooperation and obedience, a component not sampled by the tests.

Thus Serpell (1972) suggests that these social qualities of cooperation and obedience valued by the adults must be regarded as part of the definition of intelligence in this society. He further suggested that before one can meaningfully evaluate the intelligence of any group of people, one needs to identify the meaning of that term in the society being considered. That is,

> *"...one needs to determine what qualities the individual needs to successfully deal with in his/her environment and then design tests to measure those qualities and then standardize the list for use within that particular environment" Serpell (1974).*

Indeed there is evidence (Serpell, 1972) that Zambian children have definite preferences regarding orientation to figures (e.g. vertical vs. horizontal), which could influence their copying of figures. While American children have similar preferences, they nevertheless produce fewer rotations, which Serpell (1976) suggests may be due to their following a convention, learned in school, of aligning figures with the edge of the paper. Another perceptual preference, which in this case seems particularly characteristic of African children, is seen in matching tasks presented on paper: African children in a number of studies have shown a much stronger preference than Western children for colour rather than form as a basis for matching geometrical shapes (Serpell, 1976). The point in relation to these findings is that, if such culturally biased preferences are not known and if the tasks are not set and performance is not evaluated in such a way as to allow for their expression, then the test content reflects an inappropriate bias in the specification of what intelligent behaviour in Africa is.

Serpell (1972) demonstrated the advantage gained by Zambian children in a copying task when they used the familiar medium of wire as contrasted with the paper-and-pencil version of the task. The Zambian children performed better in a wire-modeling version of the task than did English children, whereas the reverse was true on the paper- and-pencil version. This emphasizes the fact that when testing, a medium that is familiar should be used. This may include the language in which the test is given, the type of

items found in the test and the kind of tasks given to the child. These should be familiar to the child if a measure of the child's true performance is to be obtained.

Cole et al (1971), in attempting to investigate the use of logic in solving problems, set their Kpelle subjects what would seem to be a particularly appropriate form of problem for African examinees and one which rarely appears in Western tests, at least explicitly in this form: namely riddles. They found, however, that non-literate adults especially when responding to traditional type riddles, tended to rely on culturally biased notions of proper solutions rather than on a logical analysis of the relations among the elements of the riddle. Such responses, which would receive low scores for logic on Western criteria, surely must be taken as the expression of a particular cultural bias in the way intelligence is expected to be brought to bear in certain kinds of problem solving.

Research by Greenfield (1966) in Senegal pointed to the hypothesis that rural Wolof children may appeal to "action-magic" in their interpretation of Piagetian conservation problems; i.e. they explain the change in level of liquid when it is poured from one container to a differently-shaped container "...by attributing special powers to intervening human agents" (P.120), in this case, the tester who did the pouring. This perhaps illustrates the possibility that in many traditional African communities there is a spiritual/social dimension to the logic employed in problem solving. A dimension that is certainly very clearly evident in relation to problems of diagnosis and treatment of disease and one that does not exist in the western community and should be taken into consideration when conducting assessments.

Underlying the motives, skills, contents and materials emphasized by the Western approach to assessment of intelligence is a system of values, one characterization of which is offered by Vernon (1969) as follows:

"It...seems to be intimately bound up with puritanical values, with repression of instinctual responses and emphasis on responsibility, initiative, persistence and efficient workmanship".

This is reflected in intelligence tests by emphasis on speed more than deliberation, on cleverness more than wisdom, on competitive and individualistic rather than conforming and cooperative effort, on the materials more than the spiritual/social world (Vernon, 1969).

Although it is not unreasonable to assume that much of development during infancy is universal, it is also obvious that environmental factors influence the child's development from birth. For this reason, western findings cannot be extended to Africa without careful investigation (Ohunch & Otaala, 1981). Much variation exists in the social organization as well as physical and cultural environment. Even within the African continent, much caution needs to be taken in making general statements about their development. Principally, factors associated with the physical development of the child can be classified into primary and secondary categories. The latter include heredity, nutrition, the condition of the mother during pregnancy, the physical environment, aspects of the social environment, emotional and other psychological factors during the early stages of life, while the former include family size, the position of the particular child in the family, the socio-economic and educational level of the parents, the spacing of the children and the attitude of the particular society to children (Ohuchi & Otaala, 1981). Therefore, children of the same age in different societies or within the same society will be at different levels of physical development. To illustrate this, Durojaiye (1976:28) conducted a study and noted the following observations:

"In some countries in Africa, poor growth in children is noticed in the rainy season, and increases in weight and height are often good in the dry season. Poor growth in the rainy season may be due to inadequate food supply and increased risk of catching the infectious diseases transmitted by insects. Maternal care also suffers in this season as mothers are out in the field helping their husbands cultivate the land. Sleep often suffers because of insects and high humidity."

These findings are also noted by Dasen, Inhelder, Lavallee & Retschitzki (1978), who noted that

> *"weight is very sensitive to fluctuations in food supply and diseases whereas other anthropometric measures such as height and weight, head and chest and arm circumference reflect long-term effects of environmental conditions".*

The findings by Durojaiye, (1976) can be generalized to the Zambian setting where diseases such as cholera, dysentery, malaria and diarrhoea are much more prevalent during the rainy season and these consequently have an effect on the physical and intellectual development of the child.

An exploration study of the "Malawian Perspective on Children's Everyday Skills: Implications for Assessment" was conducted by Taylor & Francis in 2000. The aim of the study was to consider Malawian concepts of psychosocial development in children and to draw implications for the devising of an instrument to measure everyday skills in children. The method used to conduct the study involved key informant interviews, focus groups and other interviews; videotapes and observations of children were undertaken in a rural village in Malawi, with a focus on 4-5-year-olds. The results from this study indicated that a well adapted child of this age is expected to show first of all understanding of social responsibilities, with regards to respect, obedience, cooperation, ability to socialize with other children, ability to carry out 'children's chores', to know people by names, but more importantly how they are related to the child. The child should also show memory skills sufficient to carry messages. Such a child is described as intelligent or clever, characteristics important for survival. There is significant justification for the development of a culturally appropriate instrument to measure everyday skills in African communities.

The information provided in the preceding paragraphs has tried to provide insight into the use of psychological assessments in Africa, especially in relation to tests that have been imported from the West. It also emphasizes the importance of considering cultural differences when administering

psychological tests. This is built on the premise that due to differences in the environment, child rearing practices and different ways in which children are socialized in different cultures, performance on psychological tests will differ from culture to culture. An account of socialization practices in the Eastern part of Zambia has also been provided to set a context for the study.

RESEARCH CONDUCTED USING THE VINELAND ADAPTIVE SCALE

The Vineland Adaptive Behavior Scale has been and is still being used for various purposes, the main purpose being that of diagnosis. The following paragraphs highlight some of these studies.

Carter et al. (1995), presented Vineland Adaptive Scales Supplementary norms for Individuals with Autism. Autism is a developmental disorder marked by impairments in socialization, communication and preservative behaviour (American Psychiatric Association, 1994) and is often associated with cognitive impairment and deficits in adaptive functioning. Research has consistently demonstrated that children with autism have deficits in adaptive functioning more severe than their cognitive deficits. A study was therefore, conducted to investigate the correlates and predictors of adaptive functioning as measured by the VABS in high and low functioning children with autism and their age and nonverbal I.Q matched controls.

Norms presented included the following groups: a) mute children under 10 years of age b) children with at least some verbal skills under 10 years of age; c) mute individuals who are 10 years of age or older; and d) individuals with at least some verbal skills, who are 10 years of age or older. The sample consisted of 684 autistic individuals. The young children had a higher standard score than older individuals across all Vineland domains. In the communication domain, younger verbal children were least impaired, older mute individuals most impaired, and younger mute and older verbal individuals in the mid range. Verbal individuals achieved higher scores in Daily living skills than mute individuals. The expected profile of a relative weakness in socialization and relative strength in daily living skills was

obtained with age-equivalent but not standard scores. Results highlight the importance of employing Vineland special population norms as well as national norms when evaluating individuals with autism.

Thirty-five 9-year-old children with high functioning autism (HAD) were compared with 31 age-matched children with developmental language disorder (DLD), and 40 9-year-old children with low-functioning autism (LAD) were compared with 17 age-matched children with low IQ on adaptive functioning, IQ, autistic symptomology, and tests of language and verbal memory. Results indicated that both groups with autism were significantly impaired compared to their matched controls on socialization and daily living skills domains but not communication and that these impairments were pronounced in the high functioning autism group than in the low functioning autism. Adaptive behaviour was strongly correlated with autistic symptomology only in the high functioning autistic group. Regression analyses indicated that IQ was strongly predictive of adaptive behaviour in both low functioning groups but tests of language and verbal memory predicted adaptive behavior in the higher functioning groups. Results suggest that I.Q may act as a limiting factor for low functioning children but higher functioning children are impaired by specific deficits, including autistic symptomology an impaired language and verbal memory.

In another study conducted by Irwin, Carter and Briggs-Gowan (2002) to find out the social-emotional problems and competencies of toddlers who evidenced lag in expressive language without concomitant receptive language delays, maternal report and observation of 14 "late-talking" toddlers were compared with that of 14 control toddlers. Their social emotional functioning was assessed using the Vineland Adaptive Scale. Results indicated that late talker score was lower on the socialization domain thereby indicating that early lags in expressive language are associated with poor social-emotional adjustment. Intervention may ameliorate difficulty in linguistic and social-emotional functioning.

The Vineland Adaptive Behaviour Scales was also used in a study that was conducted to examine adaptive, emotional and family functioning in a well-characterized group of children and adolescents with obsessive-compulsive disorder (OCD) and to evaluate the influence of comorbid attention deficit hyperactivity disorder (ADHD) on the levels of impairment in various functional domains. The study group included 287 children and adolescents (191 boys, 97 girls) ages 7-18 years. Fifty-six subjects had a diagnosis of OCD only, 43 had both OCD and ADHD, 95 had ADHD and 93 were unaffected comparison children. Findings from the study indicated that children with OCD only were more impaired than were unaffected comparison subjects in most areas of adaptive functioning and emotional adjustment. Children with OCD plus ADHD had additional difficulties in social functioning, school problems and self-reporting depression. Impairment in daily living skills, reduced number of activities, and self-reported anxiety were uniquely associated with the diagnosis of OCD. Family dysfunction was associated with ADHD and with OCD. It was concluded that children and adolescents with OCD are impaired in multiple domains of adaptive and emotional functioning. When comorbid ADHD is present, there is an additional burden on social, school and family functioning.

In another study, Hayes (2005) examined gender and age effects on the relationship between adaptive behaviour and cognitive functioning in offenders with intellectual disabilities. The Vineland Adaptive Behaviour Scale and the Kaufman Brief Intelligence Test were administered to 202 volunteer participants accused or convicted of crime, 9% being of Australian indigenous background. The sample included males and females, juveniles and adults. Significant correlations were found between all subtests and domains on each instrument; for males under 18 years, correlations were lower, and significant correlations were absent between K-BIT Vocabulary and VABS sub domains and composite standard scores for this group. It was concluded that generally there is a convergence between assessment of adaptive behaviour and cognitive skills, across age ranges and for both genders.

