1987

The Predictive Validity of Adaptive Behavior and Aptitude on Achievement

Julia A. Long
Loyola University Chicago

THE PREDICTIVE VALIDITY
OF ADAPTIVE BEHAVIOR AND APTITUDE
ON ACHIEVEMENT

by

Julia A. Long

A Dissertation Submitted to the Faculty of the Graduate School

of Loyola University of Chicago in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

January

1987

ACKNOWLEDGEMENTS

This research study necessarily required the cooperation and assistance of numerous individuals. Among those who deserve special acknowledgement is Dr. Nancy Hablutzel, Director of the Dissertation Committee, who was very supportive of this study. Sincere appreciation is expressed to Dr. Ronald Morgan who provided theoretical insight and practical suggestions. There never was a time when this writer could not impose upon him for guidance and aid. Special thanks are due to Dr. Joy Rogers whose helpful assistance improved the clarity of this presentation, and who freely gave of her vacation time to read and respond to the study with constructive suggestions. Dr. Jack Kavanagh and Dr. Joseph Feidler patiently guided me through the statistical analyses necessary to bring this project to fruition, for which I am extremely grateful. Sincere appreciation is also expressed to Dr. William Watts, who was kind enough to be a member of the dissertation committee and who also was very supportive of the project from the beginning to the end.

A sincere debt of gratitude is expressed to Dr. Mary Kilgallon of District 67 of Morton Grove who was the inspiration for the conceptualization and completion of this study, giving generously of her time, materials, thoughts and constant encouragement. She directed me step by step through every procedure. Thanks must also be expressed to Dr. Harry Trumfio, Superintendent; Mr. Steven Lake and Mr. Frank Hren, Principals; and to all the special education teachers and aides of the district for their cooperation, assistance, and support.

Finally, I would like to thank my devoted husband, David, to whom I am indebted for his endless and untiring support by offering clerical assistance, helpful suggestions, constant encouragement, and never complaining of the financial burdens of the last few years.

VITA

The author, Julia A. Long, is the daughter of Frederick Stewart and Mary Ann Armstrong. Mrs. Long is the wife of David Joseph Long and the mother of Monica Jean, Laura Ann, and Eric Stephen Long. She was born on September 6, 1938 in Oak Park, Illinois.

Her elementary education was obtained in parochial schools in Oak Park, Illinois; Ypsilanti, Michigan; and Dallas, Texas. Her secondary education was completed in 1956 at Trinity High School in River Forest, Illinois.

In September 1956, Mrs. Long entered Rosary College in River Forest, Illinois, receiving a Bachelor of Arts degree in 1960 with a major in French, and minors in English and secondary education. Mrs. Long had taught French in grades six through eight in Elmhurst from 1960-1962. She taught grades four through six in Berwyn, Illinois from 1969-1981.

In September, 1978, Mrs. Long entered Concordia College in River Forest, Illinois receiving a Master of Arts degree in Elementary Curriculum in 1978. She continued on with her studies, pursuing a Certificate of Advanced Studies in Administration and Supervision, which was completed in 1983.

From 1981-1984 Mrs. Long was a principal for the Catholic Archdiocese of Chicago. In August, 1983, she entered Loyola University to pursue a Doctoral Degree in Educational Psychology. During the 1985-1986 school year, Mrs. Long completed her school psychology internship in Morton Grove.

TABLE OF CONTENTS

LIST OF TABLES

CONTENTS OF APPENDICES

CHAPTER I

INTRODUCTION

The assessment of adaptive behavior has become an essential part of psychoeducational evaluations. However, only with the passage of Public Law 94-142 (Education for All Handicapped Children Act of 1975) did the assessment of adaptive behavior become mandatory. The regulations state that information from a variety of sources must be considered, including aptitude and achievement test scores, teacher recommendations, physical condition, social or cultural background, and adaptive behavior. Today, placement in classes for the mentally retarded must be based on low levels of both intellectual functioning and adaptive behavior (Lambert, 1981).

The proliferation of information regarding adaptive behavior has resulted in the development of numerous adaptive behavior scales. However, the adaptive behavior scales most frequently employed reportedly contain many problems (e.g., limited age ranges, limited standardization samples, and nonexistent, unsubstantiated reliability and validity (McLoughlin & Lewis, 1981).

The present study was designed to test the predictive validity of two adaptive behavior scales when used to predict achievement. The study focused on the potential utility of the Adaptive Behavior Evaluation Scale (ABES) and the AAMD Adaptive Behavior Scale (School Edition) as general measures of adaptive behavior with any student experiencing academic or behavioral difficulties regardless of the severity of suspected handicapping condition (McCarney, 1983).

Furthermore, this study was designed to determine the utility of the Detroit Tests of Learning Aptitude-2 (DTLA-2) for identifying those individuals who were high risks for scholastic failure. Hamill (1985) stated:

> The DTLA-2 has three principal uses: (a) to determine strengths and weaknesses among intellectual abilities, (b) to identify children and youths who are significantly below their peers in aptitude, and (c) to serve as a measurement device in research studies investigating aptitude, intelligence, and cognitive behavior (p. 11).

The theoretical implications of this study rest on its potential to generate further understanding about the relationships among adapative behavior, aptitude, and achievement. The results of this study could be particularly useful and perhaps make a useful contribution to the field of education in that seldom has anyone investigated the prediction of achievement based solely on the variables included in the study at hand. Also, research comparing the predictive utility of variables among various groups of students has been a somewhat recent addition to the educational research literature (Coleman, et al., 1967; Feld & Lewis, 1967). Furthermore, this study employed multiple regression procedures to identify the best predictors in the adaptive behavior and aptitude measures for predicting achievement. Finally, although research concerning the interrelationships among adaptive behavior, aptitude, and achievement has intensified recently, more research in this area has been suggested (McLoughlin & Lewis, 1981).

A review of the literature indicates that there is a substantial foundation of research on the subject of adaptive behavior. An adaptive behavior measure allows one to determine whether the child's adaptive skills are like those of other children and whether those adaptive skills are stable across learning and social environments (Tucker, 1977). There is reported to be considerable agreement among psychologists and educators that adaptive behavior refers to the degree to which an individual demonstrates age-appropriate independent functioning, assumes personal responsibility, and accepts social responsibilities in his or her environment (Brown & Hammill, 1978; Heber, 1961; Leland, 1978a, 1978b; Mercer, 1979). Behaviors are considered adaptive by consensus (Prichard & Buxton, 1973; Shertzer & Stone, 1980). Slate (1983) stated that mentally retarded individuals are identified, at least in part, by their maladaptive behaviors.

One of the major problems with adaptive behavior assessment is interrater reliability. Mayfield, Forman, and Nagle (1984) stated:

> ...although different types of raters will provide stable ratings, results of adaptive behavior assessment may vary significantly, depending upon who provides the information. Differences in ratings may be attributed to one or more of the following factors: (a) varying familiarity with the assessment instrument; (b) varying amount of observation time; (c) biases resulting from experience with different reference groups; (d) biases resulting from the nature of the relationship with the child; (e) varying perceptions of the value of the behaviors; and (f) actual variations in child behavior (p. 60).

Only a limited number of studies have looked at the relationship between IQ and adaptive behavior. Roszkowski and Bean (1980) found:

> As anticipated, Part I of the ABS bears a much stronger relationship to IQ than does Part II of the scale. That is, the correlation between IQ and Part I Total score is large (.77) ... Total Part II score, in contrast, shows only a low degree of

> association with IQ (r =.22). Furthermore, the average correlation for Part I domains (r = .66) is markedly larger than the average correlation for Part II domains (r =.22) (p. 456).

Previous studies found that IQ tests measure only test behavior, while adaptive behavior scales tap real-life intelligence (Brown & French, 1979; MacMillan & Jones, 1972). Measures of adaptive behavior have been recommended as a means of estimating IQ (Goulet & Barclay, 1963).

In a study dealing with the contributions of school classification, sex, and ethnicity to adaptive behavior assessment, Lambert (1979) stated:

> From the analysis of the contributions of sex and ethnic status to the Part Two domains, the author inferred that difference in environmental tolerance for affective or emotional responses to the school or community environment was a more reasonable explanation than the inference that girls and boys or children from different cultural backgrounds were inherently different with respect to these behaviors. The Public School Version of the AAMD Adaptive Behavior Scale is valid for assessing adaptive behavior of children in public school and relatively independent of effects attributable to sex or ethnic status (p. 3).

Based on the findings reported above, it was expected that, in the present study, intelligence, as measured by the DTLA-2, would be more strongly related to the measures of achievement than any other independent variable (environmental/interpersonal behaviors, self-related behavior, task-related behaviors) across the total group (93 special education students). It was further expected that Part I of the AAMD ABS-SE would bear a much stronger relationship to IQ than would Part II of that adaptive behavior scale.

In the present study, 93 special education students placed in self-contained LD, resource LD, LD/BD or BD classes; ranging in age from six to fifteen years; in grades one through eight; at two schools in a middle-class, suburban school district near Chicago were tested on the DTLA-2 and the Standard Achievement Test (1983). The special education teachers rated the AAMD ABS-SE and the ABES in April after at least eight months of actual classroom observation of the behaviors in question. Classroom aides also rated the ABES, independent of any consultation with the special education teacher, to verify the possibility of significant interrater reliability on the ABES.

As noted earlier, the study was designed to focus mainly on the prediction of achievement, with a primary emphasis on demonstrating the psychometric adequacy of adaptive behavior and aptitude variables. Adaptive behavior is defined as the "effectiveness or degree with which the individual meets the standards of personal independence and social responsibilities expected of his age and cultural group" (Grossman, 1973, p. 11).

The five adaptive behavior factors on the ABS-SE are personal self-sufficiency (basic skills in which the individual attends to immediate personal needs such as eating, toileting, and grooming); community self-sufficiency (application of learned skills to social role-taking in the community setting); personal social-responsibility (self-direction and motivation to carry out tasks alone); social adjustment (reflecting aggressive, inappropriate interpersonal relationships); and personal adjustment (depicting behaviors that are autistic and disturbed, but not anti-social) (Lambert, 1981).

The adaptive behavior subscales on the ABES (independent variable in this study) are environmental/interpersonal behaviors (ability to interact with peers and to adapt to school and general community expectations), self-related behaviors (ability to accept consequences and responsibilities, self-help and independent functioning), task-related behaviors (work-study skills) (McCarney, 1983).

Specific research questions addressed in this study were: To what extent, did the ABES and the AAMD ABS-SE'predict achievement on the Stanford Achievement Test in a special education population; as well as, to what extent, if any did the DTLA-2 predict achievement on the SAT? In addition, an attempt was made to determine if there was a correlation between aptitude and adaptive behavior with achievement.

CHAPTER II

REVIEW OF THE LITERATURE

Information about individuals´ adaptive behavior levels, provides some idea of the types of maladaptive behavior that one may expect from them. If individuals have the capacity to engage in certain kinds of maladaptive behavior, they must have a certain level of behavioral competency (adaptive behavior). For example, in order to be verbally aggressive (e.g., curse), one must be able to talk. Thus, if it is known that a person curses, it can be assumed that he or she can speak; however, if it is only known that a person can speak, it cannot be assumed that he or she curses. In this case, the only thing that is certain is that the individual has the capacity to carry out this misbehavior (Roszkowski, Spreat, & Waldman, 1983).

