AN ABSTRACT OF THE THESIS OF

JUDITH L. HAYNES for the degree of DOCTOR OF EDUCATION in GENERAL EDUCATION presented on _____

Title: SELF-ASSESSMENT AS A FUNCTION OF ENTERING SKILLS ANALYSIS IN ADULT BASIC EDUCATION

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Tom E. Grigsby

The purpose of the study was to determine if a self-assessment procedure provides data with acceptable accuracy for use in Adult Basic Education placement diagnostic batteries.

Several factors descriptive of the population and the treatment were studied:

1. The overall degree of accuracy in computation and word pronunciation.
2. The effect of formal schooling, age, sex, orientation, and order of test administration on computation and word pronunciation accuracy.

A self-assessment tool (experimental procedure) was adapted from a standardized test (Wide Range Achievement Test). Both the experimental and standardized procedures were administered to 107 qualifying Adult Basic Education students entering programs at six Oregon community colleges.

Results of Paired T, Student's "t", and Analysis of Variance statistical tests revealed that:

1. Adult Basic Education students overestimated their computation skills by three grade levels, and overestimated their word pronunciation skills by almost two grade levels.
2. There were no statistically significant differences in the effect of formal schooling, age, sex, or orientation on the accuracy of self-assessment of computation and word pronunciation skills.
3. There were statistically significant differences found in order of test administration. Participants who received the standardized test prior to self-assessment were more accurate in their estimates of their skills.
4. Females were found to be slightly more accurate than males in self-assessment of both computation and word pronunciation. However, these findings were not statistically significant.
5. Students who received an orientation statement as well as basic instruction tended to be slightly more accurate in their self-assessments of both computation and word pronunciation skills. However, these findings were not statistically significant.

Several recommendations were suggested as a result of data analysis:

1. To insure standardization of the procedure for data collection, subsequent research should be conducted utilizing methodology designed to assure consistency in the assessment procedure.

2. Subsequent research regarding the sex effect of self-assessment procedures should be studied in detail.

3. An orientation statement which acquaints the student with the placement process should be developed and tested.

4. A longitudinal study of self-assessment should be undertaken to provide information on self-assessment as it relates to placement of students into program materials.

5. A self-assessment procedure should be preceded by a "warm-up" session in which students practice the problems and/or words they will encounter in the placement process.

# SELF-ASSESSMENT AS A FUNCTION OF ENTERING SKILLS ANALYSIS IN ADULT BASIC EDUCATION

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## I. INTRODUCTION

> Because adult education was tied so closely to pedagogy for so long, little attention was given to developing procedures and tools for helping adults diagnose their own needs--after all, if the teachers already know what they needed, why waste time getting students into the act? So the reservoir of experience and materials for student self-diagnosis of present level of performance is extremely limited (49:275).

This statement by Malcolm Knowles is representative of the current concern for the development of an effective self-measurement system designed to serve the needs of adults. Within the scope of the development of a measurement system such as the one described by Knowles, a number of problems are recognized: 1) limited sources of time and money to develop a system; 2) limited research to clarify the threat of measurement and its relationship to drop-out rates; 3) limited research to develop appropriate measurement tools utilizing the self-diagnostic mode related to adult basic education populations; and 4) limited research to examine the cost-effectiveness of the adoption of a student self-diagnosis system. The problem of the development of self-assessment as an appropriate tool for entry diagnosis in adult basic education programs provides the foundation for this study.

## Background of the Problem

Programs for adult students who wish to improve basic skills have been in effect for a number of years. The thrust to provide a formal system of basic education for adults in the United States began seriously with the adoption of Title III of the Elementary and Secondary Education Act of 1964 (69). Within the title, adults were given the right to pursue basic education at no personal cost. The primary objective of Title III was to allow those adults who had given up their education before achieving the high school diploma another chance at acquiring the academic and living/coping skills they had missed. The adoption of the act generated the opening of hundreds of programs dedicated to educating adults throughout the country. An evaluation instrument, the General Educational Development Test (G.E.D. Test), was utilized to test students of those programs to determine whether they could function academically at the same level as high school graduates. The original test was designed to measure knowledge in five academic areas: 1) Mathematics, 2) English Grammar, 3) Science, 4) English Literature, and 5) Social Studies. There have been changes in the original test, but the areas covered are basically the same. Those adults who passed the test at the required level were presented with

the G.E.D. Certificate which functioned as a high school diploma.

Presently, according to the Oregon Department of Education, more than seventeen thousand students are enrolled in Adult Basic Education programs (79). The primary goals of current students are similar to their predecessors in that they pursue basic education, but their options now include more than just the G.E.D. as an equivalence for the high school diploma. Depending on the future goals of adult students, they may select from among a number of educational opportunities to complete their secondary experience. Some of the options are: 1) The Adult High School Diploma, 2) The College Level Examination Program, 3) High School Completion Programs, 4) High School Continuation Programs, and 5) Concurrent enrollment in high school and college programs offered simultaneously by the selected institution.

Just as options exist in the selection of appropriate programs for adult students, options also exist in the entry academic diagnosis of those students.

There is frequent discussion among educators in the field of adult education about the issue of diagnostic procedures upon entry into basic education programs (29). Many adult educators feel that because entry testing is

threatening to returning students, they may withdraw from program offerings. Malcolm Knowles reports that, "to most adults the words 'test', 'quiz', and 'examination' call forth such unpleasant memories that it is often difficult to use them in voluntary adult groups" (49). Kidd confirms Knowles's opinion, but points out that thus far satisfactory substitutes for testing have not been devised (46). It is obvious, however, that some assessment of skills is necessary if the adult learner is to be assigned meaningful materials which challenge rather than insult (22). How can such an assessment be conducted to afford both a meaningful tool for the classroom teacher and a non-threatening if not positive experience for the adult?

Since cognitive theorists recommend a psychological climate of orderliness, clearly defined goals, and careful explanation of expectation and opportunities, and since personality theorists emphasize the importance of a climate in which individual differences are respected and in which anxiety levels are appropriately controlled (enough to motivate, but not so much as to block), careful assessment of the discrepancies or gaps between the model body of knowledge and the present level of the adult learner is essential (8).

According to the proponents of the theory of andragogy, the critical element in the assessment phase is the learner's perception of the discrepancy between where he/she is now and where he/she wants to be (49, 50). The adult student is viewed as capable of using a self-assessment mode by utilizing the tools and procedures by the teacher for obtaining data about the required program elements. He/she can then make decisions about personal instructional needs. Andragogists recommend that the assessment be conducted within a safe, supportive, non-threatening atmosphere in order to counterbalance that which could be interpreted as an ego-deflating experience (8, 22, 46).

Following this line of reasoning, self-assessment could provide the environment for the adult learner as a base upon which the instructional program in the basic education classroom might reasonably be built, since it takes into consideration both the needs of the program and the perceptions of the adult learner. Diagnosis is essential in adult education program entry for appropriate assignment of study. Research into a self-assessment entry process for adult basic education programs could provide the link between the adult learner's assessment and his/her own instructional needs and the required diagnostic method for program entry. In such a program

of self-assessment, a certain degree of accuracy would be assumed.

## Statement of the Problem

The central problem of this study is to determine if a self-assessment procedure provides data with acceptable accuracy for use in Adult Basic Education placement diagnostic batteries.

## OBJECTIVES

1. To review existing research dealing with self-diagnosis.
2. To adapt and pilot test an instrument which employs a self-diagnostic mode of measurement. To make appropriate adjustments and revisions to the instrument according to findings on the pilot test.
3. To administer the self-diagnostic instrument (Adult Survey) to entering adult basic education students in the academic areas of arithmetic computation and word pronunciation.
4. To administer a standardized instrument (Wide Range Achievement Test) to entering

adult basic education students in the academic areas of arithmetic computation and word pronunciation.

5. To determine what relationship exists between the accuracy of the skill level of the adult learner determined by self-diagnosis and the skill level as determined by a standardized measurement instrument.
6. To utilize findings as a basis for making recommendations for use of a self-assessment mode in adult basic education entry diagnosis.

## Rationale of the Study

Although the need for accurate, non-threatening tests is recognized by adult educators, presently the most frequently used diagnostic tools employed with adults were developed for use with children or were developed without benefit of study of adult preferences. Angelica Cass points out in her observations of the testing of adult reading skills,

> ...these tests were developed for children and are being used to place adults on a graded reading scale. There is a great need for the development of similar tests for use with adults (22:118).

In a study conducted by Ralph Berdie (8) at the University of Minnesota the observation was made that an alternate to the traditional testing methodology was to determine whether or not a person knows something by asking if he knows it. Berdie's rationale for the alternate self-assessment mode was that many people become frightened or anxious when confronted with test-taking. He further rationalizes that tests may demand a great deal of time to develop, administer, and score. He points out that people are not reluctant to tell another person that they do or do not know something and that the collection of data can be quickly and economically accomplished using the self-assessment mode. The results of his study of college students suggest that asking people whether or not they possess information may provide a satisfactory means for observing whether or not they know something (8).

In a study conducted at the University of Maryland, Richard Brandt noted that,

> Although the topics of self-perception and self-concept appear prominently as theories of noted students of human behavior, a review of the literature reveals only a modest amount of experimental evidence for verifying those theories (15:59).

His study was focused on the accuracy of self-estimate. Among the findings of this study of sixty and eleventh grade students were those which may be useful in

determining accuracy in the self-assessment mode for adults: 1) students who rated themselves accurately in one area tended to do likewise in others; 2) self-rating accuracy is a developmental characteristic which tends to increase with age, and 3) expressed self-ratings to a great extent represented actual self-estimates.

Steven R. Yussen and Victor Levey conducted a study at the University of Wisconsin to discover developmental changes in the accuracy of predicting one's own recall using preschool, third grade, and college students. The study revealed that the adults in the study were significantly more accurate than the other subjects (93).

Eugene Shen reports,

> It is always an interesting question as to whether an individual can know himself better than he knows his associates. Reporting on the results of ratings of scientific men by themselves and their colleagues Catell says: "It thus appears that there is no constant error in judging ourselves--we are about as likely to overestimate as to underestimate ourselves, and we can judge ourselves slightly more accurately than we are likely to be judged by our colleagues" (75:104).

## Limitations of the Study

This study was limited in the following fashion:

1. This study was limited to adult students in Oregon community colleges.
2. The population was limited to students who are native speakers of English.
3. The population was limited to participants who scored between thirteen and fifty-two points on the computation, and between eighteen and ninety-one points on the word pronunciation procedures. These scores represent the minimum and maximum number of points necessary to account for floor effect and ceiling effect in the measurement instruments.
4. The procedure were limited to the measurement of skills in arithmetic computation and word pronunciation.

## Definitions of Terms

Terms used frequently were:

ADULT: A person who has come into that stage of life in which he/she has assumed responsibility for him/herself and often for others, and who has concomitantly

accepted a functionally productive role in the community.

ADULT BASIC EDUCATION: An instructional program for the undereducated adult planned around those basic and specific skills most needed to help him/her function adequately as a member of society.

AGE EFFECT: The influence that age has in the adult's ability to assess his/her own academic skills.

ANDRAGOGY: The field of teaching adults including the philosophy, methods and materials that may be unique to that field.

ASSESSMENT: The process by which data are gathered and used to evaluate a person or skill.

CEILING EFFECT: The upper limit of ability that can be measured by a test: reached when individuals have abilities surpassing the highest performance level at which the test can make reliable discriminations, and the effect that level has on results of testing.

FLOOR EFFECT: The level beneath which a test ceases to distinguish between actual differences in the variable being tested and the effect that level has on results of testing.

FORMAL SCHOOLING EFFECT: The number of years the adult student spent in public or private school in a formal sense and its influence on his/her ability to assess

accurately his/her own academic skills.

MODE: A method of knowing involving elaboration and explanation usually within some frame of reference, leading to insights, conclusions, and generalizations.

ORIENTATION EFFECT: The preliminary program of instruction to prepare adult students for the assessment activity and its influence on their ability to assess accurately their own academic skills.

# II. REVIEW OF LITERATURE

The review of literature related to the topic of this study was conducted in four areas: 1) Adult Education and Adult Basic Education; 2) Characteristics of the Adult Learner; 3) Measurement and Evaluation, and 4) Self-diagnosis and Self-assessment

## Adult Education and Adult Basic Education

Adult education is simply defined by Verner (90:1) as those educational activities which are "designed specifically for adults." Ely (27:6) further defines educational activities as the "conscious and purposeful adaptation of the human organism to its environment."

According to Verner, adult education may occur in two settings: the informal, of which he offers television, conversation, and community life as examples, and the formal setting which is personified by the institution (90:1-2).

Knowles confirms Verner's opinion that as adult education develops, it tends to become more institutionalized (49). Verner cautions that adult education attaches more significance to form than to function as it develops, which is a typical characteristic of social organizations (90). The value of modification and adaptation may be lost in

the management and maintenance of the institution. The danger in the loss of the institution's ability to modify and adapt programs is the loss of programs themselves, which were born out of certain constantly changing needs reflecting the changing society. When an institution becomes caught up in its own maintenance and management to such a degree that it no longer fulfills its function, it becomes obsolete and new institutions develop to take over that function (90).