Sparrow and Cicchetti (2001) cited a number of research findings and clinical issues pertaining to adaptive functioning of psychologically disturbed children. They included overall and specific adaptive behaviour patterns of several types of emotional disorders, some diagnosed before, and others after, the advent of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-11) criteria (American psychiatric Association, 1980). Disorders included atypical mild and reactive conditions (pre-dating DSM11) as well as the following DSM – 111 diagnostic categories: Anxiety disorder, atypical pervasive developmental disorder and infantile autism, In general, results indicated that 1) the severity of adaptive behaviour deficit tends to increase with the severity of the psychological disturbance 2) the usual pattern for disturbed children relative to appropriate controls is highest deficits in both socialization and maladaptive areas of assessment and 3) patterns of deficit in other major areas that is, communication and daily living skills tend to be less predictable.

Finally, Luthar, Woolston, Sparrow and Zimmerman (1995) examined adaptive behaviour among 126 psychiatrically hospitalized children. Intelligence has previously been found to serve protective functions for the maintenance of socially competent behaviors. In this study two constructs, in addition to intelligence, possibly associated with this protective effect, were examined: level of academic achievement and the distinction between internalized and externalized symptology. Sex effects were also examined. Of the variables examined, achievement showed the strongest associations with different types of adaptive behaviors. Further, achievement levels appeared to mediate the modest associations that were found for intelligence. Type of symptomology had significant associations with adaptive behaviors chiefly in the socialization domain, and these effects seemed largely independent of both I.Q and achievement.

The above paragraphs have attempted to highlight some of the studies on adaptive behaviour in Africa and other parts of the world. The subsequent chapter will now discuss the methodology.

CHAPTER THREE

METHODOLOGY

This chapter discusses the methods used to collect data. It briefly discusses the pilot study and the main study.

THE PILOT STUDY

A preliminary study was conducted in Lusaka. The study involved 20 teachers, who were asked to respond to the questionnaire. The rationale for conducting the pilot study was to establish if teachers were able to understand the items in the questionnaire. The pilot was also used to establish approximately how long it would take to respond to one questionnaire. This being an instrument that was validated outside Zambia, it was important to initially establish how long it would take to respond to it. This knowledge helped in planning for the actual study as it provided a rough estimate of how many teachers could be targeted in a day, thereby helping in establishing the amount of time I would need to collect the data.

A total sample of 20 teachers was selected from 4 schools in Lusaka, Northmead Basic, Jacaranda Basic, Ngombe basic and Olympia Basic schools. 2 children from each of the teacher's classes were randomly sampled. The teacher was then asked to respond to the VABS – teacher version, for the two children. Data analysis was used with Microsoft excel. Findings from this pilot indicated that the teacher VABS could safely be used for analysis.

THE FINAL STUDY

Data for the final study was collected between June and August 2004. The data was collected as part of the UNZA/Yale project. The procedures used for conducting the study were similar to those used in the pilot study. This is described in more detail under the data collection techniques.

STUDY DESIGN

The research design took the form of a survey. It involved both qualitative and quantitative methods through a semi-structured interview. The design was qualitative in that a lot of information was given about the interaction that places place between the students and the teachers. The interview was semi-structured in that although they were responding to the questionnaire, discussions were also included and information from these was noted. The teachers were expected to write their general comments about the student on a spare sheet of paper that was provided at the end of the questionnaire. It was quantitative in that when responding to the questionnaire, the teachers were expected to respond to the questions by indicating numbers, as follows:

2 – if the child regularly/usually performed the behaviour.
1 – if the behaviour was performed sometimes.
0 – if the behaviour was never performed
DK – if the teacher did not know whether the child performed the behaviour or not or
if the teacher was guessing.
N – if there was no opportunity for the child to perform the behaviour.

STUDY POPULATION

The study population comprised teachers and their pupils from both rural and urban parts of Chipata.

SAMPLE

The respondents were drawn from government schools only. The schools consisted of both urban and rural in order to enhance sample representativeness of the population. The teachers from various schools responded to a total of 484 questionnaires. The following table illustrates the number of teachers and pupils that were actually sampled and responded to the questionnaire.

Table 1: Distribution of schools, pupils and teachers

Category of school	Name of school	Number of children	Number of teachers
Urban	Hillside Basic	72	21
	Mpezeni Park Basic	54	6
	Magwero Standard	84	7
	Umodzi Basic	68	16
Rural	Chiparamaba Basic	56	6
	Mafuta Basic	55	5
	Chiwoko Basic	84	7

Table 2: Distribution of pupils and teachers according to schools

School	Number of pupils	Number of teachers
Hillside	72	21
Magwero	84	7
Chiwoko	84	7
Mafuta	55	5
Umodzi	68	16
Mpezeni	54	6
Chiparamba	56	6

SAMPLING PROCEDURES

In order to draw the sample, a list of all the rural and urban schools were compiled and classified as either rural or urban. The schools were then organized according to their distances from Chipata town. Random sampling was then used to select 8 schools, 4 urban and 4 rural. A list of the children in each of the selected schools was then obtained after which a random sample of 10 children was selected for each of the grades (1-7), 5 boys and 5 girls. While the children were doing the cognitive tests that were being administered to them, the teachers were responding to the Teacher Vineland for each of these children.

INSTRUMENT

The instrument used for data collection was the Teacher version of the Vineland Adaptive Behaviour Scale (VABS). This is a psychological instrument designed to assess disabled and non-disabled persons from birth to childhood in their personal and social functioning. It can be used to diagnose or identify individuals who have mental retardation, developmental delays, post-traumatic brain injuries, autism spectrum disorders (ASDs), Attention Deficit Hyperactivity Disorder (ADHD), hearing impairment and dementia/Alzheimer's disease thereby helping to determine eligibility or qualification for special services. It also provides valuable information for educational and rehabilitation or intervention programmes. The teacher rating form of the Vineland Adaptive Behaviour Scale caters for ages ranging from 3 through to 21 years. It contains the following five domains:

(a) Communication domain - contains the receptive, expressive and written sub-domains with a total number of 92 items.

(b) Daily Living Skills domain - contains the personal, domestic and community sub-domains with a total number of 68 items.

(c) Socialization domain - contains the Interpersonal relationships, play and leisure time and coping skills sub-domains with a total number of 54 items.

(d) Motor skills domain – contains the fine and gross sub-domains with a total number of 43 items.

The first page of the form contains the rater's instructions. This includes student information such as the student's name and grade, the student's identity number (for the purpose of differentiating the students when conducting data analysis), the school and the name of the grade teacher.
The questionnaire was administered to each of the teachers for each of their students. The ratings were as follows:

(a) 2 = student performs all of this behaviour regularly/usually.

(b) 1 = student performs part of this behaviour, or only performs it sometimes.

(c) 0 = student never performs this behaviour.

(d) E = if the teacher is only estimating or taking a best guess at the behaviour of a student.

(e) N/O = no opportunity.

DATA COLLECTION

The researcher, after conducting a random sampling of schools and pupils within the selected school according to their grades, approached the teachers to these pupils and explained the purpose of the study and their role in it. This was done in advance so as to give the teachers ample time to plan activities for their classes, while they were responding to the questionnaire, which was quite involving. It took approximately 45 to 180 minutes to respond to, depending on the number of pupils.

On the actual day of data collection, the researcher established rapport with the teachers from the various grades by first explaining the questionnaire to them. Information on the various domains and sub-domains as well as the rating instructions was given. The teachers were then asked if they had any questions. They were encouraged to ask questions whenever they experienced any doubt, as they responded to the questionnaire. The researcher ensured that she worked very closely with the teachers so as to attend to any questions they may have had while responding to the questionnaire. Teachers were not permitted to take the questionnaires home. This was done to ensure the presence of the researcher in order to note any problematic questions that were brought up by the teachers. This helped ensure that the teachers understood the questionnaire and responded to the questions accordingly.

On average, the researcher worked with teachers from at least 3 grades, depending on whether the teachers were having their classes in the morning or in the afternoon. Each grade had an average of 2 teachers. In cases were the teacher was responsible for more than one class, the researcher would return the following day to work with that teacher as this would mean the teacher would have to respond to the questionnaire for a different set of pupils. The researcher spent an average of 3 days working in each school.

DATA ANALYSIS

The SPSS Package was the main statistical instrument used in the analysis of quantitative data as follows:

1. Descriptive analysis of the Zambian data was conducted, that is the mean and standard deviations for each domain.
2. To determine the reliability of children on the Teacher Vineland Adaptive scale in relation to an already standardized version of the instrument. This was done using the Cronbach alpha and the split half reliability.

3. To select items within the Teacher Vineland Adaptive Scale that were poorly performed on by the Zambian population in Chipata. This was achieved by using the corrected item total intercorrelation.

4. To determine the validity of the VABS with Zambian population in comparison to an already standardized population in the United States of America. This was achieved by comparing the scores that were obtained with the scores indicated in the manual.

PROBLEMS ENCOUNTERED IN THE PROCESS OF DATA COLLECTION

The following are the major problems that were encountered during data collection:

Firstly, in most of the schools, there seemed to have been high levels of teacher absenteeism. This therefore meant that for some grades, data was not collected for the pupils that were sampled from these grades, as no other teacher knew the pupils as well enough as the class teacher to answer questions on that child. This inevitably reduced the sample size.

Secondly, in some cases, teachers who may not have completed the questionnaire the previous day were not reporting for work the following day thereby making it impossible to use the data on these questionnaires, as they were incomplete. This also had implications as it reduced the sample size.

Thirdly, in some instances, some teachers had been newly assigned to the grades and did not know enough about the pupils to confidently respond to the questions. This led to the "E" response, which meant that the teacher was only guessing the pupil's behaviour. This undoubtedly had implications for the outcome of the study.

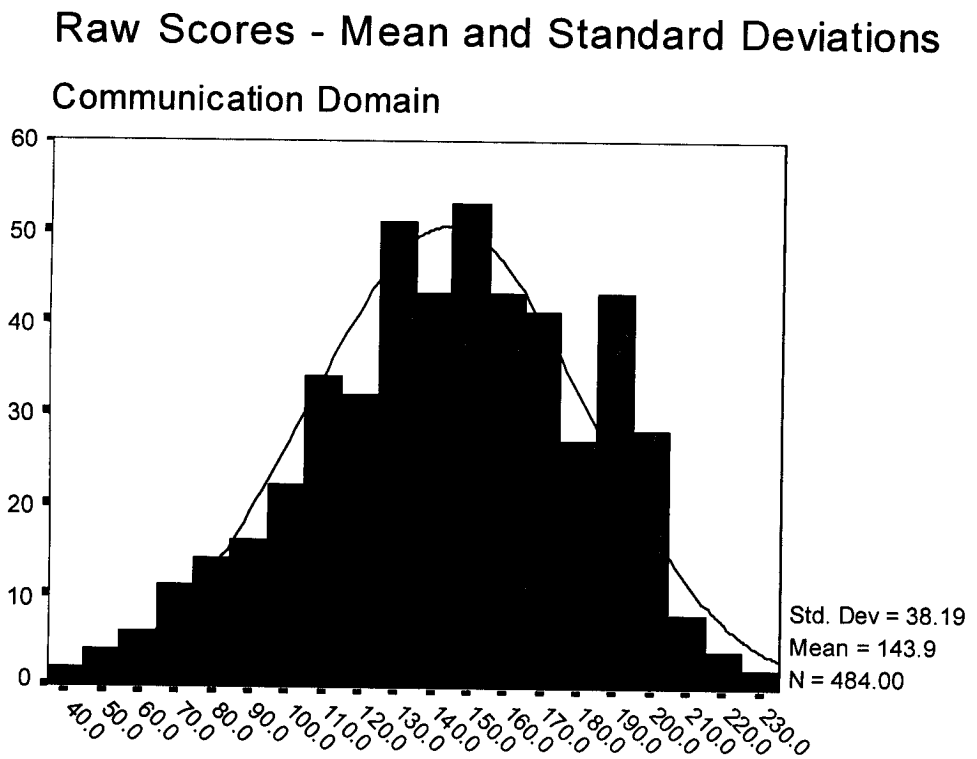
Fourthly, in some of the schools, the data collection process clashed with other activities, for example, Ministry of Health de-worming or vitamin administering programmes. Such activities involved both the pupils and their teacher. This therefore, meant that for certain grades in some of the schools, data was not collected, thereby having an impact of the sample size.

