This is to certify that the

dissertation entitled

presented by

has been accepted towards fulfillment
of the requirements for

_____ degree in _____

William McKeveny
Major professor

Date 2-25-93

USING THREE FORMATS OF THE SEMANTIC DIFFERENTIAL TO DETERMINE THE MOST RELIABLE FORMAT OF THE TECHNIQUE AMONG KENYAN AND AMERICAN ELEMENTARY SCHOOL CHILDREN AND INVESTIGATE THE DIMENSIONALITY OF THEIR ATTITUDES TOWARD READING

By

Frank Oyungu Ingule

A DISSERTATION

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

Department of Counselling, Educational
Psychology and Special Education
Major: Measurement, Evaluation
and Research Design

1983

ABSTRACT

USING THREE FORMATS OF THE SEMANTIC DIFFERENTIAL TO DETERMINE THE MOST RELIABLE FORMAT OF THE TECHNIQUE AMONG KENYAN AND AMERICAN ELEMENTARY SCHOOL CHILDREN AND INVESTIGATE THE DIMENSIONALITY OF THEIR ATTITUDES TOWARD READING

By

Frank Oyungu Ingule

Three-point, five-point and seven-point formats of the Semantic Differential technique were used to rate the concept of READING by American and African fourth to seventh grade children. The purpose of the study was to identify the most reliable formats of the Semantic Differential for the various grades and determine whether the technique identifies the same factors (dimensions) and factor structures among the American and African children selected for the study.

The American subjects were selected from two schools in Lansing, Michigan while the African subjects were selected from two schools in Kenya (East Africa). A total of 448 American and African children participated in this study.

The results showed that among the American subjects, five-point and seven-point formats were more reliable than the three-point format. The five-point format was more reliable in the African fourth and fifth grade than the

three-point and seven-point formats. However, in sixth and seventh African grades, the five-point and seven-point formats were equally reliable but more reliable than the three-point format. The three-point format was consistently less reliable than the five-point and seven-point formats among both the African and American subjects.

The factors identified among the American subjects, in their order of importance, were, Evaluation, Difficulty (Potency), and Usefulness (Activity). The same factors were identified as characterizing the attitudes of African subjects toward reading but the order of these factors were changed. Factor I among the African subjects was Usefulness (Activity), Factor II was Evaluation and Factor III was Difficulty (Potency).

Results of the factor reliabilities showed that the most reliable factor among the American subjects was Evaluation, followed by Difficulty (Potency), then Usefulness (Activity). The most reliable factor among the African subjects was Usefulness, followed by Evaluation and then Difficulty.

The results of this research cannot be generalized beyond the subjects used because it is based on a fixed design model. The information on the dimensions is restricted to READING since this was the concept that was rated.

To my wife, Eunice,

whose love inspires the best in me.

ACKNOWLEDGMENTS

It is with grateful acknowledgment and appreciation for their many contributions in various stages of this dissertation and my graduate work:

Professor William Mehrens, Professor, Measurement and Research Design, my advisor and the chairman of my dissertation committee, for his patience, availability and encouragement throughout my graduate work at Michigan State University and for his vital assistance in various stages of this dissertation. I will always remember him as one of the best and most efficient scholars I have met in my life.

Dr. Joe Byers, Professor, Professor of Educational Psychology, member of my committee for giving me an initial orientation in the use of computers for research and for his continued support and guidance throughout my studies at Michigan State University

Dr. Richard Houang, Assistant Professor, Educational Psychology, member of my committee, for his determined efforts to introduce me to various quantitative and statistical aspects of research. He has been a valuable friend to me during studies at Michigan State University and has made substantial contributions to my development.

Dr. David Dwyer, Professor, Linguistics, Anthropology and

African Studies, member of my committee, for his encouragement and supportive ideas. He particularly helped me focus my research attention on my beloved people of Africa.

My friend Dr. Paul Virts and Viola Virts, Dr. Gary Waldon and Ev Waldon, Dr. Tom English, Dr. Betta Mengistu, Dr. Lars Dunberg, Tom and Sue Hood, Donna Birkey, Reverend Charles Landon and Phylis Landon, for their support and encouragement during my graduate studies.

Richard Skinner, superintendent, Lansing Christian Schools, John Omuyak, Elijah Mbalanya and Crispo Opanga for their assistance during the data gathering stages.

Finally, to my wife, Eunice, my children, Sarah, Carol and Timoth, my father and mother, for their love and understanding.

TABLE OF CONTENTS

LIST OF TABLES

CHAPTER I

THE PROBLEM

Introduction

This study attempts to investigate some psychometric properties of the Semantic Differential when the technique is used to scale reading attitudes of African and American elementary school children. The psychometric properties relate to determining the most reliable format for measuring the reading attitudes of children from various grades among the subjects taken from American and African cultural backgrounds. However, it is hoped that the study will not only provide some information on the most reliable SD formats for measuring reading attitudes but will also give some indication of the dimensionality (the underlying factors) of the attitudes among the African and American subjects. Actually, according to research findings by Leo M. Harrill (1971, p. 23), the Semantic Differential is one of the "most promising techniques" for analyzing reading attitudes.

Semantic Differential

The Semantic Differential Technique, as described by Osgood, Suci, and Tannenbaum (1957), was developed originally for measurement of concepts. The respondent is requested to indicate the meaning he or she attaches to a

given concept by recording it on a rating scale (three, five, or seven-point) between carefully selected bipolar adjectives. Fishbein and Ajzen (1975, p. 74) make the following statements about the technique:

> Ascertaining an object's meaning was viewed as similar to playing the game of "Twenty Questions" with the respondent. Thus, to identify the meaning of a given object, the respondent might be asked questions such as: "Is it hard or soft?" "Is it fast or slow?", etc.

Thus, just as in the "Twenty Questions" game the object being sought is gradually identified, so the selection among pairs of common verbal opposites should gradually establish the "meaning" of the concept.

Many studies involving different concepts and different bipolar adjectives have repeatedly found three basic factors or dimensions. The first is called evaluation and is associated with scales such as good-bad, pleasant-unpleasant, beautiful-ugly, positive-negative. The second, potency, is associated with strong-weak, light-heavy, hard-soft, and the like. The third, activity, is characterized by scales such as active-passive, fast-slow, excitable-calm. These factors are mutually independent and usually account for most of the variance in the data.

The dimensions (or factors) being investigated in this study are related to the subject of reading. These dimensions are, Evaluation, Usefulness, and Difficult. These factors are taken from a search of literature on the measurement of reading attitudes (e.g. Epstein, (1980), Osgood, (1969), Clarke, and Nybergy, (1979)).

In the use of Semantic Differential Technique, factor analysis of results from a number of scales is used to identify the number of dimensions which are being assessed. Thus if the rating on two scales (such as good-bad and clean-dirty) are highly correlated, these scales may be regarded as alternate measures of the same underlying dimension (or factor, or, in the case of the semantic differential, meaning).

Semantic Differential Technique has proved to be an effective tool for measuring concepts, attitudes and personality traits. There are a number of studies that show that the technique has reliable utility with regard to measuring self-concepts of students, measuring attitudes towards reading, identifying motivational factors in achievement, measuring students' attitudes to school subjects, for gathering information on effective instructional objectives, for assessing the effectiveness of some school services like counselling, etc. (Osgood, et al. 1961; DiVesta, 1966; Donahoe, 1961, Lana, 1965; Chen, 1980; Sunal, 1975).

There are other instruments such as Likert scales, Guttman cumulative technique, paired comparison, questionnaires, interviews, and observation rating, which are used for the same purpose but the Semantic Differential is superior because of its simplicity and potential to utilize more than one dimension (e.g. three dimensions). For instance, while an instrument like the Likert Scale can only utilize the Evaluative Dimension, the Semantic Differential can be

constructed in such a way that the Evaluative, Potency, and Activity, and even more dimensions can be used at the same administration.

The Semantic Differential also compares very favorably with more sophisticated instruments like Thurstone Scales and Guttman Scallogram Analysis. For instance the correlation between the Semantic Differential and Thurstone Scales is as high as .90 (Osgood, 1961, p. 194). This means that whatever the Thurstone scales measure, the Semantic Differential can do just as well. However, while the Semantic Differential utilizes a multidimensional space, the Thurstone scales only utilize one dimension. This gives the Semantic Differential some superiority. Furthermore, the technique is relatively easy to administer and the D statistics developed by Osgood, C., George J. Suci, Percy H. Tannenbaun (1969) for analyzing the response data has an added advantage of simplicity.

Research seems to show that despite the utility and simplicity of the technique there are some issues on which the user must ponder carefully before and while using the technique. For instance, research has shown that the factorial structures of subjects may differ according to the age of the subject. (Osgood, 1969). The Evaluative factor shapes earlier than the Potency and Activity factors. Hence although, the technique is potentially multidimensional, at an early age probably one dimension will be meaningful. Suci, (1952) has also shown in his research that the

factorial structures of high and low ethnocentrics differ. Bopp, (1955) shows in her research that factorial structures of normal people differ from that of schizophrenics.

Measurement of Reading Attitudes

In this study, the concept to be rated will be READING. Numerous studies on measuring attitude towards reading (Epstein, 1980; Alexander, 1976; Athey, 1976; Himmelfarb, 1974 , etc) suggest that the concept of READING has different meanings. This study focuses on the reading in the classroom, and in the general school situation like the library, and reading as a school subject. To ensure common understanding of the concept being rated for all the subjects, an exercise involving completion of a questionnaire on reading is provided at the beginning of the testing for all the subjects. This exercise is aimed at providing some common definition of the concept under consideration.

Problem Statement

The Semantic Differential has been used in America, Canada and other Western countries to generate a lot of information on various aspects of school life. For instance, there has been some substantial research in which the instrument has been used to identify the attitudes of students to school subjects in both elementary and high school (Nybergy, 1969; Clarke, 1979; Epstein, 1980; Harrill, 1971; Keith, and Banning, 1968; Davis, 1977). The findings from these studies are very interesting particu-

larly to one interested in the education of students similar to subjects sampled in these studies.

Some revealing research has also been generated on the psychometric properties of the Semantic Differential in some of the above studies. This kind of research has provided some information on the reliability of the technique (DiVesta, and Dick, 1966; Osgood, et al. 1969), the stability of the factors (Clarke, 1979; Heise, 1969; Norman, 1959). Some interesting work has also been done on the developmental aspects of the Semantic Differential (DiVesta, 1966).

However, the first question that arises is the generalizability of these research findings to non-Western subjects like African school children. Can the findings on the attitudes to school subjects and some of the psychometric properties of the Semantic Differential be generalized to elementary school children from an African country like Kenya? The choice of the non-Western subjects for the study has been determined by the fact that I come from Africa and I would like to seek some information on how to use the technique within African subjects.

Secondly, different formats of the Semantic Differential are used in the research. Research seems to assume that the technique is a homogenous instrument. However, since there is more than one format of the Semantic Differential, e.g., three-point, five-point, and seven-point scales, it is possible to postulate that these are various

kinds of the same technique. The question that then arises is: What formats are most reliable for various subjects in different grades, age and even cultures?

Osgood, (1961, p. 222) suggests that for (American) elementary grade children, the most reliable format is the five-point format. Does this equally apply to African children of the same grade? Additionally, it may be possible that for some grades a three-point format will provide more reliable measures while for others, a seven-point format will provide more reliable measures. The thrust of this argument can be put plainly. Which formats provide the most reliable measures of attitudes for various African and American elementary grades?

The third problem to be investigated in this research relates to the dimensionality issue. Dimensionality refers to the number of factors underlying the concept being rated. According to research (Osgood, 1964; Heise, 1979; Norman, 1963), the Semantic Differential reveals three underlying factors, namely, Evaluative, Potency, and Activity (i.e. EPA dimensions). These dimensions are supposed to have some universality (Osgood, 1961). This study tested the universality of the EPA dimensions by using American and African subjects. To facilitate this comparison, the concept of READING was rated by the two groups. The comparison of the EPA dimensions was based on the educational levels within the African and American subjects. Therefore the third focus was determining whether the EPA dimensions are

maintained in African and American attitudes towards reading in various grades.

Purpose

The purpose of this study was therefore to determine four sets of things:

1. To determine the most reliable format on the Semantic Differential technique among the three-point, five-point and seven-point formats for American and African subjects. Concept reliability coefficients involving the computation of the reliability coefficients from the ratings on the combined eighteen scales on each format were to be used for comparison.

2. Determining factors (dimensions) that emerge at different grades in both the American and African subjects when the Semantic Differential is used to measure attitudes toward READING. It was hoped that this would provide some information on the dimensionality of these attitudes in both sets of subjects.

3. Determining the order of any identified factors in terms of the most important factor, the second, and third factor at different grades and whether the order among the African subjects is different from the one among American subjects.

4. Determination of the factor(s) measured most reliably by the Semantic Differential technique among the American and African subjects.

Importance of the Study

This study is important because it contributes to the study of the reliability of Semantic Differential technique in two cultures (American and African), it provides guidance on how to use the technique in American and African elementary schools, the results have the potential of being generalized to other similar instruments and the results on the dimensionality of reading attitudes can be generalized to literacy programs in the third world.

Contribution to Reliability of the Instrument

At the heart of the evaluation of a measurement instrument are two issues, namely, validity and reliability. Validity has to do with whether the instrument measures the construst it is supposed to measure. A number of studies exist that demonstrate that the Semantic Differential has high validity with respect to measuring attitudes personality traits and concepts individuals have about given things (Sunal, 1975; Clarke, 1979; Molholt, 1978; Suci, 1952). This study will not concentrate on validity of the Semantic Differential but rather more attention will be given to the study of reliability of the technique.

Reliability refers to the precision, or consistency with which an instrument measures. It implies the dependability of the instrument for providing the measurements required. The question of reliability is important in social sciences because of existence of a number of factors that militate against a measuring instrument's consistency. In fact, while the validity is important, an instrument that provides inconsistent measures may actually not provide valid measures. This study is therefore based on an assumption that if an instrument that has a proven level of validity can measure reliably when used in a given group of people, that instrument is appropriate for the group.

Therefore the study will make a contribution in this sensitive area of reliability and, hence, appropriateness of various formats of the Semantic Differential

technique for various groups of people who differ in age, education, and even cultural background.

Providing Guidance for Use of the Technique in Schools

The study will further serve the purpose of providing guidance on how to use Semantic Differential in the Elementary and High Schools. From the results of the study it will be possible for a teacher interested in using the Semantic Differential for instructional purposes to determine the most appropriate format to use for a particular grade level. The results of this study will provide information on the format that has potential for yielding the most reliable measures for the relevant grade.

In a school situation, the Semantic Differential has the following advantages (Epstein, 1980, p. 39).

1. It allows subjects to respond anonymously, thereby increasing chances of receiving open and honest responses.
2. It gives subjects time to formulate reponses.
3. It is adaptable to large-scale assessment in that many people can be tested at one time.
4. It produces data which can be quantified and subsequently analyzed by computer.

Although the fourth advantage is irrelevant to African schools, the first three show how the technique can simplify the assessment of attitudes in African schools and definitely all the four advantages are relevant to American schools.

As a matter of fact, this study emanates from a committment to helping teachers understand their students

better through use of simplified and appropriate tools. The utility of the Semantic Differential Technique has been well documented and demonstrated with respect to how it compares with other instruments. For instance, the technique has been proven to be comparable to Thurstone Scales and Guttman's Scallogram (Osgood, 1961, p. 194). However, the simplicity that accompanies the construction of the technique and the rather straightforward 'D' statistics used for analysis of response data make the Semantic Differential a convenient tool for teachers. Most teachers can use the technique even with no training in statistics and psychometrics. This issue increases the importance of the determination of reliable Semantic Differential formats for different grades. The determination of reliable formats has the potential of providing teachers with the simplest yet the most reliable means of measuring attitudes, etc. of the students in order to facilitate better instruction.

Generalizing Results to Other Instruments

This study has potential for generality to other rating instruments that use formats similar to Semantic Differential Technique. One such instrument is the Likert Scale which is administered using formats identical to the ones used in the study although a different design is used. Generalization to the Likert Scale can be done by examining the reliability coefficients associated with various formats at different grade levels in the Evaluative factor. This is

because the Likert scale is a one dimension scale that is based primarily on the evaluative factor.

Reading Attitudes and Literacy

The choice of the concept for the study was deliberate. READING was chosen because in most of the African countries the main educational concern is the elimination of illiteracy. In Kenya, the Government has even legislated universal primary school education with the aim of eliminating illiteracy. However, it would be dangerous for the various governments to think that achievement tests provide all the information necessary to monitor these literacy programs.

The ultimate success of a reading program's effectiveness should be judged not solely on the basis of how well students learn but also in terms of their attitudes to reading. This applies to both the African countries and America. However, even in America, while schools have begun to recognize the importance of developing in students positive attitudes toward reading, "it is safe to say that basic skills of instruction receive the greatest emphasis" (Epstein 1980, p.8). Measuring a program's effectiveness based on ability scores alone is limited. A more balanced goal would be achieved by investigating skills improvement together with attitude improvement. Rowell (1967, p.3) insists that "If improvement in reading skills takes place without a concurrent improvement in attitude toward reading, the progress is only partial and at best, may be of short

duration." Therefore, monitoring the attitudes of the various participants in the literacy programs is important. This study will provide an example of the factors that are important in measuring various attitudes toward reading. Since attitudes are learned (Lemon,1973) the literacy programs should endeavor to evaluate their programs to determine if the participants are changing their attitudes in a way corresponding to the improvement in their reading skills. This study provides tools on how to monitor the changes in reading attitudes at different grades and even ages.

CHAPTER II

REVIEW OF LITERATURE

Introduction

The literature review in this chapter covers various issues that are relevant to this study. First, relevant literature which focuses attention on the Semantic Differential as a scaling technique is examined. Then the literature on the dimensionality (underlying factors) of the technique and subsequently the dimensionality of reading attitudes is reviewed. Finally, the literature on reliability is reviewed. Various terms are defined during the process of this literature review.

Semantic Differential - A Scaling Method

Semantic Differential is a scaling technique. Therefore one way of understanding the technique is to give a little relevant background of the general scaling theory.

According to Allen, and Yen (1979, p. 179), scaling is a branch of measurement theory that focuses on rationales and mathematical techniques for determining what numbers should be used to represent amounts of property being measured. With respect to the Semantic Differential, one would therefore say that this is an attempt to assign

numbers to the properties being measured. Warren S. Torgerson (1958) haspproposed three approaches to scaling methods.

There is the subject-centered approach (method). In this kind of scaling method, "the systematic variations in reactions of the subjects to the stimuli are attributed to individual differences in the subjects" (Torgerson, 1958, p. 46). The subjects are the ones that are scaled. Scaling methods that fall in this category include those that differentiate between individuals like aptitude, achievement, and intelligence tests. Obviously the Semantic Differential does not fall in this category.

There is the Stimulus-centered (or judgement) Approach. In this kind of scaling method, "the systematic variations in the reactions of the subjects to the stimuli are attributed to differences in the stimuli with respect to a designated attribute" (Torgerson, 1958, p.46). The purpose of any experiment that utilizes this kind of scaling has the major purpose of scaling the stimuli which alone are assigned scale values. The Semantic Differential falls in this category and so does the Likert technique. Hence the purpose of the Semantic Differential is to scale the various bipolar adjectives used as stimuli during the experiment.

The third category is a combination of the Judgement approach and stimulus-centered approach. The approach used in this third category is called Response Approach and it involves scaling both the subjects and the stimuli.

Accordingly, "the variability of reactions to stimuli is ascribed to both variation in the subjects and in the stimuli" (Torgerson, 1958, p.46). The Guttman technique provides a good example for this category. The Semantic Differential does not belong to this category but this category is included in this review in order to put SD in a proper perspective with respect to the scaling theory.

However, according to Torgerson, (1958) the various scaling methods classified under the same category as the SD, (which as indicated above constitutes the Judgement Approach) must have certain important metric properties. Some of these metric properties include property of equal intervals within the scale and zero points falling at the same place on each scale (i.e. at the centroid). Samuel Messick (1957) has tried to investigate these properties with respect to the Semantic Differential. According to Messick, these properties have to be established for the various factor analysis studies on the SD response to be meaningful for the studies are based on the assumptions of equal intervals within the scale and the zero points falling at the same place on each scale. In order to summarize Messick's findings, it may be appropriate here to briefly review what is involved in SD ratings.

The SD measures people's reaction to things in terms of ratings on scales defined with contrasting adjectives at each end. For example, a seven-point SD scale

may be as follows:

Pleasant - - - - - - - Unpleasant
3 2 1 0 -1 -2 -3

The SD data are coded numerically as if the scales are bipolar, equal interval scales each passing through the origin (zero in the above example). Hence the coding assumes equal intervals within the scale and zero points falling at the same place on each scale. This is similar to the metric properties referred to above.

Accordingly, Messick, (1957) applied the method of successive intervals to SD data to determine if the assumption of equal intervals is warranted. He found that category boundaries were similarly spaced on all of the nine scales he considered, but not exactly in the proper positions for equal intervals. One side of a scale generally has slightly larger intervals than the other side. He also found that the end intervals tend to be larger than those toward the middle. However, Messick indicates that despite the deviations from equal interval assumption, one does not go far wrong in making this assumption. The correlations between the assumed and scaled boundaries were greater than .98 for every scale considered. Therefore one could make the assumption about this metric property on the Semantic Differential. Hence the SD fits in Torgerson's (1958) classification of scaling methods as discussed with respect to the metric property of equal intervals.

The assumption of the zero point was not

conclusively demonstrated in Messick's (1957) study. The study revealed that the center point of SD scales is not true zero, but rather a point lying about .2 scale units from the true zero. But according to Heise, (1969) this may be due to left-right bias which was also reflected in Messick's study. It is therefore possible that this property can be assumed to exist in the SD scales. If this is the case, then the SD has metric properties similar to those possessed by other methods in the Judgemental and even Response Scaling Categories. This means that the SD compares very well to the other scaling methods with respect to the above metric properties.

Robert B. Kane (1968) has also attempted to test whether in the reordering of SD Scales one answer on the SD is substantially changed from what is woul d otherwise be. Kane calls this kind of error the proximity error. The findings of the study indicate that the proximity error is not a problem hence the ordering of the various SD Scales does not cause a problem in SD research.

Multi-Dimensional Advantage

According to Charles Osgood et al. (1961) the Semantic Differential is rather special and different from some of the scaling methods discussed above in the sense that the technique can scale a stimulus in more than one dimension. For instance, methods like Likert technique and Guttman technique are only unidimensional (Osgood, et al., (1961), 72; Snider and Osgood, 1969) while the SD has the

potential of being two-dimensional, three-dimensional, four-dimensional, etc.

Factor analyses of Semantic Differential data have consistently shown that there are three major dimensions of rating responses. These three dimensions (or factors) are Evaluation, Activity, and Potency. The Evaluation dimension includes bipolar adjectives like good-bad, nice-awful, beautiful-ugly, pleasant-unpleasant, etc. The potency factor includes bipolars like strong-weak, large-small, heavy-light. The Activity Dimension includes adjective pairs like fast-slow, active-passive, sharp-dull. (Osgood, et al. 1961, 44).

One of the studies available is the one by Osgood, et al. (1961) in which seventy-six adjective contrasts were chosen from Roget's Thesaurus and the corresponding bipolar scales were used to rate twenty different concepts. Correlations between the ratings on different scales were calculated and factor analysis was carried on these. The factors that were identified from this study were Evaluation, Potency and Activity, respectively. This sequence of factors, i.e. Evaluation first, then Potency, then Activity is often referred to as EPA structure in SD data.

A number of studies exist that support the EPA dimensions of the Semantic Differential. For instance, David R. Heise (1965) had 1,000 concepts rated on eight scales by Navy enlistees. Factor analyses of the data based on mean ratings for the 1,000 different words

yielded the EPA structure. Similarly, Bopp, J. (reported in Osgood, C. et al. 1961) had forty schizophrenics rate thirty-two words on a thirteen-scale form. The EPA structure emerged from the factor analysis of the response data. DiVesta, (1966) had one hundred concepts rated on twenty-seven scales by subjects in Grades two through seven. The EPA structure emerged though there was some tendency for Potency and Activity to merge into a single dimension up until the fifth grade. This dimension was labelled by DiVesta as the Dynamism dimension. The study by Nyberg and Clarke, (1979) on using the Semantic Differential for measuring the attitudes of Elementary grade children toward school subjects basically revealed the same EPA dimensions.