Houle explains that there are four basic institutional approaches to adult education as it exists today: 1) the institution which regards adult education as its primary function, an example of which is the Cooperative Extension Service; 2) the institution in which adult education is combined with other educational purposes, an example of which is the Evening School; 3) the institution in which adult education is just one of a number of objectives, an example of which is the Library; and 4) the institution in which adult education is a subordinate function, an example of which is the Armed Services (39:4-6).

Adult education encompasses many fields which may not be recognized as affiliates of education, but one of the fields which is readily recognizable is Adult Basic Education. Houle classifies Adult Basic Education as a social need. He identifies Adult Basic Education as

"literacy and other remedial training for adults who did not secure adequate schooling in youth..." (39:53).

Although Adult Basic Education is now interpreted as literacy and remedial training, its importance was recognized by the early settlers. Their concern that all adults be sufficiently literate to read the Bible and participate in the activities of a fledgling government led to the creation of initial programs in adult literacy. Subsequent events such as the Americanization of immigrants, returning veterans of war, and War on Poverty programs in the 1960's were of tremendous influence on adult education programs in the United States (49).

Immigration of people from almost every part of the world created a need for integration of those people into a new culture. Individuals representative of multiple language groups and widely divergent cultures challenged educators to develop both assessment and instructional methodology for the Americanization of the millions of these immigrants. The integration of immigrants coupled with a country involved in a massive industrial movement served to revolutionalize the nature of the American society (62).

Educational preparation for life before World War I was much less demanding than that required for life in a faster-changing post-war society. World War II demanded that high school aged men abandon their studies. Veterans

returning from service who had left high school to go to war found that the high school diploma was becoming a basic necessity for employment in an increasingly complex social setting (60).

In order to satisfy the veteran's need for a high school diploma or its equivalent, the General Educational Development (G.E.D.) Test was developed. The purpose of the test was to measure the level of examinees to determine whether they could function at an academically equivalent level to high school graduates. Successful completion of the G.E.D. Test became the goal for the majority of students in Adult Basic Education programs (90).

Although Federal funds for literacy programs were first made available upon the passage of the Immigration and Nationality Act of 1918, the powerful economic forces of the mid-sixties resulted in Federal legislative responses to the educational and training needs of adults who were undereducated, unemployed, and poor (24).

With the enactment of the Economic Opportunity Act of 1964, the Adult Basic Education (ABE) program had its fundamental beginning. The act initiated Federal support for instruction of persons eighteen years of age and older to improve their ability to read and write the English language and to improve their ability to obtain and/or retain employment. The Amendments to the Elementary and Secondary Education Act (ESEA) of 1966 was an additional

piece of legislation to assist adult education beyond the Equal Opportunity Act. It provided expanded definitions for adult and adult basic education, reserved funds for special demonstration projects and teacher education, and provided for the designation of the Advisory Committee on Adult Basic Education (49).

Subsequent amendments to ESEA have provided a variety of changes in services including that private nonprofit agencies be accepted as eligible grant recipients (1968). that the age of eligibility for the program be reduced from eighteen years of age to sixteen (1968), and that the statement of purpose be revised to include secondary education for adults (1970). Amendments to the act also provided special consideration for minority populations such as Indians (1972), older Americans (1973), and Indochinese refugees (1976).

As a result of the Federal support of adult education for the undereducated, programs sprang up throughout the nation. Enrollments in adult basic education programs have increased since the 1966 legislation to their present levels. As of the 1978-79 program year, 1,246,751 adults were enrolled in ABE instructional programs (grade levels 1-8), 1,146,688 adults were enrolled in secondary programs (grade levels 9-12), 506,416 adults were enrolled in high school equivalency programs (grade levels 9-12,

including G.E.D.) and 1,079,002 adults were enrolled in Americanization and citizenship programs. According to the most recent figures submitted to the National Association for Public and Continuing Adult Education (NAPCAE) by State Departments of Education, there were a total of 3,978,857 adults in the nation receiving instruction through Adult Basic Education programs (69). However, even though there were more than three million persons in the United States who were receiving instruction during that period, there were more than twenty-four million adults who had less than an elementary school education and more than sixty-four million who had less than a high school diploma. Therefore, even though millions of American adults were being reached by ABE programs in 1979, that figure represents only about six percent of those who were eligible to be served. The statistics are similar for the state of Oregon, for of the 620,000 eligible adults, only eighteen thousand were served during the 1978-79 program year (69).

The lack of enrollment of a greater percentage of program eligible adults coupled with the high drop-out rate among ABE students (more than fifty percent nationally) may be due to the nature of the student. Undereducated people are undereducated because 1) either they did not have the opportunity to take advantage of education when they were younger, or 2) they did not choose to avail

themselves of the opportunity. Research indicates that the undereducated tend to pass on the inclination toward undereducation. Children tend to emulate their parents, so if parents show a certain lack of respect for education or have failed to complete a basic education, their children may well adopt an attitude similar in nature and reason that if their parents did not need schooling, they will have little need themselves. For example, Cross has found that "the best single predictor of whether an adult will participate in continuing learning activities is prior level of educational attainment." She found that a college graduate is about four times more likely to participate in some form of organized instruction than a high school drop-out. If the less educated are to participate in the learning society, she recommends some changes in direction. She has found in her research that the same things that led to the initial dropping out also contribute to the lack of interest in returning. She further reveals that the things that lead to dropping out are significantly related to how education makes people feel about themselves:

> It seems obvious that those who have been most successful in the education system will be eager to return to the scene of their earlier successes, while those who have been less successful are not especially eager to expose themselves to the threat of further failure (24:397).

Among the recommended changes advocated by Cross and others is the taking into consideration of basic characteristics of adult learners in the planning of their continuing education (24, 28, 53, 54, 85).

## Characteristics of the Adult Learner

One of the most documented of the characteristics of adult learners is their pragmatic approach to the learning process. Adults are primarily concerned with solving immediate and practical problems. The adult learner is motivated to seek education as an answer to a need. Therefore the adult learner is described as a voluntary learner (3, 29, 35, 36, 39, 40, 46, 51, 58, 60). Because adults come to educational programs as volunteer learners, it is very important that programs be seen by the participants as directly related to their needs (3). "If the needs, interests, and motives of the adult are not satisfied, they simply refuse to participate" (51:200). They are more likely to undertake instruction in some vocationally oriented subject or courses in home and family management than in others not related. Unlike educational programs for youth which are most often devoted to preparation of learners for anticipated future needs, the programs in adult education must consider the adult learning characteristic of pragmatism. "Learning for the future is time-

consuming and ineffective since the most teachable moments are those which immediately precede the need and, therefore, the use of the material learned" (90:22). The adult student has many responsibilities which demand time. Formal learning may be recognized as only one minor element in the adult learner's life. Therefore, studies which involve the adult learner in devoting time to pursuits other than those seen as practical may be doomed to certain failure.

Another very distinct characteristic is the reservoir of life experiences which adults bring to any learning activity. They come to programs with personal experiences which may help them find the meaning in educational activities (28). They want to know how the new learning relates to their own existing thoughts and experiences. It is noted by J. R. Kidd that although life experiences of adults are recognized, they are not always understood nor accepted (46:46). Ranges of experience tend to grow greater as one matures and differ widely from those of other adults.

The relating of new learning to existing knowledge and experience has both advantages and disadvantages. Advantages lie in the ability to "hook on" new learning to compatible existing knowledge. The disadvantages lie in trying to "unlearn" incompatible information.

Experiences may also hinder learners or make them appear to be slower at thinking than youngsters. The more experiences a person has to sort through to find the linkages for new learning, the more thinking time required (91).

According to J. R. Kidd, adults and children perceive time differently. Time may seem endless to children if they are awaiting some moment of gratification of their wants. Adults see time quite differently (46:48). As a rule they are able to deal with long range plans over long periods of time. Adult learners, though more highly motivated may seem to have an urgency about learning. Havighurst explains the urgency felt by adult learners as a psychological need to evaluate their lives in terms of time left in life (35). "For an adult learner time is of very great consequence. This is true in several different respects - physically, culturally, emotionally" (45:48). Therefore, the Adult Basic Education student finds very little use for isolated facts. If these facts do not fit into any of the adult's perceived learning needs, they are seen as not immediately useful. The adult student may even visualize the learning of isolated facts as a deterrent to the real learning which is so important.

Psychologists have found in their studies of children that quick responses and correct responses to questions have had high correlations (46:61-62). Therefore they have

touted the value of speed in answering test questions. Speed has become an important factor in most assessment instruments as a result of those findings in research with children. Even instruments which are used with adult respondents usually have a time factor built in. However, even though the relationship of speed and correctness seems to be close and direct when applied to children, the speed/correctness relationship does not apply to the adult learner, especially the older adult. Although the learning rate may have slowed considerably since youth, the adult's learning efficiency remains high. To point out that as people get older they slow down seems to be unnecessarily trite and obvious according to J. R. Kidd. But when the forms of slow-down are carefully analyzed for their implications for education, their importance may be recognized. An adult, for example, may be very much concerned about the correctness of a response; such concern may tend to slow down the reaction to an unfamiliar situation (46:61-62).

Certain physical characteristics may be linked to the slowing down of the learning processes. Of those physical changes, the sensory changes are among the most noticeable since most learning is received by sensory channels. Of all the sensory changes taking place in the body which contribute to differences between children and adults, the most noticeable is vision. The eye is truly a

reflection of total bodily health, but the acuity of vision declines as a person gets older. The greatest decline in visual acuity takes place between the ages of forty and fifty-five. Studies have shown that there is a marked preference by persons over the age of thirty-five for more illumination for reading than in previous years (46:64-68).

A certain decline in visual acuity is expected in normal healthy people, as is pointed out by a study of visual regression summarized in Table 1 (46:63):

TABLE 1. NORMAL VISION DECLINES

| AGE GROUP | % WITH NORMAL VISION |
|---|---|
| below 20 | 77 |
| 20-24 | 68 |
| 25-29 | 61 |
| 30-34 | 60 |
| 35-39 | 55 |
| 40-44 | 50 |
| 45-49 | 35 |
| 50-54 | 25 |
| 55-59 | 18 |
| 60 and over | 16 |

Second only to sight in the importance for learning reception and in its notice of decline is auditory acuity, states Kidd. Hearing performance normally peaks at age fifteen and then gradually declines until about age sixty-five. Psychological effects of hearing decline

may affect the behavior of the learner. Lack of confidence and insecurity may be augmented by hearing loss: a person may begin to feel unsure and unable to learn new things. He/she may not want to venture into new situations which cause these apprehensions. Crowded or confused situations may be particularly feared by a person who is suffering from a decline in hearing.

Men and women do not lose acuity for the same pitches at the same time, which may cause some disharmony for couples trying to communicate. Studies have shown that women lose acuity for low pitch and men for high frequencies; in general, men may communicate better with men and women with women as they grow older (46:64).

Although learning characteristics such as pragmatism, life experiences, and decline in speed, sight, and hearing are recognized as paramount to the adult learner, learning theorist David Ausbel reports, "The most important single factor influencing learning is what the learner already knows. Ascertain this and teach...accordingly (4:21)." A recommendation which may encounter difficulty, especially in cases of many undereducated adults where surprising gaps in learning may co-exist with amzaing sophistication (24). Adults often display anxiety in circumstances which they perceive as unsuccessful or unpleasant. To be faced with an evaluation of their existing knowledge level by traditional means may be interpreted as threatening. The anxiety

this anxiety combined with poor attitude contributes to poor attendance and high drop-out rates.

## Measurement and Evaluation

Based on their previous school experiences, adult students expect to be assessed when they enter a program. Their expectations, however, do not preclude their being anxious about the assessment of their skills. Testing has long been a component of programs with which the adult has associated failure (29). Tests have provided the basis for anxiety and worry for students since they were first used as measuring tools and have been of particular concern to adult students because of their intimate knowledge of failure in school (38).

In an attempt to discover the skills of the incoming adult student, a testing battery is usually employed in adult basic education programs (29). However, studies such as the one conducted by Morris and Fulmer have been concerned with the connection between anxiety and test results. Their study showed that worry and emotionality are complex elements which cannot be totally separated from the testing situation.

> Emotionality is a classically conditioned autonomic reaction to the cues associated with the initiation of the testing period and thus dissipates as attention is turned

> to the test itself...changes in worry seem to be dependent on feedback about one's performance on the test. Thus, worry remains high at post-test and even two days later, before tests are returned (63:818).

The population for their study was made up of college students in a psychology class. It seems reasonable, then, that adults who have felt failure in the school setting (1, 29) would be even more influenced by worry and emotionality in the test situation: a condition recognized by adult educators as a fact to be dealt with in programs for Adult Basic Education students (29, 38). There appears to be a dichotomy here. On the one hand, teachers recognize that students may be adversely affected by the test battery, and on the other, teachers are constantly being bombarded with appeals to be accountable and knowledgeable about their students' academic skills. Pedro Orata, Washington D.C., has written a critique of measurement and evaluation and the changing nature of education. His comments deal with the definitions of measurement and evaluation and their relationship to the educational system in today's society. "Measurement places emphasis on accuracy and reliability; evaluation, on validity and social utility. Measurement deals primarily with subject matter attainment; evaluation, with experience and motivation" (68:650). However, Orata does point out that measurement has been

criticized for its exclusive use of paper and pencil tests. There are other criticisms of both measurement and evaluation, and the conclusion is that:

> While teaching is apparently becoming more progressive, testing remains basically the same traditionally...the old testing instruments have been renamed to fit the new educational program (68:651).