CHAPTER FOUR

RESULTS

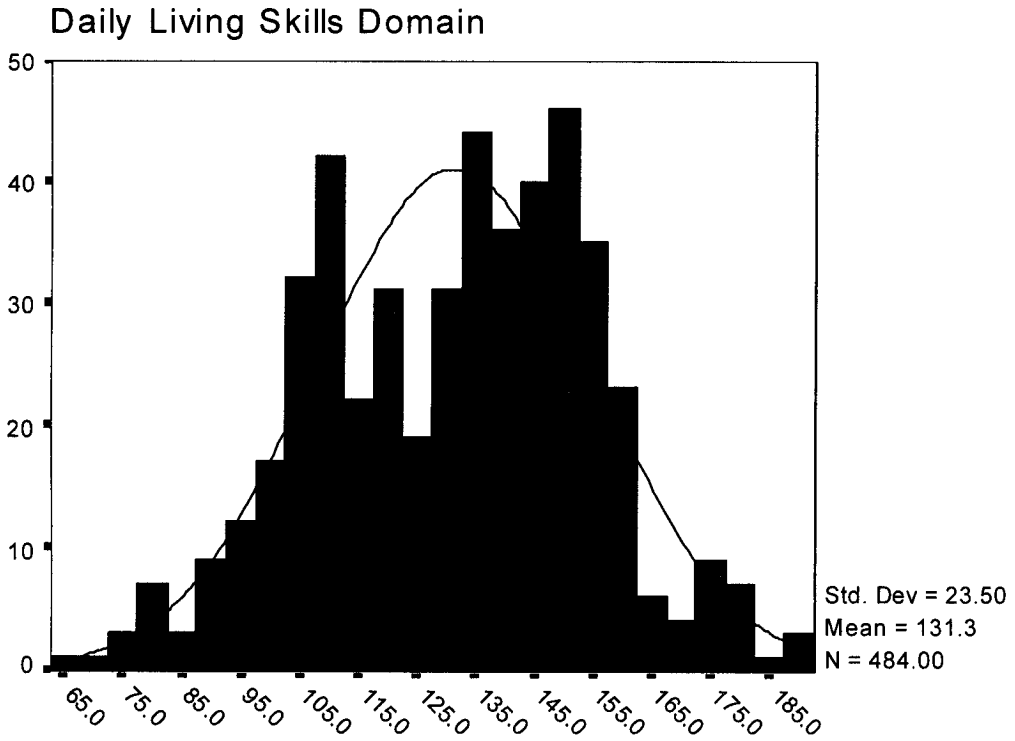
This chapter presents the results of the study. Results obtained for the various analyses are presented separately.

Figure 2: MEANS AND STANDARD DEVIATIONS



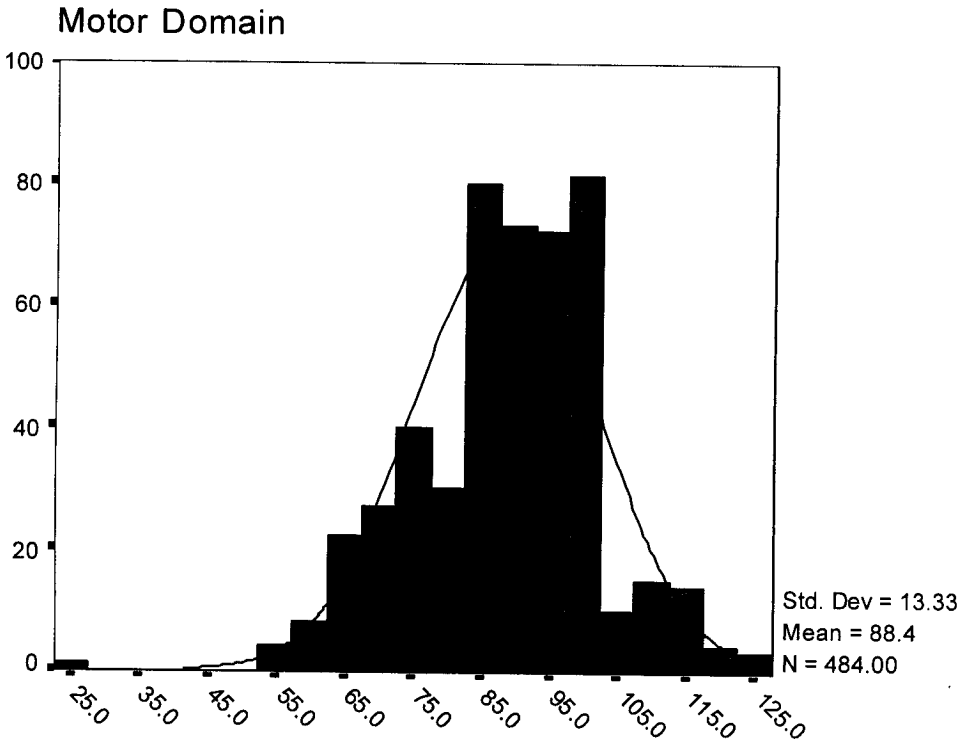
The above graph shows the descriptive analysis for the communication domain. Age range was between 7 and 18 years and N=484. The mean is 143.9 and the standard deviation 38.19. The graph shows there was a wide range in the results obtained by the students. Most of the results are concentrated in the middle. The table is positively skewed indicating that more students obtained higher scores in this domain.

Figure 3: RAW SCORES – MEANS AND STANDARD DEVIATIONS



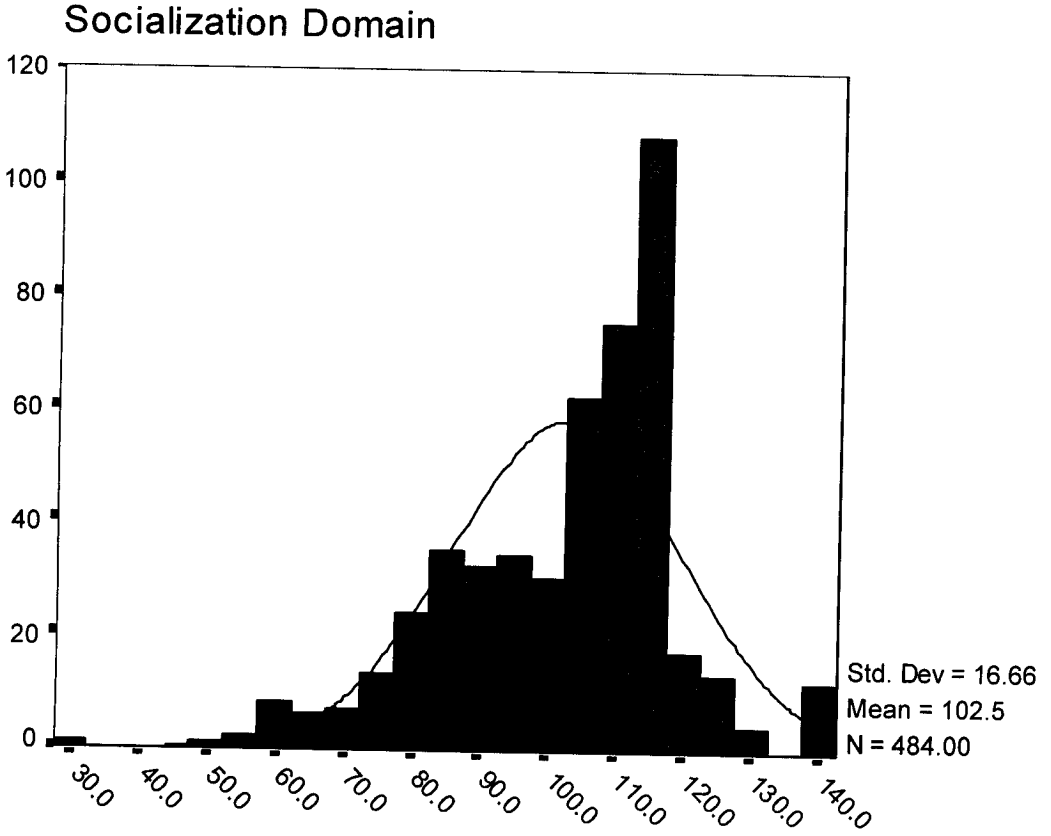
The above graph shows the descriptive analysis for the daily living skills domain. Age range was between 7 and 18 years and N=484. The mean is 131.3 and the standard deviation 23.50 and indicates the variability in the results of the sample. The graph shows there was a wide range in the results obtained by the students. Most of the results are concentrated in the middle. The table is positively skewed indicating that there more students obtained high scores in this domain.

Figure 4: RAW SCORES – MEANS AND STANDARD DEVIATIONS



The above graph shows the descriptive analysis for the motor domain. Age range was between 7 and 18 years and N=484. The mean is 88.4 and the standard deviation 13.33 and indicates the variability in the results of the sample. The graph shows that the students obtain a not so wide range of scores and a bunching of the results; this is further indicated by the low standard deviation and the high peak of the graph – a leptokurtic distribution The table is positively skewed indicating that more students obtained high scores in this domain.

Figure 5: RAW SCORES – MEANS AND STANDARD DEVIATIONS



The above graph shows the descriptive analysis for the socialization domain. Age range was between 7 and 18 years and N=484. The mean is 102.5 and the standard deviation 16.66 and indicates the variability in the results of the sample. The graph shows that the students obtain a not so wide range of scores; this is further indicated by the low standard deviation. The table is positively skewed indicating that more students obtained high scores in this domain.

From the tables above, it can be stated that the communication domain has the highest values of mean and standard deviation (mean= 143.9 and S.D =38.9) and the motor domain had the lowest values (mean= 88.4 and S.D= 13.33).

Means and Standard Deviations of sub-domain raw scores for the Zambian and American samples ages 7-18

From the results indicated in tables 3 and 4 as indicated in appendix C, it can be indicated that the mean scores across the sub-domains do not increase with age for the Zambian sample. Instead the values fluctuate across the age groups without producing a particular trend or pattern. Vineland mean scores are expected to increase with age because the older the child, the more the behaviors they can perform. This increase in the mean as the age increases is a trend that can be clearly noticed for mean scores in the American sample for all the sub-domains.