The assessment of adaptive behavior has become a basic component in the evaluation of mental retardation in the public schools. The assessment of social functioning (ability to interact with peers and to adapt to school and general community expectations) is now manadatory and its significance is highlighted by landmark court cases [Larry P. v. Riles (1979), PASE v. Hannon (1980)] which have challenged the use of individual intelligence tests as the sole criterion for the assessment of mental retardation. The public school standardization of the American Association on Mental Deficiency´s Adaptive Behavior Scale (1979) appears to meet this need for complementary assessment procedures (Lambert, 1979).

The PARC (1972) and Mills (1972) court cases served to ensure a publicly supported, appropriate education for all handicapped children. However, most of the instruments available until 1973, that were used to measure adaptive behavior, had been standardized on institutionalized children rather than on retarded children attending regular public schools. Three of the more commonly used instruments available in 1973 were The Vineland Social Maturity Scale designed by Doll (1947); the Adaptive Behavior Scale (ABS) designed by Nihira, Foster, Shellhaas, and Leland (1969), and the Cain-Levine Social Competency Scale (CLSCS) designed by Cain, Levine, and Elzey (1963). These three instruments, together with the more recently published system of Multicultural Pluralistic Assessment (SOMPA) by Mercer and Lewis (1977), still constitute the most frequently used instruments designed to assess adaptive behavior. Only the SOMPA and the ABS (Public School Version) by Lambert, Windmiller, and Cole (1974) have normative data secured from public school children.

Adaptive Behavior and Interrater Reliability

The norms of the individuals' immediate social groups as well as those of their larger environments must be taken into account when evaluating adaptive behavior. Because of the multidimensional quality of adaptive behavior, measurement of adaptive behavior cannot be assumed to have taken place by the usual standardized procedures developed for the measurement of other constructs, such as achievement or intelligence. This lack of standardization in scale administration and scoring increases the importance of interrater reliability in establishing consistent results.

According to Stack (1984):

> There are several possible causes for problems with interrater reliabilities. Three of them were delineated by Isett and Spreat (1979): (a) differential interpretation of items or scoring criteria; (b) raters experiencing actual differences in behavior due to environmental settings (e.g., day shift/night shift) that evoke different behavioral requirements; and (c) raters experiencing actual differences in behavior as a function of the discriminative stimuli each interpersonal interaction brings, even in the same general environment. In addition to these causes, the method of administration may enhance or inhibit rater agreement (p. 397).

Stack (1984) further stated that three methods for completing adaptive behavior scales are:

> (a) rater observes the subject and completes the scale booklet (first party), (b) interviewer checks the item-by-item verbal responses of the rater (third party) or (c) the interviewer conducts a structured but informal conversation with the rater and subsequently completes the scale booklet (interview method). Although the authors of the ABS warn that results may vary according to method chosen, there has been no published research that defines possible differences. (p. 397).

Levels of rater agreement differ with the type of behavior being observed. For example, in Part One of the ABS (Public School Version), the higher agreements occur on Domains I through VII which are types of overt external behavior (e.g., toilet accidents) that are less prone to interpretation. The lower agreements on Domains VIII through X reflect the requirement of a social judgment, e.g., determining whether an individual is conscientious and responsible. It is within these domains that rater standards are open to personal values and that scores reflect the expectancy level of the raters. The lack of a definitional framework for these domains creates interpretive confusion, which is evidenced by the responses of raters who have agreed on exhibited behavior on early domains but not on later ones.

The types of behavior in Part Two are social-interactional in nature and based on one individual's relationship to another. Because there is no specific criterion of achievement, raters either set a uniquely defined standard or vascillate in their standard setting from item to item. The acting out behavior that results in higher agreements is most likely the result of common standard setting.

Interrater reliabilities on Part Two are also affected by the scoring method. Even if two raters agree that a certain behavior occurs, the one who describes it as frequent will provide twice the score value of his or her paired rater who describes it as only occasional. The range of scores affected by the frequency rating is very wide, therefore, contributing substantially to differences in interrater agreement scores.

In addition to the lack of a definitional standard or guideline for social interactional behavior that produces low levels of agreement for certain domains, two other possible factors exist: actual differences in subjects' behavior and rater bias (Stack, 1983).

As with prior indirect measures of adaptive behavior (Vineland Social Maturity Scale, the Cain-Levine Social Competency Scale and the Adaptive Behavior Scale) some concerns have been expressed concerning the reliance on a parental informant in the ABIC, particularly regarding the child's role in school (Goodman, 1979; Oakland, 1979).

Previous research with the Vineland Social Maturity Scale has indicated differences between parent and teacher reports. For example, the Vineland social quotients of retarded children attending a nursery school were consistent with their IQs when teachers were informants but were higher than their IQs when parents were informants (Zuk, 1959). Mothers of normal nursery school children rated their children significantly higher on the Vineland than did the teachers (Kaplan & Alatishe, 1976). In a more comprehensive study involving mothers and teachers of both retarded and normal preschool and adolescent children, Vineland scores from mothers were significantly higher than those from teachers regardless of whether the child was retarded or normal, a preschooler or an adolescent (Gutsch & Casse, 1970).

Similarly, research with the Cain-Levine Social Competency Scale and the Adaptive Behavior Scale-Part 1 has also demonstrated differences between parent and teacher reports. Parents of moderately and severely retarded children attending public school rated their children significantly higher than did teachers on the self-help dimension of the Cain-Levine on half of the subtests of the Adaptive Behavior Scale. In addition, teachers' rating did not exceed parents' in any subtest of either scale (Mealor & Richmond, 1980).

The divergence between parent and teacher reports suggests that the relationship of the rater to the child may influence the results of indirect measures of adaptive behavior (Wall & Paradise, 1981).

In a study conducted by Heath and Obrzut (1984), three measures of adaptive behavior were examined and compared. They were the Adaptive Behavior Inventory for Children (Mercer & Lewis, 1977), the Children's Adaptive Behavior Scale (Richmond & Kicklighter, 1980), and the more established Adaptive Behavior Scale-School Edition (ABS-SE) (Lambert, Windmiller, Tharinger, & Cole, 1981). The purpose of the Heath and Obrzut study was to examine the relationship among teachers', parents', and students' ratings of adaptive behavior for educable mentally retarded (EMR) children and slow-learning children across the three measures.

Parents, as opposed to teachers, rated the students as having better adaptive behavior skills. It is possible that the reliability of parents' self-reports is somewhat reduced due to their lack of objectivity. Because main effects for respondents (teachers vs. parents) were recorded only on several subscales of both the Adaptive Behavior Inventory for Children and the ABS, it is likely that no single instrument can accurately define such a broad concept as adaptive behavior (Adams, 1973; Baumeister & Muma, 1975). In addition, although tests might appear similar across adaptive instruments, there is no evidence to suggest that these subtests are equivalent. Although several instruments are labelled as "adaptive behavior" scales, it is likely that the developers of each measure tend to define the concept in a different manner.

Differences between the various instruments may be the result of categorical differences as noted by Bailey and Harbin (1980). They classified the ABS-Public School Version (now the ABS-School Edition) as a psychosocial measure, whereas the Adaptive Behavior Inventory for Children was classified as a social systems measure of adaptive behavior. Perhaps these categories are more distinct than initially realized, and there is a need to decide, prior to administration, just what type of information is desired.

In summary, assessment of children's adaptive behavior may be influenced greatly by the method of administration of the adaptive behavior scale, the levels of rater agreement with the type of behavior being observed, possibly due to the lack of a definitional standard for social interactional behavior, and the relationship of the informant to the child being assessed which may result in rater bias.

Gender and Ethnicity Differences in Adaptive Behavior

Not only is it important to determine the validity of the adaptive behavior scale for differentiating between handicapped and normally functioning children, but another major set of questions arises with respect to the extent to which differences in children's functioning as measured by the Adaptive Behavior Scale can be attributed to sex and/or ethnicity (Lambert, 1979).

Other investigators have also reported ethnic status differences in affective or emotional behavior as observed in school. Miller (1972), Swift and Spivack (1968), and Datta, Schaefer, and Davis (1968) analyzed the contribution of ethnic status to the measures of social and emotional adjustment. While black children in these studies were often rated as being less able to meet classroom demands, these differences in ratings did not persist when additional variables were introduced in the analysis. For example, a recent study by Lambert and Nicoll (in press) analyzed the unique and joint contribution of socioeconomic status and ethnic status to first- and second-grade reading achievement. They found that when socioeconomic status was controlled, ethnic status did not significantly contribute to reading achievement scores.

As one considers the results of the findings reported here, it is important to recall that the Adaptive Behavior Scale was developed from a systematic review of hundreds of behavioral statements reflecting aspects of independent functioning, personal and social responsibility, and personality factors associated with independent appraisal of adaptive behavior level. In the item development phase (Nihira, Foster, Shellhaas, & Leland, 1974), no attempt was made to eliminate items on which males and females or individuals of different ethnic groups performed differently. The fact that the results reported here fail to show consistent ethnic status or sex contributions to domain scores makes it possible to infer that differences in adaptive behavior assessments on this scale for pupils assigned to regular and EMR classes reflect real differences in adaptive behavior functioning that are relatively independent of sex and ethnicity (Lambert, 1979).

Relationship of Adaptive Behavior to Intelligence

Clausen (1972a) contended that the less than perfect correlations between IQ and the Vineland Social Maturity Scale are quite impressive if interpreted in light of the fact that the information on social maturity is typically obtained secondhand, from informants, rather than by direct measurement. Moreover, according to his analysis, marked differences between social competence and intelligence are the exception, rather than a general rule. Large discrepancies between intelligence and social competence usually occur at the extremes of the distribution, points at which scores are always less reliable, and, in effect, may be simply instances of measurement error.

A study by Roszkowski and Bean (1980) assessed the association between IQ and the ABS. Christian and Malone (1973), correlating Part I Total score with IQ among 129 institutionalized mentally retarded youngsters and young adults, reported a product moment coefficient of .75 between the two. The relationship of IQ to the Total Part II score, or to the individual domains, was not analyzed. Because adaptive behavior is said to be multi-dimensional, it is logical to assume that the correlation with IQ may vary by domain.

Guaranccia (1976), factor analyzing the domain ratings made on non-institutionalized mentally retarded adults, reported that IQ was highly related to the factor labelled Personal Independence, while it did not relate to the other three factors (Personal Responsibility, Productivity, and Social Responsibility). The domains that loaded most highly on the first factor were Independent Functioning, Economic Activity, Numbers and Time, Language Development, and Self-Direction.

In a factor analysis of the subdomains of the ABS, Nihira (1976) identifed only three factors; each factor was again differentially related to IQ. The correlations were as follows: .54 for Personal Self-Sufficiency, .68 for Community Self-Sufficiency, and .54 for Personal-Social Responsibility.

Previous research relating IQ to behavior measured by scales other than the ABS provides some additional expectations about IQ-ABS domain relationships. IQ has been demonstrated to be inversely related to stereotyped behaviors (Baumeister & Forehand, 1973), hyperactivity (Ross, 1972), and self-injurious behavior (Johnson, 1970). Data provided by Johnson (1970) indicated that, in general, the magnitude of association between independent living skills (such as measured by ABS Part I) and intelligence is much higher than that between intelligence and conduct disorders (such as measured by ABS Part II).