He goes on to explain that a paper and pencil test that is written by a person "on the outside" for someone else to use is inappropriate for most new programs. He claims that;

> No one, not even an expert, should evaluate the work of someone else, if the philosophy of progressive education is accepted as a point of orientation. In fact, the teacher should not evaluate the work of the pupils; they should do the evaluation themselves (68:652).

He advocates that programs should study their measurement and evaluation systems and that new systems be devised to reflect the objectives and the philosophies of the program staff as well as reflect the needs of the students.

Bernard McKenna, professional associate for the National Education Association, advocates the development of more individualized evaluation methods. He suggests several possible ways to monitor achievement:

1. Professional judgment of teachers and other school specialists.
2. Objective referenced tests.

3. Self and peer evaluation by students

4. Anecdotal records and student portfolios

Some of these alternatives are well-developed and ready for use while others need further field testing, he points out (65:4).

## Self-Diagnosis and Self-Assessment

C. R. Rogers, in Client-Centered Therapy, reinforces Orata's points be expressing, "The person most competent to perform this task would appear to be the reasonable individual who has formulated the purposes...the learner who has been in the center of the process" (72:414f). Rogers even goes so far as to say that the learner's personal growth may be hampered by external evaluation, and that self-evaluation is a process that deserves "much weight".

Percival M. Symonds makes a point of warning his readers to be aware that self-evaluation may have some drawbacks. He illustrates his warning by quoting information from a study at Columbia University which asked students to estimate achievement in their first term of work at the University. There were seven points the students could assign to how they felt they were doing in their current term's work in art, biology, music, and mathematics. The study reported that, "students estimate their achievement with considerable error" (80:142). Those students were

college students who were estimating how someone else would evaluate their work. They were estimating without benefit of knowing the criteria upon which the evaluation would be made.

David Russell, University of California at Berkeley, cites research on self-estimate as supporting new research endeavors emphasizing self-evaluation saying that the lack of emphasis on self-evaluation may be due to "indifference, lack of knowledge, or difficulties in using a procedure unsuited to elementary and secondary school pupils" (73:562). Of particular interest to Russell was a study done by Bullock at Berkeley. He found that students in his population (fourth, fifth, and sixth graders) tended to rate themselves higher in reading, spelling, and handwriting than their teachers did. Tangent to the information about self-assessment found by Bullock was that there was a positive relationship between self-rating and test averages. Russell's conclusions included that self-evaluation as a part of evaluation programs seems to need some further investigation. He admitted that his review of some of the literature indicated a lack of scientific study of the values of day-by-day evaluation in the learning activities of the modern school. His study of the literature further indicates that teachers or others may tend to be wrong in their estimation of the student, and that the student may be more

accurate in his/her own estimate (73).

Richard M. Brandt, of the institute for Child Study, University of Maryland, studied 139 sixth and eleventh graders in Maryland County. His investigation began with an explanation of the study. The participants were asked to rate their own performances against that of other members of their class. The ratings were made according to how the rater thought that person would do compared to the rater. The students were to mark a B or an N beside the name of each classmate depending on whether they thought they would do Better or Not do as well as that person on the specific task being considered. The rating sheets were then collected and a second set of sheets was passed out for self-ratings regarding a second academic task. Brandt found that no simple pattern emerged regarding the accuracy of self-estimate variability and central tendency. Some students were highly accurate in assessing their abilities in all areas studied. Other students were more inconsistent in their accuracy. Boys were found to be more accurate in their estimates on many items than girls. Another conclusion made by Brandt which reinforces the idea that self-rating would be very applicable for adult students is that "...self-rating accuracy is a developmental characteristic which tends to increase with age" (15:85).

Frank Smith, in a speech to the Oregon Chapter of the International Reading Association in Corvallis, Oregon, in October, 1980, pursued the thought of the appropriateness of self-assessment by adults to its final conclusion when he stated that "the best measure of (reading) comprehension is to ask the person if he understands. Tests only distort the measure" (78).

## Summary

According to Jensen's (43) and Knowles's (49) studies of the history of adult education, adults were the focus of ancient education. It has been a recent tendency in this country for children to receive the higher educational priority. It has been only within the past two decades in which adult education has regained part of its past emphasis. Modern discoveries and inventions have accelerated the rate of social change to such an extent that truths handed down from generation to generation no longer hold true. The society that a person is born into is not the same as the one in which the adult life will be lived, so the education obtained in youth will not be adequate for adult life (43: iv,v).

> The consequences of this sudden turn in the tide of civilization is clear: a society that makes its educational investment almost entirely in children and youth is on the way to becoming obsolete and is reducing its chances

> for survival...society now has as great a stake in the continued learning of adults as it ever had in the education of children (43:v).

Even though authors in the field of adult education recognize its importance in society as an integral part of the institutional pattern (39, 49), there are very few studies dealing with the adult as a learner and even fewer which deal with the Adult Basic Education student.

The literature abounds with studies of children and college students and their abilities to assess their own skills. In the study of Adult Basic Education populations, which seem by their characteristics and the testimony of their instructors to be in most need of a self-evaluation mode of entry diagnosis, there is a great void. There have been recommendations that studies of ABE populations be made, and that self-assessment would be an appropriate tool for use in skills analysis. There has been no effect, however, to develop and merge the two concepts into a study of the ability of ABE students to use their self-assessment skills to assist in the entry diagnostic process.

# III. DESIGN OF THE STUDY

This study was an investigation of the self-assessment skills of the adult student upon entry into an adult basic education program. The purpose of the study was to determine if a self-assessment procedure provides data with acceptable accuracy for use in Adult Basic Education placement diagnostic batteries. Included in this section are:

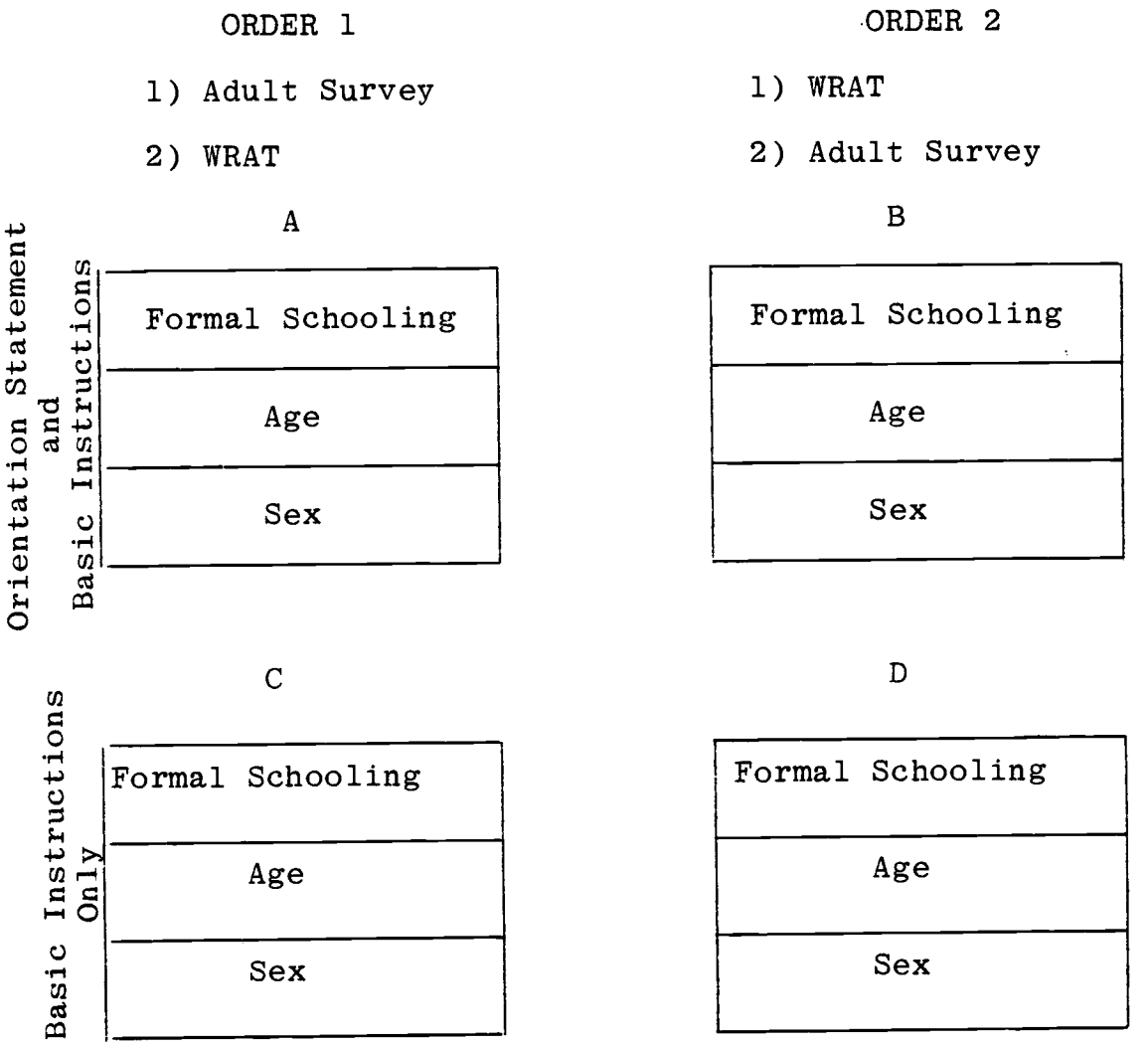
1. a description of the sample population of the study,
2. the steps conducted in the study,
3. a description of the instruments utilized,
4. the hypotheses tested, and
5. a description of the statistical tools employed.

## Sample

The sample for this study was selected from among entering adult students attending adult basic education programs in the state of Oregon.

The sample for the study was divided into four groups: Group A, Group B, Group C, and Group D. A summary of the design of the study appears in graphic form in Table 2.

TABLE 2. STUDY DESIGN



Groups A and B:

1. Both groups were given an orientation statement of the procedure (Appendix A). An explanation similar to the one designed for this study was recommended by Richard M. Brandt as a tool for involving the students and getting accurate results (15).
2. The order of the two procedures differed from Group A to Group B. Group A was given Order 1: Adult Survey (experimental procedure) first, and the Wide Range Achievement Test (standardized procedure) second. Group B was given the procedures in reverse order (Order 2).
3. In addition to the orientation statement, both groups were given basic instructions for both procedures (Appendix B).

Groups C and D:

1. Neither of the groups was given the orientation statement, but received basic instructions only (Appendix B).
2. The order of the two procedures differed from Group C to Group D. Group C was administered the

the procedures in Order 1: Adult Survey (experimental procedure) first and Wide Range Achievement Test (standardized procedure) second. Group D was administered the procedures in Order 2: Wide Range Achievement Test first and Adult Survey second.

There were 107 participants who met the sample requirements. Fifty of the participants were male, and fifty-seven were female. All five of the age groups were represented, as shown in Table 3.

TABLE 3. AGE RANGES OF PARTICIPANTS

| | |
|---|---|
| Group 1 = Ages 16-26 . . . . . | 58 participants |
| Group 2 = Ages 26-34 . . . . . | 24 participants |
| Group 3 = Ages 35-44 . . . . . | 15 participants |
| Group 4 = Ages 45-54 . . . . . | 8 participants |
| Group 5 = Over 54 . . . . . | 2 participants |

A variety of grade levels reached prior to leaving formal schooling was represented by the sample as shown in Table 4.

TABLE 4. PRIOR SCHOOLING

| Grade Level | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Participants | 1 | 0 | 2 | 1 | 0 | 3 | 3 | 7 | 23 | 35 | 32 | 0 |

There were 17 participants whose schooling backgrounds fell into Level 1 (grades 1-8) and 90 whose backgrounds were in Level 2 (grades 9-12).

Groups A, B, C, and D were similar in size as shown in Table 5.

TABLE 5. GROUP SIZE

| | |
|---|---|
| Group A . . . . . | 25 participants |
| Group B . . . . . | 27 participants |
| Group C . . . . . | 27 participants |
| Group D . . . . . | 29 participants |

There were a total of 52 participants who completed the procedures in Order 1, and 55 who completed the procedures in Order 2. There were 52 participants in the groups who were given the orientation statement along with the basic instructions for completion. There were 55 participants who were given basic instructions only.

After administration and scoring of the procedures, samples which did not register at least 13 points in computation, and 18 points in word pronunciation on both procedures were discarded as a control factor for floor effect (2:51). Samples which registered a total of 52 or more points on computation, or 91 or more points on word pronunciation on either procedure were discarded as a control

factor for ceiling effect (2:52). Availability of entering students determined the order of sites in which the study was conducted. The sites are named in Table 6.

TABLE 6. PARTICIPATING COMMUNITY COLLEGES

1. Chemeketa Community College, Salem, Oregon
2. Lane Community College, Eugene, Oregon
3. Linn-Benton Community College, Albany, Oregon
4. Mount Hood Community College, Gresham, Oregon
5. Southwestern Oregon Community College, Coos Bay, Oregon
6. Umpqua Community College, Roseburg, Oregon

Samples were categorized into the four groups according to the procedure order, orientation statement, or basic instructions only, as described above. Therefore they do not maintain their identity with the given sites at which the data were gathered.