Inter-correlations for domains and sub-domains for both the American and Zambian samples ages 7-13

The tables 5 and 6 as in appendix C, show the inter-correlations for the domains and sub-domains for the Zambian and American samples for the age group 7 to 13 years. As already noted, the American sample is the standardized sample and was used as a basis for comparison.

From the tables, it can be stated that inter-correlations for sub-domains were much lower for the Zambian sample in comparison to the American sample except for inter-correlations between the expressive sub-domain of the communications domain and the academic sub-domain of the daily living skills domain where r = 0.62 for the Zambian sample and r = 0.54 for the American sample.

The expressive sub-domain and the written sub-domain of the communication domain also showed slightly higher inter-correlations in comparison to the American sample where r = 0.69 for the Zambian sample and 0.62 for the American sample.

The written sub-domain of the communication domain and the academic sub-domains of the daily living skills were also higher for the Zambian sample, where r = 0.65 for the Zambian sample and r = 0.49 for the American sample.

There also existed a slightly higher inter-correlation for the Zambian sub-domain for the written sub-domain of the communication domain and the community sub-domain for the daily living skills domain, r = 0.64 for the Zambian sample and r = 0.62 for the American sample.

The inter-correlation coefficient for the receptive and expressive sub-domains for the communication domain were equal to the American sample, for both r = 0.62. For the Zambian sample, there certainly exists, as is indicated from the results, greater correlations between the communication and the daily living skills domains. This highlights the functional relationship among adaptive behaviors in different sub-domains.

The remaining inter-correlations for the instrument were generally lower for the Zambian sample. This can be seen by the inter-correlation coefficients between the socialization and daily living skills domain, in comparison to the American sample.

Inter-correlations for domains and sub-domains ages 14-18 and 14-21

Table 7 and 8 in appendix C show the inter-correlations between domains and sub-domains for ages 14-18 for the Zambian sample and 14-21 for the American sample. The split-half reliabilities and Cronbach alpha were used to calculate the internal consistency.

In the daily living skills domain, inter-correlation coefficients were higher for receptive sub-domain of the communication domain and the personal sub-domain of the daily living skills domain, r = 0.54 and r = 0.32 respectively.

The receptive sub-domain of the communication domain and the academic sub-domain of the daily living skills domain, r = 0.68 for the Zambian sample and r = 0.36 for the American sample.

The receptive sub-domain of the communication domain and the community sub-domain of the daily living skills domain, r = 0.43 for the Zambian sample and 0.31 for the American sample.

The expressive sub-domain of the communication domain and the academic sub-domain of the daily living skills domain, r = 0.69 for the Zambian sample and r = 0.42 for the American sample.

The written sub-domain of the communication domain and the academic sub-domain of the daily living skills domain, r = 0.80 for the Zambian sample and r = 0.44 for the American sample.

The personal and academic sub-domains of the daily living skills were also high for the Zambian sample, r = 061 for the Zambian sample and r = 0.52 for the American sample.

Likewise for the academic and community sub-domains of the same domain, r = 0.57 for the Zambian sample and r = 0.45 for the American sample.

For the communication domain, expressive and receptive sub-domains had higher inter-correlation coefficients for the Zambian sample r = 0.77 and r = 0.52 for the American sample.

Inter-correlation coefficients were also higher for the socialization domain and communication domains as follows; receptive sub-domain of the communication domain and the interpersonal sub-domain of the socialization domain, r = 0.66 for the Zambian sample and r = 0.40 American sample.

Receptive sub-domain of the communication domain and play and leisure of the socialization domain, r = 0.50 for the Zambian sample and r = 0.35 for the American sample.

Receptive sub-domain of the communication domain and the copying skills sub-domain of the socialization domain, r = 0.53 for the Zambian sample and 0.44 for the American sample.

Expressive sub-domain of the communication domain and the interpersonal sub-domain of the socialization domain, r = 0.62 for the Zambian sample and r = 0.44 for the American sample.

Written sub-domain of the communication domain and interpersonal sub-domain of the socialization domain, r = 0.61 for the Zambian sample and 0.42 for the American sample.

Written sub-domain of the communication domain and play and leisure sub-domain of the socialization domain, r = 0.54 for the Zambian sample and r = 0.37 for the American sample.

Personal and academic sub-domains of the daily living skills, r = 0.61 for the Zambian sample and r = 0.52 for the American sample.

The academic and community sub-domains of the daily living skills domain, r = 0.57 for the Zambian sample and r = 0.45 for the American sample.

Personal sub-domain of daily living skills domain and interpersonal sub-domain of the socialization domain, r = 0.40 for the Zambian sample and r = 0.26 for the American sample.

Personal sub-domain of the daily living skills domain and play and leisure of the socialization domain, r = 0.62 for the Zambian sample and r = 0.28 for the American sample.

Academic sub-domain of the daily living skills domain and the play and leisure sub-domain of the socialization domain, r = 0.58 for the Zambian sample and r = 0.34 for the American sample.

Community sub-domain of the daily living skills domain and the play and leisure sub-domain of the socialization domain, r = 0.61 for the Zambian sample and r = 0.56 for the American sample.

Community sub-domain of the daily living skills domain and the coping sub-domain of the socialization domain r = 0.71 for the Zambian sample and r = 0.51 for the American sample.

Interpersonal and play and leisure sub-domains of the socialization domain r = 0.75 for the Zambian sample and r = 0.55 for the American sample.

Interpersonal and copying sub-domains of the socialization domain r = 0.75 for the Zambian sample and r = 0.37 for the American sample.

Play and leisure and coping sub-domains for the socialization sample, r = 0.80 for the Zambian sample and r = 0.42 for the American sample.

INTERNAL CONSISTENCY: SPLIT HALF RELIABILITY COEFFICIENTS AND ALPHA CRONBACH FOR DOMAINS AND SUB-DOMAINS BY AGE 7-18.

Tables 9 and 10 in appendix C show the values for the reliability coefficients.

Reliability coefficients were particularly low for age 7 across the sub-domains particularly in the receptive sub-domain of the communication domain with a value of 0.16 and the personal sub-domain of the daily living skills with a value of 0.23.

Generally the split half reliability for all age groups across the domains was lower for the Zambian sample when compared to the American sample. Overall the sub-domain reliability estimates are moderate to high for the American sample, with approximately 75% having a value of 0.75 or greater. This is in contrast with the Zambian sample with only 32% have a value of 0.75 or greater.

Reliabilities for the American sample, at ages 6 through 11 average sub-domain reliabilities are in the low 0.80 for almost all domains in the American sample. In the Zambian sample only 51% had a value < 0.70.

For the Communication domain, 10% of the reliability coefficients had values < 0.70 for the Zambian sample and only 1% of the American sample had values < 0.70.

The daily living skills domain had 31% of values < 0.70 for the Zambian sample while the American sample only had 3% of the values < 0.70.

The socialization domain for the Zambian sample had 10% of the reliability coefficients with values < 0.70 and 0% had < 0.70 for the American sample.

For the Zambian sample split-half reliability coefficients for the daily living skills sub-domains were lower than all the other domains while the socialization and communication sub-domains had moderate split-half reliability values.

However, in general comparison to the American sample, reliability coefficients for the Zambian sample were much lower.

The alpha Cronbach values range between 0.79 and 0.89 for the Zambian sample and 0.94 and 0.97 for the American sample. This indicates that values were lower for the Zambian sample. The average alpha value for the Zambian sample is 0.85 with 88% having values > 0.85. The average value for the alpha Cronbach value for the American sample is 0.95 with 63% having values >.95.

Total item Statistics

Table 11 in appendix C shows the percentage of items in the instrument that obtained an inter-item correlation value that was < .15.

CHAPTER FIVE

DISCUSSION

MEAN SCORES FOR THE ZAMBIAN SAMPLE

Items in the Vineland are arranged in developmental order, meaning that the older the child, the more the items that can be answered about the child. Individuals acquire adaptive behaviors in a number of areas over their life span and this should be indicated by a progression in the sub-domain mean scores. Generally, mean sub-domain scores should increase rapidly during the first few years and continue to increase, but at a slower rate, up through late adolescence, when the rate of increase tapers off (Sara, Cicchetti & Balla, 2005).

Furthermore, the size of the increase in scores from one age-group to the next reflects the number of important adaptive behaviors and skills that individuals typically develop at a given age. Since for the Zambian sample this trend was not present it can be assumed that there was a problem with either the administration process, the quality of items or their fit to the sample being measured. The following paragraphs will explain these three cardinal points in more detail.

During the administration process, the teacher was expected to respond to all the questions regardless of the age of the child or the sex. Questions in the Vineland are arranged in such a way that they cater for all behaviors that should be exhibited by children from birth to 90. This therefore, meant that questions for the younger age group were being responded to for the older children and questions for the older age group were being responded to for the younger age group. Therefore, all questions were being administered for all the children regardless of whether the child could perform the behaviour or not, depending on the age.

Secondly, although there were some questions that related to the child's academic performance, many of the questions were related to behaviors that the child exhibits in the home environment. This was a disadvantage for the teachers as they do not live with the children and would not be able to know for sure whether the child exhibits the behaviour or not and how often. This could therefore mean that the responses that were being provided by the teachers were more guess work than accurate information.

The above notion is supported by reaserch conducted on teacher ratings, which emphasizes that although there are reports of the utility of teacher ratings in differentiating children with behavior problems (Atkins, Pelham, & Licht, 1989; Milich & Fitzgerald, 1985; Milich & Landau, 1988), there is also evidence of a lack of correspondence between teacher ratings and objective classroom observations. For example, Blunden, Spring, and Greenberg (1974) reported that children who behaved impulsively were rated by teachers as showing other behavior problems (e.g., restlessness, poor concentration, poor sociability) that were not substantiated by direct observation. Vincent, Williams, Harris, and Duval (1981) reported relatively poor agreement between teachers' ratings and direct observations of normal and hyperactive children. They suggested that the lack of correspondence was related to the influence of "negative halo effects" on teachers' ratings. In summary, several different studies have reported inaccuracies in teacher ratings, related perhaps to the influence of unidirectional halo effects and rating scale characteristics, although few attempts have been made to investigate these issues directly.

RELIABILITY COEFFICIENTS – Internal consistency

In calculating the reliability of an instrument, the main objective, in relation to this study was to find out the internal consistency of the instrument by estimating how well the items that reflect the same construct yield similar results and this is done by looking at how consistent the results are for different items of the same measure. The split-half reliability is the measure of reliability that was used in this particular study.

The results indicate that split half reliability for all age groups across the domains was lower for the Zambian sample when compared to the American sample. Overall, the sub-domain reliability estimates are moderate to high for the American sample, with approximately 75% having a value of 0.75 or greater. This is in contrast with the Zambian sample where only 32% have a value of 0.75 or greater. This shows that there existed greater consistency of scores in the American sample than there was for the Zambian sample.