Number of Dimensions

According to most SD research, there are basically the three EPA dimensions (Osgood, C. et al. 1961 ; Wright, 1958 ; DiVesta, 1966 ; Heise, 1965). The stress on these three dimensions almost always suggests that additional dimensions do not exist. However, it is apparent from other research sources that the dimensionality issue is not settled. There are some studies that suggest that there may be more than three dimensions of the Semantic Differential rating response. For instance, Green, and Goldfried (1965) in their study of the bipolarity of the Semantic Differential, used unipolar rather than bipolar adjective scales and found more than three factors. In a study by

Bruce W. Tuckman (1976) using twenty-eight bipolar adjective scales, four factors were found to characterize the data. On the other hand, the study by Wiggins, and Fishbein (1969) found that there are different dimensions according to types of subjects. Some types of subjects were found to employ a two-dimensional structure (EP), others a three-dimensional factor structure (EPA), and still others a four-dimensional structure (EPA with either the Evaluation or the Activity dimension splintering into two factors). Borgatta (1964) and Norman (1963) have found that when adjective ratings are used to assess persons, five factors emerge from the response data.

Yonker, et al. (1974) using the SD among tenth grade students to measure their self-concept found different factor structures for males and females. For males, the factors were evaluation and potency while for females, evaluation, activity and intellectual ability factors were identified. For the combined groups of males and females five interpretable factors were identified.

On the other hand, in the study by Hecht and Bonnie (1976) only two factors emerged from the subsequent factor analysis of SD data. Similarly, there are some studies that suggest that only one dimension emerges when the Semantic Differential is used to rate some concepts. For example, Solly and Stagner (1956), Dyer (1964), Nisbertt and Gordon (1967) have obtained measurements of self-concept using the Semantic Differential with only the Evaluation dimension

represented. A study by Ranson, et al, (1973) on how students evaluate instruction revealed only one dimension. However, studies carried out by Aiken (1965), Griggs (1959), Pervin and Lilly (1967), Kubiniec (1970), Farr and Kubiniec (1972), on the measurement of the same self-concept confirm the basic EPA dimensions. There is some form of dimensionality dilemma (Yonker, et al. 1974) in the Semantic Differential research. Therefore it will not be surprising to find different dimensions characterizing the data in this study of the reading attitudes of African and American Elementary level students. It may be also possible to get the basic EPA factor structures plus one (or more) additional factor(s) as in the study by Patricia Maslon and Merrifield (1973) in a school situation.

Pan-Cultural Factor Structure

A number of studies have also been carried out to determine if the EPA (Evaluation, Potency and Activity) structure is idiosyncratic to English or whether it holds within other languages. Accordingly, Suci (1960) had illiterate Navajo, Hopi, and Zuni respondents make ratings by pointing. The data obtained revealed Evaluation and Potency factors. The Activity factor did not appear separately. This may be due to the fact that only two dimensions characterize the adjective pairs that were used in these languages, or it may be that Suci did not use enough Activity scales, or the concepts used did not introduce enough Activity variance. However, other studies on the

cross-cultural aspects of the dimensions have confirmed the EPA structure in a number of languages. For instance in the studies by Jakobovits (1966) and Osgood (1964), the EPA structure has been identified in twenty-four different languages. In Jakobovits' study, fifteen languages were used. These languages were American (English), Arabic, Cantonese, Dutch, Finnish, Flemish, French, Greek, Hindi, Italian, Japanese, Kannada, Serbo-Croatian, Swedish and Spanish. In each of these languages, a set of fifty bipolar scales were developed and these were used to rate one hundred concepts. The factor analyses revealed the usual EPA structures in all the languages except the Hindi and Arabic. According to Jakobovits, this demonstrates the pan-cultural nature of EPA structure of the Semantic Differential.

Further work to study the generality of the EPA factor structure across cultures has been conducted by Kumata and Schramm (1969) using subjects from Korean, Japanese and American cultures. In their study, Kumata and Schramm set out to investigate the following:

First, given that the differential has indicated that a common EPA structure in the area of connotative meaning exists among persons in American culture, do the same semantic factors operate in the judgments of Japanese and Korean people? Secondly, do the same set of different factors operate within a bilingual (and bicultural) group? That is if an individual knows two languages, will he make

the same meaning judgements when he is operating in one language as when he is using the other?

The subjects selected for this study were Japanese, Korean and American students. All three groups were college students at a midwestern university. Length of residence in the United States for the two foreign groups ranged from three months to six years.

All groups received two administrations of the test with three weeks between testings. The Korean and Japanese groups received one form in English and the other form in their native language. The American subjects received the identical English form on both administrations. All the instructions were given in the language appropriate to the version of the test. It was assumed that conducting the administration in the manner would encourage "thinking" in the appropriate language. The administrator for each of the three groups was a member of that group. i.ê. a Korean tester for the Koreans, a Japanese for the Japanese group, and an American for the American subjects.

In total, thirty concepts were rated by the subjects. The scales were picked from the original study by Osgood, et al. (1952).

The results showed that the first and dominant factor (after rotation) for all six analyses was the Evaluation factor. This first factor is in agreement with the first factor in the EPA factor structure and it accounted for thirty-four percent of the variance. The second factor

identified in the study was labeled as dynamism. The highest loadings and the most restricted scales for this factor were the scales strong-weak, active-passive, fast-slow and sharp-dull. Hence this factor seems to combine both the potency and activity factors identified in the Osgood original study.

Kumata and Schramm (1956) suggest that the same two factors (evaluation and dynamism) are utilized by the students from the three cultures, i.e. American, Japanese and Korean. This is true within the same language (i.e. English) and the same factors are utilized by bilinguals regardless of language used.

The study conducted by Tanaka, Oyama, and Osgood (1969) using American andJapanese subjects also verified the EPA factor structure among the subjects from the two cultures. However, this study suggests that although the same factors exist in the two cultures, the scale composition of semantic spaces can be to some extent modified in terms of the objects of judgement. Factors may vary with the concepts being rated. Some scales may change their meaning in the sense of factorial composition in the semantic space. This means that although the EPA factor structure characterizes the data, the same scale may change its meaning according to the concept being rated. This phenomenon was found in both the American and Japanese subjects.

Gerald Elsworth et al. (1977) using the Semantic

differential among Australian subjects to measure the self-perception in students for Australian Council for Educational Research identified seven factors. These factors were orderliness, warmth-supportiveness, satisfaction, clarity, energy-enthusiasm, non-conformity and creativity. The study seems to suggest that the kind of concepts being rated determine the factors that subsequently emerge in the factor analysis.

In a study conducted in South Africa by Hudson (1970), using mine laborers, it was found that the samples that had less than four years of education had not developed a more than two-dimensional way of thinking about things. On the other hand, samples that had more than four years of education had developed a kind of three-dimensional way of thinking about things. This should suggest that the Semantic Differential should identify only two dimensions among the people in this particular sample that had less than four years of education while at least three dimensions should be identified among people with more than four years of schooling.

In a separate study conducted in Taiwan and America, Lao (1978) identified the same factor structures among American and Chinese students. The basic three factors identified by Osgood characterized the responses of the subjects from the two cultures. Maclay and Ware (1970) found Evaluation, Potency and Activity factors among the Zuni and Navajo. Their sample consisted of people ranging

from the teens to over sixty. Osgood (1970) found a ninety percent agreement between the factor structures of Navajo, Mexican-Spanish American, Anglos and Japanese. From this he concluded that

> "there is a world view that is relatively stable despite differences in both language and culture. . . . certain aspects of cognitive behaviour may remain stable despite cultural and linguistic differences (Issa and Dennis, 1970, p. 412)."

From this brief literature review, the EPA factor structure has been confirmed in cultures like the American culture, Cantonese, Dutch, Finnish, Flemish, Australians, French, Greek, Italian, Japanese, Mexicans, Kannada, Serbo-Croatian, Swedish, Spanish, etc. This suggests that the same dimensions (evaluation, potency, and activity) should characterize the respones of both African and American students who constitute the subjects of the current study.

Dimensionality Issue Among Children

Applications of the semantic differential with adults are numerous. However, there are relatively fewer applications with children as subjects. Some of these applications of the technique also confirmed the basic evaluation, potency and activity factors among children.

In one experiment by DiVesta (1962) the Evaluation factor characterized the responses of children when rating color. Kagan, Hosken, and Watson (1961) found that in six- and seven-year old children semantic differential ratings of mother, father, and self, the Evaluative dimension was the primary structuring principles used in classification.

In another study conducted by DiVesta and Stover (1962) it was demonstrated that the Evaluative dimension was dominant even in the rating of nonsense figures by children. These three studies seem to suggest that the Evaluative dimension predominantly characterizes the responses of children.

In a study conducted by Ervin and Foster (1960) in which the first- and sixth-grade children rated pictures of faces, two factors, i.e. Evaluation and Potency, were identified. However the study cautions against using scales that have metaphorical meanings because these kind of scales may confuse children.

Maltz (1969) in a study of SD ratings by second-fourth- and sixth-grade children identified the presence of the Evaluation, Potency and Activity factors hence confirming the EPA factor structure among the children. This study also showed that changes in ratings became more apparent with increasing age differences. The meanings of concepts were less consistent in the younger children than in the older ones.

In two studies conducted by Francis J. DiVesta (1969) using subjects from grades two through seven, there was evidence for the stability of Evaluation, Potency, and Activity factors down to the second-grade level. Progressive refinement and differentiation were evident in the unrotated principle-axes factors as reflected in the shift from a predominantly two-factor system (composed of the

Evaluation and Dynamism factors) among the lower grades to the three-factor EPA factor structure among higher grades.

In the first study (by DiVesta, 1969) subjects were one hundred children from each of the grade two through six inclusive. One half of the sample was from a city school in a lower-middle socioeconomic area. The other half of the sample was from a campus school of a state college and was representative of a middle socio-economic area. Five factors emerged from the subsequent factor analysis of the response data. However, most of the variance was accounted for by first three factors, namely, Evaluation, (40.62 percent), Potency (15.60 percent) and Activity (11.54 percent). The fourth and fifth factors defined dimensions involving sensory discriminations.

In the second study (DiVesta, 1969), the subjects again consisted of children from grades two through seven. Six factors emerged from the subsequent factor analysis. These factors were labeled as Evaluation, Potency, Activity, Warmth, Tautness (represented by scales such as loose-tight, soft-hard) and Novelty-Reality (represented by scales like same-different, real-make believe, new-old, etc.) Again, the first three factors, i.e. Evaluation, Potency, and Activity, accounted for most of the variance. However, one difference between the first and the second study was that in the second study there was a gradual increase in loadings on the Evaluation factor from around .13 in the second grade to around .63 in the seventh grade.

Additionally, in the second study, the Potency and Activity factors were combined into one factor (labeled Dynamism) in the lower grades (two through four). However, in this second study, like the first one, from the fifth grade through seventh grades the breakdown of the Dynamism factor clearly emerged in the form of its two components, the Potency and the Activity factors.

Other studies exist in which the issue of the dimensionality of the SD ratings among elementary grade children has been treated. For instance, Sunder (1962) using subjects from grades two, four and six found ten factors characterized the reponse data of students from the three grades. The first factor was Abstract Evaluation, the second, Concrete Evaluation, the third, Softness, the fourth, Noise, the fifth, Quantity-size, the sixth, Primacy, the seventh, Quantity-weight, the eighth, Activity, the ninth, Warmth and the tenth factor was Dryness. However, according to DiVesta, (1969) these factors represent the four factors. For instance, the first, second, third and sixth factors comprise the Evaluation dimension; the fifth and seventh factors comprise the Potency dimension; the fourth and eighth factors are related to Activity dimension; and the ninth and tenth factors make up the Warmth dimension.

The Semantic Differential has also been utilized in schools and among children for purposes other than identifying dimensionality of attitudes held. But from some of these applications, the dimensionality question can be

addressed. For instance, Richard Jantz et al.(1978) used the Semantic Differential to study the attitudes of the three to eleven year old children toward the elderly. The results show that the technique is reliable among children of these ages but more significantly, the Evaluation factor was identified. Anttonen et al. (1977) used the Semantic Differential to monitor the attitudes of third and fifth graders and they found that evaluation factor was the most important factor and clearly distinct by as early as third grade.

In summary, the above literature review suggests that the semantic space of elementary grade children can be defined by one, two, three, or more than three factors. Generally, ratings by children from lower grades (like one through four) are characterized by one or two factors. These factors almost always are evaluation and dynamism, in that order of importance. Ratings by children in higher grade (five through seven) are characterized by all the three factors in the EPA factor structure and it is possible even to identify additional factors. However, there is some evidence that the general EPA structure exists among elementary level grade children irrespective of their grades (Nyberg, and Clark 1979).

Nyberg and Clark used the Semantic Differential to measure the attitudes of elementary children from Alberta, Canada, toward school subjects. They identified the

Evaluation, Potency (which was called Difficulty) and Activity (named Usefulness) factors.

Dimensionality of Reading Attitudes

Since this study attempts to investigate the dimensionality of reading attitudes, it is only appropriate that at this point the relevant research with respect to the issue should be discussed. According to Ira Epstein (1980) investigation of the dimensionality of reading attitudes should facilitate knowledge of various factors that contribute to the development of these attitudes.

Attitudes

The review on the dimensionality of the Semantic Differential has revealed the dilemma that characterizes the research on this matter. This dilemma haunts one even in the research on the use of the SD to determine the dimensionality of Reading attitudes. The nature of what is involved when people talk about attitudes may be partly responsible for this dimensionality dilemma (Epstein 1980). For instance, although the concept of attitude is frequently cited. there are multiple and often confusing definitions of the term. Scott (1968, pp. 205) after reviewing various definitions attached to the term attitude concludes that "it is unreasonable to expect a single final definition of 'attitude' to emerge within the forseeable future." Similarly, Green (1977, p. 111) states that "no single definition can be found that will satisfy all

those who study the topic. This fact is largely a consequence of the broadness of the concept, which permits various definitions reflecting the theoretical point of view of the individual student of attitudes." According to Donlon (1974) this broadness of the concept (attitude) may partly contribute to the dimensionality dilemma.

However, in spite of the multiplicity of definitions of the concept of attitudes, certain dimensions emerge from the literature as being common to most attitudes. The dimensions seem to suggest that the EPA structure is relevant for characterizing data from most attitudes, although often there are additional dimensions.

For instance, Epstein (1980) has identified three basic dimensions of attitudes. The first dimension is that of attitudes as mental constructs. This is inferred from the definition of attitudes by Green (1977) which views attitudes as constructs similar to intelligence. This is similar to the Potency dimension in the EPA structure. Epstein also points out an effective dimension in attitudes. This dimension is evaluative in nature and is comparable to the Evaluation factor in the EPA structure. Then there is the dimension which is supposed to predispose an individual to respond. This is equivalent to the Activity dimension in the EPA structure discussed above. Therefore according to Epstein (1980), the three dimensions from the EPA factor structure are recognizable in attitudes. Epstein points out that reading attitudes are not different.

Scott (1968) has provided eleven dimensions of attitudes. These dimensions involve:

1. Direction: the position along the attitude continuum ranging from positive feelings at one extreme to negative feelings at the other.

2. Magnitude: the degree to which the attitude is favorable or unfavorable

3. Intensity: the degree of commitment with which an individual maintains a particular attitude position.

4. Ambivalence: the extent to which an individual maintains both positive and negative feelings toward the attitude object.

5. Salience: the importance or prominence of the attitude to an individual

6. Affective Salience: the degree to which the evaluative or feeling component of an attitude exerts a greater influence over an individuals' views than does the cognitive or behavioral component.

7. Cognitive Complexity: the number or "richness" or ideas an individual has about the attitude object

8. Overtness: the extent to which an attitude will be expressed in action tendencies on the part of an individual.

9. Embeddedness: the degree to which an attitude is associated with or related to other concepts.

10. Flexibility: the extent to which an attitude can be modified.

11. Consciousness: the degree to which an individual is aware of a given attitude.

According to Lemon (1973) these eleven dimensions can be represented by three major components: cognitive, affective and behavioral. The cognitive component refers to the knowledge, information and perception held by an individual and this may be equivalent to the Potency

(e.g. difficult-easy) dimension of the EPA structure of the Semantic Differential. The affective component concerns the individual's evaluation of the attitude object. This is definitely equivalent to the Evaluation dimension of the EPA structure. The behavioral component is supposed to refer to the individual's action tendency toward the attitudinal object. This may be considered to be equivalent to the Activity dimension. Therefore it looks like even in the above long list of eleven dimensions of the attitudes, three basic EPA dimensions can be identified. Then one could reasonably hold that although attitudes may be characterized by many factors, three major underlying factors are Evaluation, Potency and Activity.

Reading Attitudes

The same issues that relate to attitudes in general have been raised about the area of reading attitudes. For example, Mikulecky (1976, p. 10) reviews literature on reading attitudes and concludes that no uniform definition exists. This compares with the views of Scott (1968) and Green (1977) on the existing definitions of attitudes in general. On the matter of the dimensionality of reading attitudes, various dimensions are also identified but the basic EPA dimensions seem to emerge (Reed, 1978; Summers, 1970; Epstein, 1980).

Epstein (1980) confirmed that all the eleven general dimensions identified by Scott (1968), and discussed above, as characterizing general attudes, i.e.

direction, magnitude, intensity, ambivalence, salience, affective salience, cognitive complexity, overtness, embeddedness, flexibility and consciousness also characterize attitudes toward reading. However, Epstein shows that these eleven dimensions can be adequately represented by the three dimensions, Evaluation, Potency and Activity. Therefore, although in a research similar to the current study it would not be surprising to obtain numerous factors, one can reasonably expect at least the main EPA structure factors (i.e. Evaluation, Potency, and Activity) to emerge in the subsequent factor analysis of the response data.

But there are possibilities for just two factors to characterize reading attitudes. For instance the study carried by Frances Bennies(1973) on the reading attitudes of elementary school children revealed only two factors, Evaluation and Potency. This finding has been supported by another study conducted by Rausbury (1973) which was aimed at determining the cognitive components of attitudes toward reading. The basic factors identified in the study were Evaluation and Potency factors. Similarly, Lowery and Grafft (1968) have found that the reading attitudes towards paperback books are characterized by two basic dimensions, i.e. Evaluation and Potency.

However, there are instances of only one factor characterizing attitudes toward reading. Factor analysis of the Likert-type instrument developed by Estes (1972) for measuring reading attitudes shows that the Evaluative

factor seems to be the dominant factor in the assessment of reading attitudes. Estes uses different scales like, enjoyment, boring, waste of time, interesting, rewarding, not good, dull, pleasant, but the variance in these scales is shown to be accounted for mainly by the Evaluation factor. Kamper (1973) in the investigation of seventh grade students' attitudes toward reading similarly shows that the Evaluation factor seems to be the dominant factor. However, in this particular study girls generally were more positive than boys. Subjects that were classified in the study as reading above their grade placement were found to have significantly more positive attitudes toward reading than subjects classified below grade placement. This suggests that the Evaluation factor may be the most important factor in attitudes toward reading but at the same time within this one factor, there may be differences according to the sex and the ability of the students.

The above literature review on reading attitudes suggests that one can expect the SD ratings of the concept of READING to be characterized by one dimension, two dimensions or three dimensions or even more than three dimensions.

Evaluation of the Semantic Differential

Osgood, et al. (1961) have suggested that the SD should be evaluated as a measurement instrument using the criteria of objectivity, validity, sensitivity, comparability, and reliability (pp.125-177).

An instrument is valid when it measures what it is supposed to measure. The validity of SD has been established in terms of face validity and correlation with external criteria (Osgood, 1961; Marks, 1965). The Semantic Differential is sensitive because it yields distinctions as fine, or even finer, than those made on common sense grounds (Osgood, et al. 1961, pp. 166-169). The criterion of comparability is met by SD when it is applied across the range of situations relevant to what is being measured and the results are interpreted in a constant fashion (Osgood, et al. 1961, p. 169). The different situations include different subjects, different cultures (Kumata, and Schramm, 1956), and different concepts (Osgood et al. 1961, p. 177).

However, the focus of this study is on the evaluation of SD with respect to the reliability of various SD formats. According to Osgood, et al. (1961, 126-140), three kinds of reliabilities can be computed from any of the three formats used in this study. These are item reliability,(p. 126), factor-score reliability (p. 138) and concept-reliability (p. 140). These reliabilities are explained in the following way:

> The basic score obtained from the semantic differential is a digit value (e.g. one through seven for a seven point format SD) corresponding to a subject's check-mark with which he indicates his judgment of a particular concept against a particular scale. We shall use the term item reliability to the reproducibility of these basic scores. These item scores are typically averaged within factors . . . we use the term factor-score reliability to refer to the reproducibility of these values under retest conditions. The several factor-scores for a single

> concept serve to allocate this concept to a point in the semantic space which defines the meaning of this concept; we shall refer to concept-meaning reliability when dealing with the reproducibility of points in the semantic space with repetition of the measurement operation (Osgood, C.E. et al. 1961, p. 126).

However since there is more involved in the estimation than the simple test-retest reliability which Osgood et al. (1961, see above) use for their definition of reliability, an attempt will be made first to review literature that provides a complete conceptual framework of "reliability" then some additional literature dealing specifically with the reliability of SD will be examined.

Reliability

Reliability refers to consistency of scores. It is concerned with the degree of agreement or consistency between two independently discerned assessment scores. A correlation coefficient is used to express the degree of relationship between the two sets of scores. In educational and psychological assessment, it is unreasonable to expect scores that are completely consistent. For instance, in the case of measuring attitudes toward reading, some variations in measurement are inevitable. This may be due to the fact that the attitude held by subjects may be unstable or the measuring procedure or instrument may have changed from one assessment to another. Therefore, the results of assessment may reflect upon the "true" amount of attitude held by the subjects as well as how accurate a measuring device is.

Many factors influence scores and affect reliability. Emotional strain, fatigue, guessing, poor conditions during the administration of the test, scoring error, memory effects, etc. (Magnusson, 1966; Mehrens, and Lehmann, 1978). However, according to Gronlund (1976, p. 106), "the more consistent the test results are from one measurement to another, the less error present and, consequently, the greater the reliability."

The goal of reliability estimates is to determine the consistency of our results. Consistency, however, can be thought of in several ways. For instance, consistency can be over a period of time, over different samples of questions, within the measure itself, or between different raters. This means that there are different ways of estimating reliability. This study focuses on one kind of reliability, namely, the reliability within the measure itself. This way of estimating reliability is called the internal consistency method. Coefficient Alpha, which is an estimate of internal consistency will be used.

Nunnally and Durham (1975) support the use of Coefficient Alpha because, in most situations, it provides a good estimate of reliability. This method will be used for estimation of reliabilities in this study. In the study conducted by Askov (1971) the SD was demonstrated to have an interval consistency (reliability) which was as high as .925. This information should provide a guide on what to

expect in this study. Nunally (1967) (in Elsworth and Coulter, 1977, p. 35) has suggested that for scales, reliabilities of 0.50 to 0.60 may be adequate.

Reliability and the SD Technique

Reliability of the Semantic Differential can be approached in terms of conceptualizing the observed rating in terms of true variance and error variance. According to the classical theory of measurement, reliability of an instrument is due to the true variance (Magnusson, 1967, p. 64; Mehrens and Lehmann, 1978, p. 90; Allen and Yen 1979, pp. 61-65). Reliability indicates the extent to which the observed variance (from the ratings) is due to true score variance. If error variance accounts for a big portion of the observed variance, then the reliability will be low because the large error variance will reduce the true variance.

In the Semantic Differential, true variance is that derived from actual variations in effective responses and error variance is that due to other factors. Error variance has two sources, random errors and bias (non-random errors). However, for reliability of an instrument, random errors contribute to unreliability but the non-random or systematic errors become part of true variance. Both kinds of errors will be reviewed below for various reasons. First, the literature on random errors in SD ratings will be reviewed in order to show potential sources of unreliability. The literature on the bias in SD ratings

will subsequently be reviewed to show that SD data needs to be interpreted cautiously especially where instances of bias discussed in this literature are possible.

Sources of Random Errors

One example of the source of random error has been associated with the grade level of subjects. DiVesta and Dixon, (1966) found in their study of the test-retest reliability of children's ratings on the Semantic Differential that reliabilities were higher in the higher grades than lower grades. The same study found that the Evaluation scales were more reliable at all grade levels than the Potency and Activity factors.

Research also seems to indicate that ratings are more stable for some concepts than for others, and this seems to be related to the number of meanings for a concept. For example, Norman (1959) found that the concepts leper and tornado were more stable than the concept star. Studies by Lauria (1959) and Peabody (1962) suggest that concepts whose true values are neutral are rated with less reliability.