## Procedure

The skills of reading and mathematics are recognized as fundamental to Adult Basic Education programs (39). Within those two broad categories certain aspects were chosen as the target areas for the purpose of conducting

tests for this study. Those areas of concentration are word pronunciation in the area of reading, and computation on the area of mathematics.

The Wide Range Achievement test was selected as the standardized instrument to be utilized in gathering data for this study. A detailed description of the instrument and its use is included in Appendix D.

The WRAT is a four-page test of general academic skills in spelling, mathematics, and reading. The test was primarily designed for use with individual students, with some portions adaptable for group use. Buros writes that the WRAT may be most effective,

> ...in a clinical or research setting in which one is testing individually persons of such diverse backgrounds or abilities that one cannot tell in advance what level of test would be appropriate, and needs to get a quick estimate of each person's general level of ability and educational background (19,368).

The experimental procedure, herein called the Adult Survey, was adapted from the WRAT after permission from the publisher was granted (Appendix C). Level II mathematics problems from the WRAT were transferred to slides so that large groups could be tested together and so that strict control of exposure time could be maintained. Level II words from the WRAT reading test were also transferred to slides. Two pictures of the Adult Survey answer sheet were included to aid in the administration of basic instructions to the groups.

## Hypotheses

$HO_1$ There will be no significant difference in computation scores of entering Adult Basic Education students in a self-assessment procedure and in a standardized procedure.

$HO_2$ There will be no significant formal schooling effect on the accuracy with which participants will assess computation skills.

$HO_3$ There will be no significant age effect on the accuracy with which participants will assess computation skills.

$HO_4$ There will be no significant sex effect on the accuracy with which participants will assess computation skills.

$HO_5$ There will be no significant orientation effect on the accuracy with which participants will assess computation skills.

$HO_6$ There will be no significant order effect on the accuracy with which participants will assess computation skills.

$HO_7$ There will be no significant difference in word pronunciation scores of entering Adult Basic Education students in a self-assessment procedure and in a standardized procedure.

$HO_8$ There will be no significant formal schooling effect on the accuracy with which participants will assess word pronunciation skills.

$HO_9$ There will be no significant age effect on the accuracy with which participants will assess word pronunciation skills.

$HO_{10}$ There will be no significant sex effect on the accuracy with which participants will assess word pronunciation skills.

$HO_{11}$ There will be no significant orientation effect on the accuracy with which participants will assess word pronunciation skills.

$HO_{12}$ There will be no significant order effect on the accuracy with which participants will assess word pronunciation skills.

## Method of Analysis

Two statistical tools, Student's "t" Test and One Way Analysis of Variance were employed in this study.

According to Downie and Heath, the Student "t" test is one of the several parametric statistics (26). It is an inferential statistic designed to measure the difference between two independent group means. Student's "t" is appropriate for use with small samples (fewer than 30). In the instance of this study two types of T tests were utilized: the Individual T in which groups are compared on some basis not common to all the members of the group (e.g., males and females); and the Paired T in which groups are compared on some basis which is common to all the members of the group (e.g., two different tests were taken by each person). The Paired T will be recognized hereafter by name, and the Individual T will be referred to as Student's "t".

The Paired T was chosen as the appropriate tool for use in studying the data generated by the four groups taking the Adult Survey and WRAT tests in relation to the question of the accuracy of Adult Basic Education students in assessing their own mathematics computation skills ($HO_1$), and in assessing their own word pronunciation skills ($HO_7$).

Student's "t" was chosen as appropriate to analyze the data related to schooling effect ($HO_2$ and $HO_8$), sex effect ($HO_4$ and $HO_{10}$), orientation effect ($HO_5$ and $HO_{11}$), and order effect ($HO_6$ and $HO_{12}$).

A Oneway Analysis of Variance was employed to test age effect ($HO_3$ and $HO_9$). The F statistic at the .05 level of significance was used.

# IV. PRESENTATION OF THE FINDINGS

The analysis of the data collected for the study is presented in three sections.

The first section includes a description of the results of data analysis related to computation as stated in hypotheses one through six. Those hypotheses deal with assessment accuracy of participants on the computation skills part of the tests.

In section two, results of hypotheses seven through twelve are presented. Those six hypotheses deal with assessment accuracy of participants on the word pronunciation part of the tests.

Discussion of each of the two sets of hypotheses presented above centers on analysis of data gathered. Formal schooling, age, sex, orientation process, and order of administration are the elements discussed.

The final section is a summary of the findings.

## Computation Findings

### Hypothesis I

There will be no significant difference in computation scores of entering Adult Basic Education students in a self-assessment procedure and in a standardized procedure.

A paired T test was used to compare the experimental scores of the computation test with the standardized scores on the same test. From the comparison, an accuracy score was drawn for both the raw scores and the grade level scores. The results of this comparison are summarized in Table 7.

Discussion: The aggregate test population was considered in this central question of accuracy. A comparison of the mean raw scores between the experimental (31.5421) and standardized (22.5981) tests of the group indicates a difference of 8.9439 points. The participants assessed their raw score (number of computation problems they thought they could do correctly) nearly nine points higher than they were found to be on the standardized test. This tendency to overestimate the raw score resulted in a grade score difference of 3.0168 grade levels. That is, participants were found to overestimate their computational skills by three grade levels. Therefore, the hypothesis that the scores on the experimental and standardized procedures would not be different was rejected.

TABLE 7. COMPUTATION ACCURACY

| | MEAN | STANDARD DEVIATION | STANDARD ERROR | (DIFFERENCE) MEAN |
|---|---|---|---|---|
| RAW EXPERIMENTAL | 31.5421 | 10.026 | .969 | 8.9439 POINTS |
| RAW STANDARDIZED | 22.5981 | 6.923 | .669 | |
| GRADE EXPERIMENTAL | 9.4449 | 3.288 | .318 | 3.0168 GRADE LEVELS |
| GRADE STANDARDIZED | 6.4280 | 2.147 | .208 | |

## Hypothesis 2

There will be no significant formal schooling effect on the accuracy with which participants will assess computation skills.

Samples were divided into two groups: group one represented participants with formal schooling of from one to eight years, and group two represented participants with formal schooling of from nine to twelve years. Student's "t" test was utilized to analyze the data comparing the accuracy of participants in group one with the accuracy of participants in group two. The results of formal schooling effect on assessment accuracy are summarized in Table 8.

Discussion: There were 17 participants in group one (prior formal schooling of eight years or less) and 90 participants in group two (prior formal schooling of nine years or more). Group one was found to have an average accuracy score of 9.3529, which is to say that group one participants were found to overestimate their skills in computation by an average of nine points. Group two was found to have an average accuracy score of 8.8667, which is to say that group two participants were found to overestimate their skills in computation by an average of almost nine points. Translated into grade level scores,

group one was overestimating by 3.1235 grade levels, and group two was overestimated by 3.0156 grade levels. The computed T values were .22 for raw scores and .01 for grade scores, both of which fall far short of the critical tabular T value of 1.98. The two-tailed probability score indicates that in the raw scores of this test, the participants would overestimate their scores 83% of the time. In the grade score portion of this test, the probability was that participants would overestimate their scores 99% of the time. Since the hypothesis was that formal schooling would not make a difference in accuracy scores, and since a statistically significant difference between the scores was not found, the hypothesis that there would be no difference was retained.

TABLE 8. COMPUTATION: FORMAL SCHOOLING EFFECT

| | Group | No. of Cases | MEAN | TABULAR T VALUE | COMPUTED T VALUE | 2-TAIL PROB. |
|---|---|---|---|---|---|---|
| RAW SCORE | 1 | 17 | 9.3529 | 1.98 | .22 | .828 |
| | 2 | 90 | 8.8667 | | | |
| GRADE SCORE | 1 | 17 | 3.0235 | 1.98 | .01 | .991 |
| | 2 | 90 | 3.0156 | | | |

## Hypothesis 3

There will be no significant age effect on the accuracy with which participants will assess computation skills.

A Oneway Analysis of Variance was conducted to analyze the data. Age of participants was gathered in five range categories (Table 3, p. 37). The total group was considered by comparing each age category to each other age category. The data were analyzed between and among groups to determine if there were any differences. The results of the analysis of age effect are summarized in Table 9.

Discussion: The Tabular F value considered significant at the .05 level is 2.46. The computed F ratio is .331 for the raw scores and .427 for the grade scores. The probability is that the group as a whole would overestimate their raw scores 86% of the time and would overestimate their grade scores 78% of the time. The group, then, was not influenced to be more accurate or less accurate by the age categories within it. Since there were no significant differences found in the ages as a group, there were no individual age categories which influenced the accuracy. Therefore, the hypothesis that age would have no effect on the accuracy of the participants' abilities to assess computation skills was retained.

TABLE 9. COMPUTATION: AGE EFFECT

| | SOURCE | D.F. | SUM OF SQUARES | MEAN SQUARES | F RATIO | TABULAR F | F PROB. |
|---|---|---|---|---|---|---|---|
| RAW SCORES | BETWEEN GROUPS | 4 | 95.7000 | 23.9250 | .331 | 2.46 | .8564 |
| | WITHIN GROUPS | 102 | 7367.9635 | 72.2349 | | | |
| | TOTAL | 106 | 7463.6636 | | | | |
| GRADE SCORES | BETWEEN GROUPS | 4 | 11.4932 | 2.8733 | .427 | 2.46 | .7888 |
| | WITHIN GROUPS | 102 | 686.1966 | 6.7274 | | | |
| | TOTAL | 106 | 697.6897 | | | | |

## Hypothesis 4

There will be no significant sex effect on the accuracy with which participants will assess computation skills.

The participants were divided into two groups. Group one consisted of 50 males; group two consisted of 57 females. The Student's "t" test was used to analyze the data. The results are summarized in Table 10.

Discussion: The average accuracy score (difference between the experimental and standardized scores) for males was 10.48, and the average accuracy score for the females was 7.5965, indicating that the females were better able than the males to estimate their scores. As a result, the females' grade level accuracy was also better: males' grade level accuracy scores were 3.5080, and females' grade level accuracy scores were 2.5860. Even though there were differences observed between the males and the females, the calculated T value for the raw score was 1.79 and for the grade score was 1.88: not high enough to reach the critical tabular T value of 1.98. There is an inverse relationship between T value and probability: when T values are high, probability is low and vice versa. In this case, since the T values were so high, probabilities were only 7% that the group would overestimate raw scores and that the probability would be 6% that the grade scores would be influenced. In

order to be statistically significant, the probability level may not exceed 5%. Since no statistical significant differences were found, the hypothesis that sex would have no effect on the accuracy of the participants' scores was retained.

TABLE 10. COMPUTATION: SEX EFFECT

| | NUMBER CASES | MEAN | TABULAR T VALUE | COMPUTED T VALUE | 2-TAIL PROB. |
|---|---|---|---|---|---|
| RAW MALE | 50 | 10.4800 | 1.98 | 1.79 | .076 |
| RAW FEMALE | 57 | 7.5965 | | | |
| GRADE MALE | 50 | 3.5080 | 1.98 | 1.88 | .063 |
| GRADE FEMALE | 57 | 2.5860 | | | |

## Hypothesis 5

There will be no significant orientation effect on the accuracy with which participants will assess computation skills.

The participants were divided into two groups for data analysis: group one had been given an orientation statement (Appendix A) in addition to basic instructions prior to testing, and group two had been given basic instructions only (Appendix B) prior to testing. Fifty-two participants were in group one and fifty-five were in group two. A Student's "t" test was employed to analyze the data. The results of orientation effect are summarized in Table 11.

Discussion: The accuracy mean score for those who received the orientation statement in addition to basic instructions was lower (meaning that there was less difference between the experimental and the standardized scores) than the mean score for those who received basic instructions only. This finding indicates that the participants who received the orientation statement in addition to the basic instructions were more accurate in their estimates of scores. The probability that the participants would overestimate their raw scores in this case was 14%. The probability that they would overestimate the grade scores was 27%. Calculated

T values were -1.49 for the raw scores and -1.10 for the grade scores. Negative T values resulted when group two scores (which were higher) were subtracted from group one scores. The critical T value of 1.98 was not reached. Therefore, since there were no statistically significant differences, the hypothesis that the orientation statement would have no effect on the accuracy of participants was retained.

TABLE 11. COMPUTATION: ORIENTATION EFFECT

| | NO. OF CASES | MEAN | TABULAR T VALUE | COMPUTED T VALUE | 2-TAIL PROB. |
|---|---|---|---|---|---|
| RAW ORIENT. | 52 | 7.7115 | 1.98 | -1.49 | .140 |
| RAW BAS. INS. | 55 | 10.1091 | | | |
| GRADE ORIENT. | 52 | 2.7365 | 1.98 | -1.10 | .274 |
| GRADE BAS. INS. | 55 | 3.2818 | | | |

## Hypothesis 6

There will be no significant order effect on the accuracy with which participants will assess computation skills.

Participants were divided into two groups. Group one received the tests in Order one: Adult Survey (experimental procedure) first, and Wide Range Achievement Test (standardized procedure) second, and group two received the tests in Order two: Wide Range Achievement Test (standardized procedure) first, and Adult Survey (experimental procedure) second. A Student's "t" test was used as the analytical tool. The results are summarized in Table 12.