The poor results may be attributed to the manner in which the questions in the instrument have been phrased. It is possible that teachers may have had problems interpreting the meaning of the sentences or words thereby affecting the manner in which they interpreted the behaviour that was being asked about in the question. It is important to note here that some of the questions were phrased with words that are not commonly used in a rural setting for example, Chipata. Furthermore, some examples that were given in some of the questions were not culturally appropriate to the environment in Chipata, which would have made it difficult for the teachers to interpret the behaviour asked about in the item. Therefore, it can be stated that the low reliability coefficients for the Zambian sample can be attributed to the lack of comprehension of the items on the part of the teachers. The lack of contribution aside from being attributed to the culturally inappropriate items and examples can also be attributed to the level of professional training that these teachers have received. Many of the teachers had qualifications that ranged from grade 12 certificates, teacher training certificates to diplomas depending on the school.

Another contributing factor to the low internal consistency is the lack of basal and ceiling rules for the instruments. Due to the lack of basal and ceiling rules for this particular version of the Vineland, teachers continued providing responses even for behaviors that were not applicable to that particular age group either because they were either to young or too old for the behaviour being asked. This disadvantaged the lower age groups because they were unable to perform the behaviors that the older age groups could perform and

were therefore, receiving negative responses. This may have caused a fluctuation in the responses that were being provided by the teachers.

VALIDITY COEFFICIENTS

The validity of an instrument is concerned with how well it measures what it is supposed to measure. As alluded to in the literature review, there are different types of validity but the one mainly concerned with this study is construct validity. This is concerned with the relationship of the measure to the underlying attributes it is attempting to measure (Trochim, 1991). Is the instrument measuring the construct it purports to measure, in this case, adaptive behavior?

Results indicate that firstly, in comparison to the American sample, inter-correlation coefficients for the Zambian sample are much lower than the American sample and secondly, even without providing a comparison, correlation coefficients were generally low for the Zambian sample across all age groups and domains. This poor performance may be attributed to a variety of reasons but the most outstanding of these was the level of knowledge the teachers had of the children to provide adequate responses on these children and the quality of the items in the instrument.

Since most of the questions that were being asked in the questionnaire related to the child's home environment, teachers could only comfortably respond to questions or behaviors that directly related to the child's academic performance or those behaviors that they observe children perform within the school environment. This means that they indicated DK-"don't know" or 0 – "never performs the behaviour". Unfamiliarity with the child's life as a whole may have attributed to this poor performance.

Serpell (1993) emphasizes the importance of formulating items in an instrument so they truly capture the construct the instrument intends to measure in a particular population by stating,

"...one needs to determine what qualities the individual needs to successfully deal with his environment and then design tests to measure those qualities and then standardize the list for use within that particular environment".

In light of this, it can be stated that the poor performance could be as a result of the items not tapping into elements of adaptive behaviour as experienced and exhibited by the population in the Eastern part of Zambia. The results also indicate that there are some inter-correlations coefficients between the sub-domains that are slightly higher than the American sample. This may be attributed to the fact that items within those particular sub-domains tapped adaptive behaviour in children from the Eastern Province more than it did for the American sample. It is important to mention here that this trend existed only for the lower age groups and for a few sub-domains.

The administration process may have also contributed to the low performance on the test. Teachers were expected to provide responses for more than one child at a time. On average, each teacher was simultaneously providing responses for 6 children. This may not only have proved tiring, but also very confusing for the teacher, who for each item had to reflect on 6 to 10 children simultaneously. When considering this point, it is important to remember the fact that these teachers have an average of 3 classes that they teach in a day, some of whom attend the morning, midmorning or afternoon classes. Furthermore, these classes are overcrowded with an average of 88 pupils in each class (Chituwo, 2005)

Another factor that could have affected the validity of the instrument involves the test itself. The subsequent points elaborate on this:

(a) The length of the test – in total, teachers had to respond to a total of 306 questions for each child. This may have had an impact on the quality of the responses by the teachers as most of them wanted to get the work over and done with. This attitude towards the test may

have had an effect on the quality of the responses that were provided by the teachers. In total the instrument has a total of 257 items.

(b) Test items – some of the items on the test were culturally inappropriate, for example, items that asked about the child's computer skills, use of telephone, and other technology that a child in rural Zambia has never been exposed to, whether at home or at school. This is clearly seen from the inter-item correlations in table 3 of the results section. Some of the items highlighted are items that include technology that children, even teachers in most government schools, especially in the rural areas, are not exposed to for example, computers, microwaves, video games to mention but a few.

(c) The manner in which the questions where phrased may have made it difficult for the teachers to understand them thereby affecting their responses. Most primary school teachers, especially in rural areas are either grade 12 leavers, or will have obtained a certificate or diploma in teaching. This limited level of education may have made it difficult to understand some of the items because of the words and the manner in which the questions were phrased. Suffice to indicate that they were designed for teachers in the United States. It is possible that this lack of understanding may have created feelings of intimidation on the part of the teachers and therefore, instead of asking where they did not have understood, they may have instead chosen to passively respond the questionnaire. Issues of testing conditions and attitude of the testee towards the tester and the instrument as a whole raises serious concerns related to validity and reliability of the data and the conclusions drawn from the study. In relation to this point, Anderson (1976:155), states "...it appears that the actual testing situation and the testees reaction to it and to the tester are very important variables, therefore the test situation and the interactions of the participants should be taken into account." He further states that this is particularly true if the test is administered in a foreign language. This highlights the fact that when administering tests, it should be done in a context

within which the interests of the testee are taken into account, and the total situation is related to the outcome of the tests and in this instance the use of a foreign language may have disadvantaged the testees to the extent that it may have had a negative impact on the outcome of the test.

Up and above all the points highlighted above, it is an important fact to acknowledge that though the Vineland tries to measure universal adaptive behavior, there are some components which may be considered important aspects of adaptive behavior in the rural setting of Chipata that were not captured by the instrument. The instrument places much emphasis mostly on the behaviour of the individual child. Unfortunately, the life of the rural child is one that is surrounded and molded by the community in which the child lives. Silvey (1963) alludes to this point when he suggests that in African rural life, social relationships were the embodiment of authority rather than based on individual merit. The characteristic roles were expressed through proverbs and tales". This still holds in the Chipata rural community, which does not place much value on individualism and therefore, if the behaviour of a child is to be accurately assessed then the community, at some point should be made reference to in order to provide a more comprehensive assessment. Serpell (1972) in his research with the Chewa of the Eastern Province of Zambia concludes that amongst the Chewa of the Eastern province "...the disposition to use one's capacity in a socially productive way forms an integral part of which is valued as intelligence" (P.207). Within any given community, however, there is a tendency for some individuals to show a remarkably wide range of adaptability. The fact that the range of environmental conditions to which individuals must adapt is very different in different communities means that the qualities of mind constituting a particular construct in each community are likely to be correspondingly different. Thus, in a society like that of the Eastern province of Zambia, which in comparison to modern, western industrial society has little technology and attaches relatively great importance to social interactions, it is quite plausible to suppose that adaptive behaviour will be specified by the community and,

rightly so, as including a greater component of cooperative disposition than is the case of Western society's definition of adaptive behaviour.

Item total Statistic.

Table 11 in the appendix indicates the items that received an inter-item correlation of < .15. This indicates that the correlation with the other items within that particular sub-domain was very low. Having looked at the items, this is not a surprise. All of these items tend to be culturally inappropriate and yet they were scored as, hence the low values. Questions especially referring to technology received the lowest values. Items with such low values tend to affect the reliability of the instrument by lowering the reliability coefficient and it is usually recommended that such items be dropped or deleted, although there are exceptions to this rule (Litwin, 2002).

CHAPTER SIX

INTRODUCTION, CONCLUSIONS, RECOMMENDATIONS AND SUGGESTIONS FOR FURTHER RESEARCH, BIBLIOGRAPHY AND APPENDICES

INTRODUCTION

The dissertation aimed at establishing whether or not the teacher Vineland can be used to assess adaptive behaviour in Zambian primary school children of ages 7 to 13 in Chipata. Schools included 4 rural and 3 urban schools. Adaptive behaviour in this dissertation was defined as the effectiveness or degree with which individuals meet the standards of personal independence and social responsibility expected from age and cultural group. The performance of these children was then compared to the performance results of a standardized sample in America. A reliability and correlation analysis as well as means and standard deviations were calculated and results compared to that of the American sample.

CONCLUSION

From the analysis conducted and the results obtained it can be deduced that the performance of the Zambian children on the instrument was generally lower than that of the American sample. Items in the instrument increase with difficulty and scores obtained by the child depends on the age of the child. The older the child, the higher the scores should be. This trend can easily be seen for the American sample. This lack of progressive increase in the raw scores is indicative that something about the instrument was not right. However, the reliability scores, both split half and alpha cronbach indicate that there was consistency in the results obtained, although they were much lower than the American sample. Generally, reliability of the instrument was good and this is according to the criteria used in the manual by Citchetti (1994) in which reliability score <.70 = poor, .70-.79 = fair, .80-.89 good and

>.90 is excellent. Zambian alpha reliability scores fall within the .80-.89 range.

From the correlation results obtained, it can be concluded that correlation coefficients were low for both domains and sub-domains. This is true even when the results are compared to the American sample. The correlation coefficient measures the reliability of the instrument that is, if the instrument is measuring what it purports to measure. From the results obtained, it can be concluded that because the reliability coefficients are very low, especially when compared to an already standardized sample, that the instrument is not a valid measure of adaptive behaviour in the Eastern province of Zambia.

From the above explanation it can be deduced that although the Vineland adaptive Scale – Teacher version has been standardized and is widely used to assess adaptive behaviour in the United States and other parts of the world, it does not, in its existing format, adequately assess adaptive behavior is the Eastern part of Zambia.

Content validity is concerned with sample-population representativeness. i.e. the knowledge and skills covered by the test items should be representative of the larger domain of knowledge and skills. Inconsistency in students' performance across tasks does not invalidate the assessment. Rather, it becomes an empirical puzzle to be solved by searching for a more comprehensive interpretation (Moss, 1994).

In the Zambian sample the instrument has proved moderately reliable, that is, there appears to be consistency in the scores obtained by the sample but in the case of validity, the instrument does not measure what it is supposed to measure, which is adaptive behaviour in children from the Eastern part of Zambia and although reliability is a necessary component in psychological assessment, it is not sufficient for validity (Perkes, 2000).

The results from this study clearly highlight a commonly known, yet unacknowledged fact, which is, that foreign instruments used for assessment

in Zambia should first be validated and standardized within the Zambian setting before they are administered to the Zambian population and that Zambian psychologists should work on constructing tests specifically tailored for use in Zambia.

RECOMMENDATIONS

In light of the above, the following are recommendations that could assist in making the instrument more useful to the Zambian setting:

(a) Items that are not culturally appropriate should be either removed from the questionnaire or replaced by more culturally appropriate ones. This can be done by studying in depth the life of the people in Eastern province, Chipata in particular and learning about adaptive behaviour in this setting and what the community considers important. This knowledge would help to greatly enhance the quality of the instrument and make it more useful in Chipata. This should be done for both rural and urban settings, as there exists some differences in the life style of the people in these two settings. In order to produce specifically appropriate items for Zambia, an understanding of the social values of the community is required. These items can be identified by the low inter-item correlation values.