Part I of the ABS in that study bears a much stronger relationship to IQ than does Part II of the scale. That is, the correlation between IQ and Part I Total Score is large (.77) and of approximately the same magnitude as that reported by Christian and Malone (1973). The total Part II score, in contrast, shows only a low degree of association with IQ ($r=.22$). Furthermore, the average correlation for Part I domains ($r=.66$) is markedly larger than the average correlation for Part II domains ($r=.22$).

Numbers and Time, Economic Activity, and Language Development are the three domains that correlate most strongly with IQ, probably because they require many of the same intellectual skills typically measured by an IQ test. These three domains bear a high degree of association with the psycholinguistic abilities measured by the Illinois Test of Psycholinguistic Ability (ITPA).

Domains dealing with basic self-help skills, namely Independent Functioning and Domestic Activity, are also quite strongly correlated with IQ. As one may recall, Independent Functioning loaded highly on Guaranccia's (1976) Personal Independence factor, and this was the factor that was most strongly related to IQ.

The three domains on Part I that reportedly tap personality and motivation factors are the domains of Responsibility, Socialization, and Self-Direction. However, these three domains are only moderately (.52 to .63) related to IQ.

On Part II, the highest degrees of correlation between domain and IQ occur on the Psychological Disturbances, Antisocial Behavior, and Untrustworthy Behavior subscales. A look at the items comprising these subscales provides a clue as the reason for this. All three domains deal with problem behaviors that involve verbalization. The differences between Antisocial Behavior and Rebellious Behavior, in considering their correlation with IQ, probably is also attributable to linguistic ability. Rebellious Behavior items, while similar to those of the Antisocial Behavior domain, involve fewer verbal misbehaviors.

Stereotyped Behavior and Odd Mannerisms and Withdrawal are negatively correlated with IQ. The same is true for Self-Abusive Behavior and Hyperactive Tendencies. Although the latter two relationships are weak (-.12 to -.14), their magnitude is consistent with the literature (Johnson, 1970), relating hyperactivity and self-destructive behavior to IQ.

The Adaptive Behavior Evaluation Scale (ABES) was developed on the basis of the most commonly accepted definition of adaptive behavior (Grossman, 1973) and includes those educationally relevant behaviors which may be identified as contributing to more appropriate diagnosis, placement, and programming for students with behavioral, learning, and intellectual handicaps. The expectation is that the ABES will be used as a general measure of adaptive behavior with any student experiencing academic or behavioral difficulties regardless of the severity or suspected handicapping condition (McCarney, 1983).

As McLoughlin and Lewis (1981) stated, standardized rating scales are used to assess adaptive behavior. In addition, an adaptive behavior scale should provide results which correlate with and are easily compared to the most commonly used measures of intelligence. By using the standard scores provided and the Adaptive Behavior Quotient, the ABES also provides this information.

According to Salvia and Ysseldyke (1981) the three most important facets of content validity to consider are the appropriateness of the types of items included, the completeness of the item sample, and the way in which the items assess the content. To assure the integrity of the content validity, an item pool was created based on direct observation of adaptive behavior, a careful literature review, and the input from 73 educational diagnosticians and special education personnel. To assure the appropriateness of the items included in the scale, the overriding consideration used by all contributors was to identify those adaptive behaviors necessary for success in an educational setting which are not measured by academic skills testing.

In order to measure criterion-related validity, the ABES was compared to the Vineland Social Maturity Scale (Doll, 1965). Two of the ABES subscales (Environmental/Interpersonal and Self-Related) yielded coefficients exceeding the .001 level of confidence in correlation with the Vineland Social Maturity Scale. The Task-Related Subscale correlated significantly at the .05 level. The correlation for the total ABES and Vineland Social Maturity Scale was .64. In total, the obtained correlations for the ABES and Vineland were all statistically significant and exceeded the levels of acceptability (.30 to .35) considered necessary (Guilford, 1956).

Relative to psychometrics, Gronlund (1981) has observed that "tests designed to measure learning ability have traditionally been called intelligence tests" (p. 334), though today the term scholastic aptitude tests is preferred. This statement gives credence to the idea that the choice of aptitude or intelligence in the title of a mental ability test appears to depend upon the preference of the author. For example, even though Baker and Leland used aptitude in the title of their test, they left little doubt that in building the original Detroit Tests of Learning Aptitude their intention was to construct an intelligence test that could be used to estimate a person's overall and specific capacity to learn the kinds of information and skills necessary to do well in everyday life (Baker, 1959, 1975; Baker & Leland, 1967). Baker (1959) referred to the DTLA as being an intelligence test and stated that the terms aptitude and intelligence are essentially synonymous.

In summary, large discrepancies between intelligence and social competence usually occur at the extremes of the distribution. In general, the adaptive behaviors measured by Part I of the ABS showed relatively large associations (.50 to .77). ABS domain scores that correlated .7 or above with IQ included Independent Functioning, Economic Activity, Language Development, Numbers and Time, and Domestic Activity. In contrast, Part II domains, which deal primarily with conduct disorders, showed low to negligible association (-.38 to

.25) with IQ.

Adaptive Behavior and Its Relationship to Achievement

High academic achievement is a valued and meaningful goal for most elementary school children. It is valued in the sense that positive achievement behaviors are encouraged and rewarded by parents and other significant adults in a child's social network. Singer and Singer (1969) stated that achievement becomes the primary source of reinforcement as a child develops. Likewise, failure to achieve is considered undesirable and may be punished or disapproved (Sarason, et al., 1960). In short, American society is achievement oriented.

Achievement is meaningful because it conveys information about school children, specifically about individual differences in school learning that result from effects of various conditions in the schools (Bloom, 1972). Achievement is also related to children's overall mental health. A history of success in school has been associated with the lack of, and a kind of immunization against, mental illness (Stringer & Glidewell, 1967; Bloom, 1972; Torshen, 1969), whereas consistent failure has left children vulnerable to the development of maladaptive behavior patterns. Achievement, then, seems to indicate the general level of a child's functioning and well-being, especially in school-related-situations. Thus achievement should correlate with adaptive behavior measures.

On the ABS modest correlations were found between the skill ratings (reading, writing, and numbers and arithmetic) and the Community Self-Sufficiency factor (.35 to .48), suggesting a relationship between day-to-day classroom achievement and adaptive behavior (Lambert, 1981).

In a search of the literature the observation was made that in much of the reported research, the Stanford Achievement Test (SAT) (Kelley, Madden, Gardner, & Rudman, 1966) was the achievement criterion most frequently used at the end of first grade. According to Sattler (1982) the Stanford Achievement Test, Metropolitan Achievement Test, and Peabody Individual Achievement Test have correlations between the WRAT in the vicinity of .60 with various groups of children, including normal, learning disabled, economically deprived, and mentally retarded.

In summary, achievement becomes a source of reinforcement as a child develops. Consistent failure in school leaves children vulnerable to the development of maladaptive behavior patterns. Modest correlations (.35 to .48) between skills rating and the Community Self-Sufficiency factor of the ABS indicates a relationship between day-to-day classroom achievement and adaptive behavior. The SAT has correlations between the WRAT (.60) with learning disabled and mentally retarded children.

Recapitulation

The review of the related literature highlighted many problems inherent in the assessment of adaptive behavior. According to Stack (1984), most of the instruments available up until 1973 that were used to assess adaptive behavior had been standardized on institutionalized children rather than on retarded children attending regular public school.

Levels of interrater agreement differ with the type of behavior being observed. Higher agreements occur on the ABS in Domains I through VII which are types of overt external behavior. The lower agreements on Domains VIII through X require that respondents use social judgment. The lack of a definitional framework for these domains appears to create interpretive confusion. Furthermore, interrater reliabilities on Part Two also appear to be affected by the type of scoring method employed.

Wall and Paradise (1981) found that relationship of the rater to the child may influence the results of adaptive behavior measures. Parents, as opposed to teachers, rated the students as having better adaptive behavior skills. Given this finding, it is possible that parents' self-reports are somewhat biased.

Adams (1973) and Baumeister and Muma (1975) concluded that it is likely that no single instrument can accurately define such a broad concept as adaptive behavior since there is no evidence to suggest that subtests across adaptive behavior instruments are equivalent. Discrepancies between the various instruments may be the result of categorical differences as noted by Bailey and Harbin (1980).

Roszkowski and Bean (1980) stated that Clausen (1972s) contended:

> ...marked differences between social competence and intelligence and social competence usually occur at the extremes of the distribution, points at which scores are always less reliable, and, in effect, may be simply instances of measurement error (p. 452).

In a factor analysis of the subdomains of the ABS, Nihira (1976) noted correlations on the ABS with IQ of .54 for Personal Self-Sufficiency, .68 for Community Self-Sufficiency, and .54 for Personal-Social Responsibility. Nihira (1976) demonstrated that IQ is inversely related to stereotyped behavior, hyperactivity, and self-injurious behavior. Furthermore, the average correlation of the ABS with IQ for Part I domains ($r=.66$) is markedly larger than the average correlation for Part II domains ($r=.22$).

Finally, Stringer and Glidewell (1976), Bloom (1972), and Torshen (1969) found IQ to be one of the strongest predictors of achievement in all grades, sexes and ethnic groups. Consistent failure in school reportedly leaves children open to the development of maladaptive behaviors. Therefore, as noted previously, the present study was designed to establish a relationship between adaptive behavior and achievement.

CHAPTER III

METHOD

Hypotheses

The following null hypotheses were tested:

1. There is no statistically significant relationship among the independent variables (domain scores on the ABS-SE; subscale scores on the ABES; subtest scores on the DTLA-2) and the dependent variables (reading comprehension, vocabulary, listening comprehension, spelling, concepts of numbers, mathematics computation, social science on the SAT) in the total group (93 special education students).

2. There is no significant relationship between adaptive behavior as measured by the domain scores of the AAMD ABS-SE and adaptive behavior as measured by the subtest scores of the ABES.

3. There is no significant relationship between the scores on the ABES when rated by the classroom teacher and the scores of the ABES when rated by the classroom aide.

Subjects

The subjects in this study were 93 special education students in two schools (elementary and middle school) of a suburban school district comprised largely of lower to upper middle class families. About 40% of the families residing in the district are Jewish and the remaining 60% of the families are from a variety of ethnic groups. Non-Caucasian minority groups in the district include Orientals (10%)

and blacks (.6%). Those subjects selected for inclusion in the investigation had all been identified and placed by a consensus obtained at a multi-disciplinary staffing with prior testing completed by the psychologist and special education personnel.

At the elementary school, a total of 44 students served as subjects in the study. Eight (8) of these students were assigned to a primary self-contained LD/BD class (grades 1-2); six students were assigned to a primary self-contained LD/BD class (grades 2-3); eight students were assigned to a primary self-contained BD class (grades 1-2); six students were assigned to an intermediate self-contained BD class (grades 3-4); 16 students were assigned to a LD resorce room (grades 2-4).