Discussion: The mean raw scores and grade scores (which compared the experimental and standardized scores for accuracy) indicate that in both cases group two, which received the procedures in Order two (standardized test first) was more accurately able to estimate skills. The differences indicated show a computed T value in the raw scores of 2.63 and in the grade scores of 3.33, findings which both surpass the critical tabular T value of 1.98. The probability that the groups would overestimate their raw scores in this case fell to 1%, and the probability that they would overestimate grade scores was only .1%. Thus, the findings indicate that there are statistically

significant differences between the two groups. Therefore, the hypothesis that order would have no effect on the accuracy scores of participants was rejected.

TABLE 12. COMPUTATION: ORDER OF ADMINISTRATION

| | NO. OF CASES | MEAN | TABULAR T VALUE | COMPUTED T VALUE | 2-TAILED PROBABILITY |
|---|---|---|---|---|---|
| RAW GROUP 1 | 52 | 11.0769 | 1.98 | 2.63 | .010 |
| RAW GROUP 2 | 55 | 6.9273 | | | |
| GRADE GROUP 1 | 52 | 3.8288 | 1.98 | 3.33 | .001 |
| GRADE GROUP 2 | 55 | 2.2491 | | | |

## Word Pronunciation Findings

### Hypothesis 7

There will be no significant difference in word pronunciation scores of entering Adult Basic Education students in a self-assessment procedure and in a standardized procedure.

A paired T test was used to compare the experimental scores of the word pronunciation test with the standardized scores on the same test. From the comparison, an accuracy score was drawn for both the raw scores and the grade level scores. The results of this comparison are summarized in Table 13.

Discussion: The entire test population was considered in this central question of accuracy. A comparison of the mean raw scores between the experimental (58.8224) and standardized (46.6636) tests of the group indicates a difference of 12.1589 points. The participants assessed their raw scores (number of words they could correctly pronounce) as more than 12 points higher than they were found to be able to do on the standardized test. This tendency to overestimate the raw score resulted in a grade score difference of 1.9075 grade levels. That is, participants were found to overestimate their word pronunciation skills by almost two grade levels. Therefore, the hypothesis that the scores

on the experimental and standardized procedures would not be different was rejected.

## Hypothesis 8

There will be no significant formal schooling effect on the accuracy with which participants will assess word pronunciation skills.

Samples were divided into two groups: group one representing participants with formal schooling of from one to eight years, and group two representing participants with formal schooling of from nine to twelve years. Student's "t" test was utilized to analyze the data comparing the accuracy of participants in group one with the accuracy of participants in group two. The results of formal schooling effect on assessment accuracy are summarized in Table 14.

Discussion: There were 17 participants in group one (prior formal schooling of eight years or less) and 90 participants in group two (prior formal schooling of nine years or more). Group one was found to have an average accuracy score of 11.9412, which is to say that group one participants were found to overestimate their skills in word pronunciation by an average of 12 points. Group two was found to have an average accuracy score of 12.2, which is to say that group two participants were found to over-estimate their skills in word pronunciation by an average

TABLE 13. WORD PRONUNCIATION ACCURACY

| | MEAN | STANDARD DEVIATION | STANDARD ERROR | DIFFERENCE MEAN |
|---|---|---|---|---|
| RAW EXPERIMENTAL | 58.8224 | 14.583 | 1.410 | 12.1589 POINTS |
| RAW STANDARDIZED | 46.6636 | 13.225 | 12.79 | |
| GRADE EXPERIMENTAL | 9.1551 | 13.225 | 1.279 | 1.9075 GRADE LEVELS |
| GRADE STANDARDIZED | 7.2477 | 2.002 | .194 | |

of more than 12 points. As a result, group one was overestimating by 1.7882 grade levels, slightly better than group two which was overestimating by an average of 1.93 grade levels. The computed T values were -.09 for raw scores and -.31 for grade scores, both of which fall far short of the critical tabular T value of 1.98. The two-tailed probability score indicates that in the raw scores of this test, the participants would overestimate their scores 93% of the time. The grade scores show that the participants would have a probability of overestimating an average of 76% of the time. Since the hypothesis was that formal schooling would not make a difference in accuracy scores, and since statistically significant differences between the scores were not found, the hypothesis that there would be no difference was retained.

TABLE 14. WORD PRONUNCIATION: FORMAL SCHOOLING EFFECT

| | | | MEAN | TABULAR T VALUE | COMPUTED T VALUE | 2-TAILED PROBABILITY |
|---|---|---|---|---|---|---|
| RAW SCORE | 1<br>2 | 17<br>90 | 11.9412<br>12.2000 | 1.98 | -.09 | .930 |
| GRADE SCORE | 1<br>2 | 17<br>90 | 1.7882<br>1.9300 | 1.98 | -.31 | .760 |

## Hypothesis 9

There will be no significant age effect on the accuracy with which participants will assess word pronunciation skills.

A Oneway Analysis of Variance was conducted to analyze the data. Age of participants was gathered in five range categories (Table 3, p. 37). The total group was considered together, comparing each age category to each other age category.

The data were analyzed between and among groups to determine if there were any differences. The results of the analysis of age effect are summarized in Table 15.

Discussion: The Tabular F value considered significant at the .05 level of significance is 2.46. The computed F ratio is 1.168 for the raw scores and 1.282 for the grade scores. The probability is that the group as a whole would overestimate their grade scores 78% of the time. The group, then, was not influenced to be more or less accurate by the age ranges within it. Since there were no significant differences found in the ages as a group, there were no individual age categories which influenced the accuracy. Therefore, the hypothesis that age would have no effect on the accuracy of the participants' abilities to assess word pronunciation was retained.

TABLE 15. WORD PRONUNCIATION: AGE EFFECT

| | | D.F. | SUM OF SQUARES | MEAN SQUARES | F RATIO | TABULAR F | F PROBABILITY |
|---|---|---|---|---|---|---|---|
| RAW SCORES | BETWEEN GROUPS | 4 | 561.7166 | 140.4291 | | | |
| | WITHIN GROUPS | 102 | 12268.5825 | 120.2802 | 1.168 | 2.46 | .3296 |
| | TOTAL | 106 | 12830.2991 | | | | |
| GRADE SCORES | BETWEEN GROUPS | 4 | 15.4690 | 3.8672 | | | |
| | WITHIN GROUPS | 102 | 307.6250 | 3.0159 | 1.282 | 2.46 | .2819 |
| | TOTAL | 106 | 323.0940 | | | | |

## Hypothesis 10

There will be no significant sex effect on the accuracy with which participants will assess word pronunciation skills.

The participants were divided into two groups. Group one consisted of 50 males; group two consisted of 57 females. The Student's "t" test was used to analyze the data. The results are summarized in Table 16.

Discussion: The average accuracy score (difference between the experimental and standardized scores) for males was 13.3200, and the average accuracy score for the females was 11.1404, indicating that the females were better able than the males to estimate their raw scores. They were similarly better able to estimate their grade scores: males' grade level accuracy scores were 2.1840, and females' grade level accuracy scores were 1.6649. Even though there were differences observed between the males and the females, the calculated T value for the raw score was 1.02 and for the grade score was 1.54: not high enough to meet the critical T value of 1.98. Since the T values were so high, the probabilities were 31% and 13% that the group would overestimate raw scores and grade scores respectively, but the difference was not considered statistically significant at the .05 level. Since no statistical significant differences were found, the hypothesis that sex would have no

effect on the accuracy of the participants' scores was retained.

## Hypothesis 11

There will be no significant orientation effect on the accuracy with which participants will assess word pronunciation skills.

The participants were divided into two groups for data analysis: group one had been given an orientation statement (Appendix A) in addition to basic instructions prior to testing, and group two had been given basic instructions only (Appendix B) prior to testing. Fifty-two participants were in group one and fifty-five were in group two. A Student's "t" test was employed to analyze the data. The results of orientation effect are summarized in Table 17.

Discussion: The accuracy mean score for those who received the orientation statement in addition to basic instructions was lower (meaning that there was less difference between the experimental and the standardized scores) than the mean score for those who received basic instructions only. This finding indicates that the participants who received the orientation statement in addition to the basic instructions were more accurate in their estimate of scores. The probability that the participants would overestimate their raw scores in this case was 32%. The

TABLE 16. WORD PRONUNCIATION: SEX EFFECT

| | NUMBER CASES | MEAN | TABULAR T VALUE | COMPUTED T VALUE | 2-TAILED Probili. |
|---|---|---|---|---|---|
| RAW MALE | 50 | 13.3200 | 1.98 | 1.02 | .309 |
| RAW FEMALE | 70 | 11.1404 | | | |
| GRADE MALE | 50 | 2.1840 | 1.98 | 1.54 | .125 |
| GRADE FEMALE | 57 | 1.6649 | | | |

probability that they would overestimate the grade scores was 54%. Calculated T values were -.99 for the raw scores and -.61 for the grades scores. Negative T values resulted when group two scores (which were higher) were subtracted from group one scores. The critical T value of 1.98 was not reached. Therefore, since there were no statistically significant differences, the hypothesis that the orientation statement would have no effect on the accuracy of participants to assess their word pronunciation scores was retained.

TABLE 17. WORD PRONUNCIATION: ORIENTATION EFFECT

| | NO. OF CASES | MEAN | TABULAR T VALUE | COMPUTED T VALUE | 2-TAILED PROBABIL. |
|---|---|---|---|---|---|
| RAW ORIENT. | 52 | 11.0769 | 1.98 | -.99 | .325 |
| RAW BAS. INS. | 55 | 13.1818 | | | |
| GRADE ORIENT. | 52 | 1.8019 | 1.98 | -.61 | .546 |
| GRADE BAS. INS. | 55 | 2.0073 | | | |

## Hypothesis 12

There will be no significant order effect on the accuracy with which participants will assess word pronunciation skills.

Participants were divided into two groups. Group one received the tests in Order one: Adult Survey (experimental procedure) first, and Wide Range Achievement Test (standardized procedure) second; and group two received the tests in Order two: Wide Range Achievement Test (standardized procedure) first and Adult Survey (experimental procedure) second. A Student's "t" test was used as the analytical tool. The results are summarized in Table 18.

Discussion: The mean raw scores and grade scores (which compared the experimental and standardized scores for accuracy) indicate that in both cases group two, which received the procedures in Order two (standardized test first) was more accurately able to estimate skills. The differences indicated show a computed T value in the raw scores of 3.78 and in the grade scores of 3.54, findings which both surpass the critical tabular T value of 1.98. The probability that the groups would overestimate their raw scores in this case was 0%, and the probability that they would overestimate grade scores was only .1%. Thus,

the findings indicate that there are statistically significant differences between the two groups. Therefore, the hypothesis that order of administration would have no effect on the accuracy scores of participants was rejected.

## Summary

The central problem of this study was to determine if a self-assessment procedure provides data with acceptable accuracy for use in Adult Basic Education placement diagnosis batteries.

The statistical tools utilized to analyze the data were: Paired T, Student's "t", and Oneway Analysis of Variance.

The results of the analysis are summarized in Table 19.

Discussion: The analysis of the data concerned with the question of accuracy of self-assessment resulted in several findings. The participants in the study tended to overestimate their abilities to perform computation and word pronunciation skills on the tests. Although some of the variables had slight effects on the findings (i.e., sex, and orientation), none of the data in those cases was statistically significant. The only effect which

TABLE 18. WORD PRONUNCIATION: ORDER OF ADMINISTRATION

| | NO. OF CASES | MEAN | TABULAR T VALUE | COMPUTED T VALUE | 2-TAILED PROBABILITY |
|---|---|---|---|---|---|
| RAW GROUP 1 | 52 | 16.0577 | 1.98 | 3.78 | .000 |
| RAW GROUP 2 | 55 | 8.4727 | | | |
| GRADE GROUP 1 | 52 | 2.4904 | 1.98 | 3.54 | .001 |
| GRADE GROUP 2 | 55 | 1.3564 | | | |

was found to be significant was the order in which the two procedures were performed. Those participants who received the standardized procedure prior to the experimental procedure were better able to assess their own academic skills. It seems that when the participants were able to perform the skill and then decide whether or not they performed correctly, they were better able to estimate than when they had to predict the scores before they had had the benefit of performance.