(b) The length of the questionnaire is something that should be taken into account. While it is true to state that the instrument is rich in content, that is it covers adaptive behaviour across virtually all age groups and the more items an instrument has, then the greater the reliability, the teachers are not capable of answering all of these questions because of the limited time they spend with the child in the school. To deal with this problem, two questionnaires measuring adaptive behaviour should be constructed. One for the teachers, who will be in a better position to respond to questions related to the child's adaptive behaviour is the school environment and one for the parent who will better respond to questions related to the child's adaptive behaviour in the home

environment. This will not only reduce the length of the questionnaire for both parents and teachers, it will also help ensure that the questions focus on behaviors that both teachers and parents know about the child and can easily observe the child perform.

(c) Some items in the questionnaire measure universal behaviour. These are common behaviors that children are expected to perform regardless of where in the world they live and certainly apply to the child in the Eastern province. For some of these questions, teachers gave negative responses because they could not understand the meaning of the item. This means that some questions will need to be rephrased and made a lot simpler for the average Zambian primary school teacher to understand. This should also include examples given in these questions, most of which are culturally inappropriate.

(d) Translating the instrument into Nyanja is another way of making the instrument more useful in Chipata. It would definitely help the teachers understand the questions better thereby making them more confident when providing the responses. Worth mentioning here is that the instrument should be translated by a psychologist instead of an ordinary translator who may just conduct a direct translation from English to Nyanja without capturing the psychological construct being measured.

(e) In terms of the administration process of the instrument, teachers should be given ample training in order to understand the instrument better. This can be done a day before the teachers are expected to respond to the questionnaire so that they have enough time to ask questions and make clarifications on items they may not be able to understand.

(f) Also the number of children the teachers work with at a time should be drastically reduced to a maximum of two children at a time. Responding for 10 children at a time, notwithstanding the length of the

questionnaire, can be very tiring and stressful for the teachers. When this stress sets in, it creates or builds up a negative attitude to the entire administration process, which in turn, compromises the quality of responses that are provided by these teachers.

(g) A greater effort should be made by psychologists in Zambia to construct instruments that will be specifically tailored for use in Zambia. Psychologists who know and understand the life style, values and norms of individuals living in a particular society and who themselves share these norms should be responsible for constructing the psychological instruments.

(h) Ceiling and basal rules for the instrument should be introduced.

SUGGESTIONS FOR FURTHER RESEARCH

This study was conducted in a selected part of Zambia; Chipata in the Eastern province and therefore, findings can only be generalized to this region. In order to get a more comprehensive view on the performance of Zambian children on this instrument, the instrument will need to be administered to children in the other provinces of Zambia. A study of this nature will prove very valuable, as it will help obtain a more detailed understanding of adaptive behaviour of Zambian children in general.

Even within the Eastern Province, studies could be conducted in other parts such as Katete district, Lundazi, to mention but a few and a comparison in the performance of children from various areas of Eastern Province can be made and the commonalities as well as differences highlighted.

Furthermore, a study with the same sample using a version translated to Nyanja will prove very helpful. This will aid in determining whether the invalidity of the instrument was mainly due to the lack of understanding of the various behaviors that were asked in the questionnaire or whether it was just

that the items were culturally inappropriate and therefore, not performed by Zambian children.

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APPENDIXES

Appendix A

Parental Consent Form

Name of Child:.....

Age:..... Sex: ..... Admission number: .....

School:.....

Zone / District:.....

School code / EMIS number: .....

It has been decided to establish a program to understand how children in Zambia learn. Our goal is to improve the services provided to school children in school. The University of Zambia, in collaboration with colleagues from Yale University in the United States, is conducting a survey of learning abilities and difficulties. We are talking both to children who currently attend school and to those who don't. By participating in this study, you are not committing yourself or your child to go to school.

Your village has been selected to take part in this program and we request your permission to allow your child to take part. Should you agree, your child will be asked to take tests that will help us understand how s/he learns best. The tasks are similar to things that children do in school and to tasks that they need to accomplish in their daily lives in your village.

We will also ask your child to let us take four photographs of his or her head and hands. We will take a fifth portrait photograph that we will give to your child to keep.

In addition, we will measure and weigh your child, take a picture of your child, and collect a sample of saliva. The saliva collection is done by using a brush [show brush] that we sweep on the inside of the cheek. The purpose of collecting the saliva and photographs is to enable us conduct a thorough analysis for learning disabilities. There are no expected risks to your child's participation in this program.

All of your child's answers will be confidential and will not be shared with his / her teachers or the village chiefs. We will use the information your child provides to improve the way students are instructed in schools in Zambia.

If your child is identified as having difficulties with learning, we will return to you and ask for your permission to collect additional information from you and your child. By signing this document, you are also agreeing to allow us to contact you again about additional participation.

Declaration by parent / guardian:

I give my consent for my child to take part in the student learning program. I understand that I am free to withdraw my child from the study at any time.

Name of parent:.....Signature / Mark: .....

For any queries, please contact the University of Zambia, Research Ethics Committee P. O. Box 50110 Ridgeway Campus, Lusaka. Tel: 260-1-256067 Telefax: 260-1-250753 E-mail: unzarec@zamtel.zm

Appendix B

Vineland Teacher Form

For each item, indicate whether:

1. **Teachers will understand the content and purpose of the question. Is the question worded in a way that teachers will understand in English? If the item is worded appropriately, simply write 'YES' in the box. If the item is NOT worded appropriately, explain why it is inappropriate and provide alternative wording, if possible.**

2. **Children in Zambia will have exhibited the behavior described in the question. Does the question address a behavior that Zambian children will have done? For this question, it is not necessary that all children, or even a majority of children will have exhibited the behavior. It is only important that the behavior make sense, and is possible within the Zambian culture. If children may have exhibited the behavior, simply write 'YES' in the box. If children will NOT have exhibited the behavior, explain why.**

3. **The question can be translated directly into Nyanja. Are the words and concepts in the question translatable directly into Nyanja? If the words and concepts do have Nyanja equivalents, simply write 'YES' in the box. If the words and concepts do NOT have Nyanja equivalents, explain why the question (or part of the question) is not translatable and provide alternative wording, if possible.** **It is not necessary to actually do the translation of these items. For now, we just need to know if it is possible.**

COMMUNICATION DOMAIN
Receptive Subdomain

1. Demonstrates understanding of the meaning of *no*, or word or gesture with the same meaning (for example, stops current activity briefly).	
2. Demonstrates understanding of the meaning of *yes*, or word or gesture with the same meaning (for example, continues activity, smiles, etc.).	
3. Points to at least 3 major body parts when asked (for example, nose, mouth, hands, feet, etc.).	
4. Points to common objects in a book or magazine as they are named (for example, dog, car, cup, key, etc.).	
5. Points to at least 5 minor body parts when asked (for example, fingers, elbows, teeth, toes, etc.).	
6. Listens to instructions (that is, looks at speaker and generally refrains from interrupting).	
7. Follows instructions with 1 action and 1 object (for example, "Bring me the book"; "Close the door"; etc.).	
8. Listens to a story for at least 5 minutes (that is, sits quietly and pays attention).	
9. Follows instructions with 2 actions or an action and 2 objects (for example, "Bring me the crayons and the paper"; "Sit down and eat your lunch"; etc.).	
10. Follows instructions in "if-then" form (for example, "If you want to go outside, then put away your things"; etc.).	
11. Follows 3-part instructions (for example, "Take out a pencil and paper, print your name at the top, and look up when you are ready to begin"; etc.).	
12. Follows instructions or directions heard 5 minutes before (for example, "When you finish, put the paint away"; etc.).	
13. Listens to an informational talk for at least 15 minutes.	
14. Listens to a story or fun presentation for at least 30 minutes (for example, a puppet show, a play, etc.).	
15. Listens to an informational talk for at least 30 minutes.	
16. Understands sayings that are not meant to be taken word for word (for example, "Button your lip"; "Hit the road"; etc.).	

Expressive Subdomain

1. Makes sounds or gestures (for example, waves arms) to get your attention.	
2. Makes sounds or gestures (for example, shakes head) if he or she wants an activity to stop or keep going.	
3. Points or gestures to indicate preference when offered a choice (for example, "Do you want this one or that one?"; etc.).	
4. Repeats or tries to repeat common words immediately upon hearing them (for example, *ball*, *car*, *go*, etc.).	
5. Says one-word requests (for example, *up*, *more*, *out*, etc.).	
6. Names at least 3 objects (for example, bottle, dog, favorite toy, etc.).	
7. Names at least 10 objects.	
8. Uses phrases with a noun and a verb (for example, "Katie stay"; "Go home"; etc.).	
9. Says at least 50 recognizable words.	
10. Uses negatives in phrases or sentences (for example, "Me no go"; "I won't drink it"; etc.); grammar is not important.	
11. Says at least 100 recognizable words.	
12. Says first and last name when asked.	
13. Says correct age when asked.	
14. Uses simple words to describe things (for example, *dirty*, *pretty*, *big*, *loud*, etc.).	
15. Tells about experiences in simple sentences (for example, "Ginger and I play"; "Dan read me a book"; etc.).	
16. Asks questions beginning with *what* or *where* (for example, "What's that?"; "Where doggie go?"; etc.).	
17. Uses regular plural nouns (for example, "Two dogs"; "My toys"; etc.).	
18. Uses *in*, *on*, and *under* in phrases or sentences (for example, "Ball goes under chair"; "Put it on the table"; etc.).	
19. Uses present tense verbs ending in *ing* (for example, "Is singing"; "Is playing"; etc.).	
20. Uses pronouns in phrases or sentences; must use correct gender and form of the pronoun, but sentences need not be grammatically correct (for example, "He done it"; "They went"; etc.).	
21. Uses possessives in phrases and sentences (for example, "That's her book"; "This is Carlos' ball"; etc.).	
22. Asks questions beginning with *who* or *why* (for example, "Who's that?"; "Why do I have to go?"; etc.).	
23. Uses regular past tense verbs (for example, *walked*, *baked*, etc.); may use irregular past tense verbs ungrammatically (for example, "I runned away"; etc.).	
24. Asks questions beginning with *when* (for example, "When is dinner?"; "When can we go home?"; etc.).	
25. Identifies and names most common colors (that is, red, blue, green, yellow, orange, purple, brown, black).	

26. Uses *behind* or *in front of* in phrases or sentences (for example, "I walked in front of her"; "Terrell is behind her"; etc.).	
27. Says month and day of birthday when asked.	
28. Says own telephone number when asked.	
29. Gives simple directions on how to play a game or how to make something.	
30. Says complete home address, with or without zip code, when asked (that is, street or rural route, apartment number, city, and state).	
31. Pronounced words clearly without sound substitutions (for example, does not say "wabbit" for "rabbit," "Thally" for "Sally," etc.).	
32. Tells basic parts of a story or television show (for example, who the story is about, how it ends, what happened, etc.).	
33. Uses *between* in phrases or sentences (for example, "My pencil fell between the desk and the wall"; etc.).	
34. Stays on topic in conversations; does not go off on tangents.	
35. Modulates tone of voice, volume, and rhythm appropriately (for example, does not consistently speak too loudly, inaudibly, in a monotone, etc.).	
36. Tells about experiences in detail (for example, tells who was involved, where activity took place, etc.).	
37. Explains ideas in more than one way (for example, "That was a good book. It was exciting and fun to read"; etc.).	
38. Uses irregular plurals correctly (for example, *children*, *geese*, *mice*, *women*, etc.).	
39. Describes a short-term goal and what he or she needs to do to reach it (for example, "I want to get an A on my test so I'm going to study hard"; etc.).	
40. Easily moves from one topic to another in conversation.	
41. Gives complex directions to others (for example, to distant location, for recipe with many ingredients or steps, etc.).	
42. Presents oral reports at least 10 minutes long (for example, to classmates, to members of an organization, etc.).	