At the middle school, a total of 49 students served as subjects in the study. Eight (8) of these students were assigned to a self-contained LD/BD class (grade 5); seven students were assigned to a self-contained LD class (grades 6-7); eight students were assigned to a LD resource room (grades 5-6); nine students were assigned to a self-contained LD class (grade 8); 17 students were assigned to a LD resource room (grades 7-8).

Procedure

With the exception of the eighth grade students who were tested in January, 1986, the Stanford Achievement Test was administered to all of the subjects in April, 1986. The investigator assessed all self-contained special education students on the DTLA-2 during the month of April, 1986. The LD resource teachers (n=10) administered the DTLA-2 to their students during the months of March-May, 1986.

Inservice training sessions were conducted by the investigator with all the special education personnel on the rating and scoring techniques to be employed on the AAMD ABS-SE and the ABES scales. Both the teachers (n=10) and the classroom aides (n=9) completed the adaptive behavior scales during the months of March-April, 1986. The classroom aides were asked to complete the ABES to verify interrater reliability on this particular adaptive behavior measure.

Of the 93 subjects tested and rated, SAT scores were not obtained from two students in the intermediate BD class. Because the SAT test is an instrument given in a group setting, these two subjects appeared unable to handle the completion of the SAT. However, scores on the DTLA-2 were obtained for these two subjects, as well as the adaptive behavior ratings by the teachers. Because no aide was assigned to the fifth-sixth grade resource room, no aides' rated scores were obtained on the ABES for this group.

Instrumentation

AAMD Adaptive Behavior Scale-School Edition: The ABS-SE is comprised of two parts. Part One measures intelligence, with nine domains assessing personal independence and areas such as economic activity, self-direction, responsibility, and independent functioning. The Part Two dimensions of personal adjustment and social adjustment are similar to the constructs of extraversion and introversion as described by Eysenck (1953). A similar typology was described by Hewitt and Jenkins (1946) and designated as extrapunitive versus intropunitive disorders in children with emotional problems. Correlations with IQ scores from several measures (Wechsler

Intelligence Scale for Children-Full Scale; WISC Verbal Scale; WISC Performance Scale; Stanford-Binet Intelligence Scale; Lorge-Thorndike Intelligence Test) were made with Regular, EMR, and TMR children. Lambert (1981) stated:

> On Part One domains, the magnitude of the relationship between IQ and domain scores range from low (.18 to .28) on Physical Development, Prevocational Activity, and Responsibility, to moderate (.32 to .63) on Independent Functioning, Economic Activity, Language Development, and Numbers and Time (p. 25).

Part Two of the AAMD ABS-SE is comprised of 12 domains. Lambert (1981) a low correlation (-.23 to .28) to exist between IQ and each of the 12 domain scores.

In looking at factor scores, the Community Self-Sufficiency factor has the highest correlation with IQ (.41 to .67). Correlations between IQ and the Personal Self-Sufficiency factor range from .27 to .40; correlations between IQ and the Personal-Social Responsibility factor ranges from .31 to .39; correlations between IQ and the Social Adjustment and Personal Adjustment factors are low, ranging from -.22 to .10.

Lambert (1981) also correlated the factor scores with the Stanford Achievement Tests in reading and mathematics and showed correlations of .25 to .20 respectively for Factor 1-Personal Self-Sufficiency; correlations of .52 to .53 on Factor 2-Community Self-Sufficiency; .47 to .44 on Factor 3-Personal-Social Responsibility; .32 to .31 on Factor 4-Social Adjustment; .20 to .21 on Factor 5-Personal Adjustment (Lambert, 1981).

<u>Adaptive Behavior Evaluation Scale (1983):</u> The ABES is a teacher report adaptive behavior scale taking approximately 30 minutes to

complete, and comprised of 60 items and three subscales (Environmental/Interpersonal Behaviors, Self-Related Behaviors, and Task-Related Behaviors). An Adaptive Behavior Quotient (quotient determined by adding the sum of the subscale standard scores and referring to the appropriate age group conversion table) provides a global representation of the child's overall adaptive behavior. Norms are included for students ages 4.5 years to 19 years.

McCarney (1983) reported reliability of .97, .88, and .93 respectively on the Environmental/Interpersonal Subscale, Self-Related Subscale, and the Task-Related Subscale. A Pearson Product Moment Correlation Coefficient of $r=.95$ ($p.<.01$, $n=79$) indicates a substantial degree of test-retest reliability. Inter-rater reliability was established by asking sets of two educators, equally familiar with the child, to rate 260 children with the ABES. The Pearson Product Moment Correlation Coefficients for the interrater activity showed coefficients ranging from .97 to .99 from all age levels.

McCarney (1983) compared the ABES to the Vineland Social Maturity Scale (Doll, 1965). Two of the ABES subscales (Environmental/Interpersonal and Self-Related) yielded coefficients exceeding the .001 level of confidence in correlation with the Vineland Social Maturity Scale. The Task-Related Subscale correlated significantly at the .05 level. The correlation for the total ABES and Vineland Social Maturity Scale was .64 ($p.<.001$).

Detroit Test of Learning Aptitude-2 (1985): The abilities measured by the DTLA-2 are considered to be developmental in nature, and are reported to tap abilities that are related to aptitude and academic performance. The DTLA-2 is comprised of 11 subtests and nine composite scores formed by combining different sets of subtest scores. The ninth composite, the Overall Aptitude Composite, represents the construct of general aptitude and is made up of all 11 subtests. As a global measure of intellect, this composite is usually the best single estimate of aptitude. The test takes approximately one hour to administer. Standard scores for the subtests are derived with a mean of 10 and a standard deviation of 3. The raw score means and standard deviations for the subtests were calculated at each six-month age interval between 6-0 and 17-11.

Relative to the DTLA-2 subtests, 88% of the alphas reach .80, the criterion for acceptable reliability; 38% attain .90, the optimal level. The coefficients for all the composites are greater than .90 (Hamill, 1985).

The DTLA-2 was correlated to the Wechsler Intelligence Scale for Children-Revised and the Peabody Picture Vocabulary Test. The coefficients showing the relationship between the subtests of the DTLA-2 and the criterion tests ranged from low (.38) to high (.76), the median correlation being moderate (.55). For the composites on the DTLA-2, the coefficients ranged from moderate (.54) to very high (.84), the median being high (.71).

The DTLA-2 was also correlated with the SRA Achievement Test. The subtests of the DTLA-2 showed correlations with reading ranging from .40 to .91, with mathematics ranging from .44 to .86, and with language ranging from .42 to .76. The composite scores showed correlations with reading ranging from .67 to .91, with mathematics ranging from .70 to .84, and with language ranging from .63 to .75.

Stanford Achievement Test (1983): Testing for the fall standardization and the two equating programs took place from September 28--October 16, 1981. Approximately 250,000 pupils from 300 districts participated in the fall standardization, with 20,000 in each of the equating programs. The mid-year standardization was conducted with 15,000 kindergarten and grade 1 pupils from January 25 to February 12, 1982. The spring standardization took place from April 26 to May 14, 1982, with 200,000 students participating in the program. All students, except kindergartners, took the Otis-Lennon School Ability Test as well as the Stanford.

The samples were chosen to represent the national population in terms of school system enrollment, geographic region, SES status, and public versus non-public affiliation.

The internal consistency reliability, which presents Kuder-Richardson Formula #20 coefficients, indicates that the coefficients range between .90 to .99 for all subtests as well as composite scores. The alternate forms reliability coefficients range from .76 to .90 indicating excellent reliability on this achievement test. The raw scores on each test and on several totals can be translated into grade equivalents, percentile ranks, stanines, scaled scores, and content cluster performance categories.

Design and Statistical Analysis

The overall analytic paradigm related to the investigation at hand is presented below:

Adaptive Behavior

ABSE-SE ABEST ABESA

Aptitude Achievement

(DTLA-2) (SAT)

Seven (7) subtests of the SAT [reading comprehension (RC), vocabulary (VOC), listening comprehension (LC), spelling (SP), concepts of numbers (CN), mathematics computation (MC), and social sciences (SOC)] comprised the dependent variables. The independent variables consisted of numerous total and subtest scores obtained from the adaptive behavior measures [AAMD ABSE-SE, ABES (rated by the teachers), ABES (rated by the aides)], and the aptitude measure (DTLA-2).

To test the first null hypothesis, backward elimination multiple regression procedures were run on the dependent variables of the DTLA-2. Then, backward elimination multiple regression procedures were run on the dependent variables with the inclusion of all the independent variables of the AAMD-SE. Finally, all the independent variables of the ABES were included in the backward elimination procedures with the dependent variables. Also backward elimination multiple regression procedures were run on the dependent variables with the inclusion of the entire 34 independent variables.

To test the second null hypothesis, backward elimination multiple regression procedures were run on the dependent variables (ABEST 1 - ABEST 3) with the inclusion of all the independent variables of the AAMD ABS-SE.

To test the third null hypothesis a correlation ratio was obtained as a measure of association between the five dependent variables on the ABES rated by the aide, and the five independent variables on the ABES rated by the teacher.

CHAPTER IV

RESULTS

The dependent variables used in this study were seven of eleven subtests of the Stanford Achievement Test (1983). They were reading comprehension (RC), vocabulary (VOC), listening comprehension (LC), spelling (SP), concepts of numbers (CN), mathematics computation (MC), and social sciences (SOC). The four subtests not included were mathematics application, word study skills, language, and science. The rationale for the exclusion of these four subtests was that these particular subtests are not given at all grade levels. An N > 90 would not have been maintained if these subtests scores had been included. It is important to note that the raw scores were used rather than grade equivalents, percentiles, and stanines. Raw scores provide information about the relative performance of students, while percentile ranks, stanines, and grade equivalents indicate a student's relative standing in a reference group.

The independent variables used in this study were the raw scores obtained on 20 of the 21 domains of the AAMD-SE (1981). They were Domain 1-Independent Functioning (D1), Domain 2-Physical Development (D2), Domain 3-Economic Activity (D3), Domain 4-Language Development (D4), Domain 5-Numbers and Time (D5), Domain 6-Prevocational Activity (D6), Domain 7-Self-Direction (D7), Domain 8-Responsibility (D8), Domain 9-Socialization (D9), Domain 10-Aggressiveness (D10), Domain

11-Antisocial vs. Social Behavior (D11), Domain 12-Rebelliousness (D12), Domain 13-Trustworthiness (D13), Domain 14-Withdrawal vs. Involvement (D14), Domain 15-Mannerisms (D15), Domain 16-Appropriateness of Interpersonal Manners (D16), Domain 17-Acceptability of Vocal Habits (D17), Domain 18-Acceptability of Habits (D18), Domain 19-Activity Level (D19), Domain 20-Symptomatic Behavior (D20). Domain 21-Use of Medications was not included because only five students were using any type of medication on a regular basis.

From the Detroit Tests of Learning Aptitude (DTLA-2), standard scores for the 11 subtests were also used as independent variables. They were Subtest 1-World Opposites (SUB 1), Subtest 2-Sentence Imitation (SUB 2), Subtest 3-Oral Direction (SUB 3), Subtest 4-Word Sequences (SUB 4), Subtest 5-Story Construction (SUB 5), Subtest 6-Design Reproduction (SUB 6), Subtest 7-Object Sequences (SUB 7), Subtest 8-Symbolic Relations (SUB 8), Subtest 9-Conceptual Matching (SUB 8), Subtest 10-Word Fragments (SUB 10), and Subtest 11-Letter Sequences (SUB 11).