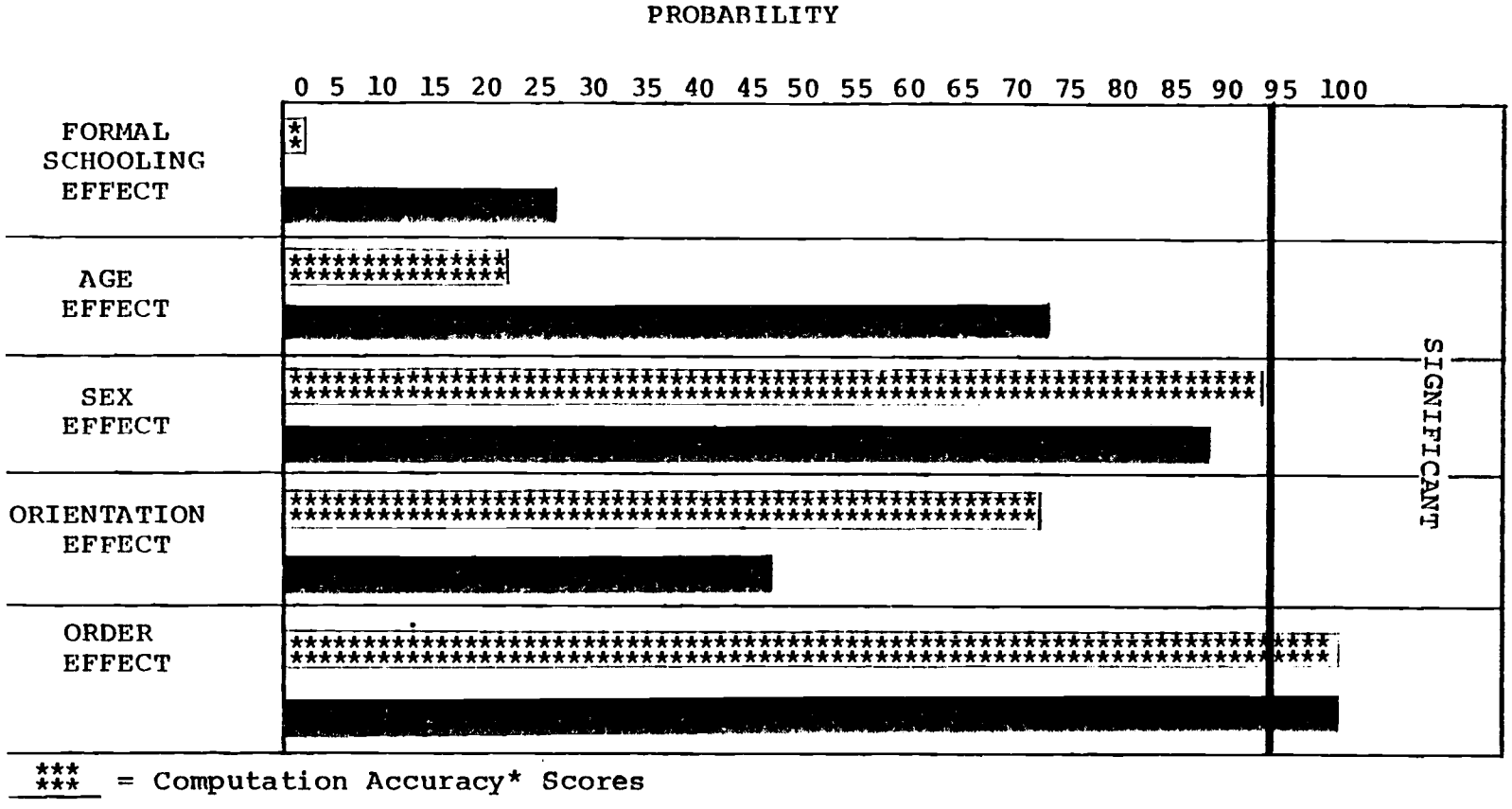
A summary of the results of analysis of formal schooling, age, sex, orientation, and order of administration effects is reported in Table 20.

Tables for all effects were consulted for probability scores on accuracy of both computation and word pronunciation. The probability levels were converted to graphics, thereby summarizing in visual form the results of data analysis. Illustration of the probabilities found in the summary graph allows for visual comparison of the findings.

TABLE 19. SUMMARY OF FINDINGS

| | HYPOTHESIS | STATISTIC UTILIZED | RESULTS |
|---|---|---|---|
| $HO_1$ | Computation Accuracy | Paired T test | Participants overestimated by Three grade levels |
| $HO_2$ | Schooling Effect on Computation Accuracy | Student's "t" Test | No Significant Differences |
| $HO_3$ | Age Effect on Computation Accuracy | Oneway ANOVA | No Significant Differences |
| $HO_4$ | Sex Effect on Computation Accuracy | Student's "t" Test | No Significant Differences |
| $HO_5$ | Orientation Effect on Computation Accuracy | Student's "t" Test | No Significant Differences |
| $HO_6$ | Order Effect on Computation Accuracy | Student's "t" Test | Participants who received Order 2 were more accurate |
| $HO_7$ | Word Pronunciation Accuracy | Paired T Test | Participants overestimated by 1.9 grade levels. |
| $HO_8$ | Schooling Effect on Word Pronunciation Accuracy | Student's "t" Test | No Significant Differences |
| $HO_9$ | Age Effect on Word Pronunciation Accuracy | Oneway Analysis of Variance | No Significant Differences |
| $HO_{10}$ | Sex Effect on Word Pronunciation Accuracy | Student's "t" Test | No Significant Differencbs |
| $HO_{11}$ | Orientation Effect on Word Pronunciation Accuracy | Student's "t" | No Significant Differences |
| $HO_{12}$ | Order Effect on Word Pronunciation Accuracy | Student's "t" Test | Participants who received order 2 were more accurate |

TABLE 20. Summary of Effects.




* Accuracy = Difference between Experimental and Standardized Scores

# V. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

## Summary

The central purpose of this study was to determine if a self-assessment procedure provides data with acceptable accuracy for use in Adult Basic Education placement diagnosis batteries. The need for accurate, nonthreatening skills analysis in entering Adult Basic Education diagnostic batteries has been documented. The literature abounds with statements dealing with the need for experimental evidence to verify theories of self-perception and self-assessment.

The major objectives, procedures and findings are summarized in the following section:

Objective 1: To review existing research dealing with self-diagnosis.

Related literature pertaining to adult education and adult basic education, characteristics of the adult learner, measurement and evaluation, and self-diagnosis and self-assessment were examined. The results of this activity revealed that:

1. adult education has begun, within the last two decades, to regain the emphasis that it

had enjoyed at the inception of the concept of formal education. In fact, the primary focus on education of youth has been important only within the past two hundred years.

2. adults entering basic education programs are met with a battery of entry diagnostic tools which may tend to intimidate the learner. These tests provide potentially an overwhelming obstacle to the program and to the prospective learner.
3. self-assessment, because of its non-threatening nature, might be an appropriate tool for entry skills analysis if it could be proved accurate as a placement tool.
4. self-assessment has been the focus of very little research, and although there have been numerous recommendations for studies concentrating on Adult Basic Education populations, there have been no studies which combine the two.

Objective II. To adapt and pilot test an instrument which employs a self-diagnostic mode of measurement, and to make appropriate modifications as indicated.

An experimental instrument (Adult Survey) was adapted from the Wide Range Achievement Test. The WRAT computation problems from Level II and the words for pronunciation from Level II were transferred to 35mm slides. An answer sheet was developed to be used with the experimental test. The experimental procedure was pilot tested (and revised where necessary) to determine if directions and content were clear and complete.

Objective III. To administer the self-diagnostic instrument (Adult Survey) to entering adult basic education students in the academic areas of arithmetic computation and word pronunciation.

The experimental self-assessment instrument (Adult Survey) was administered to 107 adult basic education students who were entering ABE programs at six community colleges in the state of Oregon. Those 107 students were those who:

1. were native speakers of English,
2. and were within the limits set for floor and ceiling effect for both procedures.

Objective IV. To administer a standardized instrument, Wide Range Achievement Test, to entering Adult Basic Education students in the academic areas of arithmetic computation and word pronunciation.

The standardized instrument (Wide Range Achievement Test) was administered to 107 adult basic education students (the same as those in Objective III above) who were entering Adult Basic Education programs in six community colleges in the state of Oregon.

Objective V. To determine what relationship exists between the accuracy of the skill level of the adult learner as determined by a standardized measurement instrument and the student's assessment of skills.

Twelve hypotheses were generated to enable the investigator to determine the relationships:

$H_{O_1}$ There will be no significant difference in computation scores of entering Adult Basic Education students in a self-assessment procedure and in a standardized procedure.

Findings

There was a mean difference of 3.01 grade levels between the experimental and standardized scores in mathematics computation. Since it was hypothesized that there would be no significant difference between the two scores, the hypothesis was rejected.

$HO_2$ There will be no significant formal schooling effect on the accuracy with which participants will assess computation skills.

Findings

There were no statistically significant differences in computation accuracy between participants who had eight or fewer years of formal schooling and those who had more than eight years of formal schooling. Therefore, the hypothesis that formal schooling would have no effect on the accuracy of computation assessment was retained.

$HO_3$ There will be no significant age effect on the accuracy with which participants assess computation skills.

Findings

There were no statistically significant differences among the five age groups in their abilities to assess accurately their performance on the computation tests. Therefore, the hypothesis that age would have no effect was retained.

$HO_4$ There will be no significant sex effect on the accuracy with which participants assess computation skills.

Findings

There were no statistically significant differences between males' and females' abilities to assess accurately their performances on the computation tests. Therefore, the hypothesis that sex would have no effect was retained.

$HO_5$ There will be no significant orientation effect on the accuracy with which participants assess computation skills.

Findings

There were no significant statistical differences between those participants who were given an orientation statement in addition to basic instructions for the

tests and those who received basic instructions only in their abilities to assess accurately their performances on the computation tests. Therefore, the hypothesis that orientation would have no effect was retained.

$H0_6$ There will be no significant order effect on the accuracy with which participants assess computation skills.

Findings

Statistically significant differences were found between computation accuracy scores of participants who received the procedures in order one and those who received the procedures in order two (receiving the standardized procedure prior to the experimental procedure). Those who received the procedures in order two were able to assess more accurately their abilities to perform the computation test than those who received the procedure in order one (experimental procedure prior to standardized procedure). Therefore, the hypothesis that order of administration would make no difference in the student's ability to

assess accurately his/her performance on the computation test was rejected.

$HO_7$ There will be no significant difference in word pronunciation scores of entering Adult Basic Education students in a self-assessment procedure and in a standardized procedure.

Findings

There was a mean difference of 1.90 grade levels between the experimental and standardized scores in word pronunciation. Since it was hypothesized that there would be no significant difference between the scores, the hypothesis was rejected.

$HO_8$ There will be no significant formal schooling effect on the accuracy with which participants will assess word pronunciation skills.

Findings

There were no statistical significant differences between the participants who had eight years or fewer of formal schooling and those who had more than eight years of formal schooling in

their abilities to assess accurately their performances on the word pronunciation test. Therefore, the hypothesis that formal schooling would have no effect was retained.

$HO_9$ There will be no significant age effect on the accuracy with which participants will assess word pronunciation skills.

Findings

There were no statistically significant differences among the five age groups in their abilities to assess accurately their performances on the word pronunciation test. Therefore, the hypothesis that age would have no effect was retained.

$HO_{10}$ There will be no significant sex effect on the accuracy with which participants will assess word pronunciation skills.

Findings

There were no statistically significant differences between males' and females' abilities to assess accurately their performances on the word pronunciation test. Therefore, the hypothesis that sex would have no effect was retained.

$HO_{11}$ There will be no significant orientation effect on the accuracy with which participants will assess word pronunciation skills.

Findings

There were no significant statistical differences between those participants who were given an orientation statement in addition to basic instructions and those who received basic instructions only in their abilities to assess accurately their performances on the word pronunciation test. Therefore, the hypothesis that orientation would have no effect was retained.

$HO_{12}$ There will be no significant order effect on the accuracy with which participants will assess word pronunciation skills.

Findings

Significant differences were found between accuracy scores of participants who received the procedures in order one and those who received the procedures in order two (receiving the

standardized procedure prior to the experimental procedure). Those who received the procedures in order two able to assess more accurately their abilities to perform the word pronunciation test than those who received the procedure in order one. Therefore, the hypothesis that order of administration would make no difference in the student's ability to assess accurately his/her performance on the word pronunciation test was rejected.

## Conclusions

The results of this study have provided evidence for the support of the concept of self-assessment as an acceptable diagnostic tool in entry skills analysis of Adult Basic Education students. Although the results have not supported all of the hypotheses, further research should not be discounted without attention to the conclusions:

1. That of all the factors studied here, order of test administration subsisted as the most significant influence on the accuracy of self-assessment. Order was found to be

influential both in computation and word pronunciation tests of self-assessment.

2. That differences between the abilities of males and females exist. Females were found to be more accurate in assessments of their performance in estimates of both computation and word pronunciation tests. However, although differences were present, they were not statistically significant.
3. That the orientation process was found to make a difference in the abilities of students to assess their computation and pronunciation skills. Those who received the orientation were found to be slightly more accurate. However, although differences were found, they were not statistically significant.

Objective VI. To utilize findings as a basis for making recommendations for use of a self-assessment mode in Adult Basic Education entry diagnosis.

## Recommendations

The central problem of this study was to determine if a self-assessment procedure could provide data with acceptable accuracy for use in Adult Basic Education placement diagnostic batteries. No final conclusion concerning the credibility of self-assessment as a placement procedure was reached. The tendency of students to overestimate their abilities raises questions that might be addressed in two research propositions.

1. Further research should be conducted to determine if the tendency toward overestimation was a finding limited to this study or if this tendency is a given in every situation.
2. Decisions by program directors, who wish to adopt self-assessment as an entry skills analysis procedure, as to whether or not the degree of overestimation is too severe to allow accurate placement in instructional materials should be made.

A number of recommendations have been advanced for each of the above propositions.

Research Proposition I:

A. To insure standardization of the procedure for data collection, subsequent research should be conducted utilizing methodology designed to assure consistency in the assessment procedure.