The individual differences between subjects seem to introduce something to consider when reliability is analyzed. For instance, Norman (1959) has found that some subjects are more stable than others in making their ratings. According to Norman's research, there is a tendency for those subjects who use the end points of the scales

more often to have lower test-retest stability. Additionally, Norman's study indicates that certain scales generally have greater stability. These are scales with bigger factor loadings on the Evaluation factor.

The other aspect of reliability discussed in the literature on the reliability of Semantic Differential relates to comparisons of the reliabilities of individual scales and those of factors which consist of various scales (bipolars). According to Mehrens and Lehmann (1978) and Magnusson (1967), increasing the length of a test will increase the reliability of the test. Accordingly, Norman, (1959); Nyberg and Clarke (1979) found that factor scores are more reliable than single ratings and most of the gain in test-retest stability can be attained by averaging three or four scales. However, going to eight scale factor score seems to add very little additional reliability (Norman, 1959). This is rather surprising since one would expect continual gains in reliability as more relevant items are added into the total score.

The other reliability related issue discussed and researched is the reliability of group means. Many SD studies do not focus on an individual's rating of a concept but on a group mean. In such a case, there is averaging both across scales (factor scores) and across persons. According to DiVesta and Dixon (1966); and Miron (1961), the averaging of group means across scales and persons make the

group means highly stable (reliable) even when the samples of subjects involved in calculating the means are as small as thirty.

Bias. Examples of bias in SD ratings include social desirability, and scale checking styles.

Social desirability. Social desirability is an example of biased error. This can be illustrated by a study by Nickols and Shaw (1964). Nickols and Shaw hypothesize that subjects are more sensitive to the social repercussions of their ratings when dealing with salient objects. Then the SD is more transparent as a measure of attitude.

According to them, then, social desirability may enter as a factor in SD ratings of salient objects. This interpretation receives support from a study by Ford and Meisels (1965) which showed that the social desirability of SD scales corresponded directly to their loading on the Evaluation dimension. (The Potency and Activity dimensions are unrelated to social desirability.) Therefore it may be true that direct SD rating of objects may not be an efficient approach to measurement when salient or delicate topics are involved, because subjects can distort their responses in the direction of social desirability. However, Heise (1969, p. 408) suggests that before making a firm conclusion on the impact of social desirability on SD, "one would like to see replications which involve more

than two attitude objects, in which subject's need for approval is an actual control variable, in which a criterion is used to show that the SD measurements are made on all three dimensions." (p. 408). Yonker, et al. (1974) have further shown that although social desirability is real, its influence does not render the measures of SD invalid.

Error due to scale-checking styles. Important differences appear between persons in scale-checking styles. Some subjects appear to use the end points of scales more often and to avoid the intermediate discriminatory positions (Peabody, 1962). According to Arthur (1962), this is a stable trait of individuals over time and over different sets of concepts. When measurements of scale-checking style are made, the test-retest and split-half correlations of measurements are above .70.

Scale-checking styles introduce biased error by moving measurements toward the end points or midpoint of a scale. Additionally, it seems likely that the consistency and extent of end-point checking is related to the true scores for concepts, (Heise, 1969, p. 409). If a subject with such a bias rates a "quite good" concept on five evaluation scales, he is likely to check the positive end on all five scales; if he rates a "slightly good" concept, he is more likely to alternate between the end points and midpoints of the scales. The result would be that when averaging his ratings to get factor scores, we would find

systematic deviations from true scores, and the amount of deviation would be larger for the more polarized concepts. Kahneman (1963) calls this exaggeration error. Exaggeration error is a non-random deviation of a subjects' rating from the true score which varies with the true score for the concept and the individual's propensity to exaggerate when using rating scales. This error introduces problems in SD methodological research and complicates cross-person comparisons of attitudes by raising a question like, Does the obtained difference in scores reflect true differences in affective responses or merely differences in propensity to exaggerate?

A number of studies on scale-checking styles exist and these suggest that certain classes of people are more likely to emphasize scale end-points.

Age: Children tend to use the end points and center more than adults (Osgood, 1961, p. 85). The study by Soares & Soares, (1981) also indicates that age is a factor. In terms of IQ, low IQ is associated with greater use of end point but mainly among young children, (Stricker and Zax, 1966). According to the study by Mogar (1960), high scores on the F scale tend to use the extremes more often.

Sex: There are some studies to suggest that females use the extremes more than males (Dixon, and Dixon, 1964; Goldfried, Kissell, 1963). These studies suggest sex differences with respect to checking styles. But at the

same time there are other study reports that show no sex difference (Stricker, and Zax, 1966).

Neurosis: Studies by Arthur, 1965; Zax, Gardiner, Lowy, 1964, indicate that neurotics use the extremes more. However, the study by Luria shows no differences between neurotics and controls in the use of scales.

Psychosis: Studies by Neuringer, 1963; Marks, 1965, indicate that psychotics use the extremes more than normals.

Grade: According to Leo M. Harrill (1971) students in lower grades (eg. second grade) are more likely to indicate extreme positions (p. 11).

Summary

1. The Semantic Differential Technique is shown to be a scaling method with demonstrated properties like equal intervals within the scale and zero points falling at the same place on each scale. Where these properties do not hold the effect is negligible (Messick, 1957; Heise, 1969).

2. There are basically three dimensions emerging from factor analysis of the SD response data. These dimensions are Evaluation, Potency and Activity (i.e. EPA Dimensions). However, there is evidence of additional factors and in some cases even less than three factors have been identified. This has been particularly true among younger children and people from non-Western cultures where often one or two dimensions have characterized the response data.

3. Reading attitudes tend to display the general EPA Dimensions although additional dimensions have been identified in some studies.

4. The reliability of SD is influenced by factors like the social desirability of concepts being rated, checking styles of respondents, age, IQ, etc. However, SD has been shown to be reliable for students even as low as

second grade (Harrill, 1971). According to Elsworth, and Coulter (1977), for scales of SD, reliabilities of 0.50 to 0.60 may be adequate although the ideal would be to get reliabilities as high as 0.80 or greater.

CHAPTER III

METHODOLOGY AND PROCEDURES

Construction of Scales

The scales used in this study are based on the work done by Nybergy, et al. (1979) on the attitudes of children to school subjects and the work that has been done by Osgood, Suci, and Tannenbaum (1957) on the measurement of meaning. Eighteen scales (or bipolar adjectives) are used to represent three factors, namely, Evaluative, Difficulty (Potency) and Usefulness (Activity). The names of two factors were changed to make the interpretation of the information from school subjects more meaningful. The names were changed by Nybergy and his colleagues (1979). Below is a breakdown of the scales under each of the factors represented.

Evaluative Factor

1. Nice - Awful
2. Boring - Interesting
3. Dislike - Like
4. Dead - Alive
5. Lively - Inactive
6. Good - Bad

Usefulness

1. Useful - Useless
2. Important - Unimportant
3. Worthless - Valuable
4. Helpful - Unhelpful
5. Necessary - Unnecessary
6. Meaningful - Meaningless

Difficulty

1. Hard - Easy
2. Light - Heavy
3. Clear - Confusing
4. Difficult - Simple
5. Strange - Familiar
6. Understandable - Confusing

The scales will be used to rate the concept READING.

Construction of Formats

Three formats of the Semantic Differential technique were constructed for this study. These were three-point, five-point, and seven-point format. Each of these formats was used to rate the concept (READING). The same kind and number of bipolar adjectives was used in each of the formats. However, the order of these adjective pairs was different on each format. This provided three formats with the same bipolars ordered differently. First the order of the bipolars on the seven-point format are

determined. The order of the bipolars in the three-point and five-point formats is done randomly based on the ordering used in the seven-point format.

This differential ordering of bipolar adjectives meant, for instance, that the first bipolar on the seven-point format became the ninth on the five-point format, and the fourteenth on the three-point format, etc. This was deliberately done to minimize the chances of subjects in the study going back to syncronize their responses on one format with those on other formats within the time constraints provided by the testing. According to research by Kane, Robert B. (1968) the order in which SD adjective scales are presented does not lower the reliability of the instrument. Hence the differential ordering of bipolars used in the construction of formats can achieve their objective without lowering the reliability of the instruments.

Construction of Directions

To ensure uniformity of the directions for rating the formats, some directions were prepared in advance. An example of these directions is contained in Appendix A.

Construction-Orientation Material

Since the concept of reading can take on different meanings, a questionnaire was constructed to create some commonality in the basic concept of reference among the various subjects. The subjects completed the questionnaire

prior to completing the SD forms. The purpose was not to measure any reading but rather to enable the respondents to focus their attention on one similar kind of reading. An example of the questionnaire is contained in Appendix A.

Translation

The Semantic Differential adjective pairs were translated into Swahili so that the African subjects could use the instrument in a language most familiar to them. This was also done for the materials on the Direction and Orientation. The Standard English-Swahili Dictionary was used for the translation of the scales. A sample of the Swahili version of the scales, directions and orientation questionnaire is contained in Appendix B.

Administration

The administration was done in two steps. The first step involved the administration of the Orientation questionnaire to each of the respondents in the study. Immediately after the first step, the three formats of the Semantic Differential were administered to all the subjects. Although all the subjects rated the concept (READING) using all the formats, the order of the formats was varied in such a way that there were three different orders.

One order (called Sequence A) had the formats in a seven, five, three sequence, then the other (Sequence B) had the formats in three, seven, five sequence, and

finally the sequence of five, three, seven was used to create a third ordering (Sequence C) of the formats.

The various formats were presorted in these three sequences. Each sequence was administered to one third of respondents in each grade selected for the study. For instance, in fifth grade, one-third of the students took the Sequence A, one-third the Sequence B, and one-third the Sequence C. The pile of sequences of formats was randomly ordered again so that there was no predictive way of knowing the sequence to be administered to any subject.

Population

The sample used for the study consisted of students from grades four, five, six, and seven. The ages of these children ranged from nine to thirteen years. The sample consisted of students from Western Kenya (i.e. African students) and some American students selected from Lansing, Michigan. The African students were randomly selected from two schools, i.e. Momboha Primary (Elementary) School and Itumbu Primary School. The American students were selected from Lansing Christian Elementary Schools on Logan and South Pennsylvania. Below is a table that shows the number of students for every category used in the study.

The total number of subjects in the study was 448. Convenience sampling was used to select schools were the study was but the selection of the children within each school was done randomly.

The American subjects were selected from private schools, i.e. the two Christian schools, and may therefore be more representative of the American middle class than of children in public schools. However, the African subjects were from families that rely on subsistence agriculture and their parents are basically self-employed peasants living in rural Kenya. While the American subjects come from homes where parents can read and write, most of the African subjects come from homes where parents do not know how to read nor write. The African subjects view education as a means of getting salaried jobs in government or modern private sector.

Compulsory schooling characterizes the educational systems of both America and Kenya. However, in Kenya, the compulsory schooling applies to the elementary grades while in America, compulsory schooling extends to secondary grades. Additionally, compulsory education in Kenya has only been operative for the last seven years. The American subjects come from a society where compulsory education, at least for elementary grades, has been a prominent feature for a relatively longer period than in Kenya. Therefore, the American subjects were from a society that is characterized by a higher literacy rate than the Kenya subjects.

All the American subjects spoke English as their first language and the same language was used as a medium

of instruction. The African subjects spoke more than one language. The language used for instruction in classes was English but Swahili is used mainly for informal interaction outside the classroom. However, the children in these grades know better Swahili than English because while they begin learning English when they go to schools, Swahili is learned almost from the cradle.

The American subjects represent the urban American population while the African subjects were mainly drawn from rural setting and are more likely to be representative of children in rural elementary schools.

TABLE 1

THE SAMPLE

American Subjects			African Subjects		
Age	Grade	N	Age	Grade	N
9-10	4	55	9-10	4	57
10-11	5	55	10-11	5	55
11-12	6	58	11-12	6	56
12-13	7	55	12-13	7	57

Scoring

In a typical seven-point scale, the scores are numbers one to seven. The low end on the scale, representing adjectives like distasteful, weak, passive, bad, mild, unpleasant, etc., are assigned the value of one while seven is assigned to the high end of the scale, representing adjectives like tasty, strong, clean, good, etc. The numbers two to six are assigned to the points between the low and high ends of the scale. The responses are scored according to the numerical value corresponding to the points checked by the subjects.

This scoring procedure was used for all the three formats used in the study. However, for the five-point scales, the high end was assigned the value of five and the values of two-four were assigned to the points between the low and high ends of the scales. Similarly,

the high end of the three point scale was assigned the vlaue of three and the value of two was assigned to the point between the high and low end.

Analysis

Part of the focus of the analysis was on comparing the formats within each sub-population with respect to concept reliability. Additionally, an attempt was made to examine the factors underlying the subjects' reading attitudes, and the reliabilities of the various factors.

Factor Analysis

The SPSS factor analysis sub-program, i.e. principal factoring with iterations (PA2) was used for the analysis of the data from all the formats. This method utilizes the correlation matrix with communality estimates in the main diagonals to extract factors. The first procedure involved extracting factors that had eigenvalues greater than or equal to 1.00. The second procedure involved specifying the extraction of only three factors. The information on the percentage of variance accounted for by each of the first three factors was based on the output from the second procedure.

Varimax rotation procedure was then used to simplify the factor structures and hence facilitate easier interpretation of the information on the factors. This rotation resulted in some factors loading highly on some variable but almost zero on other variables. The result

led to the identification of clusters of variables on which different factors loaded significantly. To facilitate interpretation of factors, it was decided a prior that only factor loadings in excess of .30 would be considered significant. The kind of scales loading significantly on a factor were used to give the factor a label.

From the SPSS computer factor analysis output, the following information was obtained:

1. The composition of the first three factors from the ratings by American subjects. From this information, the factors were given their labels (names).

2. The composition of the first three factors from the ratings by African subjects. Again factor labels (names) were obtained.

3. The order of the factors from the American data was observed. This was basically to determine the factor that was extracted first, the factor extracted second, and the third factor. The order in which the factors were extracted and the percentage of variance they accounted for was used to make some inference on the importance of these factors.

4. The order of the factors from the African data was observed and inference was made about the importance of these factors on the basis of their variance and their order of extraction.

5. Some inference was then made on the difference or similarity of the order different factors followed in both the African and American factor structures. This information was used to determine whether the factor structures of the data from the American and African subjects were similar or different.

Factor score reliability. This is basically the estimate of the internal consistency on the ratings of the combined scales representing each of the three factors (i.e. Evaluation, Difficulty, and Usefulness). For

instance to obtain the factor score reliability for Evaluation, the SPSS subprogram was used to calculate the internal consistency on the ratings of the six scales, i.e. good-bad, nice-awful, interesting-boring, lively-inactive, like-dislike, alive-dead. This provided the factor score reliability for Evaluation. Similarly, the six scales representing the Difficulty factor (i.e. simple-difficult, easy-hard, light-heavy, understandable-confusing, clear-confusing, familiar-strange) were used to obtain reliability estimates for the Difficulty. The factor score of the Usefulness factor was obtained from the internal consistency of the combined scales representing this factor. These scales were helpful-unhelpful, meaningful-meaningless, necessary-unnecessary, useful-useless, important-unimportant, valuable-worthless.

Concept Reliability

This consisted of computing the internal consistency coefficients of the scores obtained from all ratings on each format for the eight grades. This gave 8 x 3 coefficients of internal consistency. This also provided an idea of which format provides the most reliable measures of the reading attitudes at different grades and in different cultural groups. The SPSS computer program was used for obtaining estimates of Reliability.

Criteria for most reliable format. A comparison of the reliabilities from various formats was made within

each grade (among African and American subjects, separately) using the concept of reliabilities. The format with the biggest magnitude of reliability was considered the most reliable. However, some tests of statistical significance using F tests were computed to determine if formats with the biggest reliabilities in every sub-population are significantly different from formats with the second biggest reliabilities at p=.05. The use of an F test is based on the sampling distribution of $1-r_1/1-r_0$ (where r_0 and r_1 = coefficient alpha) which is distributed as an F. (Feldt, 1969) However, based on the review of literature, it was also decided that any reliability coefficients below .50 would be rejected as being too low.

CHAPTER IV

PRESENTATION AND ANALYSIS OF RESULTS

Introduction

In this chapter the results from the ratings of the concept of READING using the three formats of the Semantic Differential technique by American and African subjects from fourth to seventh grades are presented and analyzed in three sections.

The first section presents and analyzes the results on the reliability of the formats. First, reasons are provided for using the total concept reliability for comparing the reliabilities of the formats. The subsequent analysis of format reliabilities shows that among the American subjects, five-point and seven-point formats are more reliable than the three-point format. The results from the African subjects show that the five-point format is more reliable than other formats in the fourth and fifth grades but in the sixth and seventh grades, both the five-point and seven-point are more reliable than the three-point format.

The second section presents and analyzes the results on the factors (dimensions) and the factor structures. The criterion for accepting a factor loading as

being significant is .30 so that any factor loading above this is considered to be significant. Accordingly, among the American subject, the first factor loads significantly on scales representing the Evaluation dimension, the second factor loads significantly mainly on scales representing the Difficulty dimension while the third factor has significant factor loadings on scales representing the Usefulness dimension. This suggests an Evaluation-Difficulty-Usefulness factor structure.

The results from the African subjects show that Factor I loads significantly on scales representing the Usefulness dimension, Factor II has significant factor loading on scales representing the Evaluation dimension while Factor III loads significantly on scales representing the Difficulty dimension. Hence it is concluded from observing the results generated by various formats that Factor I is Usefulness, Factor II is Evaluation, and Factor III is Difficulty.

The third section presents some results on the reliabilities of the factors represented by the eighteen scales in this study. The purpose is to determine the most reliable factor in American and African subjects of different grades. The analysis of the results shows that among the American subjects the most reliable factor is represented by the six Evaluation scales. This factor is followed by the factor represented by the Difficulty scales and the least reliable factor is the one represented

by Usefulness scales. This is true for all grades from which the subjects were taken. Hence there is no factor-grade interaction.

Among the African subjects, the most reliable factor is Usefulness followed by Evaluation and then Difficulty. This is also true from fourth grade to seventh grade.

Comparison of Reliabilities of Formats

For the purpose of determining the most reliable formats, reliability coefficients generated on all eighteen scales for each format (i.e. Concept reliabilities) were used. Osgood, et. al.(1961, p. 126) provide additional ways of comparing the reliabilities of the formats. For instance, there is factor-score reliability which refers to the reliability of factors represented by various scales. There is also item reliability which is associated with the reliability on the ratings from each individual adjective pair (scale). The factor-score reliability could be used for comparing the formats. However, concept reliabilities were used in this study for comparing the formats because the main focus of the study was to compare the formats in terms of ratings on the total concepts rather than individual items or even factor-scores.

Reason for Using Three Dimensions in Factor Analysis

At this point it may also be necessary to explain why the subsequent results from factor analysis only utilize

information from the first three factors. First, this was determined by the nature of this study which was confirmatory rather than exploratory. The scales used in the study were deliberately selected to represent three factors and the factor analysis was aimed at confirming these three dimensions. Additionally, there was some information from the initial factor analysis that reinforced the decision to use the first three factors.

It was observed that in almost all the cases, the first three (out of eighteen) factors accounted for substantial percentages of variance. Tables 2 and 3 provide the percentages of variance accounted for by the first three factors from the analysis of the ratings by American and African subjects, respectively. The magnitude of these percentages suggest that the attitudes toward reading are mainly characterized by three factors.

Reliable Formats for American Subjects

Generally, the five-point and seven-point formats yield more reliable ratings than the three-point format among the American subjects. This is true for both unstandardized and standardized reliability coefficients. This conclusion is based on the observation of the differences between the magnitudes of these reliability coefficients but in some cases this is also true when tests of statistical significance are used to determine whether the differences are statistically different at .05 level of

TABLE 2

PERCENTAGE OF VARIANCE ACCOUNTED FOR BY THE FIRST THREE FACTORS (AMERICANS)

Grade	Format	PCT of Variance
4	3 pt	49.6
4	5 pt	52.0
4	7 pt	65.2
5	3 pt	52.9
5	5 pt	60.5
5	7 pt	67.5
6	3 pt	48.0
6	5 pt	63.4
6	7 pt	66.3
7	3 pt	57.7
7	5 pt	63.2
7	7 pt	63.3

significance. A comparison of the reliability coefficients from the ratings on different formats in different American grades confirms the superiority of five-point and seven-point formats over three-point format in terms of the magnitudes of the reliability coefficients. Table 4, which is based on unstandardized reliability coefficients, attempts to portray these differences.

The same superiority of the five-point and seven-point formats emerges from the analysis of standardized

TABLE 3

PERCENTAGE OF VARIANCE ACCOUNTED FOR BY THE FIRST THREE FACTORS (AFRICANS)

Grade	Format	PCT of Variance
4	3 pt	59.8
4	5 pt	65.5
4	7 pt	65.5
5	3 pt	50.1
5	5 pt	52.7
5	7 pt	56.3
6	3 pt	51.1
6	5 pt	64.4
6	7 pt	54.2
7	3 pt	49.4
7	5 pt	62.1
7	7 pt	61.1

TABLE 4

UNSTANDARDIZED RELIABILITIES FOR AMERICAN SUBJECTS

Grade	3 Pt Format	5 Pt Format	7 Pt Format
4	.77	.86	.89
5	.80	.85	.90
6	.74	.89	.89
7	.75	.87	.88

reliability coefficients for the same group of subjects, as shown in Table 5.

TABLE 5

STANDARDIZED RELIABILITIES FOR AMERICAN SUBJECTS

Grade	3 Pt Format	5 Pt Format	7 Pt Format
4	.76	.87	.89
5	.78	.85	.89
6	.74	.90	.89
7	.74	.87	.88

Tests of Statistical Significance

Tests of statistical significance using an F test were performed to determine whether the differences between reliability coefficients from various formats were statistically significant. The standardized reliabilities were used for this purpose and the 0.05 level of significance was adopted for obtaining critical values. The F ratios were computed using $1-r_2/1-r_1$. The degrees of freedom used for obtaining the critical values were computed in the following way. This method has been suggested by Feldt (1969).

$$V_2 = \frac{2A}{A-1} \qquad V_1 = \frac{2A^2}{2B-AB-A^2}$$

where $$A = \frac{df_4}{df_4-2} \cdot \frac{df_2}{df_2-2}$$

$$B = \frac{(df_1+2)(df_4)^2}{(df_4-2)(df_4-4)(df_1)} \cdot \frac{(df_3+2)(df_2)^2}{(df_2-2)(df_2-4)(df_3)}$$

and $df_1 = (N_1-1)$

$df_4 = (N_2-1)$

$df_3 = (N_2-1)(k_2-1)$

$df_2 = (N_1-1)(k_1-1)$

and N_1 and N_2 are the number of subjects that used formats I and II respectively, while k_1 and k_2 refer to the number of scales (which was equal to eighteen in both cases).

The results for the degrees of freedom, the F ratios obtained and the conclusions concerning the significance of the differences are provided in Appendix C for both the American and African subjects. However, provided below is a summary of the results on the significance of the differences in the reliability coefficients from the ratings by American subjects using the various formats.

1. In fourth grade, the five-point and seven-point formats were significantly more reliable than the three-point formats. The difference between the five-point and seven-point formats was not significant.

2. In the fifth grade, only the seven-point format was significantly more reliable than the three-point format. Other differences were non-significant.

3. In the sixth grade, the five-point format was significantly more reliable than the three-point format. Similarly, the seven-point format was more reliable than the three-point format. The difference between the five-point and the seven-point formats was non-significant.

4. In the seventh grade, the results were very similar to what was obtained in sixth grade. Both the five-point and the seven-point formats (separately) were significantly more reliable than the three-point format.

Summary

Among the American subjects, the five-point and seven-point formats proved to be more reliable than the three-point format. In fourth grade, both the five-point and the seven-point formats have relatively bigger reliability coefficients than the reliability coefficient of the three-point format but the differences between these coefficients are not statistically signicant. In the fifth grade, the seven-point format has a reliability coefficient which is significantly greater than that of the three-point format but there is no statistical difference between the three-point and five-point formats and between five-point and seven-point formats. However, in fifth grade, like fourth grade, the reliability coefficients of the five-point and seven-point formats are bigger in magnitude than that of the three-point format. In sixth and seventh American grades, the five-point and seven-point formats have reliability coefficients which are bigger in magnitude and are significantly different from the three-point formats. This seems to suggest that in sixth and seventh grades, the five-point and seven-point formats may be more reliable than the three-point format.

Reliable Formats for African Subjects

Among the African subjects, the five-point format seems to be the most reliable one in the lower grades (i.e. fourth and fifth grades) while both the five-point and seven-point formats are relatively more reliable in sixth and seventh grades. The three-point format is generally less reliable than the other formats in all grades. In fact lowest reliability coefficient is provided by ratings on the three-point format in the African fourth grade subjects. The two tables below provide summaries of the unstandardized and standardized (respectively) reliability coefficients generated by ratings on the various formats used in different grades.