From the Adaptive Behavior Evaluation Scale (1983), the standard scores for the three subscales were used as independent variables. They were Environmental Interpersonal Behaviors (ABEST 1), Self-Related Behaviors (ABEST 2), and Task-Related Behaviors (ABEST 3). Only the scores derived from ratings on the ABES by the classroom teacher were used in testing null Hypotheses I and II. The scores derived from ratings on the ABES by the classroom aide were used in testing null Hypothesis III. These scores were reported as ABESA 1, ABESA 2, and ABESA 3. A complete summary of all the dependent and independent variables used in this study are presented in Appendix A.

To test the first null hypothesis, backward elimination multiple regression analysis was performed on each dependent variable. The predictor variables which were entered in the multiple regression equation were previously described (see Appendix B for details). To test the second null hypothesis, backward elimination multiple regression analysis was performed on the standard scores of the ABEST 1, ABEST 2, and ABEST 3, used as dependent variables. The predictor variables, which were entered into the multiple regression procedure for those dependent variables were the domain scores of the 20 domains of the AAMD ABS-SE.

Finally, to test the third null hypothesis, product moment correlation coefficients were obtained from correlations between the scores derived on the ABEST 1, ABEST 2, ABEST 3; and from scores derived on the ABESA 1, ABESA 2, and ABESA 3.

Results Related to Testing Null Hypothesis 1

The first null hypothesis states that there is no significant relationship between the independent variables (domain scores on the ABS-SE; subscale scores on the ABES; subtest scores on the DTLA-2) and the dependent varables (reading comprehension, vocabulary, listening comprehension, spelling, concepts of numbers, mathematics computation, social science on the SAT) in the total group (93 special education students).

A correlation ratio was obtained as a measure of association between each independent variable from the DTLA-2, AAMD ABS-SE, and the ABES and each dependent variable of the SAT. The Pearson correlations and correlation ratios were also run on the total group of 93 subjects. The correlation matrices for the total group, showing intercorrelations between all of the dependent variables and the independent variables in this hypothesis are presented in Appendix B.

First, in Procedure I, backward elimination multiple regression procedures were run on the dependent variables with the inclusion of all the independent variables of the DTLA-2. Then, backward elimination multiple regression procedures were run on the dependent variables with the inclusion of all the independent variables of the AAMD-SE. Finally, all the independent variables of the ABES were included in the backward elimination procedures with the dependent variables. To substantiate the predictability of the variables included in the multiple regression equation, a final check was initiated in Procedure II by running backward elimination multiple regression procedures on all the dependent variables with the inclusion of the total 34 independent variables. Statistically one would expect that at least a few of the predictor variables would differ in the two procedures. The table presented in Appendix C shows the results of the two procedures. These results verify the predictability of the independent variables that were included in the multiple regression equations from Procedure I. That is to say that many of the same independent variables proved to be predictor variables in the multiple regression equation in both Procedures I and II.

<u>Dependent Variable 1-READING COMPREHENSION:</u> Table 1 shows that

Table 1

Results of Backward Elimination Regression for the Independent Variables on the AAMD ABS-SE and the Dependent Variable RC

Variables in Equation	Corr. With Dep. Var.	Beta Weights	Sig. of Beta
D2	.272	-0.935	.0994
D3	.323	0.424	.0797
D4	.472	1.767	.0001
D8	-.001	-0.942	.0409
D9	.071	-1.070	.0036
D11	-.292	-0.683	.0002
D16	-.140	-3.344	.0042
D18	-.203	1.716	.0173

R	R2	F Sig. of R
.681	.465	.0001

for the total group 46.5 percent of the variability for the dependent variable RC is accounted for by eight of the predictor variables D2, D3, D4, D8, D9, D11, D16, and D18 (multiple R = .681). This is a moderately strong measure of the association between this set of independent variables and the dependent variables. All of the beta weights of the predictor variables in the equation, except the beta weights of D2 and D3 are statistically significant (greater than zero at the .05 level of significance). Even though the beta weights of D2 and D3 are not themselves significant at the .05 level, taken in combination with the other predictor variables in the model, they account for a significant amount of variability in the dependent variable. The variable D16 has the largest beta weight and is approximately three times as large as the other variables in the equation. Even though D4 has the highest intercorrelation with the dependent variable, and has the most statistically significant beta weight, it only has approximately the same size beta weight as D18. The variables D2, D8, D9, D11, and D16 are negatively weighted.

All variables in the model met the SAS criteria for statistical significance at the .1000 in order to remain in the model. The beta weights of the variables not included in the equation (D1, D5, D6, D7, D10, D12, D13, D14, D15, D17, D19, D20), would not significantly improve the prediction equation, since they appear to be intercorrelated with the other independent variables in the equation.

Table 2 shows that for the total group, nearly 40 percent of the variability for the dependent variable RC is accounted for by four of the predictor variables SUB 1, SUB 5, SUB 8, and SUB 10 (multiple R =

.634). This is a moderately strong measure of association between this set of independent variables and the dependent variable. Two of the beta weights (SUB 1, SUB 10) are statistically significant. Even though the beta weights of SUB 5 and SUB 8 are not themselves significant at the .05 level, taken in combination with the other predictor variables in the model, they account for a significant amount of variability in the dependent variable. The beta weight of SUB 10 is approximately twice as large as SUB 5 and SUB 8 and is the statistically most significant predictor variable.

Table 2

Results of Backward Elimination Regression for the Independent Variables on the DTLA-2 and the Dependent Variable RC

Variables in Equation	Corr. with Dep. Var.	Beta Weights	Sig. of Beta
SUB 1	.421	1.199	.0132
SUB 5	.190	.659	.0804
SUB 8	.375	.912	.1546
SUB 10	.484	1.911	.0001

R	R2	F Sig. of R
.681	.403	.001

All variables in the model met the SAS criteria for statistical significance at the .1000 level in order to remain in the model. The beta weights of the variables not included in the equation (SUB 2, SUB

3, SUB 4, SUB 6, SUB 7, SUB 9) would not significantly improve the prediction equation, since they appear to be intercorrelated with the other independent variables in the equation.

Backward elimination for ABEST 1 through ABEST 3 with the dependent variable RC could not be completed as none of the variables met the .1500 significance level for entry into the model.

Dependent Variable 2-VOCABULARY: Table 3 shows that for the total group approximately 40 percent of the variability for the dependent variable VOC is accounted for six of the predictor variables D4, D6, D11, D17, D18, and D20 (multiple R = .635). This is a moderately strong measure of association between this set of independent variables and the dependent variable. All of the beta weights are statistically significant. The beta weight of D17 is approximately twice as large as the other predictor variables in the equation. Even though the beta weight of D4 is only the fourth largest in size of the predictor variables, the beta weight of D4 has the greatest level of statistical significance. The beta weights of D6, D17, and D18 are negatively correlated.

All variables in the model met the SAS criteria for statistical significance at the .1000 level in order to remain in the model. The beta weights of the variables not included in the equation (D1, D2, D3, D5, D7, D8, D9, D10, D12, D13, D14, D15, D16, D19) would not significantly improve the prediction equation, since they appear to be intercorrelated with the other independent variables in the equation.

Table 4 shows that for the total group nearly 44 percent of the variability for the dependent variable VOC is accounted for by two of

Table 3

Results of Backward Elimination Regression for the Independent Variables on the AAMD ABS-SE and the Dependent Variable VOC

Variables in Equation	Corr. With Dep. Var.	Beta Weights	Sig. of Beta
D4	.475	0.559	.0001
D6	-.063	-0.776	.0441
D11	.117	0.202	.0474
D17	-.207	-1.435	.0044
D18	-.139	-0.828	.0342
D20	.044	0.210	.0535

R	R2	F Sig. of R
.635	.404	.0001

the predictor variables SUB 1 and SUB 6 (multiple R = .663). This is a moderately strong measure of association between this set of independent variables and the dependent variable. Both of the beta weights are statistically significant. However, the beta weight of SUB 1 is of much greater statistical significance than the beta weight of SUB 6. The beta weight of SUB 1 also is approximately three times as large as SUB 6.

Table 4

Results of Backward Elimination Regression for the Independent Variables on the DTLA-2 and the Dependent Variable VOC

Variables in Equation	Corr. with Dep. Var.	Beta Weights	Sig. of Beta
SUB 1	.631	4.37	.0001
SUB 6	.423	1.383	.0123

R	R2	F Sig. of R
.663	.440	.001

All variables in the model met the SAS criteria for statistical significance at the .1000 level in order to remain in the model. The beta weights of the variables not included in the equation (SUB 2, SUB 3, SUB 4, SUB 5, SUB 7, SUB 8, SUB 9, SUB 10, SUB 11) would not significantly improve the prediction equation, since they appear to be intercorrelated with the other independent variables in the equation.

Backward elimination for ABEST 1 through ABEST 3 could not be completed because none of the variables met the .15 significance level for entry into the model.

Dependent Variable 3-LISTENING COMPREHENSION: Table 5 shows that for the total group approximately 44 percent of the variability for the dependent variable LC is accounted for by eight of the predictor variables D3, D4, D8, D9, D13, D15, D16, D17 (multiple r = .670). This is a moderately strong measure of association between this set of independent variables and the dependent variable. All of the beta weights except D3 are statistically significant. Even though the beta weights of D3 and D8 are not themselves significant at the .05 level, taken in combination with the other predictor variables in the model, they account for a significant amount of variability in the dependent variable. The beta weights of D16 and D17 are approximately the same size and are negatively weighted. The beta weights of D8 and D9 are also approximately the same size and are negatively weighted.

All variables in the model met the SAS criteria for statistical significance at the .1000 level in order to remain in the model. The beta weights of the variables not included in the equation (D1, D2, D5, D6, D7, D10, D11, D12, D14, D18, D19, D20) would not significantly improve the prediction equation, since they appear to be intercorrelated with the other independent variables in the equation.

Table 6 shows that for the total group, 45 percent of the variability for the dependent variable LC is accounted for by four predictor variables SUB 1, SUB 2, SUB 8, SUB 10 (multiple R = .675). This is a moderately strong measure of association between this set of independent variables and the dependent variable. All of the beta

Table 5

Results of Backward Elimination Regression for the Independent Variables on the AAMD ABS-SE and the Dependent Variable LC

Variables in Equation	Corr. With Dep. Var.	Beta Weights	Sig. of Beta
D3	.370	0.310	.1027
D4	.514	0.746	.0001
D8	-.029	-0.439	.0685
D9	.170	-0.424	.0243
D13	-.054	0.506	.0443
D15	-.104	0.833	.0199
D16	-.195	-1.501	.0083
D17	-.206	-1.378	.0104

R	R2	F Sig. of R
.670	.449	.0001

weights of the variables in the equation except SUB 8 are statistically significant. Even though the beta weight of SUB 8 is not significant in itself at the .05 level, taken in combination with the other predictor variables in the model, it accounts for a significiant amount of variability in the dependent variable. The beta weight of SUB 1 is approximately twice as large as the others in the equation and is also the most statistically significant beta weight of the predictor variables in the equation. The beta weights of SUB 8 and SUB 10 are approximately the same size.