Discussion: The development of standard data collection procedures that would be implemented as a regular part of the program at each research site would help to eliminate some concerns for experimental bias (e.g., the Hawthorne effect from strangers conducting the study, modified or special procedures, etc.)

B. Subsequent research regarding the sex effect of self-assessment procedures should be studied in detail.

Discussion: The findings of this study indicated that substantive differences between the male and female performances exist. A study which investigates the differences between the abilities of males and females to predict scores should be conducted. Future studies should control for this variable to determine the existence, nature, and extent of these differences. Although the data from this limited study can be interpreted as representative of a sex effect on self-assessment ability, caution should be exercised to avoid any interpretation that would contribute to a bias based on the sex of students.

C. An orientation statement which acquaints the student with the placement process should be developed and tested.

Discussion: Students who were provided a clear introduction to the self-assessment placement procedure performed more accurately than the group not receiving the treatment. An orientation statement should be created as an introduction to the specific program into which the student is entering. Testing of the orientation statement's effect on the subsequent placement of students should then be conducted.

Research Proposition II:

A. A longitudinal study of self-assessment should be undertaken to provide information on self-assessment as it relates to placement of students into program materials.

Discussion: Placement into instructional materials should be the emphasis of this recommended study of self-assessment. Secondary questions concerning accuracy of standardized instruments could be asked as well.

The major hypothesis behind the process of self-assessment is that students can judge their abilities with accuracy comparable to standardized placement procedures. Additionally, the assumption has been made that standardized tests place students accurately.

The relationship of the ability level predicted by these tests and the subsequent performance of students in material at that level should also be examined to test the above assumption.

B. A self-assessment procedure should be preceded by a "warm-up" session in which students practice the problems and/or words they will encounter in the placement process.

Discussion: Students who were presented the standardized test procedure before the self-assessment procedure (control group) demonstrated substantially greater accuracy than the students who were in the experimental group (self-assessment first). It was interpreted that these results were produced by the opportunity that students had to "practice" the problems and words before they were asked to assess their abilities. Investigation into the format and content as well as the setting for the "warm-up" session should be conducted.

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# APPENDICES

# APPENDIX A

# ORIENTATION STATEMENT

As you may know, people have learned a lot of things in the last few hundred years. They have invented automobiles, airplanes, even jets and rockets; discovered how to generate and use electricity; developed new "wonder drugs" and medicines which help prevent sickness and help us live longer. Through scientific experiments people have learned a lot about many things. We can do things today that our grandfathers never dreamed of doing.

One thing we don't know much about is how well people know themselves. Of course, we probably know more about ourselves than anyone else does, but just how much do we know about ourselves and our abilities? How well do we know the things we are good at and the things we can't do so well? To know what we can do and what we can't do is pretty important.

Strange as it may seem, nobody that I know of has ever tried to find out how well A.B.E. students know themselves and how well they do various things.

In the next few minutes, you will be asked to judge whether or not you can do certain problems or pronounce certain words. Then you will be checked for accuracy. No one except me will know whether you said you could answer the questions or not, unless, of course, you yourself tell someone. And since I don't know you, you can feel free to put down what you really think.

All of us can do some things well and other things not so well. One person may be good at making friends and not so good at reading. The only question today is, do you really know whether or not you can do certain things?

Because you would probably like to know how accurately you were able to rate yourself, I will talk to each one of you later if you wish. I will be able to tell you how many ratings you were correct about without telling you just which ones they were.

What you say will help show us how well A.B.E. students rate themselves. If any of you feel you don't want to be part of this survey, just say so.

Please remember just three things:

1. Rate yourself exactly according to how you think you will do today, not how you hope to do someday.

2. Don't be afraid to put down a "NO" answer because you are ashamed to admit you can't do better, or a "YES" for fear of bragging. The important thing is that your rating be as close as possible to what you think you will do.

3. Do the best you can on the words and/or problems whether you like them or not.

# APPENDIX B

# BASIC INSTRUCTIONS (WRAT)

## Arithmetic Computation

I'd like to know how many of the problems on this page you can figure out. Look at each problem carefully to see what you are supposed to do - add, subtract, multiply, or divide - and then put down your answer in the space on or under the lines. Should you wish to figure on the paper, you may use the empty spaces or the margins to write on. First, do the top row, then the second row, then the third row, and so on. The problems get more difficult as you go down the page. Don't spend too much time on any one problem. You can skip a problem if it is too difficult for you, but do as many as you can one by one. You will have 10 minutes. Now, go ahead and do as many as you can (41:13).

## Word Pronunciation

Look at each word carefully and say it aloud. Begin here and read the words across the page so I can hear you. When you finish the first line, go on to the next, and so on (41:11).

# BASIC INSTRUCTIONS (ADULT SURVEY)

## Arithmetic Computation

Look at each problem carefully and decide whether or not you think you could figure the problem and get the correct answer. If you think you could get the correct answer, circle the "Y" (for YES) on your answer sheet. If you think you could not get the correct answer, circle the "N" (for NO) on your answer sheet.

## Word Pronunciation

Look at each word carefully and decide whether or not you think you could say the word correctly. If you think you could say the word correctly, circle the "Y" (for YES) on your answer sheet. If you think you could not say the word correctly, circle the "N" (for NO) on your answer sheet.

# APPENDIX C

JASTAK
ASSESSMENT
SYSTEMS

APR 2 3 1979

April 17, 1979

Tom E. Grigsby, Coordinator
Post-Secondary Education
Oregon State University
Corvallis, Oregon 97331

Dear Dr. Grigsby:

This will serve as our written authorization for you to put Level II reading and arithmetic items of the Wide Range Achievement Test on slides as per your letter of April 9, 1979.

Please understand that this authorization is specifically restricted to your experimental project. At the end of the project the slides should be sent to us to be destroyed (or written certification of their destruction sent to us instead).

We would appreciate receipt of a copy of your study and your findings.

Our best wishes in your project.

Sincerely yours,

Redacted for Privacy

F. Arthur Brill
Director

FAB:jgm

# APPENDIX D

## WIDE RANGE ACHIEVEMENT TEST

The Wide Range Achievement Test (WRAT) is distinctive in that it measures reading, spelling, and arithmetic skills from kindergarten to college level. Success in such an undertaking involves difficulty in sampling from the total school experience. In this test, the sampling is done by limiting the measurement to certain mechanical aspects of three subjects (reading, arithmetic, and spelling); and by selecting items, in each of the three areas, which showed a regularly increasing percentage of successes at succeeding grade levels. Thus, the items in each part are arranged in order of difficulty.

The aspects of the two subject areas used in this study were word pronunciation and computation. The word pronunciation section tests skill in pronouncing printed words ranging from letters of the alphabet to such words as "egregious", "heinous", and "synecdoche". The test's authors make the claim that a word pronunciation test is superior to both paragraph and picture-reading tests as a measure of how well a person can read. They base their claim on the argument that paragraph tests may introduce context clues, thus encouraging guessing, and picture tests may involve distraction as well as clues.

The computation section of the WRAT tests mathematical skills ranging from counting dots to simple

algebra and logarithms. The authors of the test contend that the most accurate test of arithmetic ability is one which does not depend on reading. The scaled computation items, ranging from simple addition to college mathematics, appear to serve the clinical purpose of this test.

The WRAT test is designed primarily as an individual clinical test, but the spelling and arithmetic sections can also be administered as group subtests.

Scores for the tests are given in grade equivalents, percentiles, and standard scores.

PROCEDURES FOLLOWED:

I. Prior to site visits:

a. A decision was made that there would be only one investigator in the study.

b. WRAT items from the computation and word pronunciation sections were photographed and placed on 35 mm slides (for use in the experimental procedure).

c. An experimental answer sheet was created (see Appendix D).

d. Copies of the WRAT were purchased at Oregon College of Education's Bookstore. A manual of administration was also required.

e. Student packets were made up for use in the testing procedure. Each packet contained one copy of the experimental answer sheet

and one copy of each of the two sections of the WRAT which were to be utilized during this study. Materials were packaged inside a manila envelope (9x12 inches). The envelope was marked with a code number designating the student number and the administrative group to which that packet belonged. For example, in the code number 422-21 the student number was 422 (meaning that the student was from Linn-Benton Community College and was the 22nd student to be tested) this information was needed so that test results could be returned to the students if they requested them. The 21 part of the code number meant that the student was given the orientation statement and that he/she was administered the procedures in order 1 (experimental procedure preceding the standardized procedure). Of the four groups which took the test, Group A had the code number 11, Group B had the code number 12, Group C had the code number 21, and Group D had the code number 22.

f. A decision was made concerning the grouping assignment of each participant.

g. Contact was made with the director of the ABE program for suitable times, places, etc. Final arrangements were made for the study visit.

II. At the time of the visit:

a. Students were introduced to the project by their teacher and were advised that they could take part or not, as they wished.

b. Those students who wished to participate were administered the treatment according to the decision made in I-f. (Directions for the tests and Orientation Statement were read directly from the copy to insure that every participant received the same words in the same order.)

c. A procedure for returning the test scores to those students who requested them was explained. (The code number was duplicated on a small sheet of paper and attached to the outside of the packet. If the student was interested in the results, he/she would remove the number and keep it for further reference. The results of that day's testing were sent by code number to the teacher. Students who wanted the information could get it by comparing their own code number

with the list of results, thereby protecting their privacy as well as the privacy of the other participants.)

III. After the visit:

a. Experimental and standardized answer sheets were tabulated and recorded.

b. Raw scores and grade scores for both the experimental and standardized tests in computation and word pronunciation were recorded on data code sheets for computer card punching and analysis.

ADULT SURVEY ANSWER SHEET

NUMBER _____ SCHOOL _____

M F DATE _____ AGE __ 16-25 __ 26-34 __ 35-44 __ 45-54 __ Over 54

LAST FULL YEAR OF EDUCATION 1 2 3 4 5 6 7 8 9 10 11 12 (circle one)

MATHEMATICS

| | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | Y | N | | 24. | Y | N | | | | | | | | | | | | | | | | | |
| 2. | Y | N | | 25. | Y | N | | | | | | | | | | | | | | | | | |
| 3. | Y | N | | 26. | Y | N | | | | | | | | | | | | | | | | | |
| 4. | Y | N | | 27. | Y | N | | | | | | | | | | | | | | | | | |
| 5. | Y | N | | 28. | Y | N | | | | | | | | | | | | | | | | | |
| 6. | Y | N | | 29. | Y | N | | | | | | | | | | | | | | | | | |
| 7. | Y | N | | 30. | Y | N | | | | | | | | | | | | | | | | | |
| 8. | Y | N | | 31. | Y | N | | | | | | | | | | | | | | | | | |
| 9. | Y | N | | 32. | Y | N | | | | | | | | | | | | | | | | | |
| 10. | Y | N | | 33. | Y | N | | | | | | | | | | | | | | | | | |
| 11. | Y | N | | 34. | Y | N | | | | | | | | | | | | | | | | | |
| 12. | Y | N | | 35. | Y | N | | | | | | | | | | | | | | | | | |
| 13. | Y | N | | 36. | Y | N | | | | | | | | | | | | | | | | | |
| 14. | Y | N | | 37. | Y | N | | | | | | | | | | | | | | | | | |
| 15. | Y | N | | 38. | Y | N | | | | | | | | | | | | | | | | | |
| 16. | Y | N | | 39. | Y | N | | | | | | | | | | | | | | | | | |
| 17. | Y | N | | 40. | Y | N | | | | | | | | | | | | | | | | | |
| 18. | Y | N | | 41. | Y | N | | | | | | | | | | | | | | | | | |
| 19. | Y | N | | 42. | Y | N | | | | | | | | | | | | | | | | | |
| 20. | Y | N | | 43. | Y | N | | | | | | | | | | | | | | | | | |
| 21. | Y | N | | 44. | Y | N | | | | | | | | | | | | | | | | | |
| 22. | Y | N | | 45. | Y | N | | | | | | | | | | | | | | | | | |
| 23. | Y | N | | 46. | Y | N | | | | | | | | | | | | | | | | | |