TABLE 6

UNSTANDARDIZED RELIABILITIES FOR AFRICAN SUBJECTS

Grade	3 Pt Format	5 Pt Format	7 Pt Format
4	.33	.86	.54
5	.59	.77	.71
6	.77	.78	.80
7	.79	.85	.88

The reliability coefficient of .33 provided by the ratings on the three-point format in fourth grade is the lowest in the whole study and is unacceptable because the standard acceptable reliability is .50 and above (see

Methodology). Therefore, the three-point format may not be appropriate for African fourth graders.

TABLE 7

STANDARDIZED RELIABILITIES FOR AFRICAN SUBJECTS

Grade	3 Pt Format	5 Pt Format	7 Pt Format
4	.41	.88	.59
5	.57	.80	.71
6	.77	.81	.82
7	.79	.88	.88

Similarly, the standardized reliability coefficient of .41 (from the table above) is unacceptable for the same reason that acceptable reliability should only be above .50. However, it can be noted that the five-point format provides some very high reliability coefficients among fourth graders and fifth graders relative to other formats. This is more pronounced in fourth grade than in fifth grade. In the sixth grade the reliability coefficients of the five-point and seven-point format are almost the same and in the seventh grade both formats have the same reliability coefficients. The reliability coefficients generated from the ratings on the three-point formats are smaller than those from the five-point and seven-point formats in all the African grades.

Tests of Statistical Significance

Tests of statistical significance to determine whether differences between the more reliable and less reliable formats were significant were also performed. Conditions similar to the tests of significance on the data from American subjects were maintained. Appendix C has a table that gives the results. An outline of these results is also presented below.

1. In fourth grade, the five-point format was significantly more reliable than the three-point and (separately) the seven-point formats. The difference between the three-point and seven-point formats was not significant.

2. In the fifth grade, both the five-point and the seven-point formats were significantly more reliable than the three-point format while the difference between the five-point and the seven-point formats were non-significant.

3. In the sixth grade, no significant differences were obtained in the reliabilities of the formats.

4. In the seventh grade, both the five-point and seven-point formats were significantly more reliable than the three-point format. The five-point and seven-point formats were not significantly different in their relationships.

Summary

Among the African subjects, the five-point format appears to be more reliable than the three-point and seven-point in fourth and fifth grade but in the subsequent grades, both the five-point and seven-point formats are more reliable than the three-point formats.

The summary of the results on the reliable formats

for both the American and African subjects is given in Table 8 below.

TABLE 8

SUMMARY ON RELIABLE FORMATS

Subjects' Nationality	Grade	Most Reliable Formats
American	4	5 pt and 7 pt
American	5	5 pt and 7 pt
American	6	5 pt and 7 pt
American	7	5 pt and 7 pt
African	4	5 pt
African	5	5 pt
African	6	5 pt and 7 pt
African	7	5 pt and 7 pt

Information on Factors

Factor analysis of the ratings revealed the existence of the three factors identified by various studies conducted by Osgood and others as discussed in the review of literature. These factors are evaluation, potency and activity which are given the names of evaluation, difficulty and usefulness, respectively, in this study to make them relevant to the school situation. However, although the factor analysis of the American subjects ratings show that the most important factor is the Evaluation, followed by the Difficulty (Potency) factor, and the third factor

is the Usefulness (Activity) factor, the factor analysis of the ratings of African subjects showed that the most important factor, with minor exceptions, was the Usefulness factor, followed by the Evaluation factor and the third factor was the Difficulty (Potency) factor.

Factors from American Subjects' Ratings

In the factor analysis of the ratings from almost all the formats in all the American subjects and grades used for the study, the first factor was identified as the Evaluation, the second was the Difficulty (Potency) and the third factor was the Usefulness (Activity). The only exception was the factor structure obtained in fourth grade on the ratings from the three-point format. An attempt is made below to present the results on the factor structures of the data. These factor structures are presented according to the grades and the format that was used to get the ratings. The results that seem to suggest the same factor structures are presented first and then the factor structure from the ratings on the three-point format by American fourth graders is presented last because it differs from all the other factor structures. All the first eleven factor structures that are presented below suggest an Evaluation, Difficult, Usefulness factor structure.

Factors from the Five-Point and Seven-Point Formats Used in American Fourth Grade

For the sake of interpreting factor loadings, .30 was made (in the section on methodology) to be the cutoff for significant factor loadings. Any factor loading above this cut-off is considered significant and any loading below that is rejected. On this basis, Factor I on Table 9 is Evaluative because most of the scales that load highly on the factor are evaluative. These scales are alive-dead, like-dislike, good-bad, nice-awful, and interesting-boring. Factor II is clearly a Difficulty factor because the scales that consistently load significantly on it are simple-difficulty, easy-hard, understandable-confusing, clear-confusing, and familiar-strange. These scales represent Difficulty. Factor III loads significantly on scales like helpful-unhelpful, useful-useless, valuable-worthless, important-unimportant, and necessary-unnecessary. These scales represent a Usefulness dimension and therefore it is reasonable to conclude that Factor III is basically a Usefulness factor. In this case, since the table gives results of the factor analysis of the Semantic Differential ratings using five-point format among American fourth graders, the table therefore provides the factors and the factor structure provided by the data obtained from this particular format in fourth grade.

The factor analysis of the ratings by fourth grade American subjects using a seven-point format is provided

TABLE 9

EXTRACTED FACTORS FROM RATINGS USING FIVE-POINT FORMAT BY AMERICAN FOURTH GRADE CHILDREN

Scales	Factor I	Factor II	Factor III
Evaluation			
1. Alive	.31	.13	.12
2. Like	.61	.28	.22
3. Good	.58	-.09	.18
4. Lively	.09	.41	-.17
5. Nice	.84	.31	-.08
6. Interesting	.69	.02	.19
Difficulty			
7. Simple	.13	.20	-.01
8. Easy	.45	.64	.22
9. Light	.16	.07	.30
10. Understandable	.25	.51	.24
11. Clear	.02	.57	.15
12. Familiar	.07	.30	.49
Usefulness			
13. Helpful	.13	.09	.73
14. Meaningful	.25	.09	.40
15. Necessary	.05	.30	.74
16. Useful	-.01	-.16	.40
17. Important	.11	.04	.40
18. Valuable	.28	.26	.78

in Table 10. The Factor I loads highly on scales like like-dislike, good-bad, lively-inactive, nice-awful, interesting-boring. This is an Evaluation factor. Factor II loads significantly on scales like simple-difficult, easy-hard, light-heavy, understandable-confusing, clear-confusing, and familiar-strange. This is therefore a Difficulty factor. Factor III loads significantly of scales like valuable-worthless, useful-useless, important-unimportant, necessary-unnecessary. This is clearly a Usefulness factor. Therefore Factor I is Evaluation, Factor II is Difficulty and Factor III is Usefulness.

Factors from Ratings on Different Formats Used by American Fifth Grade Subjects

The next three tables give the various results of factor analysis of the Semantic Differential ratings by American fifth grade subjects using three-point, five-point and seven-point formats.

Table 11 gives the factor structure of the ratings on the three-point format. Factor I loads significantly on alive-dead, like-dislike, good-bad, lively-inactive, nice-awful, which are evaluation scales. This is clearly an Evaluation factor. Factor II loads highly on light-heavy, clear-confusing, familiar-strange. This may be a Difficulty factor. Factor III loads significantly on valuable-worthless, important-unimportant, useful-useless, necessary-unnecessary, meaningful-meaningless. These

TABLE 10

EXTRACTED FACTORS FROM RATINGS USING SEVEN-POINT FORMAT BY AMERICAN FOURTH GRADE CHILDREN

Scales	Factor I	Factor II	Factor III
Evaluation			
1. Alive	.29	.75	.16
2. Like	.73	.07	.36
3. Good	.57	.19	.10
4. Lively	.41	-.16	.16
5. Nice	.65	.24	-.40
6. Interesting	.78	.09	.20
Difficulty			
7. Simple	.62	.62	-.25
8. Easy	-.01	.87	.21
9. Light	.15	.71	.08
10. Understandable	.18	.50	-.05
11. Clear	.65	.42	.11
12. Familiar	.20	.71	.06
Usefulness			
13. Helpful	.09	.93	.17
14. Meaningful	.38	.29	.69
15. Necessary	-.02	.09	.34
16. Useful	-.05	.05	.49
17. Important	.84	.02	.34
18. Valuable	.06	.24	.89

TABLE 11

EXTRACTED FACTORS FROM RATINGS USING THREE-POINT FORMAT BY AMERICAN FIFTH GRADE CHILDREN

Scales	Factor I	Factor II	Factor III
Evaluation			
1. Alive	.70	.12	-.19
2. Like	.30	.57	.31
3. Good	.81	.13	.16
4. Lively	.56	.21	.05
5. Nice	.78	-.03	.00
6. Interesting	.04	.59	-.06
Difficulty			
7. Simple	.29	.08	-.51
8. Easy	.04	.10	-.47
9. Light	.23	.86	.05
10. Understandable	.10	.06	-.01
11. Clear	.11	.35	.04
12. Familiar	.04	.34	-.19
Usefulness			
13. Helpful	-.03	.14	.02
14. Meaningful	.76	.12	.36
15. Necessary	-.14	.02	.30
16. Useful	.25	.43	.69
17. Important	.22	.09	.73
18. Valuable	.21	.01	.35

adjective pairs represent the Usefulness factor and in fact Factor III is clearly Usefulness.

Table 12 gives the factor analysis results of the ratings by fifth graders using five-point formats. Factor I loads highly on alive-dead, like-dislike, good-bad, nice-awful, interesting-boring. This is clearly an Evaluation factor. Factor II loads significantly on scales like simple-difficult, easy-hard, light-heavy, understandable-confusing, clear-confusing. This is a Difficulty factor. Factor III loads significantly on useful-useless, necessary-unnecessary, important-unimportant, which are Usefulness scales. But this factor is not as interpretable as Factor I and Factor II but the message concerning the cluster of scales is still clear enough.

Table 13 presents the factor structure of the ratings on the seven-point format by fifth grade American subjects. Factor I loads significantly on alive-dead, like-dislike, good-bad, lively-inactive, nice-awful, interesting-boring. This is clearly an Evaluation factor. Factor II loads significantly mainly on scales representing the difficulty factor like simple-difficult, easy-difficult, light-heavy, understandably-confusing, clear-confusing, and familiar-strange. this is a Difficulty factor. Factor III loads significantly on all the Usefulness scales except one. This does not happen with scales representing other factors and hence indicates that Factor III is Usefulness.

TABLE 12

EXTRACTED FACTORS FROM RATINGS USING FIVE-POINT FORMAT BY AMERICAN FIFTH GRADE CHILDREN

Scales	Factor I	Factor II	Factor III
Evaluation			
1. Alive	.77	.12	.12
2. Like	.40	.09	.54
3. Good	.85	-.12	.22
4. Lively	.22	.01	.13
5. Nice	.61	.22	-.01
6. Interesting	.50	.30	.49
Difficulty			
7. Simple	.08	.67	-.11
8. Easy	.08	.72	-.01
9. Light	-.08	.63	-.41
10. Understandable	.00	.82	.25
11. Clear	.28	.54	.27
12. Familiar	.10	.02	.80
Usefulness			
13. Helpful	.17	.21	.37
14. Meaningful	.23	-.05	.15
15. Necessary	.49	-.08	.47
16. Useful	.29	.00	.68
17. Important	.75	-.01	.30
18. Valuable	.86	-.09	.28

TABLE 13

EXTRACTED FACTORS FROM RATINGS USING SEVEN-POINT FORMAT BY AMERICAN FIFTH GRADE CHILDREN

Scales	Factor I	Factor II	Factor III
Evaluation			
1. Alive	.62	.14	.22
2. Like	.85	-.02	.26
3. Good	.67	.34	.05
4. Lively	.66	.43	-.03
5. Nice	.82	-.10	-.04
6. Interesting	.70	.28	.19
Difficulty			
7. Simple	.11	.96	.11
8. Easy	.11	.87	.20
9. Light	.20	.74	-.11
10. Understandable	.12	.36	-.02
11. Clear	-.05	.92	.07
12. Familiar	.55	.41	.51
Usefulness			
13. Helpful	-.03	.02	.28
14. Meaningful	-.19	.58	.33
15. Necessary	.19	.18	.42
16. Useful	.45	.49	.57
17. Important	.09	-.04	.70
18. Valuable	.42	-.03	.43

In summary, all the formats used among American fifth grade suggests that the first factor or dimension characterizing the attitudes of the subjects toward reading is an Evaluation, the second one is the Difficulty dimension and the third is the Usefulness dimension.

Factors from American Sixth Grade Subjects' Ratings

Tables 14, 15, and 16 present the factor structures obtained from the factor analysis of the ratings by American sixth grade subjects using three-point, five-point, and seven-point formats to express their attitudes toward reading.

Table 14 was obtained from the factor analysis of the ratings on the three-point format. Factor I has consistent significant factor loadings on evaluation scales. These scales are alive-dead, like-dislike, good-bad, lively-inactive, nice-awful, interesting-boring. Factor II loads significantly on adjective pairs like simple-difficult, easy-hard, light-heavy, clear-confusing. This is a Difficulty factor. Factor III loads significantly mainly on Usefulness scales and hence is a Usefulness factor.

Table 15 presents the factor structure from the ratings on the five-point formats by American sixth grade subjects. Factor I loads significantly on adjective pairs like alive-dead, like-dislike, good-bad, lively-inactive, nice-awful, interesting-boring. Factor II loads

TABLE 14

EXTRACTED FACTORS FROM RATINGS USING THREE-POINT FORMAT BY AMERICAN SIXTH GRADE CHILDREN

Scales	Factor I	Factor II	Factor III
Evaluation			
1. Alive	.64	.29	-.32
2. Like	.48	.19	.17
3. Good	.50	.03	.52
4. Lively	.56	-.01	-.06
5. Nice	.16	.48	.46
6. Interesting	.69	.11	.03
Difficulty			
7. Simple	.05	.53	-.04
8. Easy	-.06	.69	.10
9. Light	.09	.85	.08
10. Understandable	.39	-.16	.00
11. Clear	.37	.56	.16
12. Familiar	.18	.01	.83
Usefulness			
13. Helpful	.67	.06	.18
14. Meaningful	.01	.06	.21
15. Necessary	-.12	.01	.32
16. Useful	.09	.23	.49
17. Important	.39	-.45	.33
18. Valuable	.59	-.03	.14

TABLE 15

EXTRACTED FACTORS FROM RATINGS USING FIVE-POINT FORMAT BY AMERICAN SIXTH GRADE CHILDREN

Scales	Factor I	Factor II	Factor III
Evaluation			
1. Alive	.73	.11	.02
2. Like	.61	.10	.21
3. Good	.61	.04	.51
4. Lively	.74	.00	.27
5. Nice	.49	.03	.62
6. Interesting	.66	.18	.45
Difficulty			
7. Simple	.52	.39	.08
8. Easy	.71	.16	-.03
9. Light	.18	.61	.53
10. Understandable	.06	.84	.01
11. Clear	.16	.90	.08
12. Familiar	.16	.71	.13
Usefulness			
13. Helpful	.32	.15	.31
14. Meaningful	.33	.39	.02
15. Necessary	-.01	-.03	.81
16. Useful	.10	.25	.81
17. Important	-.05	.15	.30
18. Valuable	.11	.07	.64

significantly on simple-difficult, light-heavy, understandable-confusing, clear-confusing, and familiar-strange. Factor III loads significantly on helpful-unhelpful, necessary-unnecessary, useful-useless, important, unimportant, valuable-worthless. This seems to suggest that the first, second, and third factors are Evaluation, Difficulty, and Usefulness, respectively.

Table 16 presents the factor structure obtained from the ratings by sixth grade subjects using seven-point formats. Factor I loads highly mainly on evaluation scales like alive-dead, like-dislike, good-bad, lively-inactive, nice-awful, interesting-boring. Factor II has significant factor loadings on simple-difficult, easy-hard, light-heavy, understandable-confusing, clear-confusing, and familiar-strange. Factor III loads significantly mainly on usefulness scales like useful-useless, valuable-worthless, helpful-unhelpful, etc. It is reasonable to conclude that the first, second and third factors are Evaluation, Difficulty, and Usefulness, respectively.

In brief, the attitudes of American sixth grade subjects toward reading are characterized by the three dimensions of Evaluation, Difficulty, and Usefulness, in that order of importance.

TABLE 16

EXTRACTED FACTORS FROM RATINGS USING SEVEN-POINT FORMAT BY AMERICAN SIXTH GRADE CHILDREN

Scales	Factor I	Factor II	Factor III
Evaluation			
1. Alive	.78	.01	.42
2. Like	.76	.02	.34
3. Good	.82	.35	-.16
4. Lively	.40	.89	-.02
5. Nice	.74	.07	-.06
6. Interesting	.67	.39	.03
Difficulty			
7. Simple	.06	.40	.29
8. Easy	.02	.65	.44
9. Light	.08	.47	.27
10. Understandable	.03	.61	.19
11. Clear	.10	.22	-.03
12. Familiar	.91	.11	.01
Usefulness			
13. Helpful	-.04	.39	.41
14. Meaningful	.68	.16	.35
15. Necessary	.09	.22	.87
16. Useful	.04	.03	.74
17. Important	-.01	.05	.90
18. Valuable	.12	-.02	.60

Factors from American Seventh Grade Subjects' Ratings

The factor analysis results of the attitudes of the American seventh grade subjects toward reading are given in Tables 17, 18, and 19. The three dimensions identified among the fourth, fifth and sixth grade subjects emerge from the factor analysis of the data from seventh grade subjects. Factor I loads significantly on scales representing the Evaluation dimension, Factor II loads significantly on scales representing the Difficulty dimension and Factor III has significant loading on scales representing the Usefulness dimension. This is true of all the formats used.

For instance, in Table 17, which presents factor analysis of ratings on three-point format, Factor I loads significantly on alive-dead, like-dislike, good-bad, lively-inactive, nice-awful, interesting-boring. These scales represent the Evaluation dimension. Factor II loads significantly on simple-difficult, easy-hard, clear-confusing which represent the Difficulty dimension. Factor III loads significantly on helpful-unhelpful, useful-useless, important-unimportant, valuable-worthless. These scales represent the Usefulness dimension.

Table 18 represents the factor analysis results from ratings using five-point formats. Again Factor I loads significantly mainly on evaluative scales like alive, like, good, lively, nice and interesting. Factor II

TABLE 17

EXTRACTED FACTORS FROM RATINGS USING THREE-POINT FORMAT BY AMERICAN SEVENTH GRADE CHILDREN

Scales	Factor I	Factor II	Factor III
Evaluation			
1. Alive	.84	.02	-.02
2. Like	.55	.04	-.41
3. Good	.37	.06	-.11
4. Lively	.53	.14	-.32
5. Nice	.62	.21	.21
6. Interesting	.75	-.05	.03
Difficulty			
7. Simple	.20	.85	.19
8. Easy	.14	.71	.28
9. Light	.26	.25	.16
10. Understandable	.06	.10	.11
11. Clear	.17	.40	.08
12. Familiar	-.23	.10	.04
Usefulness			
13. Helpful	.15	.14	.80
14. Meaningful	-.02	.02	.25
15. Necessary	.10	.71	.08
16. Useful	-.03	.21	.74
17. Important	-.03	.21	.74
18. Valuable	.05	.24	.54

TABLE 18

EXTRACTED FACTORS FROM RATINGS USING FIVE-POINT FORMAT BY AMERICAN SEVENTH GRADE CHILDREN

Scales	Factor I	Factor II	Factor III
Evaluation			
1. Alive	.83	.17	.03
2. Like	.82	.02	.25
3. Good	.85	.09	-.09
4. Lively	.88	.01	.23
5. Nice	.58	.33	-.28
6. Interesting	.44	.25	-.16
Difficulty			
7. Simple	.16	.73	.17
8. Easy	-.01	.70	.28
9. Light	.14	.91	.18
10. Understandable	.06	.93	.16
11. Clear	.25	.74	.13
12. Familiar	.76	.22	.23
Usefulness			
13. Helpful	.24	.15	.58
14. Meaningful	.07	-.05	.33
15. Necessary	.26	.01	.59
16. Useful	-.01	-.10	.69
17. Important	.04	-.11	.17
18. Valuable	-.02	.27	.67

loads significantly on simple, easy, light, understandable, and clear which represent the Difficulty dimension. Factor III also loads significantly mainly on scales representing the Usefulness dimension.

In Table 19, which presents the factor structures from ratings using seven-point formats by American seventh grade subjects, Factor I loads significantly mainly on scales representing the Evaluation dimension. Factor II loads significantly mainly on scales representing the Difficulty dimension. Finally, Factor III loads significantly on scales like helpful-unhelpful, useful-useless, valuable-worthless, necessary-unnecessary, which represent the Usefulness dimension. Therefore in all the three formats, the first, second and third factors that characterize the attitudes of the American seventh grade subjects toward reading are Evaluation, Difficulty and Usefulness, respectively.

Summary

The overwhelming evidence from eleven sources, consisting of three three-point formats, four five-point formats, and four seven-point formats show that the attitudes of the American subjects from grades four to seven toward reading can be defined adequately by three factors, Evaluation, Difficulty, and Usefulness. The only format that provides contradictory evidence is the three-point format factor structure which is given in Table 20.

TABLE 19

EXTRACTED FACTORS FROM RATINGS USING SEVEN-POINT FORMAT BY AMERICAN SEVENTH GRADE CHILDREN

Scales	Factor I	Factor II	Factor III
Evaluation			
1. Alive	.24	.77	-.01
2. Like	.39	.58	.07
3. Good	.52	.31	.22
4. Lively	.74	.26	.06
5. Nice	.64	.48	.14
6. Interesting	.77	.05	.09
Difficulty			
7. Simple	.09	.87	-.03
8. Easy	.53	.47	.09
9. Light	.27	.11	-.03
10. Understandable	.02	.70	.16
11. Clear	.40	.53	.12
12. Familiar	.07	.61	.09
Usefulness			
13. Helpful	.20	-.07	.63
14. Meaningful	.12	.04	.70
15. Necessary	.14	-.11	.62
16. Useful	.03	.13	.68
17. Important	-.19	.42	.69
18. Valuable	-.04	.27	.60

TABLE 20

EXTRACTED FACTORS FROM RATINGS USING THREE-POINT FORMAT BY AMERICAN FOURTH GRADE CHILDREN

Scales	Factor I	Factor II	Factor III
Evaluation			
1. Alive	.05	.50	.40
2. Like	.30	.58	.32
3. Good	.01	.73	.61
4. Lively	.65	.17	.46
5. Nice	.67	.22	.20
6. Interesting	.24	.28	.31
Difficulty			
7. Simple	.51	.49	.23
8. Easy	.37	.70	.18
9. Light	.62	.26	.04
10. Understandable	.13	.59	-.04
11. Clear	.50	.75	-.17
12. Familiar	.78	.33	.09
Usefulness			
13. Helpful	.71	-.10	.34
14. Meaningful	.22	.22	.60
15. Necessary	.19	.07	.69
16. Useful	.01	.13	.58
17. Important	.61	.26	.11
18. Valuable	.32	-.22	.63

Factors from African Subjects' Ratings

The three factors identified in the factor analysis of the response data of American subjects are also identified among African subjects but there is a slight difference in the order of the factors in terms of their importance. While in the American results the first factor is Evaluation, followed by Difficulty and then Usefulness, among the African subjects, the first factor is Usefulness, followed by Evaluation, then Difficulty. This means that the most important factor in the attitudes of African subjects toward reading is Usefulness, then, Evaluation, and third, Difficulty. A grade by grade presentation and discussion of the factor analysis results of African subjects will be discussed below.

Factors from African Fourth Grade Subjects' Ratings

For the purpose of making inference about the dimensions that characterize reading attitudes held by African subjects, only the information provided by the factor analysis results of the ratings from the five-point format by African fourth grade subjects was used. This is because the reliabilities of the three-point and seven-point were so low that they were unacceptable. Therefore the factor structure provided by the five-point format was the only one that was used for analyzing the relevant factors and their importance. The reliability of the five-point format was quite high, .86, while the

reliabilities of the three-point and seven-point formats were .33 and .54, respectively. Hence, a decision was made to use the five-point factor structure for this analysis. The factors extracted from the ratings from the three-point and seven-point formats were not used to make any decision on the factor structures of the African subjects. This is because of the unreliability of the formats.