Table 6

Results of Backward Elimination Regression for the Independent Variables on the DTLA-2 and the Dependent Variable LC

Variables in Equation	Corr. With Dep. Var.	Beta Weights	Sig. of Beta
SUB 1	.592	1.010	.0001
SUB 2	.469	0.512	.0146
SUB 8	.394	0.406	.0670
SUB 10	.326	0.406	.0333

R	R2	F Sig. of R
.675	.456	.0001

All variables in the model met the SAS criteria for statistical significance at the .1000 level in order to remain in the model. The beta weights of the variables not included in the equation (SUB 3, SUB

4, SUB 5, SUB 6, SUB 7, SUB 9, SUB 11) would not significantly improve the prediction equation, since they appear to be intercorrelated with the other independent variables in the equation.

Backward elimination for ABEST 1 through ABEST 3 could not be completed because none of the variables met the .1500 significance level for entry into the model.

Dependent Variable 4-SPELLING: Table 7 shows that for the total group 54 percent of the variability for the dependent variable SP is accounted for by eight of the predictor variables D1, D3, D4, D6, D8, D9, D15, D17 (multiple R = .739). This is a moderately strong measure of association between this set of independent variables and the dependent variable. All of the beta weights except D1 and D9 of the variables in the equation are statistically significant. Even though the beta weights of D1 and D9 are not themselves significant at the .05 level, taken in combination with the other predictor variables in the model, they account for a significant amount of variability in the dependent variable. The variable D15 has the largest beta weight. However, the beta weights of D15 and D6 are approximately the same size. The beta weights of D4 and D8, respectively, are also approximately the same size. Even though the beta weight of D4 is only the fourth largest beta weight, it is satistically more significant than the other predictor variables in the equation. The variables D1, D9, and D17 are all negatively weighted.

All variables included in the model met the SAS criteria for statistical significance at the .1000 level in order to remain in the model. The beta weights of the variables not included in the equation

Table 7

Results of Backward Elimination Regression for the Independent Variables on the AAMD ABS-SE and the Dependent Variable SP

Variables in Equation	Corr. With Dep. Var.	Beta Weights	Sig. of Beta
D1	.392	-0.197	.0629
D3	.499	0.726	.0002
D4	.466	0.827	.0001
D6	.378	1.724	.0013
D8	.204	0.806	.0183
D9	.152	-0.489	.0756
D15	-.061	1.728	.0002
D17	-.272	-2.454	.0002

R	R2	F Sig. of R
.739	.547	.0001

(D2, D5, D7, D10, D11, D12, D13, D14, D16, D18, D19, D20) would not significantly improve the prediction equation, since they appear to be intercorrelated with the other independent variables in the equation.

Table 8 shows that for the total group nearly 38 percent of the variability for the dependent variable SP is accounted for by two of the predictor variables SUB 8 and SUB 10 (multiple R = .619). The beta weight of SUB 10 is statistically significant. Even though the beta weight of SUB 8 is not significant at the .05 level, taken in combination with the other predictor variable in the model, they both account for a significant amount of variability in the dependent variable. The beta weight of SUB 10 is the largest in the equation, is approximately three times as large as SUB 8, and is of greater statistical significance than the beta weight of SUB 8.

Table 8

Results of Backward Elimination Regression for the Independent Variables on the DTLA-2 and the Dependent Variable SP

Variables in Equation	Corr. With Dep. Var.	Beta Weights	Sig. of Beta
SUB 8	.225	0.555	.0767
SUB 10	.602	1.950	.0001

R	R2	F Sig. of R
.619	.384	.001

All variables included in the model met the SAS criteria for statistical significance at the .1000 level in order to remain in the model. The beta weights of the variables not included in the equation (SUB 2, SUB 3, SUB 4, SUB 5, SUB 6, SUB 7, SUB 9) would not significantly improve the prediction equation, because they appear to be intercorrelated with the other independent variables in the equation.

For the total group, five percent of the variability for the dependent variable SP is accounted for by one of the predictor variables ABEST 3 (multiple R = .242). The beta weight of ABEST 3 is statistically significant.

Table 9

Result of Backward Elimination Regression for the Independent Variables on the ABES and the Dependent Variable SP

Variables in Equation	Corr. With Dep. Var.	Beta Weights	Sig. of Beta
ABEST 3	.244	1.081	.0196

R	R2	F sig. of R
.242	.059	.0001

The variable included in the model met the SAS criteria for statistical significance at the .1000 level in order to remain in the model. No other variables (ABEST 1 and ABEST 2) met the .1500 significance level for entry into the model.

Dependent Variable 5-CONCEPTS OF NUMBERS: Table 10 shows that

Table 10

Results of Backward Elimination Regression for the Independent Variables on the AAMD ABS-SE and the Dependent Variable CN

Variables in Equation	Corr. With Dep. Var.	Beta Weights	Sig. of Beta
D2	.172	0.597	.0646
D4	.181	0.362	.0216
D5	.010	-1.090	.0343
D11	.110	0.546	.0008
D12	-.085	-0.783	.0001
D20	-.033	0.268	.0170

R	R2	F Sig. of R
.523	.274	.0001

for the total group approximately 27 percent of the variability for the dependent variable CN is accounted for by six of the predictor variables D2, D4, D5, D11, D12, D20 (multiple R = .523). All of the beta weights are statistically significant except for D2. Even though the beta weight of D2 is not significant at the .05 level, taken in combination with the other predictor variables in the model, it accounts for a significant amount of variability in the dependent variable. The beta weight of D5 is approximately twice as large as the other predictor variables. Even though D12 is only the second largest beta weight in the equation, D12 is the most statistically significant predictor variable. The beta weights of D5 and D12 are negatively weighted.

All variables included in the model met the SAS criteria for statistical significance at the .1000 level in order to remain in the model. The beta weights of the variables not included in the equation (D1, D3, D6, D7, D8, D9, D10, D13, D14, D15, D16, D17, D18, D19) would not significantly improve the prediction equation, since they appear to be intercorrelated with the other independent variables in the equation.

Table 11 shows that for the total group, 40 percent of the variability for the dependent variable CN is accounted for by three predictor variables SUB 1, SUB 5, and SUB 7 (multiple r = .637). This is a moderately strong measure of association between this set of independent variables and the dependent variable. All of the beta weights of the predictor variables in the equation are statistically significant. The beta weight of SUB 1 is the largest of the variables and the most statistically significant of all the predictor variables in the equation.

Table 11

Results of Backward Elimination Regression for the Independent Variables on the DTLA-2 and the Dependent Variable CN

Variables in Equation	Corr. With Dep. Var.	Beta Weights	Sig. of Beta
SUB 1	.502	1.108	.0001
SUB 5	.387	0.704	.0003
SUB 7	.328	0.410	.0346

R	R2	F Sig. of R
.681	.406	.0001

All of the variables included in the model met the SAS criteria for statistical significance at the .1000 level in order to remain in the model. The beta weights of the variables not included in the equation (SUB 2, SUB 3, SUB 4, SUB 6, SUB 8, SUB 9, SUB 10, SUB 11) would not significantly improve the prediction equation, since they appear to be intercorrelated with the other independent variables in the equation.

Table 12 shows that for the total group three percent of the variability for the dependent variable CN is accounted for by one of the predictor variables ABEST 1 (multiple r = .176). The beta weight is not statistically significant.

Table 12

Results of Backward Elimination Regression for the Independent Variables on the ABES and the Dependent Variable CN

Variables in Equation	Corr. With Dep. Var.	Beta Weights	Sig. of Beta
ABEST 1	.178	0.431	.0914

R	R2	F Sig. of R
.176	.031	.0001

The variable included in the model met the SAS criteria for statistical significance at the .1000 level in order to remain in the model. No other variables (ABEST 2 and ABEST 3) met the .1500 significance level for entry into the model.

Dependent Variable 6-MATH COMPUTATION: Table 13 shows that for the total group 24 percent of the variability for the dependent variable MC is accounted for by five of the predictor variables D4, D12, D18, D16, D20 (multiple R = .507). All of the beta weights of the predictor variables except D13 are statistically significant. Even though the beta weight of D13 is not significant at the .05 level, taken in combination with the other predictor variables in the model, it accounts for a significant amount of variability in the dependent variable. The beta weight of D16 is three times as large as the other variables in the equation. The beta weights of D12 and D16 are negatively weighted.

Table 13

Results of Backward Elimination Regression for the Independent Variables on the AAMD ABS-SE and the Dependent Variable MC

Variables in Equation	Corr. With Dep. Var.	Beta Weights	Sig. of Beta
D4	.196	0.538	.0013
D12	-.075	-0.409	.0231
D13	.164	0.833	.0664
D16	-.240	-2.607	.0041
D20	.041	0.402	.0111

R	R2	F Sig. of R
.507	.245	.0001

All variables in the model met the SAS criteria for statistical significance at the .1000 level in order to remain in the model. The beta weights of the variables not included in the equation (D1, D2, D3, D5, D6, D7, D8, D9, D10, D11, D14, D15, D17, D18, D19) would not significantly improve the prediction equation, because they appear to be intercorrelated with the other independent variables in the equation.

Table 14 shows that for the total group 22 percent of the variability for the dependent variable MC is accounted for by three of the predictor variables SUB 1, SUB 5, and SUB 7 (multiple R = .469). All of the beta weights of the three predictor variables except for SUB 7 are statistically significant. Even though the beta weight of SUB 7 is not significant at the .05 level, taken in combination with the other predictor variables in the model, it accounts for a significant amount of variability in the dependent variable. The beta weight of SUB 1 is approximately twice as large as the other predictor variables, and has the greatest degree of statistical significance. None of the beta weights of the predictor variables is negatively weighted.

Table 14

Results of Backward Elimination Regression for the Independent Variables on the DTLA-2 and the Dependent Variable MC

Variables in Equation	Corr. With Dep. Var.	Beta Weights	Sig. of Beta
SUB 1	.375	1.122	.0022
SUB 5	.270	0.559	.0453
SUB 7	.287	0.486	.0918

R	R2	F Sig. of R
.469	.220	.0001

All the variables included in the model met the SAS criteria for statistical significance at the .1000 level in order to remain in the model. The beta weights of the variables not included in the equation (SUB 2, SUB 3, SUB 4, SUB 6, SUB 8, SUB 9, SUB 10, SUB 11) would not significantly improve the prediction equation, because they appear to be intercorrelated with the variables in the equation.

Table 15 shows that for the total group 8.6 percent of the variability for the dependent variable MC is accounted for by one of the predictor variables ABEST 2 (multiple R = .293). The beta weight of the predictor variable is statistically significant.

Table 15

Results of Backward Elimination Regression for the Independent Variables on the ABES and the Dependent Variable MC

Variables in Equation	Corr. With Dep. Var.	Beta Weights	Sig. of Beta
ABEST 2	.293	0.971	.0050

R	R2	F Sig. of R
.293	.086	.0001

The variable included in the model met the SAS criteria for statistical significance at the .1000 level in order to remain in the model. No other variables (ABEST 1 and ABEST 3) met the .1500 significance level for entry into the model.