Written Subdomain

1. Identifies one or more alphabet letters as letters and distinguishes letters from numbers.	
2. Recognizes own name in printed form.	
3. Identities at least 10 printed letters of alphabet.	
4. Shows understanding that written language is read in a particular direction (that is, from left to right).	
5. Prints or writes using correct orientation (that is, from left to right).	
6. Copies own first name.	
7. Identifies all printed letters of alphabet, upper and lower case.	
8. Prints at least 3 simple words from example (for example, *cat*, *see*, *bee*, etc.).	
9. Prints or writes own first and last name from memory.	
10. Reads at least 10 words aloud.	
11. Prints at least 10 simple words from memory (for example, *hat*, *ball*, *the*, etc.).	
12. Reads simple stories aloud (that is, stories with sentences of 3 to 5 words).	
13. Prints more than 20 words from memory.	
14. Prints simple sentences of 3 or 4 words.	
15. Accurately copies phrases or sentences of 3 to 4 words written on board or easel.	
16. Reads and understands material of at least 2nd-grade level.	
17. Puts words in alphabetical order.	
18. Uses print or electronic dictionary when necessary.	
19. Writes simple correspondence at least 3 sentences long (for example, postcards, thank-you notes, e-mail, etc.).	
20. Demonstrates understanding of information presented in simple tables, graphs, or charts.	
21. Reads and understands material of at least 4th-grade level.	
22. Uses table of contents or index in reading materials when needed (with print or electronic media).	
23. Writes complete mailing and return addresses on letters or packages.	
24. Writes reports, papers, or essays at least one page long; may use computer.	
25. Reads on own initiative.	
26. Demonstrates interest in both fact and fiction reading material.	
27. Finds information by using school or public library (for example, to complete a report, to locate a reference, etc.).	
28. Reads and understands material of at least 6th-grade material.	
29. Edits or corrects own written work before turning it in (for example, checks punctuation, spelling, grammar, etc.).	
30. Writes reports or compositions at least 3 pages long; may use computer.	
31. Reads and understands material of at least 9th-grade level.	

32. Plans, organizes, or outlines material to be written.	
33. Reads at least 2 newspaper articles weekly (print or electronic versions).	
34. Writes business letters (for example, requests information, makes complaint, or places order, etc.); may use computer.	

DAILY LIVING SKILLS DOMAIN

Personal Subdomain

1. Drinks from cup or glass; may spill.	
2. Feeds self with spoon; may spill.	
3. Asks to use toilet.	
4. Is toilet-trained during the day (that is, has no accidents at school).	
5. Drinks from cup or glass without spilling.	
6. Feeds self with spoon without spilling.	
7. Sucks from straw.	
8. Feeds self with fork; may spill.	
9. Takes off clothing that opens in the front (for example, a coat or sweater); does not need to unzip or unbutton.	
10. Puts on clothing that opens in the front (for example, a coat or sweater); does not need to zip or button.	
11. Zips zippers that are fastened at the bottom (for example, on pants, backpacks, etc.).	
12. Fastens snaps.	
13. Buttons large buttons in front, in correct buttonholes.	
14. Wipes or blows nose using tissue or handkerchief.	
15. Puts shoes on correct feet; does not need to tie shoes.	
16. Buttons small buttons in front, in correct buttonholes.	
17. Connects or zip zippers that are not fastened at the bottom (for example, on jackets, sweatshirts, etc.).	
18. Covers mouths and nose when coughing or sneezing.	
19. Finds and uses appropriate restroom for his or her gender.	
20. Maintains or tries to maintain a neat, age-appropriate appearance throughout the day.	

Academic Subdomain

1. Demonstrates understanding of the function of a clock (for example, "Clocks tell time"; "What time is snack?"; etc.).	
2. Demonstrates computer skill necessary to play games or start programs with computer turned on; does not need to turn computer on by self.	
3. Identifies numbers and numbers and distinguishes numbers from alphabet letters.	
4. Says numbers 1 through 20 in sequence.	
5. Demonstrates understanding that a printed number corresponds to the same number of objects (for example, the number "5" means "five" objects, etc.).	
6. Counts at least 10 objects, one by one.	
7. Demonstrates understanding of the function of money (for example, "Money is what you need to buy things"; "How much does that cost?"; etc.).	
8. Recognizes all printed numbers 1 through 20.	
9. Identifies penny, nickel, dime, and quarter by name when asked; does not need to know the value of coins.	
10. Tells time using a digital clock or watch.	
11. Says seasons of the year (that is, spring, summer, fall, and winter) when asked.	
12. Adds single-digit numbers without using fingers.	
13. Says days of week in order when asked.	
14. Says months of the year in order when asked.	
15. Tells time by the half hour on analog clock (for example, 1:30, 2:30, etc.).	
16. States value of a penny (1 cent), nickel (5 cents), dime (10 cents), and quarter (25 cents).	
17. Discriminates between bills of different denominations (for example, refers to $1 or $5 bills; etc.).	
18. Subtracts single-digit numbers without using fingers.	
19. Says current day of the week when asked.	
20. Says current month of the year when asked.	
21. Points to current or other date on calendar when asked.	
22. Demonstrates understanding that some items cost more than others (for example, "I have enough money to buy gum but not a candy bar"; "Which pencil costs less?"; etc.).	
23. Combines coins to equal 25 cents when asked.	
24. Adds double-digit numbers when carrying is required.	
25. Tells time by 5-minute segments on analog clock (for example, 1:05, 1:10, etc.).	
26. Combines coins to equal 1 dollar when asked.	
27. Subtracts double-digit numbers when borrowing is required.	
28. Demonstrates understanding of the following mathematical signs: +, -, x, /.	
29. Demonstrates mastery of the multiplication facts through 9.	
30. Demonstrates understanding of common fractions (for example, ½, 1/3, ¼, etc.).	

31. Demonstrates computer skills necessary to carry out complex tasks (for example, word processing, accessing the Internet, installing software, etc.).	
32. Demonstrates understanding of the following symbols: >, <, %.	
33. Uses calculator to solve complex math problems when needed.	

School Behavior/Community Subdomain

1. Follows simple instructions from teacher (for example, "Be quiet"; "Sit down"; "Open your book to page 25"; etc.).	
2. Follows classroom rules and routines.	
3. Follows school rules (for example, stands in line when instructed, refrains from running in the halls or pushing other students, etc.).	
4. Cleans up desk or play area at end of activity (for example, picks up and throws away scraps or trash, wipes up spilled glue or painted, etc.).	
5. Demonstrates understanding of right to privacy for self and others (for example, while using restroom or changing clothes, etc.).	
6. Works with or near others without becoming distracted.	
7. Stays on task for more than 5 minutes.	
8. Returns signed materials to teacher (for example, permission slips, grade reports, etc.).	
9. Completes and turns in homework assignments.	
10. Brings appropriate materials to class (for example, textbook, band instrument, gym clothes, etc.).	
11. Uses clock to keep track of when to do something (for example, attend special class or study group, etc.).	
12. Uses independent work time productively (for example, reads ahead, does homework assignment, etc.).	
13. Attempts to improve work quality or study habits after receiving constructive criticism from a teacher.	
14. Demonstrates understanding of right to access personal information (for example, school or medical records, etc.).	
15. Demonstrates understanding of right to complain or report legitimate problems when dissatisfied with situation.	

SOCIALIZATION DOMAIN

Interpersonal Subdomain

1. Makes or tries to make social contact (for example, smiles, waves, talks, etc.).	
2. Shows interest in children the same age (for example, watches them, smiles at them, etc.).	
3. Demonstrates friendship-seeking behavior with others the same age (for example, says, "Do you want to play?" or takes another child by the hand, etc.).	
4. Answers when familiar adults make small talk (for example, if asked "How are you?" says, "I'm fine"; if told, "You look nice," says, "Thank you"; etc.).	
5. Uses words to express own emotions (for example, "I'm happy"; "I'm scared"; etc.).	
6. Recognizes happiness, sadness, fear and anger in others (for example, "You look sad;" "Don't be mad;" etc.).	
7. Shows desire to please teacher (for example, offers to help pass out papers, etc.).	
8. Has best friend or shows preference for certain friends (of either gender) over others.	
9. Uses words to express happiness or corner for others (for example, "Yea, you won!"; "Are you all right?"; etc.).	
10. Recognizes the likes and dislikes of others (for example, "Chow likes soccer"; "Susie doesn't eat pizza"; etc.).	
11. Acts when another person needs a helping hand (for example, holds door open, picks up dropped items, etc.).	
12. Shows same level of emotion as others around him or her (for example, does not downplay or overdramatize a situation, etc.).	
13. Chooses not to say embarrassing or mean things or ask rude questions in public.	
14. Keeps comfortable distance between self and others in social situations (for example, does not get too close to another person when talking, etc.).	
15. Talks with others about shared interests (for example, sports, TV shows, summer plans, etc.).	
16. Starts small talk when meets people he or she knows (for example, "How are you?"; "What's up?"; etc.).	
17. Cooperates with others to plan or be part of a group assignment or activity.	
18. Participates in class discussions without monopolizing.	

Play and Leisure Subdomain

1. Shows preference for certain people and objects (for example, smiles, reaches for moves toward person or object, etc.).	
2. Plays simple interaction games with others (for example, peekaboo, patty-cake, etc.).	
3. Plays near another child, each doing different things.	
4. Chooses to play with other children (for example, does not stay on the edge of a group or avoid others, etc.).	
5. Plays cooperatively with 1 or more children for up to 5 minutes.	
6. Plays cooperatively with more than 1 child for more than 5 minutes.	
7. Protects self by moving away from those who destroy things or cause injury (for example, those who bite, hit, throw things, pull hair, etc.).	
8. Shares toys or possessions when asked.	
9. Plays with others with minimal supervision.	
10. Uses common household objects or other objects for make-believe activity (for example, pretends a block is a car, a box is a house, etc.).	
11. Seeks out others for play or companionship at school (for example, asks someone to be his or her partner for an activity, plays on the playground with others, etc.).	
12. Plays simple make-believe activities with others (for example, plays dress-up, pretends to be superheroes, etc.).	
13. Takes turns when asked while playing games or sports.	
14. Shares toys or possessions without being asked.	
15. Takes turns without being asked.	
16. Follows rules in simple games (for example, relay races, spelling bees, electronic games, etc.).	
17. Plays simple card or board game based only on chance (for example, Go Fish, Crazy Eights, Sorry, etc.).	
18. Asks permission before using objects belonging to or being used by another.	
19. Asks away from a group when their actions show that he or she is not welcome.	
20. Shows good sportsmanship (that is, follows rules, is not overly aggressively, congratulates other team on winning, and does not get made when losing).	