The information concerning the extracted factors from the ratings using the five-point formats by African subjects is presented in Table 21. Factor I is dominated by significant factor loadings on scales which represent the Usefulness factor. These scales are helpful-unhelpful, useful-useless, meaningful-meaningless, necessary-unnecessary, important-unimportant. In fact most Usefulness scales load significantly on Factor I. Factor II loads significantly on four of the Evaluation scales and Factor III loads significantly on a similar number of scales representing the Difficulty. Clearly, the first, second and third factors are Usefulness, Evaluation, and Difficulty, respectively.

Tables 22 and 23 are presented to show the uninterpretable results from the factor analysis of the results from the three-point and seven-point formats, respectively.

Factors from African Fifth Grade Subjects' Ratings

Tables 24, 25, and 26 present information of the factors that characterize the attitudes of African fifth

TABLE 21

EXTRACTED FACTORS FROM RATINGS USING FIVE-POINT FORMAT BY AFRICAN FOURTH GRADE CHILDREN

Scales	Factor I	Factor II	Factor III
Evaluation			
1. Alive	.11	.77	.43
2. Like	.17	.12	.19
3. Good	.14	.43	.06
4. Lively	-.03	.48	-.27
5. Nice	.61	-.18	.05
6. Interesting	-.09	.42	.01
Difficulty			
7. Simple	.13	.45	.24
8. Easy	-.07	-.05	.10
9. Light	.06	-.01	.57
10. Understandable	.01	.02	.32
11. Clear	.32	-.35	.41
12. Familiar	.19	.13	.49
Usefulness			
13. Helpful	.30	.13	.11
14. Meaningful	.69	.01	.07
15. Necessary	.52	.15	-.14
16. Useful	.52	-.16	.31
17. Important	.58	-.16	.31
18. Valuable	.07	-.01	-.28

TABLE 22

EXTRACTED FACTORS FROM RATINGS USING THREE-POINT FORMAT BY AFRICAN FOURTH GRADE CHILDREN

Scales	Factor I	Factor II	Factor III
Evaluation			
1. Alive	.16	.37	-.12
2. Like	.41	.75	-.03
3. Good	.28	.87	.05
4. Lively	.28	.68	.14
5. Nice	-.08	.63	.18
6. Interesting	-.22	.83	.04
Difficulty			
7. Simple	.14	.13	.67
8. Easy	-.01	.30	.75
9. Light	.35	.06	.33
10. Understandable	.13	.64	.25
11. Clear	.47	.12	.14
12. Familiar	.43	.01	.59
Usefulness			
13. Helpful	.38	.14	.22
14. Meaningful	.97	.12	.14
15. Necessary	.61	.27	.01
16. Useful	.58	.06	.39
17. Important	.82	.26	.02
18. Valuable	.51	-.35	-.32

TABLE 23

EXTRACTED FACTORS FROM RATINGS USING SEVEN-POINT FORMAT BY AFRICAN FOURTH GRADE CHILDREN

Scales	Factor I	Factor II	Factor III
Evaluation			
1. Alive	.16	.37	-.12
2. Like	.41	.75	-.03
3. Good	.28	.87	.05
4. Lively	.28	.68	.14
5. Nice	-.08	.63	.18
6. Interesting	-.22	.83	.04
Difficulty			
7. Simple	.96	.13	.14
8. Easy	-.01	.30	.75
9. Light	.35	-.06	.33
10. Understandable	.13	.25	.64
11. Clear	.14	.12	.77
12. Familiar	.01	.43	.59
Usefulness			
13. Helpful	.38	.14	.22
14. Meaningful	.97	.12	.14
15. Necessary	.61	.27	.01
16. Useful	.58	.06	.39
17. Important	.82	.25	.02
18. Valuable	.51	-.03	-.32

grade subjects toward reading. The information from all the three formats suggests that the factors seem to follow the order of Usefulness, Evaluation and Difficulty, in terms of their importance.

For instance, in Table 24, which presents the results from the factor analysis of the ratings using three-point format, all the six scales representing the Usefulness factor load significantly on Factor I. Factor II has significant loadings on five of the scales representing the Evaluation factor while Factor III has significant factor loadings on four of the scales representing the Difficulty dimension. The structure, whereby the first factor is Usefulness, the second, Evaluation, and the third, Difficulty, emerges from these factor analysis results.

The results from the five-point ratings, presented in Table 25, show that Factor I loads significantly on the six scales representing the Usefulness dimension. Factor II loads significantly on five of the six scales representing the Evaluation dimension. These scales are alive-dead, like-dislike, good-bad, nice-awful, interesting-boring. Factor III loads significantly on scales which mainly represent the Difficulty dimensions. The Usefulness, Evaluation, and Difficulty factor structure emerges here again.

In Table 26, presenting the results from the factor analysis of the ratings using seven-point formats, Factor I

TABLE 24

EXTRACTED FACTORS FROM RATINGS USING THREE-POINT FORMAT BY AFRICAN FIFTH GRADE CHILDREN

Scales	Factor I	Factor II	Factor III
Evaluation			
1. Alive	.02	.06	-.13
2. Like	.51	.76	.01
3. Good	.03	.84	-.13
4. Lively	.68	.37	.01
5. Nice	-.50	.31	-.05
6. Interesting	.06	.70	-.08
Difficulty			
7. Simple	.01	.06	.64
8. Easy	.15	.09	.40
9. Light	.38	.15	.06
10. Understandable	.01	-.16	.07
11. Clear	.04	-.03	.73
12. Familiar	-.08	.73	.40
Usefulness			
13. Helpful	.41	-.12	-.08
14. Meaningful	.88	-.10	-.03
15. Necessary	.75	.01	.04
16. Useful	.85	-.13	-.02
17. Important	.61	.13	.05
18. Valuable	.74	-.02	.33

TABLE 25

EXTRACTED FACTORS FROM RATINGS USING FIVE-POINT FORMAT BY AFRICAN FIFTH GRADE CHILDREN

Scales	Factor I	Factor II	Factor III
Evaluation			
1. Alive	.16	.85	.18
2. Like	.31	.51	-.01
3. Good	.09	.58	.40
4. Lively	-.07	.02	-.31
5. Nice	.68	.23	.22
6. Interesting	.07	.38	-.15
Difficulty			
7. Simple	.44	-.05	.54
8. Easy	-.30	.26	.02
9. Light	-.07	-.23	.45
10. Understandable	.48	.41	.50
11. Clear	.04	-.02	.47
12. Familiar	.02	.38	.33
Usefulness			
13. Helpful	.78	-.07	.04
14. Meaningful	.46	.26	-.24
15. Necessary	.64	.27	.23
16. Useful	.60	.33	.40
17. Important	.61	.08	.17
18. Valuable	.87	.02	.30

TABLE 26

EXTRACTED FACTORS FROM RATINGS USING SEVEN-POINT FORMAT BY AFRICAN FIFTH GRADE CHILDREN

Scales	Factor I	Factor II	Factor III
Evaluation			
1. Alive	.25	.67	-.14
2. Like	-.14	.75	.20
3. Good	.58	-.02	-.08
4. Lively	-.30	.75	.24
5. Nice	.23	.47	-.24
6. Interesting	.37	.57	-.21
Difficulty			
7. Simple	-.01	.03	.23
8. Easy	-.18	.06	.37
9. Light	.11	.07	.57
10. Understandable	.28	.27	.61
11. Clear	.14	.06	.62
12. Familiar	.10	.40	.34
Usefulness			
13. Helpful	.79	.05	.10
14. Meaningful	.75	-.01	.13
15. Necessary	.43	.25	.05
16. Useful	.39	.18	.04
17. Important	.38	.22	.04
18. Valuable	.10	-.06	.19

loads significantly on helpful-unhelpful, useful-useless, necessary-unnecessary, important-unimportant. The factor loads significantly mainly on the kind of scales which in fact represent the Usefulness dimension. Factor II loads significantly on five of the scales representing the Evaluation dimension and on only one from another dimension. This is clearly an Evaluation factor. Factor III loads significantly on scales which are mainly drawn from the Difficulty dimension. In fact five out of the six scales of the scales representing the Difficulty dimension load significantly on Factor III. The Usefulness, Evaluation and Difficutly factor structure seems to be suggested by these results as characterizing the attitudes of African fifth grade subjects toward reading.

Factors from African Sixth Grade Subjects' Ratings

The Usefulness, Evaluation, and Difficulty dimensions clearly emerge in the attitudes of the African sixth grade subjects towards reading. Tables 27, 28, and 29 provide this information.

For instance, in Table 27, six of the scales representing the Usefulness dimension load significantly on Factor I. The scales representing the Usefulness factor dominate the Factor I in terms of scales with significant factor loadings. Factor II loads significantly on scales like alive-dead, good-bad, lively-inactive, nice-awful, which represent the Evaluation factor. Factor III loads

TABLE 27

EXTRACTED FACTORS FROM RATINGS USING THREE-POINT FORMAT BY AFRICAN SIXTH GRADE CHILDREN

Scales	Factor I	Factor II	Factor III
Evaluation			
1. Alive	.27	.56	.08
2. Like	.31	.48	-.30
3. Good	.37	.74	.19
4. Lively	.02	.41	-.11
5. Nice	.19	.54	.14
6. Interesting	.07	.60	-.15
Difficulty			
7. Simple	.39	.19	-.02
8. Easy	.55	.18	-.35
9. Light	-.22	.04	.49
10. Understandable	-.04	-.07	.35
11. Clear	-.08	.04	.31
12. Familiar	.21	-.04	.68
Usefulness			
13. Helpful	.67	.38	-.16
14. Meaningful	.55	.48	.05
15. Necessary	.55	.48	-.08
16. Useful	.70	.28	.01
17. Important	.60	.19	-.19
18. Valuable	.54	-.23	.16

significantly on scales like light-heavy, understandable-confusing, clear-confusing, familiar-strange, which represent the Difficulty dimension. Therefore, in this table, which gives results from the data on three-point format, the first, second and third factors are Usefulness, Evaluation, and Difficulty, respectively, in the same order of importance.

Results from the ratings using five-point formats given in Table 28 show that Factor I loads significantly all the six scales representing the Usefulness dimension, similarly, Factor II loads significantly on all the scales representing the Evaluation dimension. Factor III loads significantly on four of the six scales representing the Difficulty factor but only loads on one other scale representing a different scale. This is therefore clearly a factor representing Difficulty, while the first and the second factors represent Usefulness and Difficulty, respectively.

The table presenting the results from the factor analysis of the ratings on the seven-point formats (Table 29) by African sixth grade subjects also shows the same dimensions. Factor I seems to load significantly on all the scales representing the Usefulness dimension, Factor II has significant loading on all the six scales representing the Evaluation dimension. Factor III loads significantly on five of the scales representing the Difficulty dimension out of the six observed significant

TABLE 28

EXTRACTED FACTORS FROM RATINGS USING FIVE-POINT FORMAT BY AFRICAN SIXTH GRADE CHILDREN

Scales	Factor I	Factor II	Factor III
Evaluation			
1. Alive	.15	.72	.06
2. Like	.38	.74	-.21
3. Good	.75	.08	-.04
4. Lively	-.01	.44	-.48
5. Nice	-.10	.03	.44
6. Interesting	.32	.76	.03
Difficulty			
7. Simple	.09	.70	.19
8. Easy	.28	.24	.46
9. Light	-.51	.01	.31
10. Understandable	.26	.05	.79
11. Clear	-.44	.16	-.21
12. Familiar	-.13	-.03	.77
Usefulness			
13. Helpful	.61	.06	.18
14. Meaningful	.94	.28	.06
15. Necessary	.76	.25	.02
16. Useful	.55	-.02	.30
17. Important	.89	.28	.07
18. Valuable	.74	.25	.07

TABLE 29

EXTRACTED FACTORS FROM RATINGS USING SEVEN-POINT FORMAT BY AFRICAN SIXTH GRADE CHILDREN

Scales	Factor I	Factor II	Factor III
Evaluation			
1. Alive	.15	.50	-.01
2. Like	.20	.54	.29
3. Good	.16	.05	.07
4. Lively	.01	.91	-.04
5. Nice	.04	.38	.09
6. Interesting	.19	.30	-.01
Difficulty			
7. Simple	.33	.27	.43
8. Easy	.48	.23	.07
9. Light	.03	.05	.74
10. Understandable	.20	.02	.52
11. Clear	-.11	.04	.39
12. Familiar	.20	.19	.01
Usefulness			
13. Helpful	.90	.09	-.21
14. Meaningful	.83	.03	.01
15. Necessary	.76	.05	.13
16. Useful	.85	.01	-.09
17. Important	.87	.07	-.10
18. Valuable	.59	.05	.02

factor loadings. This again suggests that the attitudes of the African sixth grade subjects are characterized by Usefulness, Evaluation and Difficulty dimensions in that order of importance.

Factors from African Seventh Grade Subjects' Ratings

The Usefulness, Evaluation, and Difficulty factors emerge in the factor analysis of the seventh grade ratings on all the three formats.

For instance, the data from the factor analysis of the ratings on the three-point format by African seventh grade subjects (presented in Table 30) show that Factor I is a Usefulness factor because it mainly loads significantly on scales representing the Usefulness dimension like, helpful-unhelpful, necessary-unnecessary, useful-useless, valuable-worthless. Factor II is basically an Evaluation factor because it also loads significantly mainly on scales representing the Evaluation dimension. Factor III loads significantly on simple-difficult, easy-hard, understandable-confusing, clear-confusing and familiar-strange which represent the Difficulty dimension. Hence, a Usefulness, Evaluation and Difficulty is also suggested.

Table 31 presents the results of the factor analysis of the ratings from the five-point format. Factor I loads significantly on all the scales representing the Usefulness factor. The significant loadings on Factor II

TABLE 30

EXTRACTED FACTORS FROM RATINGS USING THREE-POINT FORMAT BY AFRICAN SEVENTH GRADE CHILDREN

Scales	Factor I	Factor II	Factor III
Evaluation			
1. Alive	-.11	.90	.17
2. Like	.30	.59	.04
3. Good	-.05	.83	.05
4. Lively	.02	.48	.17
5. Nice	.24	.05	.04
6. Interesting	.14	.14	.57
Difficulty			
7. Simple	.40	.24	.56
8. Easy	.01	.06	.59
9. Light	.34	-.16	.20
10. Understandable	.05	.47	.49
11. Clear	-.27	.06	.67
12. Familiar	.36	.08	.57
Usefulness			
13. Helpful	.45	.08	.06
14. Meaningful	.10	.02	.65
15. Necessary	.77	.11	.08
16. Useful	.39	-.04	.08
17. Important	.57	.01	.12
18. Valuable	.48	.23	-.17

TABLE 31

EXTRACTED FACTORS FROM RATINGS USING FIVE-POINT FORMAT BY AFRICAN SEVENTH GRADE CHILDREN

Scales	Factor I	Factor II	Factor III
Evaluation			
1. Alive	.42	.56	.53
2. Like	.25	.50	.33
3. Good	.05	.66	.38
4. Lively	-.11	.21	.02
5. Nice	.26	.30	-.04
6. Interesting	.26	.48	.09
Difficulty			
7. Simple	.09	.18	.38
8. Easy	.68	-.02	.37
9. Light	.73	.07	.02
10. Understandable	.05	.78	-.08
11. Clear	-.14	-.04	.70
12. Familiar	.08	.15	.87
Usefulness			
13. Helpful	.70	.09	.10
14. Meaningful	.71	.61	.01
15. Necessary	.90	.11	-.16
16. Useful	.92	.03	-.14
17. Important	.59	.24	.12
18. Valuable	.95	-.01	.08

are dominated by scales representing the Evaluation factor while the significant loadings on Factor III are dominated by scales representing the Difficulty factor. Therefore, the first, second and third factors in this case are Usefulness, Evaluation and Difficulty, respectively.

In Table 32, which presents the results from the factor analysis of the ratings using seven-point formats, the significant loadings on Factor I are dominated by scales representing the Usefulness dimension. In fact all the six scales representing the Usefulness dimension load significantly on Factor I. The scales representing the Evaluation dimension dominate the significant loadings on Factor II and the significant factor loadings on Factor III are dominated by scales representing the Difficulty dimension. The results here again show that the attitudes of African subjects toward reading are characterized by, first, the Usefulness dimension, then, the Evaluation dimension, and third, by the Difficulty dimension.

Summary

The table below (Table 33) gives a summary of the results of this study regarding the factor structure (dimensionality) of the attitudes of the African subjects toward reading. With the exception of results from the ratings using three-point and seven-point formats among fourth grade subjects, which are omitted, the other results

TABLE 32

EXTRACTED FACTORS FROM RATINGS USING SEVEN-POINT FORMAT BY AFRICAN SEVENTH GRADE CHILDREN

Scales	Factor I	Factor II	Factor III
Evaluation			
1. Alive	.12	.81	-.09
2. Like	-.06	.60	.29
3. Good	.21	.77	-.01
4. Lively	.54	.09	.14
5. Nice	.07	.63	-.05
6. Interesting	.46	.56	.16
Difficulty			
7. Simple	.23	-.10	.92
8. Easy	.23	.44	.35
9. Light	.13	-.12	.86
10. Understandable	.31	.38	.20
11. Clear	.05	-.01	.36
12. Familiar	.29	.36	.43
Usefulness			
13. Helpful	.66	.22	.37
14. Meaningful	.74	.04	.24
15. Necessary	.81	.18	.16
16. Useful	.77	.23	.02
17. Important	.36	.07	.54
18. Valuable	.71	.17	-.04

suggest that the first factor is Usefulness, then Evaluation, and the third is Difficulty.

TABLE 33

SUMMARY OF FACTORS AMONG AFRICAN SUBJECTS

Grade	Format	Factor I	Factor II	Factor III
4	5 pt	Usefulness	Evaluation	Difficulty
5	3 pt	Usefulness	Evaluation	Difficulty
5	5 pt	Usefulness	Evaluation	Difficulty
5	7 pt	Usefulness	Evaluation	Difficulty
6	3 pt	Usefulness	Evaluation	Difficulty
6	5 pt	Usefulness	Evaluation	Difficulty
6	7 pt	Usefulness	Evaluation	Difficulty
7	3 pt	Usefulness	Evaluation	Difficulty
7	5 pt	Usefulness	Evaluation	Difficulty
7	7 pt	Usefulness	Evaluation	Difficulty

Factor Score Reliabilities

Factor Score reliability refers to the reliability of each of the three factors represented by the eighteen scales in this study. These factors are Evaluation, Difficulty and Usefulness. Each of these factors is represented by six scales. The purpose of this section is to present information on the reliabilities of these factors

and determine which factor is measured more reliably in each grade using the various formats. This will be done for both American and African subjects.

Factor Score Reliabilities for American Subjects

Below, an attempt has been made to present the factor score reliabilities provided by different formats in all the four American grades used in the study.

Factor Score Reliabilities--American Fourth Grade

The results from the ratings by American fourth grade subjects on three-point, five-point and seven-point scales show that the Evaluation factor is more reliable than the other two within fourth graders.

For instance, the factor-score reliabilities from the ratings using the three-point formats are as follows:

1. Six Evaluation Scales = .78
2. Six Difficulty Scales = .75
3. Six Usefulness Scales = .38

There is not any significant difference between the Evaluation and the Difficulty factors but the difference between these two factors and the Usefulness factor is significant at .05 level of significance. However, the Evaluative factor has a slightly bigger size of reliability coefficient than the other two factors.

The factor reliabilities from the five-point and seven-point formats are summarized in the table below

(Table 34). It appears that on the five-point, the Difficulty factor is more reliable than the Evaluation factor but this difference is not significant at .05 level of significance. The Evaluation factor is more reliable than the two other factors on the information from the seven-point format.

TABLE 34

FACTOR SCORE RELIABILITIES FROM FIVE-POINT AND SEVEN-POINT FORMATS USED BY AMERICAN FOURTH GRADE SUBJECTS

Factor	Format	Reliability Coefficient
Evaluation	5 pt	.78
Difficulty	5 pt	.81
Usefulness	5 pt	.70
Evaluation	7 pt	.77
Difficulty	7 pt	.64
Usefulness	7 pt	.57

Factor Score Reliabilities--American Fifth Grade

The table below (Table 35) provides a summary of the different factor-score reliabilities generated by ratings on different formats by American fifth grade subjects. The Evaluation factor is more reliable than the Difficulty and Usefulness factors on all the three formats.

TABLE 35

FACTOR SCORE RELIABILITIES FROM THREE-POINT, FIVE-POINT, AND SEVEN-POINT FORMATS USED BY AMERICAN FIFTH GRADE SUBJECTS

Factor	Format	Reliability Coefficient
Evaluation	3 pt	.77
Difficulty	3 pt	.64
Usefulness	3 pt	.57
Evaluation	5 pt	.84
Difficulty	5 pt	.67
Usefulness	5 pt	.76
Evaluation	7 pt	.88
Difficulty	7 pt	.79
Usefulness	7 pt	.71

Factor Score Reliabilities--American Sixth Grade

With the exception of the factor score reliabilities provided by the ratings on the three-point format, the Evaluation factor is more reliable than the other factors. However, on the three-point format, the Usefulness factor is more reliable than the Evaluation factor and this is statistically significant at .05 level of significance. The table below (Table 36) gives a summary of the various factor score reliabilities from the ratings by American sixth grade subjects.

TABLE 36

AMERICAN SIXTH GRADE FACTOR SCORE RELIABILITIES

Factor	Format	Reliability Coefficient
Evaluation	3 pt	.44
Difficulty	3 pt	.35
Usefulness	3 pt	.71
Evaluation	5 pt	.88
Difficulty	5 pt	.84
Usefulness	5 pt	.75
Evaluation	7 pt	.87
Difficulty	7 pt	.81
Usefulness	7 pt	.72

The Evaluation factor is significantly (at .05 level of significance) more reliable than the Usefulness factor on both the five-point and seven-point formats.

Factor Score Reliability--American Seventh Grade

The table below (Table 37) provides the factor score reliabilities for the three factors from the ratings by American subjects using the three Semantic Differential formats. The Evaluation factor emerges as being more reliable than the Difficulty and the Usefulness factors. The second most reliable factor is Difficulty and on all

three formats, the Usefulness factor is the least reliable. On the three-point format, the Evaluation factor is significantly (at .05 level of significance) more reliable than the Usefulness factor. On other formats, there is no statistically significant difference between the reliability of the Evaluation factor and the other factors. This is also true between the factor score reliabilities of Evaluation and Difficulty on the three-point format.

TABLE 37

AMERICAN SEVENTH GRADE FACTOR SCORE RELIABILITIES

Factor	Format	Reliability Coefficient
Evaluation	3 pt	.72
Difficulty	3 pt	.52
Usefulness	3 pt	.43
Evaluation	5 pt	.87
Difficulty	5 pt	.86
Usefulness	5 pt	.75
Evaluation	7 pt	.89
Difficulty	7 pt	.83
Usefulness	7 pt	.82

Summary

Among the American subjects, the most reliable factor is the Evaluation. The least reliable factor seems

to be the Usefulness factor. In most cases, the Evaluation is quantitatively more reliable than the other two factors in terms of the relatively bigger size of its reliability coefficients but this is not always statistically significant at the .05 level of significance.

Factor Score Reliabilities for African Subjects

Among the African subjects, the Usefulness factor seems to be more reliable than the Evaluation and the Difficulty factors. There are few cases where this is not observed. An attempt has been made below to present the results concerning the factor score reliabilities using information from different formats in different grades.

For instance, the table below (Table 38) gives the factor score reliabilities from the ratings by African fourth grade subjects using the three formats. From the ratings using both the three-point and the seven-point formats, the Usefulness factor is more reliable than the Difficulty and Evaluation factor. This is not, however, statistically significant at .05 level of significance. But the Evaluation factor is significantly more reliable than the Usefulness factor on the five-point format. The general picture seems to be that the Usefulness factor is the most reliable, followed by Evaluation and then the Difficulty factor.

TABLE 38

AFRICAN FOURTH GRADE FACTOR
SCORE RELIABILITIES

Factor	Format	Reliability Coefficient
Evaluation	3 pt	.32
Difficulty	3 pt	.28
Usefulness	3 pt	.45
Evaluation	5 pt	.84
Difficulty	5 pt	.70
Usefulness	5 pt	.77
Evaluation	7 pt	.45
Difficulty	7 pt	.30
Usefulness	7 pt	.52

Factor Score Reliabilities--African
Fifth Grade

Among the African fifth grade subjects, the Usefulness factor is more reliable than the Evaluation and Difficulty factors on all the formats. This is true in terms of comparing the magnitudes of the reliability coefficients and also in computing the statistical tests of significance at .05 level of significance. Both approaches yield the same results showing that the Usefulness factor is more reliable. The Evaluation factor is more reliable than the Difficulty factor on the five-point

and seven-point formats while the Difficulty factor is more reliable than the three-point format. However, these differences in the reliabilities of the Evaluation and Difficulty factors are not statistically significant (at .05 level significance). Therefore, the most reliable factor seems to be the Usefulness factor, then the Evaluation and then the Difficulty factor.