Dependent Variable 7-SOCIAL SCIENCES: Table 16 shows that for the total group 58 percent of the variability for the dependent variable SOC is accounted for by five of the predictor variables D3, D4, D9, D15, D17 (multiple R = .761). This is a moderately strong measure of association between this set of independent variables and the dependent variable. All of the beta weights of the five predictor variables in the equation are statistically significant. The variable D17 has the largest beta weight of all the predictor variables in the equation. Variables D3 and D15 have approximately the same beta weight. Even though the beta weight of D4 is only the fourth largest beta weight, it has the highest intercorrelation with the dependent

Table 16

Results of Backward Elimination Regression for the Independent Variables on the AAMD ABS-SE and the Dependent Variable SOC

Variables in Equation	Corr. With Dep. Var.	Beta Weights	Sig. of Beta
D3	.313	1.142	.0001
D4	.542	0.995	.0001
D9	.106	-0.603	.0224
D15	-.041	1.306	.0103
D17	-.158	-2.028	.0036

R	R2	F Sig. of R
.761	.593	.0001

variable and the greatest statistical significance of all the other predictor variables in the equation. The beta weights of variables D9 and D17 are negatively weighted.

All the variables included in the model met the SAS criteria for statistical significance at the .1000 level in order to remain in the model. The beta weights of the variables not included in the equation (D1, D2, D5, D6, D7, D8, D10, D11, D12, D13, D14, D16, D18, D19, D20) would not significantly improve the prediction equation, since they appear to be intercorrelated with the other independent variables in the equation.

Table 17 shows that for the total group 37 percent of the variability for the dependent variable SOC is accounted for by two of the predictor variables SUB 1 and SUB 10 (multiple R = .625). This is a moderately strong measure of association between this set of independent variables and the dependent variable. All of the beta weights of the two predictor variables in the equation are statistically significant and approximately of the same size and of the same degree of statistical significance.

Table 17

Results of Backward Elimination Regression for the Independent Variables on the DTLA-2 and the Dependent Variable SOC

Variables in Equation	Corr. With Dep. Var.	Beta Weights	Sig. of Beta
SUB 1	.442	1.562	.0001
SUB 10	.511	1.735	.0001

R	R2	F Sig. of R
.625	.391	.0001

All the variables in the model met the SAS criteria for statistical significance at the .1000 level in order to remain in the model. The beta weights of the variables not included in the equation (SUB 2, SUB 3, SUB 4, SUB 5, SUB 6, SUB 7, SUB 8, SUB 9, SUB 11) would not significantly improve the prediction equation, since they appear to be intercorrelated with the other independent variables in the equation.

The backward elimination for ABEST 1 through ABEST 3 could not be completed because none of the variables met the .1500 significance level for entry into the model.

The results reported above are summarized in Table 18. Taken together, the findings indicate relationships between adaptive behavior and aptitude on each of the seven dependent variables, thus leading to the rejection of the first null hypothesis. That is to

Table 18

Summary of Predictor Variables for Each Dependent Variable

Dependent Variable	Independent Variables AAMD ABS-SE	DTLA-2	ABEST
READING	6 D2	2 SUB 1	
COMPREHENSION	8 D3	4 SUB 5	
	2 D4	3 SUB 8	
	5 D8	1 SUB 10	
	4 D9		
	7 D11	R = .634	
	1 D16	R2 = .403	
	3 D18	F Sig. of	
	R = .681	R = .0001	
	R2 = .465		
	F Sig. of		
	R = .0001		
VOCABULARY	4 D4	1 SUB 1	
	3 D6	2 SUB 6	
	6 D11	R = .663	
	1 D17	R2 = .440	
	2 D18	F Sig. of	
	5 D20	R = .0001	
	R = .635		
	R2 = .404		
	F Sig. of		
	R = .0001		
LISTENING	8 D3	1 SUB 1	
COMPREHENSION	4 D4	2 SUB 2	
	7 D8	3 SUB 8	
	6 D9	4 SUB 10	
	5 D13	R = .675	
	3 D15	R2 = .456	
	1 D16	F Sig. of	
	2 D17	R = .0001	
	R = .670		
	R2 = .449		
	F Sig. of		
	R = .0001		

Table 18 (continued)

Dependent Variable	Independent Variables AAMD ABS-SE	DTLA-2	ABEST
SPELLING	8 D1 6 D3 4 D4 3 D6 5 D8 7 D9 2 D15 1 D17 R = .739 R2 = .547 F Sig. of R = .0001	2 SUB 8 1 SUB 10 R = .619 R2 = .384 F Sig. of R = .0001	1 ABEST 3 R = .242 R2 = .059 F Sig. of R = .0196
CONCEPT OF NUMBERS	3 D2 5 D4 1 D5 4 D11 2 D12 6 D20 R = .523 R2 = .274 F Sig. of R = .0001	1 SUB 1 2 SUB 5 3 SUB 7 R = .637 R2 = .406 F Sig. of R = .0001	1 ABEST 1 R = .176 R2 = .031 F Sig. of R = .0914
MATH COMPUTATION	3 D4 4 D12 2 D13 1 D16 5 D20 R = .507 R2 = .245 F Sig. of R = .0001	1 SUB 1 2 SUB 5 3 SUB 7 R = .469 R2 = .220 F Sig. of R = .0001	1 ABEST 2 R = .293 R2 = .086 F Sig. of R = .0050

Table 18 (Continued)

Dependent Variable	Independent Variables AAMD ABS-SE	DTLA-2	ABEST
SOCIAL SCIENCES	3 D3 4 D4 5 D9 2 D15 1 D17 R = .761 R2 = .593 F Sig. of R = .0001	2 SUB 1 1 SUB 10 R = .625 R2 = .391 F Sig. of R = .0001	

Note. The numbers preceding the predictor variables indicate the relative importance of the beta weights in the regression equation. For example, for the dependent variable READING COMPREHENSION, D16 had the highest beta weight and D3 had the lowest.

say, there were significant relationships with many of the predictor variables of the AAMD ABS-SE, the DTLA-2 and some of the predictor variables of the ABES with the seven dependent variables of the SAT which leads to the rejection of the null hypothesis. In summary, eight independent variables of the AAMD ABS-SE, four independent variables of the DTLA-2 and none of the independent variables of the ABES showed a significant correlation with the dependent variable reading comprehension (RC). Six of the independent variables of the AAMD-ABS-SE, two of the independent variables of the DTLA-2, and none of the independent variables of the ABES correlated with the dependent variable vocabulary (VOC). Eight of the independent variables of the AAMD ABS-SE, four independent variables of the DTLA-2 and none of the variables of the ABES correlated with the dependent variable listening comprehension (LC). Eight of the independent variables of the AAMD ABS-SE, two of the independent variables of the DTLA-2 and one of the independent variables of the ABES correlated with the dependent variable spelling (SP). Six of the independent variables of the ABS-SE, three independent variables of the DTLA-2, and one of the independent variables of the ABES correlated with the dependent variable concept of numbers (CN). Five of the independent variables of the AAMD ABS-SE, three of the independent variables of the DTLA-2, and one of the independent variables of the ABES correlated with the dependent variable math computation (MC). Five of the independent variables of the ABS-SE, two of the independent variables of the DTLA-2, and none of the variables of the ABES correlated with the dependent variable social sciences (SOC).

Results Relating to Testing Null Hypothesis 2

The second null hypothesis states that there is no significant relationship between adaptive behavior as measured by the domain scores of the AAMD ABS-SE and adaptive behavior as measured by the subscale scores of the ABES (rated by the teacher). To test this null hypothesis, a correlation ratio was obtained as a measure of association between each independent variable and each dependent variable. The Pearson correlations and correlation ratios were run on the total group of 93 subjects. The correlation matrices for the total group, showing intercorrelations between all of the dependent variables and independent variables used for this hypothesis are presented in Appendix D. Finally, backward elimination multiple regression procedures were run on the three dependent variables of the ABES with the inclusion of all the independent variables of the AAMD ABS-SE.

Dependent Variable 1-ABEST 1: Table 19 shows that for the total group 48 percent of the variability for the dependent variable ABEST 1 is accounted for by five of the predictor variables D8, D9, D12, D14, D19 (multiple R = .692). This is a moderately strong measure of the association between this set of independent variables and the dependent variable. All of the beta weights of the predictor variables in the equation except D9 are statistically significant. Even though the beta weight of D9 is not significant at the .05 level, taken in combination with the other predictor variables in the model, it accounts for a significant amount of variability in the dependent variable. The beta weight of D12 is the largest of the predictor

Table 19

Results of Backward Elimination Regression for the Independent Variables on the AAMD ABS-SE and the Dependent Variable ABEST 1

Variables in Equation	Corr. With Dep. Var.	Beta Weights	Sig. of Beta
D8	.255	0.185	.0502
D9	.396	0.136	.0604
D12	-.538	-0.101	.0057
D14	-.443	-0.148	.0276
D19	-.535	-0.448	.0184

R	R2	F Sig. of R
.692	.480	.0001

variables and is approximately three times as large as the other variables in the equation. The beta weights of D8, D9, D19, and D14 are approximately the same size. Even though the beta weight of D8 is the smallest of all the beta weights in the equation, it has the largest intercorrelation with the dependent variable and the greatest statistical significance of all the predictor variables. The beta weights of D12, D14, and D19 are negatively weighted.

All variables in the model met the SAS criteria for statistical significance at the .1000 level in order to remain in the model. The beta weights of the variables not included in the equation (D1, D2, D3, D4, D5, D10, D13, D15, D16, D17, D18, D20), would not significantly improve the prediction equation, since they appear to be intercorrelated with the other independent variables in the equation.

Dependent Variable 2-ABEST 2: Table 20 shows that for the total group, nearly 35.7 percent of the variability for the dependent variable ABEST 2 is accounted for by five of the predictor variables D3, D6, D8, D12, D14 (multiple R = .597). All of the beta weights of the predictor variables in the equation except D12 are statistically significant. Even though the beta weight of D12 is not significant at the .05 level, taken in combination with the other predictor variables in the model, it accounts for a significant amount of variability in the dependent variable. The beta weight of D6 is the largest of predictor variables and is approximately twice the size of the other beta weights in the equation. Even though the beta weights of D3 and D14 are approximately the same size, the beta weight of D3 has the greatest statistical significance of all the other predictor variables

Table 20

Results of Backward Elimination Regression for the Independent Variables on the AAMD ABS-SE and the Dependent Variable ABEST 2

Variables in Equation	Corr. With Dep. Var.	Beta Weights	Sig. of Beta
D3	.051	-0.137	.0057
D6	.318	0.429	.0069
D8	.255	0.202	.0374
D12	-.538	-0.066	.0664
D14	-.443	-0.152	.0188

R	R2	F Sig. of R
.597	.357	.0001

in the equation. The beta weights of D3, D12, and D14 are negatively weighted.

All variables in the model met the SAS criteria for statistical significance at the .1000 level in order to remain in the model. The beta weights of the variables not included in the equation (D1, D2, D4, D5, D7, D9, D10, D11, D13, D15, D16, D17, D19, D20), would not significantly improve the prediction equation, since they appear to be intercorrelated with the other independent variables in the equation.