Coping Subdomain

1. Changes easily from one activity to another.	
2. Says "please" when asking for something.	
3. Says "thank you" when given something.	
4. Shows respect for teachers and other school staff.	
5. Responds appropriately (for example, refrains from complaining, etc.) to reasonable changes in school routine.	
6. Ends conversations appropriately (for example, "Good-bye"; "See you later"; etc.).	
7. Does not taunt, tease, or bully.	
8. Says that he or she is sorry for unintended mistakes (for example, bumping into someone, etc.).	
9. Changes behavior depending on how well he or she knows another person (for example, acts differently with a new classmate than a good friend, etc.).	
10. Talks with others without interrupting or being rude.	
11. Acts appropriately when introduced to an unfamiliar student or teacher (for example, nods, smiles, shakes hand, greets him or her, etc.).	
12. Changes voice level depending on location or situation (for example, in a library, during independent work time, during a school assembly or play, etc.).	
13. Controls anger or hurt feelings when plans change for reason that can't be helped (for example, a field trip postponed due to bad weather or transportation problem, etc.).	
14. Accepts mild teasing without getting upset.	
15. Returns borrowed items (for example, money or other possessions borrowed from friends, library books, etc.).	
16. Controls anger or hurt feelings when he or she does not get his or her way (for example, when not allowed to talk with classmate; when suggestion is rejected by friend or teacher; etc.).	
17. Accepts helpful suggestions or solutions from others.	
18. Controls anger or hurt feelings when he or she does not get his or her way (for example, discussion of test score or grade, correction of misbehavior, etc.).	
19. Thinks about what could happen before making decisions to do something (for example, refrains from acting impulsively, thinks about important information, etc.).	
20. Shows respect for classmates (for example, speaks quietly while others are working, refrains from making inappropriate comments, etc.).	

Table 3
Means and Standard Deviations of sub-domain raw-scores by age: 7-18
Zambian Sample

			Communication		Daily Living Skills			Socialization		
		Receptive	Expressive	Written	Personal	Domestic	Community	Interpersonal	Play& leisure	Coping
Age	N	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean
7	**31**	27.3	75.3	49.8	42.6	66.9	27.2	31.3	36.4	35.8
8	**42**	26.6	65.4	45.6	38.2	60.3	25.6	29.2	35.3	32.7
9	**51**	25.3	61.9	42.9	43.3	60.5	27.3	30.9	37	35
10	**67**	27.6	67.8	48.5	40.8	36.6	26.4	29.6	37.2	35.8
11	**29**	26.3	64.3	47	39	25.3	25.3	28.8	36.7	33.9
12-13 yrs	**140**	27.1	64.2	50.4	40.3	64.2	26.2	29	37	34.4
14-15 yrs	**101**	28.7	70.6	55.3	40.9	67.8	26.7	29	36.6	34.4
16-18 yrs	**23**	25.7	70	53.7	38	64	26.4	28	36.7	33.3

Table 4
Means and Standard Deviations of sub-domain raw scores by age: 7-18
American Sample

			Communication			Daily Living Skills				Socialization	
		Receptive	Expressive	Written	Personal	Domestic	Community	Interpersonal	Play& leisure	Coping	
Age	N	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	
7	200	35.3	97.8	30.1	67.6	21.4	47.2	60.2	48.1	37.6	
8	200	36	100	33.4	69	24.7	25.3	63	50.2	40	
9	205	36.9	102.2	37	70.7	29.6	57	65.4	52.4	45.7	
10	175	37.6	103.7	40	72.4	33.4	60	66.6	53.1	45.1	
11	205	38.1	104.9	41.6	73.1	34.8	61.7	67.8	54.3	47.6	
12-13 yrs	285	38.5	105.4	44	74.6	38.8	64	68.9	56.1	50.8	
14-15 yrs	101	38.9	106.5	46	76.6	41.9	68	70.7	58.7	52.3	
16-18 yrs	235	39.4	107.1	47.7	78.3	44.2	75.6	73.1	60.5	55.5	

Table 5: Inter-correlations for domains and sub-domains: Zambian sample age 7-13

	Comm Domain				Daily Skills				Socio Domain			
		Recept	Express	Written		Pers	Academic	Comm		Interper	Play&leisure	Coping
Communication												
Receptive			0.62**	0.32**		0.29**	0.35**	0.29**		0.42**	0.28**	0.34**
Expressive				0.69**		0.22**	0.62**	0.60**		0.56**	0.46**	0.49**
Written						0.20**	0.65**	0.64**		0.36**	0.50**	0.36**
Daily Living												
Personal							0.36**	0.36**		0.36**	0.33**	0.20**
Academic								0.61**		0.48**	0.44**	0.52**
Community										0.52**	0.57**	0.48**
Socialisation												
Interpersonal											0.7**	0.64**
Play and leisure												0.61**
Coping skills												

**Correlation is significant at the 0.01 level (2-tailed)
N = 360

Table 6
Inter-correlation coefficients for domains and sub-domain: American sample age 7-13

	Comm Domain				Daily Skills				Socio Domain			
		Recept	Express	Written		Personal	Academic	Comm		Interper	Play&leisure	Coping
Communication					0.69				0.68			
Receptive			0.62	0.52		0.37	0.44	0.45		0.55	0.48	0.53
Expressive				0.62		0.53	0.54	0.59		0.6	0.54	0.56
Written						0.54	0.49	0.62		0.51	0.5	0.48
Daily Living									0.68			
Personal												
Academic							0.61	0.61		0.49	0.44	0.49
Community								0.58		0.53	0.47	0.53
										0.59	0.56	0.55
Socialisation												
Interpersonal											0.62	0.69
Play and leisure												0.61
Coping skills												

N = 1270

Table 7
Inter-correlation Coefficients for domains and sub-domains: Zambian Sample age 14-18

	Comm Domain				Daily Skills				Socio Domain			
		Recept	Express	Written		Personal	Academic	Community		Interper	Play&leisure	Coping
Communication					0.53**				0.66**			
Receptive			0.77**	0.63**		0.54**	0.68**	0.43**		0.66**	0.50**	0.53**
Expressive				0.8**		0.35**	0.69**	0.41**		0.62**	0.45**	0.50**
Written						0.43**	0.8**	0.42**		0.61**	0.54**	0.61**
Daily Living									0.70**			
Personal							0.61	0.35		0.40**	0.62**	0.43**
Academic								0.57		0.62**	0.58**	0.53**
Community										0.59**	0.61**	0.71**
Socialisation												
Interpersonal											0.75**	0.75**
Play and leisure												0.80**
Coping skills												

** Correlation is significant at the 0.01 level (2-tailed)
N=124

Table 8
Inter-correlation Coefficients for domains and sub-domains: American sample ages 14-21

	Comm Domain				Daily Skills				Socio Domain			
		Recept	Express	Written		Personal	Academic	Community		Interper	Play&leisure	Coping
Communication					0.69				0.68			
Receptive			0.52	0.5		0.32	0.36	0.31		0.4	0.35	0.44
Expressive				0.51		0.46	0.42	0.43		0.44	0.41	0.47
Written						0.53	0.44	0.48		0.42	0.37	0.47
Daily Living									0.68			
Personal												
Academic							0.52	0.49		0.26	0.28	0.42
Community								0.45		0.34	0.34	0.4
Socialisation										0.59	0.56	0.51
Interpersonal												
Play and leisure											0.55	0.37
Coping skills												0.42

N= 535

Table 9
Internal Consistency: Split half reliability coefficients for domains & sub-domain by age: 7-18 Zambian Sample

Age	N	Comm Domain	Recept	Express	Written	Daily Skills	Personal	Domestic	Community	Socialization Domain	Interper	Play&leisure	Coping	Adaptive Behaviour Composite
7	31	0.80	0.16	0.88	0.67	0.80	0.23	0.61	0.67	0.78	0.75	0.68	0.64	0.79
8	42	0.86	0.60	0.86	0.76	0.79	0.65	0.63	0.62	0.89	0.81	0.79	0.84	0.85
9	51	0.66	0.50	0.86	0.77	0.81	0.49	0.64	0.68	0.65	0.58	0.64	0.75	0.85
10	67	0.84	0.73	0.72	0.71	0.57	0.47	0.59	0.40	0.74	0.81	0.71	0.60	0.84
11	29	0.88	0.79	0.80	0.63	0.70	0.54	0.64	0.37	0.87	0.77	0.66	0.59	0.86
12-13yrs	140	0.80	0.67	0.82	0.77	0.57	0.40	0.64	0.61	0.84	0.72	0.70	0.74	0.86
14-15	101	0.90	0.73	0.86	0.83	0.75	0.60	0.72	0.51	0.89	0.82	0.81	0.80	0.88
16-18	23	0.79	0.79	0.79	0.65	0.74	0.58	0.68	0.71	0.84	0.83	0.80	0.73	0.89

Note: Split half reliability coefficients are corrected for half test length by the Spearman Brown formula

Adaptive Behaviour Composite Reliability coefficients using the formula provided by Cronbach
N = 484

Table 10
Internal Consistency: Split half reliability coefficients for domains & sub-domain by age: 7-18
American Sample

Age	N	Comm Domain				Daily Skills				Socialization Domain				Adaptive Behaviour Composite
			Recept	Express	Written		Personal	Domestic	Community		Interper	Play&leisure	Coping	
7	200	0.94	0.80	0.92	0.84	0.92	0.76	0.83	0.88	0.93	0.85	0.78	0.89	0.97
8	200	0.93	0.76	0.87	0.86	0.93	0.76	0.88	0.86	0.94	0.86	0.78	0.90	0.97
9	205	0.94	0.80	0.90	0.86	0.91	0.71	0.86	0.82	0.92	0.85	0.74	0.86	0.97
10	175	0.91	0.68	0.86	0.84	0.89	0.67	0.85	0.76	0.92	0.82	0.77	0.87	0.96
11	205	0.89	0.70	0.80	0.82	0.88	0.65	0.84	0.70	0.89	0.76	0.68	0.83	0.95
12-13 yrs	285	0.91	0.75	0.85	0.84	0.90	0.69	0.85	0.81	0.90	0.82	0.71	0.82	0.96
14-15 yrs	235	0.87	0.71	0.76	0.76	0.85	0.61	0.78	0.72	0.88	0.78	0.74	0.82	0.94
16-18 yrs	215	0.90	0.80	0.80	0.79	0.86	0.68	0.72	0.77	0.89	0.82	0.75	0.76	0.94

Note: Split half reliability coefficients are corrected for half test length by the Spearman Brown formula

Adaptive Behaviour Composite Reliability coefficients using the formula provided by Cronbach
N = 1720

Table 11: Inter-item Correlations <. 15

Domain	Sub-domain	Items Nos.	Percentage within the domain
Communication	Receptive	6, 15, 16,	19%
	Expressive	9, 30, 31, 32, 34, 42	14%
	Written	18, 19, 20, 22, 23, 24, 27, 30, 31, 32, 33, 34	35%
Daily Living Skills	Academic	2, 9, 11, 16, 17, 23, 26, 31	24%
	Community	14, 15	13%
Socialization	Personal	10,	6%
	Play and Leisure	16, 17,	10%
	Copying	16	6%