TABLE 39

AFRICAN FIFTH GRADE FACTOR SCORE RELIABILITIES

Factor	Format	Reliability Coefficient
Evaluation	3 pt	.37
Difficulty	3 pt	.48
Usefulness	3 pt	.74
Evaluation	5 pt	.52
Difficulty	5 pt	.45
Usefulness	5 pt	.83
Evaluation	7 pt	.57
Difficulty	7 pt	.45
Usefulness	7 pt	.83

Factor Score Reliabilities--African Sixth Grade

The size of the reliability coefficients of the Usefulness factor is bigger than the reliability

coefficients of the Difficulty and Usefulness factors on all the three formats among African sixth grade subjects. It is only on the three-point and five-point formats that the Usefulness factor is significantly more reliable than the other two factors. This is at .05 level of significance.

The Evaluation factor is more reliable than the Difficulty factor on the three-point and seven-point formats while the Difficulty factor is more reliable on the five-point format than Evaluation. None of these differences in the reliabilities is significant at .05 level of

TABLE 40

AFRICAN SIXTH GRADE FACTOR SCORE RELIABILITIES

Factor	Format	Reliability Coefficient
Evaluation	3 pt	.35
Difficulty	3 pt	.34
Usefulness	3 pt	.71
Evaluation	5 pt	.30
Difficulty	5 pt	.33
Usefulness	5 pt	.76
Evaluation	7 pt	.50
Difficulty	7 pt	.49
Usefulness	7 pt	.58

significance. However, the most reliable factor seems again to be Usefulness, followed by Evaluation, and then the Difficulty factor.

Factor Score Reliabilities--African Seventh Grade

From the data generated from African seventh grade subjects, the Usefulness factor has bigger reliability coefficients than the Evaluation and Difficulty factors on all the formats used in this research. On the five-point and seven-point formats, the Usefulness factor is significantly more reliable than the other two factors ($p = .05$).

TABLE 41

AFRICAN SEVENTH GRADE FACTOR SCORE RELIABILITIES

Factor	Format	Reliability Coefficient
Evaluation	3 pt	.64
Difficulty	3 pt	.71
Usefulness	3 pt	.72
Evaluation	5 pt	.70
Difficulty	5 pt	.53
Usefulness	5 pt	.91
Evaluation	7 pt	.73
Difficulty	7 pt	.72
Usefulness	7 pt	.89

This shows that the Usefulness factor is clearly the most reliable factor in this case again.

The Evaluation factor is more reliable than the Difficulty factor on the five-point and seven-point formats while the Difficulty factor is more reliable than Evaluation on the three-point format. These differences in the reliability coefficients are not significantly different at .05 level of significance. However, just by examination of these reliability coefficients, the Evaluation factor seems to be the second most reliable factor while the Difficulty factor is the third most reliable factor.

Summary

The most reliable factor when the Semantic Differential technique is used to rate reading by African fourth to seventh grade subjects is the Usefulness factor. The superiority of this factor in its reliability relative to the reliabilities of the Difficulty and Evaluation factors is confirmed on ten out of the twelve observations made using different formats in the four grades.

The second most reliable factor is the Evaluation factor and then the Difficulty factor is the third factor in terms of reliability.

CHAPTER V

CONCLUSIONS, RECOMMENDATIONS AND DISCUSSION

Conclusions

A number of conclusions are available from this study concerning reliable formats of the Semantic Differential for subjects from different grades, the factor structures or dimensions identified and the factors which the technique is likely to measure more reliably in American and African subjects. These conclusions are listed below.

1. Among the American subjects, the five-point and the seven-point formats are generally more reliable than the three-point format. This is true even at the lower grades like fourth grade and fifth grade.

2. Among the African subjects, the five-point format is more reliable than the three-point and the seven-point format in fourth grade. In fifth grade, the five-point format is slightly more reliable than the seven-point and the three-point formats. In the sixth and seventh grades, the five-point and the seven-point are equally reliable but more reliable than the three-point format. Generally, the five-point format is more reliable in the lower grades (i.e. fourth and fifth grades) while in the sixth and seventh grades five-point and seven-point are more reliable than three-point.

3. The reading attitudes of American subjects are characterized, first, by the Evaluation dimension, then, the Difficulty dimension and finally, the Usefulness dimension. Since the Evaluation, Difficulty, and Usefulness scales correspond, respectively, to the Evaluation, Potency, and Activity scales in studies carried by Osgood, it seems reasonable to conclude that the EPA (Evaluation, Potency, and Activity)

factor structure is confirmed among the American subjects.

4. Among the African subjects, the first most important factor characterizing the attitudes toward reading is Usefulness. The second factor is Evaluation, and the third factor is Difficulty. Given that the Usefulness, Evaluation, and Difficulty scales were selected to represent Osgood's Activity, Evaluation, and Potency factors, it appears that among the African subjects, the EPA (Evaluation, Potency, and Activity) factor structure was not confirmed. Instead, the dimensions were in the order of Activity, Evaluation, and Potency.

5. The factor that was measured most reliably by almost all the formats used for rating reading by American subjects was the Evaluation. The second most reliable factor was the Difficulty factor which was followed by the Usefulness factor.

6. Among the African subjects, the factor that was measured most reliably was the Usefulness factor. This means that the ratings on the scales representing the Usefulness factor were more reliable than ratings on scales representing the other factors. The second most reliable factor was the Evaluation factor and the least reliable factor was the one represented by the six Difficulty scales.

7. In both the American and the African subjects, the factors that emerged as being the most important, almost always, were the ones that were measured most reliably and the factors that were second in order of importance were the second most reliably measured. Similarly, the factors that emerged as being third in terms of their importance in characterizing the semantic space of the subjects toward reading were also third in terms of their reliability coefficients. For instance, among the American subjects, the most reliably factor was Evaluation which also was the first factor in importance. In African subjects, the most reliably measured factor was Usefulness and it was also the most important factor.

Recommendations

1. Among the American subjects, it is better to use either the five-point or the seven-point formats because they are more reliable than the three-point format.

2. Among the African subjects, it is better to use the five-point format of the Semantic Differential in the lower grades (fourth and fifth grades). In sixth and seventh grades, both five-point and seven-point are better for use because they are relatively more reliable.

3. Among the American subjects, information can be obtained more reliably if the Evaluation dimension is made the focus of the measurement using the Semantic Differential technique.

4. Among African subjects, information can be obtained more reliably if the Usefulness (Utility) dimension is made the focus of the measurement using the Semantic Differential technique.

Discussion

The factor structure of the African subjects differs from that of the Americans in terms of the order of factors. For instance, while the factors among the American subjects are Evaluation, Difficulty (Potency), and Usefulness (Activity), in the same order of importance, the order of these factors is different among the African subjects. Among the African subjects the order of the factors is Usefulness (Activity scales), Evaluation, and Difficulty (Potency). There may be different reasons for the difference in the factor structure.

One possible explanation may just be that these differences in factor structures reflect the natural differences between the American and African subjects. This would mean that while the American children would naturally first think of reading in terms of how it is interesting (Evaluation) the African subjects would first think of reading in terms of its utility (Usefulness).

So one possible postulate is that these differences reflect the natural differences imposed on the two groups by their cultures.

The other possible explanation may be in the problems of translating the scales used in the research from English to Swahili, which is the language used by the African subjects. It is possible that when the English Usefulness scales were translated into Swahili they gained an evaluative connotative meaning and hence although they appear to be representing the Usefulness dimension they are actually the Evaluation scales.

It is possible to accept the results on the dimensionality of the American subjects toward reading because there are other studies that confirm the similar factor structures among American subjects elsewhere (see the chapter on literature review). However, before the results on the dimensionality of the African subjects are finalized, some replication studies, using more than the eighteen scales may be necessary. According to Osgood, et al (1957), to settle the dimensionality issue within a culture, one needs to use numerous scales. For example, Osgood (1957) had to use about one thousand adjective pairs from the Thesaurus in order to settle the dimensionality issue among the English speaking Americans. A similar number of scales may be necessary to settle the dimensionality issue among the Swahili speaking Africans.

However, it is worthwhile to note that the eighteen scales used in this study yield information which confirm the findings from numerous research projects, as discussed in the chapter on literature review. In this case, it may just be true that with the same number of scales, the dimensionality issue among the African subjects has been adequately solved.

One final point to note concerns the generalizability of results of this study to other concepts and groups. Concerning the concept, the information obtained in this study can only be restricted to making inference concerning the attitudes toward reading. It may not be appropriate to generalize to other concepts without some additional research. Concerning generalizing to different groups, the study uses a fixed design model which rules out attempting to generalize to other groups. However, the research provides some useful information that may be relevant to identical African and American children in fourth to seventh grades.

APPENDICES

APPENDIX A

APPENDIX A

EXAMPLE OF SCALES AND DIRECTIONS IN ENGLISH

School.....
Grade.....
Number.....

Reading Questionnaire
Instructions

Please answer each of the following statements with either "YES" or "NO." After you have completed responding to all the statements, wait for further instructions before you continue. Here are the statements:

1. I love reading.
2. I feel good after I've read a book.
3. I would be happy to get a book for my birthday.
4. Reading school books is a waste of time.
5. Reading stories is fun.
6. It is fun to read books.
7. I like to find books to read.
8. I would rather play than read.
9. I can learn things from reading books.
10. I think reading books is silly.
11. I want to be absent from reading class.
12. I want more time in school to read.
13. I get tired reading stories.
14. It is good to know how to read.
15. I hate reading books in school.
16. I would rather reat than work on other things.
17. Reading is the worst part of my day.

Instructions

Now, how students feel about reading is very important, therefore, you are asked to fill forms given on the next three pages.

This is not a test. There are no answers that are 'right' and 'wrong.' Each of the two words is a pair of opposites. Mark with (x) the space between each pair of words that tell how you feel about READING. Here is an example of how to do this.

If you feel that READING is closely related to one end of the pair, you should place your mark as follows:

Slow _x_ _ _ _ _ Fast

or

Slow _ _ _ _ _x_ Fast

If you feel that READING is neutral with respect to both words in a pair, then place your mark in the middle position. The direction toward which you mark should depend on which of the ends seem most like what you feel about READING.

IMPORTANT:

1. You will notice that on one of the forms you are provided with five spaces like in the example above. But you will also notice that there are two other different forms. In one of these, you are provided with three spaces, and in another, seven spaces. Fill the forms depending on how you feel about READING.
2. Place your marks in the middle of the spaces, not on boundaries.

_x_ _ _ _x_

THIS NOT THIS

3. Place only one mark between each pair of words.
4. Do not leave out any of the pair.
5. Work quickly. It is better to give your first feelings rather than think hard about each pair of words.

School.....

Grade.....

Name.....

READING

1.	Nice	_ _ _ _ _ _ _	Awful
2.	Useful	_ _ _ _ _ _ _	Useless
3.	Easy	_ _ _ _ _ _ _	Hard
4.	Interesting	_ _ _ _ _ _ _	Boring
5.	Important	_ _ _ _ _ _ _	Unimportant
6.	Light	_ _ _ _ _ _ _	Heavy
7.	Like	_ _ _ _ _ _ _	Dislike
8.	Clear	_ _ _ _ _ _ _	Confusing
9.	Valuable	_ _ _ _ _ _ _	Worthless
10.	Simple	_ _ _ _ _ _ _	Difficult
11.	Alive	_ _ _ _ _ _ _	Dead
12.	Helpful	_ _ _ _ _ _ _	Unhelpful
13.	Lively	_ _ _ _ _ _ _	Inactive
14.	Necessary	_ _ _ _ _ _ _	Unnecessary
15.	Familiar	_ _ _ _ _ _ _	Strange
16.	Understandable	_ _ _ _ _ _ _	Confusing
17.	Good	_ _ _ _ _ _ _	Bad
18.	Meaningful	_ _ _ _ _ _ _	Meaningless

School.....

Grade.....

Name.....

READING

1.	Interesting	_ _ _ _ _	Boring
2.	Lively	_ _ _ _ _	Inactive
3.	Good	_ _ _ _ _	Bad
4.	Light	_ _ _ _ _	Heavy
5.	Simple	_ _ _ _ _	Difficult
6.	Familiar	_ _ _ _ _	Strange
7.	Nice	_ _ _ _ _	Awful
8.	Like	_ _ _ _ _	Dislike
9.	Alive	_ _ _ _ _	Dead
10.	Useful	_ _ _ _ _	Useless
11.	Helpful	_ _ _ _ _	Unhelpful
12.	Meaningful	_ _ _ _ _	Meaningless
13.	Necessary	_ _ _ _ _	Unnecessary
14.	Valuable	_ _ _ _ _	Worthless
15.	Important	_ _ _ _ _	Unimportant
16.	Easy	_ _ _ _ _	Hard
17.	Clear	_ _ _ _ _	Confusing
18.	Understandable	_ _ _ _ _	Confusing

School.....

Grade.....

Name.....

READING

1.	Simple	___ ___ ___	Difficult
2.	Easy	___ ___ ___	Hard
3.	Light	___ ___ ___	Heavy
4.	Alive	___ ___ ___	Dead
5.	Like	___ ___ ___	Dislike
6.	Good	___ ___ ___	Bad
7.	Helpful	___ ___ ___	Unhelpful
8.	Understandable	___ ___ ___	Confusing
9.	Lively	___ ___ ___	Inactive
10.	Meaningful	___ ___ ___	Meaningless
11.	Nice	___ ___ ___	Awful
12.	Clear	___ ___ ___	Confusing
13.	Necessary	___ ___ ___	Unnecessary
14.	Useful	___ ___ ___	Useless
15.	Important	___ ___ ___	Unimportant
16.	Familiar	___ ___ ___	Strange
17.	Valuable	___ ___ ___	Worthless
18.	Interesting	___ ___ ___	Boring

APPENDIX B

APPENDIX B

EXAMPLE OF SCALES AND DIRECTIONS IN SWAHILI

Shule.....
Darasa.....
Jina Lako.....

Orodha Ya Maswali Juu Ya Kusoma

Maelezo

Tafadhali jibu maswali yafuatayo kwa kuandika 'NDIYO' au 'LA.' Baada ya kumaliza maswali yote, ngojea hadi upate maelezo mengine kabla ya kuendelea. Haya ndiyo Maswali:

1. Napenda kusoma.
2. Ninasikia vizuri sana baada ya kusoma kitabu fulani.
3. Ningependa kupata zawadi ya kitabu.
4. Kusoma vitabu vya shule ni kuharibu wakati tu.
5. Kusoma hadithi kunanipendeza.
6. Kusona vitabu kunanipendeza mno.
7. Ninapenda kutafuta vitabu vya kusoma.
8. Ni heri kucheza badala ys kusoma.
9. Ninaweza kujifunza mengi kutokana na kusoma vitabu.
10. Ninafikiri kwamba kusoma vitabu in jambo la upuzi.
11. Sipendi kuwa katika darasa wakati wa kusoma.
12. Ningependa kuongezwa wakati wa kusoma shuleni.
13. Kusoma hadithi kunanichokesha.
14. Ni vyema kujua kusoma.
15. Ninachukia kusoma vitabu shuleni.
16. Ni heri kusoma kitabu badala ya kufanya mambo mengine.
17. Kusoma kunaniharibia siku nzima.

Maelezo

Sasa, wanafunzi waonavyo juu ya jambo la kusoma ni muhimu sana, kwa hivyo, unaulizwa kujaza kurasa tatu zifuatazo.

Huu si mtihani, la! Hakuna jawabu yoyote ilio sawa au mbaya. Kila neno la maneno mawili uliyopewa ni kinyume cha lingine. Onyesa na (x) katika nafasi ilio katikati ya haya maneno mawili kuonyesha uonavyo moyoni mwako juu ya jambo la KUSOMA. Hebu angalia huu mfano.

Kama unaona kwamba KUSOMA kunalingana sana na neno lililo upande mmoja wa haya maneno mawili, basi onyesha hivi:

Polepole x _ _ _ _ Haraka

au

Polepole _ _ _ _ x Haraka

Kama unaona kwamba kusoma hakulingani na upande mmoja wala mwingine, basi weka alama katikati ya maneno hayo. Weka alama hiyo karibu na upande ulioko karibu na lile neno lielezalo maoni yako juu ya KUSOMA.

MUHIMU:

1. Utaona kwamba karatasi moja ulilopewa lina nafasi taso (5) kama mfano ulioko hapo juu. Lakini utaona kwamba kuna makaratasi mengine mawili yaliyo tofauti. Karatasi moja lina nafasi tatu katikati ya maneno, na lingine lina nafasi saba (7). Tafadhali jaza karatasi katika hizo nafasi kulingana na maoni yako juu ya KUSOMA.
2. Weka alama yako katikati ya kila nafasi wala si upande:

   x _ _ x _

   HIVI SI HIVI
3. Weka alama moja tu katikati ya maneno hayo mawili.
4. Jibu maswali yote.
5. Jibu haraka. Ni bora kujibu vile uonavyo mara tu.

Shule.....

Darasa.....

Jina Lako.....

KUSOMA

1.	Nikwema	_ _ _ _ _ _ _	Nikubaya
2.	Kunafaa	_ _ _ _ _ _ _	Hakufaidiki
3.	Nirahisi	_ _ _ _ _ _ _	Nikali
4.	Kwavutia	_ _ _ _ _ _ _	Kwachokesha
5.	Nimuhimu	_ _ _ _ _ _ _	Simuhimu
6.	Nikwepesi	_ _ _ _ _ _ _	Nikulivu
7.	Kwapendesa	_ _ _ _ _ _ _	Sikupendi
8.	Niwazi	_ _ _ _ _ _ _	Huangaisha
9.	Nibora	_ _ _ _ _ _ _	Sibora
10.	Nirahisi	_ _ _ _ _ _ _	Nikugumu
11.	Nikwepesi	_ _ _ _ _ _ _	Nidhaifu
12.	Kunasaidia	_ _ _ _ _ _ _	Hakusaidii
13.	Nikwepesi	_ _ _ _ _ _ _	Nikuzito
14.	Nilazima	_ _ _ _ _ _ _	Silazima
15.	Nikuzoevu	_ _ _ _ _ _ _	Nikugeni
15.	Kunaeleweka	_ _ _ _ _ _ _	Hubumbuaza
17.	Nikuzuri	_ _ _ _ _ _ _	Nikubaya
18.	Nikusudi	_ _ _ _ _ _ _	Nihafifu

Shule.....

Darasa.....

Jina Lako.....

KUSOMA

1.	Kwavutia	_ _ _ _ _	Kwachokesha
2.	Nikwepesi	_ _ _ _ _	Nikuzito
3.	Nikuzuri	_ _ _ _ _	Nikubaya
4.	Nikwepesi	_ _ _ _ _	Nikulivu
5.	Nirahisi	_ _ _ _ _	Nikugumu
6.	Nikuzoevu	_ _ _ _ _	Nikugeni
7.	Nikwema	_ _ _ _ _	Nikubaya
8.	Kwapendesa	_ _ _ _ _	Sikupendi
9.	Nikwepesi	_ _ _ _ _	Nidhaifu
10.	Kunafaa	_ _ _ _ _	Hakufaidiki
11.	Kunasaidia	_ _ _ _ _	Hakusaidii
12.	Nikusudi	_ _ _ _ _	Nihafifu
13.	Nilazima	_ _ _ _ _	Silazima
14.	Nibora	_ _ _ _ _	Sibora
15.	Nimuhimu	_ _ _ _ _	Simuhimu
16.	Nirahisi	_ _ _ _ _	Nikali
17.	Niwazi	_ _ _ _ _	Huangaisha
18.	Kunaeleweka	_ _ _ _ _	Hubumbuaza

Shule.....

Darasa.....

Jina Lako.....

KUSOMA

1.	Nirahisi	__ __ __	Nikugumu
2.	Nirahisi	__ __ __	Nikali
3.	Nikwepesi	__ __ __	Nikuvuli
4.	Nikwepesi	__ __ __	Nidhaifu
5.	Kwapendesa	__ __ __	Sikupendi
6.	Nikuzuri	__ __ __	Nikubaya
7.	Kunasaidia	__ __ __	Hakusaidii
8.	Kunaeleweka	__ __ __	Hubumbuaza
9.	Nikwepesi	__ __ __	Nikuzito
10.	Nikusudi	__ __ __	Nihafifu
11.	Nikwema	__ __ __	Nikubaya
12.	Niwazi	__ __ __	Huangaisha
13.	Nilazima	__ __ __	Silazima
14.	Kunafaa	__ __ __	Hakufaidiki
15.	Nimuhimu	__ __ __	Simuhimu
16.	Nikuzoevu	__ __ __	Nikugeni
17.	Nibora	__ __ __	Sibora
18.	Kwavutia	__ __ __	Kwachokesha

APPENDIX C

APPENDIX C

RESULTS ON TESTS OF STATISTICAL SIGNIFICANCE ON DATA FROM AMERICAN SUBJECTS (p=.05)

Grade	Formats	V and V	F Ratios	Decision
4	3 and 5	51 and 49	1.846	significant
4	3 and 7	51 and 49	2.18	significant
4	5 and 7	51 and 49	1.181	non-significant
5	3 and 5	51 and 49	1.466	non-significant
5	3 and 7	51 and 49	2.00	significant
5	5 and 7	51 and 49	1.363	non-significant
6	3 and 5	54 and 54	2.6	significant
6	3 and 7	54 and 54	2.36	significant
6	5 and 7	54 and 54	1.1	non-significant
7	3 and 5	51 and 49	2.00	significant
7	3 and 7	51 and 49	2.166	significant
7	5 and 7	51 and 49	1.083	non-significant

RESULTS ON TESTS OF STATISTICAL SIGNIFICANCE
ON DATA FROM AFRICAN SUBJECTS (p=.05)

Grade	Formats	V and V	F Ratios	Decision
4	3 and 5	53 and 53	4.91	significant
4	3 and 7	53 and 53	1.43	non-significant
4	5 and 7	53 and 53	3.41	significant
5	3 and 5	51 and 49	2.15	significant
5	3 and 7	51 and 49	1.48	non-significant
5	5 and 7	51 and 49	1.45	non-significant
6	3 and 5	52 and 52	1.21	non-significant
6	3 and 7	52 and 52	1.27	non-significant
6	5 and 7	52 and 52	1.05	non-significant
7	3 and 5	53 and 53	1.75	significant
7	3 and 7	53 and 53	1.75	significant
7	5 and 7	53 and 53	1.00	non-significant

APPENDIX D

DESCRIPTION OF THE CORRELATION COEFFICIENTS

The correlation coefficients provided in the matrices that appear in the next twenty-four pages omit the decimal points but the presence of these decimal points are assumed to exist in front of each of the coefficients. Additionally, unities which should otherwise appear in the diagonal have also been omitted but these should also be assumed to exist.

Key

The following key provides some idea of the scales that are represented by various numbers in the tables.

1 = Alive	10 = Understandable
2 = Like	11 = Clear
3 = Good	12 = Familiar
4 = Lively	13 = Helpful
5 = Nice	14 = Meaningful
6 = Interesting	15 = Necessary
7 = Simple	16 = Useful
8 = Easy	17 = Important
9 = Light	18 = Valuable

The first six scales represent the Evaluation factor, the next six represent the Difficulty factor and the last six represent the Usefulness factor.