READING

| | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | Y | N | | 38. | Y | N | | | | | | | | | | | | | | | | | |
| 2. | Y | N | | 39. | Y | N | | | | | | | | | | | | | | | | | |
| 3. | Y | N | | 40. | Y | N | | | | | | | | | | | | | | | | | |
| 4. | Y | N | | 41. | Y | N | | | | | | | | | | | | | | | | | |
| 5. | Y | N | | 42. | Y | N | | | | | | | | | | | | | | | | | |
| 6. | Y | N | | 43. | Y | N | | | | | | | | | | | | | | | | | |
| 7. | Y | N | | 44. | Y | N | | | | | | | | | | | | | | | | | |
| 8. | Y | N | | 45. | Y | N | | | | | | | | | | | | | | | | | |
| 9. | Y | N | | 46. | Y | N | | | | | | | | | | | | | | | | | |
| 10. | Y | N | | 47. | Y | N | | | | | | | | | | | | | | | | | |
| 11. | Y | N | | 48. | Y | N | | | | | | | | | | | | | | | | | |
| 12. | Y | N | | 49. | Y | N | | | | | | | | | | | | | | | | | |
| 13. | Y | N | | 50. | Y | N | | | | | | | | | | | | | | | | | |
| 14. | Y | N | | 51. | Y | N | | | | | | | | | | | | | | | | | |
| 15. | Y | N | | 52. | Y | N | | | | | | | | | | | | | | | | | |
| 16. | Y | N | | 53. | Y | N | | | | | | | | | | | | | | | | | |
| 17. | Y | N | | 54. | Y | N | | | | | | | | | | | | | | | | | |
| 18. | Y | N | | 55. | Y | N | | | | | | | | | | | | | | | | | |
| 19. | Y | N | | 56. | Y | N | | | | | | | | | | | | | | | | | |
| 20. | Y | N | | 57. | Y | N | | | | | | | | | | | | | | | | | |
| 21. | Y | N | | 58. | Y | N | | | | | | | | | | | | | | | | | |
| 22. | Y | N | | 59. | Y | N | | | | | | | | | | | | | | | | | |
| 23. | Y | N | | 60. | Y | N | | | | | | | | | | | | | | | | | |
| 24. | Y | N | | 61. | Y | N | | | | | | | | | | | | | | | | | |
| 25. | Y | N | | 62. | Y | N | | | | | | | | | | | | | | | | | |
| 26. | Y | N | | 63. | Y | N | | | | | | | | | | | | | | | | | |
| 27. | Y | N | | 64. | Y | N | | | | | | | | | | | | | | | | | |
| 28. | Y | N | | 65. | Y | N | | | | | | | | | | | | | | | | | |
| 29. | Y | N | | 66. | Y | N | | | | | | | | | | | | | | | | | |
| 30. | Y | N | | 67. | Y | N | | | | | | | | | | | | | | | | | |
| 31. | Y | N | | 68. | Y | N | | | | | | | | | | | | | | | | | |
| 32. | Y | N | | 69. | Y | N | | | | | | | | | | | | | | | | | |
| 33. | Y | N | | 70. | Y | N | | | | | | | | | | | | | | | | | |
| 34. | Y | N | | 71. | Y | N | | | | | | | | | | | | | | | | | |
| 35. | Y | N | | 72. | Y | N | | | | | | | | | | | | | | | | | |
| 36. | Y | N | | 73. | Y | N | | | | | | | | | | | | | | | | | |
| 37. | Y | N | | 74. | Y | N | | | | | | | | | | | | | | | | | |

MATH SCORE _____

LEVEL _____

READING SCORE _____

LEVEL _____

Page 3. Arithmetic

LEVEL II. Oral Part 1. Counts 1-5 2. Counts 6-15 3. Reads 3 4. Reads 5 5. Reads 6
6. Reads 17 7. Reads 41 8. Pennies 3-1 9. Apples 3 + 4 10. Marbles 9-3 10

Written part.

$2\frac{1}{2} + 1\frac{1}{2} =$ _____

$\frac{1}{6}$ of 30 = _____

| | | | | | |
|---|---|---|---|---|---|
| 43 | 94 | $4.95 | 726 | 229 | |
| + 6 | − 64 | × 3 | − 349 | 5048 | |
| | | | | 63 | |
| | | | | ÷ 1381 | |

17

$9\overline{)4527}$

$1\frac{1}{3}$ ft. = _____ in.

$2 -$ _____ $= \frac{1}{4}$

Add:
$6\frac{1}{4}$
$1\frac{5}{8}$
$4\frac{1}{2}$

809
× 47

Write as percent:

.42 = _____%

23

Subtract:
$10\frac{1}{4}$
$7\frac{2}{3}$

Multiply: 6.23
12.7

Find average:
34, 16, 45, 39, 27

Ans. _____

Write as decimal:
$52\frac{1}{2}\%$ = _____

Write as percent:
$\frac{3}{8}$ = _____%

$2.9\overline{)308.85}$

29

Add: 3 ft. 6 in.
5 ft. 5 in.
8 ft. 11 in.

M + 2 = 5
M = _____

2x = 3
x = _____

$6 \times 3\frac{7}{8}$ = _____

15% of 175 = _____

Write as common fraction in lowest terms: .075 = _____

The complement of an angle of 30° = _____

36

$4^3$ = _____

.25 ÷ $1\frac{1}{5}$ = _____

If a = 7, b = 3,
$a^2 + 3b$ = _____

$\frac{1}{4}\%$ of 60 = _____

66 sq. ft. = _____ sq. yd.

Solve: $\frac{7 - (6 + 8)}{2}$ = _____

Add:
−x − y − 23
x − y + 22

43

Factor:
$r^2 + 25 - 10r$

Ans. _____

$\frac{r^2 - 5r - 6}{r + 1}$

Ans. _____

Change to familiar numerals: M D C X C I = _____

Find interest on $1,200 at 6% for 70 days. Ans. _____

$3p - q = 10$
$2p - q = 7$
p = _____
q = _____

$\sqrt{2ax} = 6$
Ans. _____

$\frac{7}{17} = \frac{6}{x}$
x = _____

51

Find square root:
$\sqrt{67081}$

Ans. _____

$\log_{10}\left(\frac{1}{100}\right)$

Ans. _____

$\log_5 5\sqrt{5}$

Ans. _____

Reduce: $\frac{k^2 + k}{k^2} \cdot \frac{3k - 3}{k^2 - 1}$

Ans. _____

Find root:
$2x^2 - 36x = 162$

Ans. _____

56

Arithmetic—Level II—Grade Norms. Percentiles and Standard Scores corresponding to grade rating and age may be found in Manual.

| Score | Grade | Score | Grade | Score | Grade | Score | Grade | Score | Grade | Score | Grade | Score | Grade |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | N.9 | 7 | kg.8 | 14 | 3.9 | 21 | 6.5 | 28 | 8.5 | 35 | 12.0 | 42 | 15.9 |
| 1 | Pk.4 | 8 | Gr.1.0 | 15 | 4.4 | 22 | 6.7 | 29 | 9.0 | 36 | 12.8 | 43 | 16.5 |
| 2 | Pk.5 | 9 | 1.5 | 16 | 4.9 | 23 | 6.9 | 30 | 9.5 | 37 | 13.3 | 44 | 17.1 |
| 3 | Pk.9 | 10 | 1.9 | 17 | 5.3 | 24 | 7.1 | 31 | 10.1 | 38 | 13.8 | 45 | 17.7 |
| 4 | kg.4 | 11 | 2.5 | 18 | 5.7 | 25 | 7.4 | 32 | 10.8 | 39 | 14.4 | 46 | 18.3 |
| 5 | kg.4 | 12 | 2.9 | 19 | 6.1 | 26 | 7.7 | 33 | 11.3 | 40 | 14.9 | 47 | 18.9 |
| 6 | kg.6 | 13 | 3.4 | 20 | 6.3 | 27 | 8.0 | 34 | 11.8 | 41 | 15.4 | 48 | 19.5 |
| | | | | | | | | | | | | 49 | 20.0 |

Page 4

Percentiles and Standard Scores corresponding to grade rating and age may be found in the Manual.

Level I—Reading—Grade Norms.

| Score | Grade | Score | Grade | Score | Grade | Score | Grade | Score | Grade | Score | Grade | Score | Grade |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | N.3 | 16-17 | Kg.6 | 26-27 | 1.9 | 37 | 3.2 | 66 | 5.5 | 79 | 8.1 | 92 | 14.9 |
| 2 | N.9 | 18 | Kg.7 | 28 | 2.0 | 38 | 3.3 | 67 | 5.5 | 80 | 8.4 | 93 | 15.5 |
| 3 | Pk.1 | 19-20 | Kg.8 | 29-30 | 2.1 | 39 | 3.6 | 68 | 5.7 | 81 | 8.7 | 94 | 15.7 |
| 4 | Pk.2 | 21 | Kg.9 | 31 | 2.2 | 40 | 3.8 | 69 | 5.9 | 82 | 9.0 | 95 | 14.1 |
| 5 | Pk.4 | 22 | Gr.1.0 | 32-33 | 2.3 | 57 | 3.9 | 70 | 6.1 | 83 | 9.3 | 96 | 14.6 |
| 6 | Pk.5 | 23 | 1.1 | 34 | 2.4 | 58 | 4.1 | 71 | 6.3 | 84 | 9.7 | 97 | 14.9 |
| 7 | Pk.7 | 24-25 | 1.4 | 35-36 | 2.5 | 59 | 4.2 | 72 | 6.5 | 85 | 10.1 | 98 | 15.4 |
| 8 | Pk.8 | 26-27 | 1.5 | 37 | 2.6 | 60 | 4.4 | 73 | 6.7 | 86 | 10.5 | 99 | 15.8 |
| 9 | Kg.1 | 28-29 | 1.4 | 38 | 2.7 | 61 | 4.5 | 74 | 6.8 | 87 | 10.9 | 100 | 16.4 |
| 10-11 | Kg.2 | 30-31 | 1.5 | 39 | 2.8 | 62 | 4.7 | 75 | 7.0 | 88 | 11.3 | | |
| 12 | Kg.3 | 32-33 | 1.6 | 40 | 2.9 | 63 | 4.8 | 76 | 7.2 | 89 | 11.7 | | |
| 13-14 | Kg.4 | 34 | 1.7 | 41 | 3.0 | 64 | 5.0 | 77 | 7.5 | 90 | 12.1 | | |
| 15 | Kg.5 | 35 | 1.8 | 42 | 3.1 | 65 | 5.1 | 78 | 7.8 | 91 | 12.5 | | |

Level II—Reading—Grade Norms

| Score | Grade | Score | Grade | Score | Grade | Score | Grade | Score | Grade | Score | Grade | Score | Grade |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | Pk.5 | 16 | 1.3 | 29 | 4.4 | 42 | 6.8 | 55 | 9.5 | 68 | 13.0 | 81 | 16.8 |
| 1 | Pk.6 | 17 | 1.5 | 30 | 4.6 | 43 | 6.9 | 56 | 9.6 | 69 | 13.2 | 82 | 17.1 |
| 2 | Kg.1 | 18 | 1.7 | 31 | 4.8 | 44 | 7.1 | 57 | 9.9 | 70 | 13.5 | 83 | 17.4 |
| 3-4 | Kg.2 | 19 | 1.8 | 32 | 5.0 | 45 | 7.3 | 58 | 10.2 | 71 | 13.8 | 84 | 17.7 |
| 5-6 | Kg.3 | 20 | 2.0 | 33 | 5.2 | 46 | 7.5 | 59 | 10.5 | 72 | 14.1 | 85 | 18.0 |
| 7 | Kg.4 | 21 | 2.2 | 34 | 5.4 | 47 | 7.7 | 60 | 10.8 | 73 | 14.4 | 86 | 18.3 |
| 8 | Kg.5 | 22 | 2.4 | 35 | 5.6 | 48 | 7.9 | 61 | 11.1 | 74 | 14.7 | 87 | 18.6 |
| 9 | Kg.6 | 23 | 2.6 | 36 | 5.8 | 49 | 8.1 | 62 | 11.4 | 75 | 15.0 | 88 | 19.0 |
| 10-11 | Kg.7 | 24 | 2.8 | 37 | 6.0 | 50 | 8.3 | 63 | 11.9 | 76 | 15.3 | 89 | 19.5 |
| 12 | Kg.8 | 25 | 3.0 | 38 | 6.2 | 51 | 8.5 | 64 | 12.2 | 77 | 15.6 | | |
| 13 | Kg.9 | 26 | 3.2 | 39 | 6.4 | 52 | 8.7 | 65 | 12.4 | 78 | 15.9 | | |
| 14 | Gr.1.0 | 27 | 3.9 | 40 | 6.6 | 53 | 8.9 | 66 | 12.6 | 79 | 16.2 | | |
| 15 | 1.1 | 28 | 4.2 | 41 | 6.8 | 54 | 9.1 | 67 | 12.8 | 80 | 16.5 | | |

LEVEL 2

Two letters in name (2) A B O S E R T H P I U Z Q (13) 15

milk city in tree animal himself between chin split form 25

grunt stretch theory contagious grieve toughen aboard triumph 33

contemporary escape eliminate tranquillity conspiracy image ethics 40

deny rancid humiliate bibliography unanimous predatory alcove 47

scald mosaic municipal decisive contemptuous deteriorate stratagem 54

benign desolate protuberance prevalence regime irascible peculiarity 61

pugilist enigmatic predilection covetousness soliloquize longevity abysmal 68

ingratiating oligarchy coercion vehemence sepulcher emaciated evanescence 75

centrifugal subtlety beatify succinct regicidal schism ebullience 82

misogyny beneficent desuetude egregious heinous internecine synecdoche 89

LEVEL 1

cat see red to big work book eat was him how 30

then open letter jar deep even spell awake block size 40

weather should lip finger tray felt stalk cliff lame struck 56

approve plot huge quality sour imply humidity urge 64

bulk exhaust abuse collapse glutton clarify 70

recession threshold horizon residence participate quarantine 76

luxurious rescinded emphasis aeronautic intrigue repugnant 82

putative endeavor heresy discretionary persevere anomaly 88

rudimentary miscreant usurp novice audacious mitosis 94

seismograph spurious idiosyncrasy itinerary pseudonym aborigines 100

A R Z H I Q S E B O 10

Two letters in name (2) A B O S E R T H P I U Z Q 25