APPENDIX D

CORRELATION COEFFICIENTS FROM AMERICAN FOURTH GRADE RATINGS USING THREE-POINT FORMATS

	X	SD																
1	2.4	.72	-															
2	2.5	.75	385	-														
3	2.7	.48	351	406	-													
4	2.5	.69	391	503	273	-												
5	2.4	.64	209	547	270	477	-											
6	2.4	.72	351	431	310	364	355	-										
7	2.3	.66	138	393	494	353	387	226	-									
8	2.4	.66	108	332	507	153	317	086	621	-								
9	2.2	.69	221	205	337	314	426	052	459	363	-							
10	2.6	.48	-019	054	-127	-060	022	078	004	-044	-069	-						
11	2.3	.69	288	225	473	211	415	205	442	509	480	-122	-					
12	2.1	.74	079	175	302	393	502	101	525	414	603	-084	426	-				
13	2.5	.69	231	352	-072	396	481	254	026	-038	092	154	065	106	-			
14	2.5	.64	084	-060	-270	113	143	-102	-110	-271	012	276	-105	090	304	-		
15	2.4	.60	085	107	016	024	147	140	-003	121	072	018	-003	-089	376	258	-	
16	2.5	.57	009	247	336	075	371	308	288	260	209	-046	128	128	047	090	050	-
17	2.4	.66	-002	097	-137	240	088	-070	006	-145	216	302	006	-016	411	322	083	047	-
18	2.7	.54	-060	-190	-074	-160	-124	053	-075	-116	-178	-078	-123	-081	063	112	328	308	198

CORRELATION COEFFICIENTS FROM AMERICAN FOURTH GRADE RATINGS USING FIVE-POINT FORMATS

	X	SD																
1	4.0	1.0	-															
2	4.2	1.1	342	-														
3	3.8	1.2	369	323	-													
4	3.7	1.3	176	449	386	-												
5	4.2	.95	280	593	473	540	-											
6	3.9	1.0	466	405	651	470	653	-										
7	4.4	.95	468	240	157	085	247	211	-									
8	4.0	1.1	339	275	280	277	-288	140	214	-								
9	4.0	1.1	242	278	102	170	184	053	276	482	-							
10	4.0	1.0	437	372	234	194	371	076	343	471	516	-						
11	4.2	1.0	121	079	049	231	294	153	200	451	420	432	-					
12	4.2	1.0	253	083	132	-080	-019	220	300	324	375	416	208	-				
13	3.6	1.2	273	098	220	270	-180	339	241	348	103	-100	090	075	-			
14	4.4	.99	160	248	295	031	316	181	316	121	266	245	120	271	069	-		
15	3.6	1.3	211	323	171	112	110	160	-181	455	315	113	291	134	395	691	-	
16	3.5	1.4	280	036	242	190	029	395	259	101	067	-122	120	240	225	425	466	-
17	3.8	1.2	620	237	206	137	-110	102	155	160	080	236	067	159	158	578	303	402
18	3.6	1.1	261	439	271	329	-250	292	090	257	172	222	267	166	102	486	681	248

CORRELATION COEFFICIENTS FROM AMERICAN FOURTH GRADE RATINGS
USING SEVEN-POINT FORMATS

	X	SD																
1	5.8	1.8	-															
2	5.4	1.9	764	-														
3	5.8	1.7	443	430	-													
4	5.8	1.5	544	360	561	-												
5	4.8	2.1	383	405	426	201	-											
6	5.2	1.7	492	661	449	482	434	-										
7	4.8	1.9	113	457	339	045	688	493	-									
8	5.7	1.6	724	121	180	-004	092	223	482	-								
9	4.9	2.2	560	323	327	007	261	153	557	640	-							
10	4.9	2.2	432	098	169	375	247	194	416	480	402	-						
11	4.5	2.3	583	558	467	310	569	683	547	449	369	555	-					
12	5.2	1.9	131	135	275	200	180	435	102	846	574	531	510	-				
13	5.9	1.7	272	157	241	-119	177	255	588	225	716	497	283	141	-			
14	5.6	1.8	253	231	337	195	-028	412	200	218	356	310	469	185	460	-		
15	6.0	1.2	074	185	-012	400	-068	153	-063	300	210	361	106	257	164	496	-	
16	6.5	.89	236	152	074	271	-268	-052	-077	144	-057	058	-040	-149	170	667	391	-
17	5.3	2.0	205	563	628	375	520	439	509	-015	091	426	639	262	147	366	345	481
18	5.6	1.6	374	414	189	199	-228	230	-039	391	252	191	360	193	357	794	383	489

CORRELATION COEFFICIENTS FROM AMERICAN FIFTH GRADE RATINGS
USING THREE-POINT FORMATS

	X	SD																
1	2.7	.49	-															
2	2.5	.72	434	-														
3	2.6	.66	531	422	-													
4	2.2	.61	412	478	300	-												
5	2.6	.48	471	327	572	387	-											
6	2.6	.66	491	631	475	300	487	-										
7	2.8	.34	-063	496	066	-015	116	359	-									
8	2.7	.46	285	008	-052	120	119	-052	177	-								
9	2.3	.60	383	135	267	042	214	514	228	141	-							
10	2.7	.52	249	491	043	201	234	343	155	052	331	-						
11	2.4	.56	163	563	158	036	159	246	-011	209	257	481	-					
12	2.5	.56	245	384	174	006	289	617	229	028	642	139	548	-				
13	2.3	.49	-039	-203	-136	140	035	035	-089	070	471	-193	-095	-234	-			
14	2.7	.46	276	463	297	237	119	380	389	060	260	462	425	156	075	-		
15	2.5	.50	-153	020	-140	124	043	140	-155	-009	-003	-132	-026	-101	077	152	-	
16	2.4	.67	115	497	326	307	197	400	-317	-421	164	379	366	076	257	327	329	-
17	2.7	.46	140	463	272	003	197	164	-264	-409	260	189	171	028	070	317	276	648
18	2.4	.62	124	225	433	-013	063	193	-187	-339	090	107	283	366	155	339	336	470

CORRELATION COEFFICIENTS FROM AMERICAN FIFTH GRADE RATINGS
USING FIVE-POINT FORMATS

	X	SD																
1	4.6	.72	-															
2	4.2	1.1	388	-														
3	4.5	.79	772	632	-													
4	4.0	.87	786	357	666	-												
5	4.2	.96	479	544	469	308	-											
6	4.0	1.2	626	736	667	472	736	-										
7	4.0	.85	100	094	-067	182	094	176	-									
8	4.0	.97	283	115	-089	156	377	308	546	-								
9	3.6	.97	-047	-226	-256	016	-426	100	328	397	-							
10	4.1	.71	137	119	-006	-012	062	369	446	573	469	-						
11	3.9	1.1	291	374	309	-042	373	369	531	476	499	583	-					
12	3.7	.99	128	-036	092	092	-336	-113	-106	-036	422	455	044	-				
13	4.3	.87	112	296	285	159	396	473	365	302	-152	273	166	-284	-			
14	4.4	.72	138	405	546	111	-144	414	219	100	-253	-151	-007	-114	062	-		
15	4.6	.65	429	427	374	199	-096	516	-081	-114	-194	054	221	211	-099	372	-	
16	3.6	1.0	359	618	457	420	118	523	-051	107	-337	085	326	-121	426	272	462	-
17	4.3	.93	147	356	-126	292	031	282	228	-132	227	-026	246	-110	531	235	528	415
18	4.6	.71	181	664	300	242	250	433	-074	583	-159	034	213	144	104	391	666	385

CORRELATION COEFFICIENTS FROM AMERICAN FIFTH GRADE RATINGS
USING SEVEN-POINT FORMATS

	X	SD																
1	5.7	1.8	-															
2	5.2	1.3	630	-														
3	5.7	1.6	665	520	-													
4	6.3	1.3	385	538	664	-												
5	5.8	1.2	490	774	553	562	-											
6	5.8	1.3	751	577	811	571	422	-										
7	6.5	.89	196	063	455	477	023	414	-									
8	6.1	1.3	323	175	470	359	-071	447	890	-								
9	6.3	1.3	240	110	335	410	112	351	756	740	-							
10	5.6	1.2	347	129	469	131	-067	377	410	483	603	-						
11	5.3	1.4	256	169	029	-042	-080	170	454	414	349	306	-					
12	5.9	1.6	584	534	315	646	270	307	541	536	017	478	491	-				
13	5.1	1.5	365	-001	357	-102	-251	306	159	298	324	372	281	413	-			
14	6.2	1.1	207	-061	204	111	-368	241	573	612	175	246	451	397	332	-		
15	5.0	1.7	244	292	212	171	088	184	216	276	293	-052	-095	478	180	200	-	
16	5.5	1.5	396	532	053	209	303	647	655	664	157	318	190	774	294	476	374	-
17	5.4	1.4	329	272	229	-027	-050	291	135	209	109	-109	156	471	419	164	329	537
18	5.8	1.6	266	495	209	160	-33	463	057	309	107	-168	206	540	316	037	373	432

CORRELATION COEFFICIENTS FROM AMERICAN SIXTH GRADE RATINGS
RATINGS USING THREE-POINT FORMATS

	X	SD																
1	2.6	.49	-															
2	2.6	.52	460	-														
3	2.8	.39	346	366	-													
4	2.5	.54	431	424	405	-												
5	2.5	.50	525	391	576	378	-											
6	2.5	.49	567	425	078	478	089	-										
7	2.5	.54	-010	222	038	197	169	128	-									
8	2.8	.39	019	138	-078	-149	176	-042	372	-								
9	2.5	.50	008	-176	-153	140	203	153	311	339	-							
10	2.5	.50	008	180	153	-032	266	059	487	437	362	-						
11	2.6	.54	291	221	205	113	242	166	313	429	284	195	-					
12	2.5	.54	363	188	183	037	082	-134	041	102	327	134	408	-				
13	2.5	.55	060	300	010	-142	406	104	-175	153	065	105	215	095	-			
14	2.7	.46	-057	179	161	115	104	-078	071	172	-079	082	041	497	148	-		
15	2.6	.48	-092	021	-224	-025	336	071	187	072	100	-095	371	365	060	226	-	
16	2.3	.59	011	-185	260	-113	258	-203	-025	345	239	082	157	332	407	109	391	-
17	2.5	.59	-236	229	175	-249	173	-110	341	-034	135	215	155	268	605	070	185	337
18	2.5	.50	351	414	250	363	294	302	018	130	114	021	-090	314	434	039	261	427

CORRELATION COEFFICIENTS FROM AMERICAN SIXTH GRADE RATINGS
USING FIVE-POINT FORMATS

	X	SD																	
1	4.0	.95	-																
2	4.2	1.0	534	-															
3	4.2	.79	384	586	-														
4	4.1	.83	574	644	569	-													
5	4.5	.77	338	644	707	613	-												
6	4.2	.84	568	646	752	603	665	-											
7	4.0	1.0	287	521	249	324	432	500	-										
8	4.1	.95	301	444	242	564	229	385	656	-									
9	3.8	1.1	188	208	428	372	449	402	449	240	-								
10	3.8	1.2	074	124	231	-027	072	162	408	121	507	-							
11	4.0	1.2	222	348	102	133	162	433	437	226	578	789	-						
12	3.6	1.1	196	130	201	178	203	189	330	340	599	549	695	-					
13	4.3	.90	290	418	384	391	411	371	248	502	384	196	368	190	-				
14	4.2	.76	341	419	377	353	240	233	350	321	377	308	474	374	387	-			
15	4.2	.83	-104	279	507	137	382	197	177	-025	-034	203	-032	-094	365	118	-		
16	4.4	.71	060	426	636	319	307	529	303	247	626	322	372	307	658	275	319	-	
17	4.2	.84	-154	361	316	128	279	178	313	170	316	374	391	233	502	397	435	459	-
18	4.1	.98	132	213	034	127	379	394	352	118	102	198	185	010	315	321	561	300	344

CORRELATION COEFFICIENTS FROM AMERICAN SIXTH GRADE RATINGS
USING SEVEN-POINT FORMATS

	X	SD																	
1	5.7	1.5	-																
2	5.4	1.7	669	-															
3	5.8	1.5	544	527	-														
4	5.6	1.4	320	352	632	-													
5	5.9	1.4	667	527	623	403	-												
6	5.8	1.5	609	553	604	588	502	-											
7	6.0	1.3	-038	279	794	248	046	002	-										
8	6.0	1.4	199	105	313	563	029	199	637	-									
9	5.1	1.7	011	271	214	561	255	-059	674	569	-								
10	5.8	1.3	021	159	258	605	-028	258	552	641	572	-							
11	5.9	1.4	-146	203	245	143	-023	-258	604	341	562	487	-						
12	5.9	1.4	666	722	734	291	646	510	536	122	425	409	435	-					
13	5.3	1.7	126	195	093	385	-055	048	090	358	328	128	301	132	-				
14	5.3	1.7	670	664	605	435	637	388	393	331	238	282	218	102	537	-			
15	6.1	1.2	017	077	-016	296	003	155	025	293	273	252	-072	094	494	446	-		
16	5.9	1.2	095	243	002	014	-001	-047	290	109	280	251	-117	071	395	361	653	-	
17	5.7	1.3	073	047	066	101	160	-243	226	203	364	334	222	017	715	455	474	570	-
18	5.3	1.6	341	559	716	328	290	424	113	129	026	105	148	536	290	400	425	369	150

CORRELATION COEFFICIENTS FROM AMERICAN SEVENTH GRADE RATINGS
USING THREE-POINT FORMATS

	X	SD																	
1	2.5	.53	-																
2	2.5	.57	456	-															
3	2.7	.47	391	299	-														
4	2.5	.57	461	407	540	-													
5	2.4	.57	563	563	354	298	-												
6	2.6	.53	677	677	544	461	482	-											
7	2.4	.63	182	-376	257	220	138	291	-										
8	2.6	.57	180	296	345	188	374	-114	394	-									
9	2.4	.53	186	065	359	289	311	250	371	481	-								
10	2.4	.54	086	261	302	137	-017	150	634	364	075	-							
11	2.5	.54	198	198	299	311	049	134	370	551	023	179	-						
12	2.5	.57	-236	236	282	170	-066	-054	399	423	202	409	350	-					
13	2.4	.57	115	202	062	-123	293	174	114	253	279	191	262	134	-				
14	2.7	.56	062	230	101	196	389	062	286	345	198	276	226	234	301	-			
15	2.5	.50	036	-036	025	106	216	105	195	115	200	092	021	441	388	201	-		
16	2.2	.58	124	124	020	089	187	-052	219	302	273	198	198	131	346	105	386	-	
17	2.4	.60	037	-037	-255	-145	145	019	002	113	181	210	217	151	653	246	109	477	-
18	2.4	.50	028	134	245	159	230	166	257	210	249	216	260	076	394	434	310	496	443

CORRELATION COEFFICIENTS FROM AMERICAN SEVENTH GRADE RATINGS
USING FIVE-POINT FORMATS

	X	SD																
1	4.1	.86	-															
2	4.1	.99	655	-														
3	4.1	.93	687	691	-													
4	4.2	1.1	763	811	731	-												
5	4.0	.87	730	738	681	420	-											
6	3.7	1.0	479	388	394	399	398	-										
7	3.4	1.0	297	186	-221	172	222	239	-									
8	4.4	.87	095	099	228	209	066	-079	327	-								
9	4.0	1.1	276	206	185	172	352	244	674	378	-							
10	4.0	1.2	-224	105	092	118	336	266	607	574	918	-						
11	4.0	1.0	315	309	257	279	-334	297	695	485	768	719	-					
12	4.3	.92	536	390	419	690	468	352	310	153	389	336	368	-				
13	4.3	.89	282	252	198	358	039	151	206	533	347	244	210	455	-			
14	4.2	.77	060	189	056	124	032	205	-137	245	048	068	088	224	327	-		
15	4.1	.89	347	272	171	242	058	215	092	255	097	150	133	193	560	410	-	
16	3.9	.80	120	-059	-032	036	-044	-101	040	227	-085	-034	-170	003	334	352	365	-
17	3.8	.78	110	018	061	037	097	168	093	294	-025	096	-087	064	568	334	389	501
18	4.2	.91	020	216	-023	098	066	-035	399	204	338	346	280	177	495	394	474	445

CORRELATION COEFFICIENTS FROM AMERICAN SEVENTH GRADE RATINGS
USING SEVEN-POINT FORMATS

	X	SD																	
1	5.5	1.3	-																
2	5.7	1.4	656	-															
3	6.0	1.4	584	750	-														
4	5.2	1.5	715	593	572	-													
5	5.5	1.2	442	667	599	573	-												
6	5.5	1.4	557	402	398	579	418	-											
7	5.7	1.5	204	442	416	271	520	090	-										
8	5.4	1.5	389	558	525	366	686	382	600	-									
9	4.9	1.2	064	231	169	259	489	211	622	398	-								
10	5.6	1.2	124	411	454	300	543	119	609	360	321	-							
11	5.4	1.2	198	316	404	197	421	172	448	358	378	480	-						
12	5.1	1.4	120	243	294	349	346	102	624	361	007	456	400	-					
13	5.7	1.1	087	274	243	194	232	058	110	069	019	391	362	244	-				
14	5.8	1.9	110	118	200	243	118	067	058	041	050	206	436	157	528	-			
15	5.5	1.4	-106	018	295	011	132	061	068	112	019	340	362	196	446	429	-		
16	5.8	1.0	049	146	096	083	080	107	031	115	-104	148	244	013	495	474	406	-	
17	5.7	1.3	200	228	488	312	126	355	-058	268	-111	041	200	-017	321	505	426	496	-
18	5.4	1.4	220	438	566	216	257	223	-029	307	-130	108	325	119	478	450	509	367	647

CORRELATION COEFFICIENTS FROM AFRICAN FOURTH GRADE RATINGS
USING THREE-POINT FORMATS

	X	SD																
1	2.5	.78	-															
2	2.5	.78	269	-														
3	2.3	.88	339	801	-													
4	1.5	.86	358	655	617	-												
5	2.7	.69	147	515	537	623	-											
6	2.3	.90	313	499	740	357	509	-										
7	2.6	.73	154	491	393	439	-034	-112	-									
8	2.1	.95	016	176	264	356	282	273	161	-								
9	2.7	.66	327	075	108	108	-135	-137	392	326	-							
10	2.3	.92	344	479	648	534	-235	646	294	464	294	-						
11	2.8	.52	143	504	406	406	-068	-104	987	149	406	309	-					
12	2.3	.92	-055	130	230	183	211	-043	463	335	438	219	476	-				
13	2.8	.53	320	226	118	118	-128	128	401	277	243	417	414	309	-			
14	2.5	.78	143	504	406	406	-068	-104	487	149	406	309	980	476	414	-		
15	2.6	.66	217	433	323	491	353	-006	659	130	153	056	610	212	331	610	-	
16	2.8	.49	-117	303	276	212	277	-072	643	243	177	165	649	679	185	649	352	-
17	2.3	.90	155	617	495	284	141	078	791	041	282	187	803	385	505	803	749	555
18	2.1	.98	307	125	140	065	210	-151	453	-325	037	041	461	110	066	461	206	253

CORRELATION COEFFICIENTS FROM AFRICAN FOURTH GRADE RATINGS
USING FIVE-POINT FORMATS

	X	SD																	
1	2.9	2.6	-																
2	6.1	2.1	269	-															
3	5.7	2.4	617	801	-														
4	5.7	2.4	358	655	617	-													
5	5.7	2.3	147	515	537	623	-												
6	5.7	2.4	313	499	740	357	509	-											
7	6.7	1.1	154	491	393	439	-034	-034	-										
8	3.0	2.7	356	176	264	356	282	273	061	-									
9	5.7	2.4	108	075	108	108	-135	-137	392	326	-								
10	5.1	2.7	334	479	148	534	235	646	294	464	425	-							
11	6.7	1.1	506	504	306	405	-068	-104	787	644	406	309	-						
12	6.0	2.1	-055	130	230	183	211	-043	463	335	438	419	438	-					
13	5.7	2.4	118	226	118	118	-128	128	401	277	241	217	414	309	-				
14	6.7	1.1	406	504	406	406	-068	0104	287	149	046	309	100	476	414	-			
15	6.3	1.8	191	433	323	491	352	-006	359	130	153	056	101	212	331	610	-		
16	6.4	1.5	-111	303	276	212	277	-072	643	243	177	165	649	185	679	649	352	-	
17	6.6	1.4	155	617	495	284	141	078	791	041	282	187	203	389	505	803	749	555	-
18	6.0	2.0	307	125	140	065	-210	-151	453	325	037	041	061	110	666	461	206	253	355

CORRELATION COEFFICIENTS FROM AFRICAN FOURTH GRADE RATINGS
USING SEVEN-POINT FORMATS

	X	SD																
1	2.8	2.7	-															
2	6.1	2.1	307	-														
3	5.7	2.4	242	148	-													
4	5.7	2.4	278	-163	105	-												
5	5.7	2.3	-071	009	-040	-029	-											
6	5.7	2.4	247	117	491	222	204	-										
7	6.7	1.1	082	-104	266	139	029	034	-									
8	3.0	2.7	-294	-083	136	060	-053	139	-171	-								
9	5.7	2.4	284	097	-158	-070	-037	-101	310	-055	-							
10	5.1	2.7	098	100	-091	-163	072	-018	088	113	375	-						
11	6.7	1.1	-087	049	-066	-307	187	-177	-078	-010	325	086	-					
12	6.0	2.1	395	194	352	-078	284	117	022	037	261	043	386	-				
13	5.7	2.4	237	294	-046	021	164	-062	249	-004	-020	160	-019	-069	-			
14	6.7	1.1	126	-053	202	-081	564	-021	104	-087	-021	-163	225	185	305	-		
15	6.3	1.8	138	250	279	-008	144	-087	107	055	-002	-134	184	086	031	351	-	
16	6.4	1.6	-052	262	053	-189	446	034	146	-102	398	-125	334	074	310	332	104	-
17	6.6	1.4	056	-028	-001	262	238	046	045	005	-165	054	023	-161	226	311	523	145
18	6.1	2.0	-069	301	002	139	084	-196	-229	-182	-105	-239	-187	-113	264	-144	227	005

CORRELATION COEFFICIENTS FROM AFRICAN FIFTH GRADE RATINGS
USING THREE-POINT FORMATS

	X	SD																
1	2.5	.81	-															
2	2.6	.81	289	-														
3	2.6	.74	001	404	-													
4	1.8	.99	433	201	054	-												
5	2.8	.52	144	315	140	-042	-											
6	1.9	1.0	221	552	-091	009	345	-										
7	2.5	.81	-238	006	550	-152	-057	031	-									
8	2.4	.89	-331	108	176	-208	090	-058	489	-								
9	2.5	.84	-277	276	001	-154	006	-145	131	374	-							
10	2.5	.84	124	-139	-080	-125	172	-238	047	292	009	-						
11	2.1	.99	-085	042	-210	030	-124	-156	430	349	123	-079	-					
12	2.3	.94	025	450	-129	346	-381	506	001	-067	108	040	618	-				
13	2.6	.77	-386	-082	-041	-337	248	-071	007	204	637	-030	-034	-175	-			
14	2.8	.58	-105	221	004	-038	316	-148	095	025	370	035	020	-079	550	-		
15	2.6	.77	-069	-142	-042	032	230	-093	001	478	259	041	096	-145	119	531	-	
16	2.6	.74	-183	209	009	-120	283	-131	086	054	449	-098	-005	-210	663	879	593	-
17	2.5	.81	-291	-126	-087	110	124	-183	102	108	109	025	178	132	317	190	095	099
18	2.8	.58	-010	020	099	118	267	-141	197	371	187	138	317	-042	235	404	721	468

CORRELATION COEFFICIENTS FROM AFRICAN FIFTH GRADE RATINGS
USING FIVE-POINT FORMATS

	X	SD																
1	4.8	.69	-															
2	4.5	1.2	433	-														
3	2.4	1.7	446	159	-													
4	4.5	1.3	-131	426	481	-												
5	4.7	1.0	316	471	623	002	-											
6	4.7	.85	383	303	528	121	183	-										
7	4.6	1.0	122	001	574	-269	271	024	-									
8	4.5	1.2	-097	-205	-030	008	-190	-045	470	-								
9	3.3	1.9	-125	023	187	001	-177	119	289	144	-							
10	3.4	1.8	519	370	455	-321	297	125	503	310	455	-						
11	2.6	1.8	122	-123	014	067	091	040	213	124	277	469	-					
12	4.4	1.3	170	073	117	163	-137	-085	133	167	267	201	023	-				
13	3.4	1.9	-051	209	431	-096	525	032	317	-309	128	419	-068	059	-			
14	3.6	1.8	237	247	-201	226	290	230	200	-043	-201	-174	170	-180	278	-		
15	4.4	1.4	321	279	207	-181	537	064	334	-160	145	577	073	081	527	440	-	
16	3.6	1.8	296	261	106	-158	327	-006	490	-167	187	600	137	117	431	301	724	-
17	3.2	1.9	228	348	545	033	307	074	145	-239	122	503	007	129	612	427	307	395
18	4.4	1.4	237	200	365	-085	564	-076	581	-216	165	587	015	147	626	407	640	665

CORRELATION COEFFICIENTS FROM AFRICAN FIFTH GRADE RATINGS
USING SEVEN-POINT FORMATS

	X	SD																
1	3.1	2.6	-															
2	5.2	2.5	382	-														
3	6.4	1.4	216	051	-													
4	3.5	2.8	491	738	238	-												
5	4.2	2.8	455	587	008	165	-											
6	6.3	1.7	567	256	194	230	791	-										
7	6.5	1.0	-033	099	-036	139	234	-086	-									
8	6.5	1.1	-073	086	-194	149	-101	-091	116	-								
9	6.1	1.8	069	084	467	051	148	249	064	230	-							
10	5.2	2.5	226	333	004	262	-162	087	415	010	326	-						
11	5.6	2.2	142	178	096	084	-154	-021	242	144	273	493	-					
12	5.0	2.6	-169	180	-082	192	573	224	339	331	214	143	181	-				
13	6.6	1.1	246	-080	470	-184	151	304	-130	-134	394	286	281	153	-			
14	6.1	1.8	144	-021	470	-149	-007	111	039	-265	493	391	117	106	608	-		
15	6.5	1.4	273	169	162	180	146	210	029	046	176	174	-018	124	376	445	-	
16	6.2	1.7	068	168	107	084	-007	109	-062	153	070	103	009	066	293	478	278	-
17	5.4	2.4	-211	-320	-036	-257	131	060	146	068	-019	924	229	-201	310	352	268	083	-
18	6.1	1.9	-110	-106	-041	-113	150	214	-146	053	104	116	-218	-190	070	024	178	119	178

CORRELATION COEFFICIENTS FROM AFRICAN SIXTH GRADE RATINGS USING THREE-POINT FORMATS

	X	SD																
1	2.5	.81	-															
2	2.7	.64	394	-														
3	2.6	.73	655	445	-													
4	1.8	.99	263	267	217	-												
5	2.5	.78	359	274	561	272	-											
6	2.6	.73	353	397	458	-060	248	-										
7	2.6	.74	221	288	110	242	346	151	-									
8	2.6	.74	258	478	358	119	073	234	136	-								
9	2.3	.93	-026	-267	-054	-095	-027	-054	-206	337	-							
10	1.6	.94	-124	-089	-248	172	-006	140	226	160	050	-						
11	2.1	1.0	160	-062	081	-076	179	081	054	067	296	037	-					
12	2.2	.95	201	-080	087	341	087	-171	124	-130	256	039	231	-				
13	2.8	.58	475	647	523	070	344	261	353	451	-240	008	000	-032	-			
14	2.6	.75	632	450	573	293	347	286	309	350	-116	-338	-060	107	535	-		
15	2.6	.77	627	627	562	198	277	409	431	470	-217	-008	-206	157	527	475	-	
16	2.7	.60	555	427	421	-017	338	269	406	456	-123	022	008	104	749	527	424	-
17	2.4	.86	235	410	425	179	344	177	298	509	-209	042	086	-085	498	501	300	435
18	2.8	.92	205	-083	044	-031	-069	-089	186	220	010	-079	-010	279	151	204	219	250

CORRELATION COEFFICIENTS FROM AFRICAN SIXTH GRADE
RATINGS USING FIVE-POINT FORMATS

	X	SD																
1	2.7	1.68	-															
2	5.7	2.1	621	-														
3	6.0	1.8	127	399	-													
4	3.2	1.6	244	298	200	-												
5	5.4	2.5	492	800	305	371	-											
6	5.5	2.3	527	535	-005	289	453	-										
7	4.7	2.6	485	538	078	339	373	604	-									
8	5.1	2.4	311	125	245	-040	039	109	352	-								
9	2.7	1.4	-249	-159	-312	315	-122	-049	-025	025	-							
10	4.7	2.6	130	-015	133	-421	-055	017	169	017	001	-						
11	3.1	2.5	211	-052	-205	300	043	136	-211	-197	001	-179	-					
12	5.0	2.5	058	-302	-174	-409	-310	039	153	223	072	499	080	-				
13	5.4	2.3	071	241	736	-033	155	-027	272	432	-283	327	-276	094	-			
14	6.2	1.4	377	546	717	136	493	081	262	508	-496	301	-352	-082	559	-		
15	5.1	1.6	220	417	549	160	337	259	374	362	-569	173	-434	-111	474	759	-	
16	5.7	2.2	007	238	389	-244	165	-060	026	191	-147	532	-371	392	315	566	497	-
17	6.2	1.6	336	524	712	075	528	175	244	419	-539	344	304	-045	570	957	745	559
18	6.0	1.8	443	457	530	177	337	005	171	579	-337	193	-256	-156	409	827	670	427

CORRELATION COEFFICIENTS FROM AFRICAN SIXTH GRADE RATINGS USING SEVEN-POINT FORMATS

	X	SD																
1	3.4	1.7	-															
2	3.6	1.7	268	-														
3	4.5	1.2	057	064	-													
4	2.7	1.8	432	536	106	-												
5	3.3	1.7	049	306	157	319	-											
6	3.5	1.7	318	298	181	218	110	-										
7	3.4	1.6	197	384	244	222	-188	350	-									
8	4.0	1.5	258	313	082	163	115	110	256	-								
9	3.6	1.7	031	400	267	068	152	211	478	100	-							
10	4.1	1.5	-006	-137	067	069	-085	077	040	023	344	-						
11	3.1	1.8	004	167	207	104	243	371	248	063	368	-070	-					
12	4.0	1.6	312	113	151	-019	186	291	-042	275	061	079	.019	-				
13	4.4	1.1	194	142	206	124	-067	257	384	433	-028	383	-063	246	-			
14	4.4	1.3	155	195	149	040	-032	182	457	367	-039	167	009	190	746	-		
15	4.4	1.3	249	227	162	057	-012	286	381	318	220	131	-105	338	679	659	-	
16	4.6	1.0	211	125	317	-010	-039	253	359	485	051	.277	-106	308	845	673	677	-
17	4.4	1.2	182	135	-181	092	-077	220	305	474	-058	.190	-158	204	844	751	666	783
18	4.1	1.5	291	175	065	-016	-099	185	150	419	-082	.175	-061	466	487	625	575	491

CORRELATION COEFFICIENTS FROM AFRICAN SEVENTH GRADE RATINGS USING THREE-POINT FORMATS

	X	SD																
1	2.6	.64	-															
2	2.5	.72	476	-														
3	2.6	.64	781	476	-													
4	2.2	.85	489	387	366	-												
5	2.4	.75	088	091	005	003	-											
6	2.6	.70	282	103	033	212	212	-										
7	2.5	.69	216	330	165	293	150	589	-									
8	2.4	.83	157	138	199	042	127	242	197	-								
9	2.1	.88	165	003	-125	061	354	024	199	324	-							
10	2.3	.86	083	134	001	118	015	547	465	183	006	-						
11	2.7	.70	151	-051	252	015	-033	244	238	653	055	274	-					
12	2.4	.86	179	152	016	233	-034	372	594	326	409	434	210	-				
13	2.7	.53	017	198	-017	045	074	119	240	053	101	270	-104	234	-			
14	2/6	.70	066	147	132	137	156	090	356	625	441	279	-122	148	297	-		
15	2.6	.71	034	343	143	-003	409	075	073	104	246	140	-135	384	516	016	-	
16	2.3	.83	042	206	-121	-128	190	136	006	025	058	447	-064	159	368	024	487	-
17	2.4	.81	048	085	004	068	373	065	139	284	329	104	-030	226	403	261	357	436
18	2.4	.81	193	220	236	-069	098	001	075	-095	038	261	-217	084	082	394	331	364

CORRELATION COEFFICIENTS FROM AFRICAN SEVENTH GRADE RATINGS USING FIVE-POINT FORMATS

	X	SD																	
1	3.4	1.6	-																
2	3.3	1.5	712	-															
3	3.5	1.6	556	558	-														
4	3.9	1.4	498	003	089	-													
5	4.1	1.2	319	316	143	098	-												
6	4.0	1.2	590	320	359	118	366	-											
7	4.0	1.2	264	039	102	028	012	260	-										
8	4.3	1.1	099	197	267	013	-258	462	294	-									
9	4.4	.91	295	112	168	-103	-164	462	265	592	-								
10	3.2	1.6	376	279	561	312	167	408	453	228	036	-							
11	3.1	1.5	265	183	185	080	-160	-027	814	511	-088	-121	-						
12	4.3	1.0	219	266	080	045	209	331	107	721	560	212	105	-					
13	4.5	1.0	489	416	195	-168	-172	365	-075	469	520	031	-037	217	-				
14	4.4	.93	314	332	038	053	427	378	223	067	489	119	-086	276	508	-			
15	4.4	.93	355	173	081	-077	252	583	046	-574	452	140	-237	358	690	619	-		
16	4.6	.76	300	-220	106	111	230	432	030	698	177	049	-262	-014	656	641	883	-	
17	4.4	1.0	408	361	153	006	033	371	-216	279	708	-028	084	378	365	718	505	534	-
18	4.5	.98	085	289	056	-295	032	075	059	059	068	077	-128	311	683	697	791	841	615

CORRELATION COEFFICIENTS FROM AFRICAN SEVENTH GRADE RATINGS USING SEVEN-POINT FORMATS

	X	SD																
1	5.4	1.8	-															
2	4.8	2.2	507	-														
3	5.6	1.9	618	467	-													
4	4.5	2.2	-014	979	039	-												
5	5.4	1.8	537	319	670	036	-											
6	5.3	1.9	519	389	485	090	204	-										
7	5.6	2.2	-176	232	-008	269	-085	-092	-									
8	5.3	1.7	218	373	344	122	250	335	302	-								
9	4.1	2.2	116	008	-061	380	-075	007	154	235	-							
10	4.8	2.1	491	350	296	235	218	390	298	119	626	-						
11	4.0	2.3	033	225	016	075	292	228	402	035	414	420	-					
12	4.8	2.0	276	227	340	210	364	541	433	629	455	375	424	-				
13	5.4	1.8	207	123	381	422	110	100	527	335	136	390	228	541	-			
14	4.9	1.9	192	-001	178	601	004	319	408	320	295	557	239	572	606	-		
15	5.3	1.9	291	1642	299	563	291	432	281	312	-009	241	234	327	698	551	-	
16	5.4	1.7	291	106	349	396	185	677	213	379	388	399	268	491	677	706	656	-
17	4.7	2.2	039	305	038	400	243	367	653	485	484	322	581	648	367	510	410	406
18	5.8	1.4	170	-016	343	268	384	389	173	245	-038	331	204	187	389	447	646	594

BIBLIOGRAPHY

BIBLIOGRAPHY

Aiken, E.G. Alternate Forms of Semantic Differential for Measurement of Changes in Self-Description. Psychological Reports, 1965, 16, 177-178.

Allen, M.J. and Yen, W.M. Introduction to Measurement Theory. Brooks/Cole Publishing Co., Monterey, California, 1979.

Anatasi, A. Psychological Testing, 4th edition. New York: MacMillan Publishing Col, 1976.

Askov, E.N. Development of an Instrument for Measuring Attitudes Toward Reading in Primary Pupils. 1969, ERIC 027164.

_____. Assessment of Teachers' Attitudes Toward an Individualized Approach to Reading Instruction. Wisconsin University, Madison, 1971 (ERIC 048349).

Anttonen, R. et al. A Three Year Study of Children's Achievement and Attitude. Millersville State College, Pennsylvania, Division of Education, 1977, ERIC 154031.

Beitner, M.S. Word Meaning and Sexual Identification in Paranoid Schizophrenia and Anxiety Neurotics. Journal of Abnormal and Social Psychology, 1961, 63, 289-293.

Bennie, F. Pupil Attitudes Toward Individually Prescribed Lab Programs. Journal of Reading, 1973, 17, 108-112.

Borgatta, E.F. The Structure of Personality Characteristics. Behavioral Science, 1964, 8-17.

Carrol, J.B. Review of the Measurement of Meaning. Language, 1959, 35, 58-77.

_____. Some Cautionary Notes on the Semantic Differential. Paper presented at the meeting of American Psychological Association, Cincinnati, September 1959 (b).

Cheung, T. et al. Referent Differences in Pupil Motivations. Educational and Psychological Measurement, Vol. 40, N2, 531-536, Summer 1976.

DiVesta, J.F. A Developmental Study of the Semantic Structures of Children. Semantic Differential Technique, Eds. Snider, J.C., and Osgood, C.E., Aldine Publishing Co., 1969.

DiVesta, F.J.A. and Dick, W. The Test-Retest Reliability of Children's Ratings on the Semantic Differential. Educational and Psychological Measurement, 1966, 26, 605-616.

Dixon, T.R. and Dixon, J.F. The Impression Value of Verbs. Journal of Verbal Learning and Verbal Behavior, 1964, 3, 161-165.

Donlon, T.F. Testing in the Affective Domain. Eric Clearinghouse, Princeton, N.J., 1974 (ERIC 103493).

Donnahoe, J.W. Changes in Meaning as a Function of Age. Journal of General Psychology, 99:23-28, 1961.

Dyer, C.O. Construct Validity of Self-Concept by a Multitrait-Multimethod Analysis. Ann Arbor, Michigan, 1964.

Elsworth, G.R. and Coulter, F. Aspiration and Achievement: The Measurement of Self-Perception in Students. Occasional Paper No. 7, Australian Council of Educational Research, Melbourne, Australia, 1977.

Epstein, I. Measuring Attitudes Towards Reading. Eric Clearinghouse, N.J., 1980 (ERIC 196938).

Estes, T.H. A Scale to Measure Attitudes Toward Reading. Journal of Reading, 1971, 15, 135-138.

Estill, J.A. and Filler, R.C. Measurement of Reading Attitudes. Elementary English, 1973, 17, 108-112.

Farr, S.D. and Kubiniec, C.M. Stable and Dynamic Components of Self-Concept. Multivazite Behavioral Research, 1972, 147-163.

Glennon, R.C. An Attitude Scale for Reading. The Reading Teacher, 1972, 25, 442-447.

Goldfried, M.R. and Kissel, S. Age as a Variable in Connotative Perceptions of Some Animal Symbols. Journal of Projective Techniques and Personality Assessment, 1963, 27, 171-180.

Green, D.H. Attitudes: In Motivation in Education, ed. Ball, S., New York: Academic Press, 1977, 111-129.

Griggs, A.E. Validity Study of the Semantic Differential Technique. Journal of Clinical Psychology, 1959, 15, 179-181.

Groff, P.J. Children's Attitudes Toward Reading. Journal of Educational Research, 1962, 55, 313-318.

Gronlund, N.E. Measurement and Evaluation in Teaching, New York, MacMillan Publishing Co., 1977.

Hallworth, H.J. A Factorial Study of Value Judgments Among Adolescent Girls. British Journal of Statistical Psychology, 16, 1963.

Harman, H.H. Modern Factor Analysis, 3rd ed. Chicago, University of Chicago Press, 1976.

Harrill, L.M. Evaluation of Several Methods for Measuring Young Children's Attitudes. South Dakota University, Vermillion, 1971 (ERIC 056059)

Harris, C.W., ed. Problems in Measuring Change. Madison: University of Wisconsin Press, 1963.

Hecht, A.R. and Bonnie, H. Development of a Semantic Differential Instrument for Student Evaluation of Counseling Conferences. Paper presented at the annual meeting of the North Central Region EARA, Madison, Wisconsin, July 1976.

Heise, D.R. Semantic Differential Profiles for 1,000 Most Frequent English Words. Psychological Monographs, 1965, 79(8) No. 601.

_____. Some Methodological Issues in Semantic Differential Research. Psychological Bulletin, 1969, 72(6), 406-422.

Hudson, W. Dimensionality and Levels of Education. Cross-Cultural Study of Behavior, Eds. Al-Issa and Dennis, W., Holt, Rinehart and Winston, N.Y., 1970.

Jakobovits, L.A. Comparative Psycholinguistics in the Study of Cultures. International Journal of Psychology, 1966, 1, 15-37.

Jantz, R.K. Children's Attitudes Toward the Elderly. Maryland University College Park, 1976 (ERIC 181081).

Kahneman, D. The Semantic Differential and the Structure of Inferences Among Attributes. American Journal of Psychology, 1963, 76, 554-567.

Kamper, R.E. An Investigation of 7th Grade Students' Attitudes Toward Reading as Measured by the Semantic Differential. Doctoral Dissertation, University of Pittsburgh, Dissertation Abstracts, 1970.

Kane, R.B. Reducing Proximity Error in Administering the Semantic Differential. Purdue University, Lafayette, Indiana, 1968 (ERIC 032761).

Kerlinger, F.N. Foundations of Behavioral Research, 1st ed. New York, Holt, 1964, Chapter 32.

Kim, J.O. and Mueller, C.W. Introduction to Factor Analysis. Sage Publishing, Beverly Hills, 1982.

Komorita, S.S. and Bass, A.R. Attitude Differentiation and Evaluative Scales of Semantic Differential. Journal of Personality and Social Psychology, 1967, 6, 241-244.

Kubiniec, C.M. The Relative Efficiency of Various Dimensions of Self-Concept in Predicting Academic Achievement. American Educational Research Journal, 1970, 7, 321-332.

Kumata, H. and Schramm, W. A Pilot Study of Cross-Cultural Meaning. Semantic Differential, Eds. Snider, J.G. and Osgood, C.E., Aldine Publishing Co., Chicago, 1969.

Lao, C.R. Levenson's IPC Scale (A Comparison of Chinese and American Students. Journal of Cross-Cultural Psychology, Vol. 9, No. 1, March 1978, 113-124.

Lemon, N. Attitudes and Their Measurement. New York: Halstead Press, John Wiley and Sons, Inc. 1973.

Lowery, L.F. and Grafft, W. Paperback Books and Reading Attitudes. The Reading Teacher, 1968, 21, 618-623.

Luria, Z.A. A Semantic Analysis of a Normal and Neurotic Therapy Group. Journal of Abnormal and Social Psychology, 1959, 58, 216-220.

Maclay, H. and Ware, E.E. Cross-Cultural Use of Semantic Differential. Cross-Cultural Study of Behavior, Eds. Al-Issa and Dennis, W., Holt, Rinehart and Winston, N.Y., 1970.

Magnusson, D. Test Theory. Addison-Wesley Publishing Co., Reading, Massachusetts, 1966.

Maltz, H.E. Ontogenetic Change in the Meaning of Concepts as Measured by the Semantic Differential. Semantic Differential Technique, Ed. Snider, J.E., Aldine Publishing Co., Chicago, 1969.

Marks, I.M. Patterns of Meaning in Psychiatric Patients. Oxford University Press, New York, 1965.

Maslon, P. and Menifield, P. Semantic Space Coordinates in School Situations. Paper presented at annual meeting of Northeastern Educational Research Association, Ellenville, New York, November 1973 (ERIC 092580).

Mehrens, W.A. and Lehmann, I.J. Measurement and Evaluation in Educational Psychology. New York: Holt, Rinehart and Winston, 1978.

Messick, S.J. Metric Properties of the Semantic Differential. Educational and Psychological Measurement, 1957, 17, 200-206.

Miller, G.A. The Magical Number Seven, Plus or Minus Two. Psychological Review, 1956, 63, 81-97.

Miron, M.S. A Cross-Linguistic Investigation of Phonetic Symbolism. Journal of Abnormal and Social Psychology, 1961, 62, 623-630.

Mogar, R.E. Three Versions of the F Scale and Performance on the Semantic Differential. Journal of Abnormal and Social Psychology, 1960, 60, 262-265.

Neuringer, C. Effect of Intellectual Level and Neuro-Psychiatric Status on the Diversity of Semantic Differential Ratings. Journal of Consulting Psychology, 1963, 27, 280.

Nickols, S.A. and Shaw, M.E. Saliency and Two Measures of Attitude. Psychological Reports, 1964, 14, 273-274.

Nie, N.H. et al. Statistical Package for the Social Sciences, 2nd ed. McGraw Hill, New York, 1975.

Nisbett, R.E. and Gordon, A. Self-Esteem and Susceptibility to Social Influence. Journal of Personality and Social Psychology, 1967, 5(3), 264-276.

Norman, W.T. Stability--Characteristics of the Semantic Differential. American Journal of Psychology, 1959, 72, 581-584.

_____. Toward an Adequate Taxonomy of Personality Attributes. Replicated Factor Structure in Peer Nomination Personality Ratings. Journal of Abnormal and Social Psychology, 1963, 66, 574-583.

Nunnally, J.C. Psychometric Theory. New York, McGraw-Hill, 1967.

Nunally, J.C. and Durham, R.L. Validity, Reliability and Special Problems in Evaluation Research in Handbook of Evaluation Research. Vol. 2, Eds. Guttentag, M. and Struening, E. Berverly Hills, California: Sage, 1975, 289-352.

Nyberg, V.R. and Clarke, S.C.T. Technical Report on School Subjects Attitude Scales (and) Improving and Extending the School Subjects Attitude Scales (and) Manual for Administration, Scoring and Interpretation of the School Subjects Attitude Scales. Alberta Department of Education, Edmonton, Canada, 1979 (ERIC 179575).

Osgood, E., Yasumasa, T., and Oyama, T. A Cross-Cultural and Cross-Concept Study of the Generality of Semantic Space. Semantic Differential Technique, Eds. Snider, J.G. and Osgood, C.E., Aldine Publishing Co., Chicago, 1969.

Osgood, C. The Cross-Cultural Generality of Visual-Verbal Synesthetic Tendencies. Cross-Cultural Study of Behavior, Eds. Al-Issa and Dennis, W., Holt, Rinehart and Winston, N.Y., 1970.

Osgood, C.E., Suci, G.J. and Tannenbaum, P.H. The Measurement of Meaning. Urbana: University of Illinois Press, 1961, 3rd edition.

Osgood, C.E. Semantic Differential Techniques in the Comparative Study of Cultures. American Anthropologist, 1964, 66(3, Pt. 2), 171-200.

Peabody, D. Two Components in Bipolar Scales: Direction and Extremeness. Psychological Review, 1962, 69, 65-73.

Perrin, L.A. and Lilly, R.S. Social Desirability and Self-Ideal Self Ratings on the Semantic Differential. Educational and Psychological Measurement, 1967, 27, 845-853.

Rammers, H.H. Rating Methods in Research on Teaching. In N.L. Gage (ed) Handbook of Research on Teaching, Chicago, Rand McNally, 1963.

Ranson, J.T. et al. Changes in Students' Attitudes as Measured by a SD Instrument. National Institute of Education, Washington, D.C., 1973 (ERIC 110645).

Ransbury, M.K. Assessment of Reading Attitudes. Journal of Reading, 1973, 17, 25-28.

Reed, K. Reading Instruction: The Affective Domain "Measuring Affective Growth in Reading." Paper presented at the annual meeting of the International Reading Association World Congress on Reading, Hamburg, West Germany, August 3, 1978 (ERIC ED 160990).

Scott, W.A. Attitude Measurement. In The Handbook of Social Psychology, 2nd ed., Vol. 2, Eds. Lindzey, G. and Aronson, E., Reading, Massachusetts, Addison-Wesley, 1968, 204-273.

Snider, J.G. and Osgood, C.E., eds. Semantic Differential Technique: A Sourcebook. Chicago, Aldine, 1969.

Soares, L.M. and Soares, A.J. Convergent and Discriminant Validation of Self Perception. Paper presented at American Educational Research Association, (L.A. 1981) (ERIC 201646).

Solly, C.N. and Stagner, R. Effects of Magnitude of Temporal Barriers, Type of Goal and Perception of Self. Journal of Experimental Psychology, 1956, 51, 62-70.

Stagner, R. Impact of War on a Nationalistic Frame of Reference. Journal of Social Psychology, 24: 187-215, 1946.

Stricker, G. and Zax, M. Intelligence and Semantic Differential Discriminability. Psychological Reports, 1966, 18, 775-778.

Suci, G.J. A Comparison of Semantic Structures in American Southwest Culture Groups. Journal of Abnormal and Social Psychology, 1960, 61, 25-30.

Summers, G.F., ed. Attitude Measurement, Chicago: Rand McNally, 1970.

Summers, E.G. A Review of Research and Bibliography on Published Attitudinal Instruments in Reading. Paper presented at the annual meeting of International Reading Association, Anaheim, California, May 1976, 150 pages (ERIC 123558).

Torgerson, W.S. Methods of Scaling. John Wilen and Sons, Inc., New York, 1958.

Wells, W.D. and Smith, G. Four Semantic Rating Scales Compared. Journal of Applied Psychology, 1960, 44, 393-397.

Wiggins, N. and Fishbein, M. Dimensions of Semantic Space: A Problem of Individual Differences. In J.G. Snider and C.E. Osgood (eds.), Semantic Differential Technique: A Sourcebook, Chicago, Aldine, 1969.

Yonker, Robert J. et al. A Methodological Investigation of the Development of SD to Assess Self-Concept. Paper presented to the National Council of Measurement in Education Annual Meeting, Chicago, Illinois, April 1974 (ERIC 090264).

Zax, M., Gardiner, D.H. and Lowry, D.G. Extreme Response Tendency as a Function of Emotional Adjustment. Journal of Abnormal and Social Psychology, 1964, 654-657.