Dependent Variable 3-ABEST 3: Table 21 shows that for the total group 35.8 percent of the variability for the dependent variable ABEST 3 is accounted for by three of the predictor variables D6, D7, D8 (multiple R = .598). All of the beta weights of the predictor variables in the equation except D7 are statistically significant. Even though the beta weight of D7 is not significant at the .05 level, taken in combination with the other predictor variables in the model, it accounts for a significant amount of variability in the dependent variable. The beta weight of D8 is the largest of the predictor variables and has the greatest statistical significance of all the other variables in the equation.

Table 21

Results of Backward Elimination Regression for the Independent Variables on the AAMD ABS-SE and the Dependent Variable ABEST 3

Variables in Equation	Corr. With Dep. Var.	Beta Weights	Sig. of Beta
D6	.318	0.236	.0542
D7	.100	0.071	.0854
D8	.255	0.372	.0001

R	R2	F Sig. of R
.593	.358	.0001

All variables in the model met the SAS criteria for statistical significance at the .1000 level in order to remain in the model. The beta weights of the variables not included in the equation (D1, D2, D3, D4, D5, D10, D11, D12, D13, D14, D15, D16, D17, D18, D19, D20), would not significantly improve the prediction equation, since they appear to be intercorrelated with the variables in the equation.

The results reported above are summarized in Table 22. Taken together, the findings indicate relationships between adaptive behavior as measured on the domains of the AAMD ABS-SE and adaptive behavior as measured by the subscales of the ABES, thus leading to the rejection of the second null hypothesis. In summary, five independent variables of the AAMD ABS-SE correlated with the dependent variable ABEST 1. Five independent variables of the AAMD ABS-SE correlated

Table 22

Summary of Predictor Variables for Each Dependent Variable

Dependent Variable	Independent Variables
ABEST 1	2 D8
	4 D9
	5 D12
	3 D14
	1 D19
	R = .692
	R2 = .480
	F Sig. of R = .0001
ABEST 2	4 D3
	1 D6
	2 D8
	5 D12
	3 D14
	R = .597
	R2 = .397
	F Sig. of R = .0001
ABEST 3	2 D6
	4 D7
	1 D8
	3 D9
	R = .593
	R2 = .358
	F Sig. of R = .0001

with the dependent variable ABEST 2. Finally, four of the independent variables of the AAMD ABS-SE correlated with the dependent variable ABEST 3. These findings taken together, lead to the rejection of the second null hypothesis.

Results Relating to the Testing of Null Hypothesis 3

The third null hypothesis states that there is no relationship between the scores on the ABES when rated by the classroom teacher or on the scores of the ABES when rated by the classroom aide. To test this null hypothesis, a correlation ratio was obtained as a measure of association between each independent variable and each dependent variable. The correlation matrices for the total group, showing intercorrelations between all of the dependent variables and independent variables are listed in Table 23.

Table 23 shows that there are moderately strong correlations between the dependent variable ABESA 1 and the independent variables ABEST 2, ABESTT, and ABQT. There are moderately strong correlations between the dependent variable ABESA 2 and the independent variables ABEST 2 and ABQT. There are also moderately strong correlations between the dependent variable ABESA 3 and the independent variable ABQT. There are moderately strong correlations between the dependent variable ABESAT and the independent variables ABEST 1, ABEST 2, ABESTT, and ABQT. There are moderately strong correlations between the dependent variable ABQA and the independent variables ABEST 1, ABEST 2, ABESTT, and ABQT. All of these moderately strong correlations were significant at the .0001 level.

These findings indicate relationships between ratings of adaptive

Table 23

Correlation Coefficients and Statistical Significance of ABES (Rated by the Aide) and the ABES (Rated by the Teacher)

	ABEST 1	ABEST 2	ABEST 3	ABESTT	ABQ
ABESA 1	.6653	.4995	.2817	.6092	.6256
	.0001*	.0001*	.0090	.0001*	.0001*
ABESA 2	.4623	.6634	.2803	.5936	.6079
	.0001*	.0001*	.0092	.0001*	.0001*
ABESA 3	.4555	.4514	.4891	.5787	.6039
	.0001*	.0001*	.0001*	.0001*	.0001*
ABESAT	.6184	.6223	.3986	.6876	.7088
	.0001*	.0001*	.0002	.0001*	.0001*
ABQA	.6153	.6087	.4048	.7832	.7086
	.0001*	.0001*	.0001*	.0001*	.0001*

*Significant at the .0001 level of significance.

behavior on the ABES by the aide and ratings of adaptive behavior on the ABES by the teacher, thus leading to the rejection of the third null hypothesis. In summary, the highest intercorrelations were between the adaptive behavior quotient rated by the teacher and the adaptive behavior quotient rated by the aide. There were moderately strong correlations between the Environmental Interpersonal Behaviors rated by the teacher and rated by the aide. There also were moderately strong correlations between Self-Related Behaviors rated by the teacher and by the aide. There were only low correlations or agreement between the teacher and the aide on the subtest Task-Related Behaviors.

CHAPTER V

DISCUSSION

This chapter presents a discussion of the results related to testing each of the three null hypotheses. In this section, an integration of the findings of this study will be made with similar findings that were cited in Chapter 2-Review of the Related Literature. The reader is encouraged to check with Appendix A for clarification of the abbreviations that were used for the independent and dependent variables in this study. Tables 25-27 of this chapter provide a comparative summary is listed for the predictor variables with each of the dependent variables. Table 18 in Chapter IV contains an additional summary of predictor variables with each dependent variable, presented in a different format from Tables 24-27. In addition, a general discussion related to the findings, and suggestions for future research is presented.

Discussion Related to Null Hypothesis 1

The first null hypothesis states that there is no statistically significant relationship among the independent variables (domain scores on the AAMD ABS-SE; subscale scores on the ABES; subtest scores on the DTLA-2) and the dependent variables (reading comprehension, vocabulary, listening comprehension, spelling, concepts of numbers, mathematics computation, social science on the SAT) in the total group (93 special education students).

<u>Dependent Variable 1-READING COMPREHENSION:</u> The first dependent variable which was examined as a measure of achievement was Reading Comprehension (RC). Twenty predictor variables (Domains 1-20 of the AAMD ABS-SE) were entered into the backward elimination multiple regression procedure. For the total group, 46.5 percent of the variability for the dependent variable RC was accounted for by eight of the predictor variables D2, D3, D4, D8, D9, D11, D16, and D18. The variable D16 had the largest beta weight (-3.344). However, D4 had the largest intercorrelation with the dependent variable and accounted for the greatest amount of variability in the dependent variable. Interestingly, the variables D2, D8, D9, D11, and D16 were negatively weighted. In other words, a low score on one of these domains correlated with a high reading comprehension score. For example, D16 deals with inappropriate interpersonal manners. If a student exhibits few or none of these inappropriate behaviors, he or she will receive a low score on this domain. Because domain 16 had the largest beta weight this finding indicated that children who exhibit more appropriate interpersonal manners may tend to make better gains in reading comprehension achievement. D4 (the Language Development Domain) deals with verbal and written expression, reading comprehension and verbal instructions, as well as social language development. This particular domain, as mentioned before, had the highest intercorrelation with the dependent variable and the most statistically significant beta weight probably because D4 is tapping many of the same areas as the dependent variable RC. This finding is substantiated in a study by Roszkowski and Bean (1980) who found that

the domains of Numbers and Time, Economic Activity, and Language Development correlated most strongly with IQ. These three domains bear a high degree of association with the psycholinguistic abilities measured by the Illinois Test of Psycholinguistic Ability (ITPA). Domain 8 deals with general responsibility and responsibility for personal belongings. This domain was negatively weighted meaning that a low score, (e.g., a 2 indicating usually dependable, usually takes care of personal belongings) correlated with a high score on reading comprehension. The majority (75%) of the teachers who responded to these particular items (item 48 and item 49) tended to give the more conservative rating of 2 (usually dependable, or usually takes care of personal belongings) rather than a 3 which denotes that a child is very dependable or very conscientious. This fact coupled with the number of children who were rated as unreliable and unable to carry out responsibility at all (1 or 0) may account for the negative beta weight indicating that a lower score on this domain correlated with a higher score on the dependent variable of RC. The Domain 9 (Socialization) subscale deals with cooperation, consideration for others, awareness of others, interaction and participation in group activities. A high score on Domain 9 should correlate with a high score on RC. The results here appeared to indicate that even children who had difficulty with socialization (as indicated by low scores on D9) still seemed to achieve high scores in RC resulting in the negatively weighted beta. This could be related to the fact that children attending school in the district, as a whole, scored above stanine seven (above-average range) on the Stanford Achievement Tests in reading comprehension. Roszkowski and Bean (1980) found similarly, that the personality-motivation factors--Responsibility, Socialization, and Self-Direction are only moderately related to IQ. Domain 11 (Antisocial vs. Social Behavior) had a negative beta weight which showed that low score on this domain indicated less involvement with teasing, gossiping, manipulating of others, using angry language and disrupting activities. Such a child had high scores on reading comprehension. Domain 18 (Acceptability of Habits) deals with strange and unacceptable habits. It was negatively intercorrelated with the dependent variable but not negatively weighted. A low score on this domain subscale indicated that none of the strange behaviors were exhibited. The results of the present study show that a low score on this domain correlated with a high score on RC. Roswkowski and Bean (1980) also found that there was a high degree of correlation between domain and IQ scores occurring on Psychological Disturbances, Antisocial Behavior, and Untrustworthy Behavior because all three domains deal with problem behaviors that involve verbalization. Finally, two of the domains whose beta weights were not statistically significant (D2 nd D3) were of particular interest. The beta weight of D2 was negatively correlated indicating that if a child had no problems with hearing or vision the score correlated with a high score on reading comprehension. Also, on Domain 3 the results indicated a child who received a high score on being able to handle and budget money had a high score on RC. Guaranccia (1976) similarly reported that IQ was highly related to Independent Functioning, Economic Activity, Number and Time, Language Development and Self-Direction.

A second set of predictor variables was entered into the backward elimination multiple regression procedure. These were the 11 subtests of the DTLA-2. For the total group, nearly 40 percent of the variability for the dependent variable RC was accounted for by four of the predictor variables SUB 1, SUB 5, SUB 8, and SUB 10. SUB 10 had the largest beta weight (1.911), had the highest intercorrelation with the dependent variable, and was the most statistically significant variable of the other predictor variables in the equation. SUB 1 (Word Opposites) measures a highly complex vocabulary ability. SUB 5 (Story Construction) measures the ability to conceptualize and express a cogent story that is appropriate to the presented pictures. SUB 8 (Symbolic Relations) measures nonverbal conceptual ability. SUB 10 (Word Fragments) is a closure function requiring the examinee to read aloud a series of words that are printed with varying elements missing (Hamill, 1985). All of these subtests taken together accounted for 40 percent of the variability in the dependent variable. However, the beta weights of D5 and D8 (Story Construction and Symbolic Relations) were not statistically significant at the .05 level, but taken together with SUB 1 and SUB 10 appeared to be good predictors of achievement ($R = .634$) in reading comprehension. The results of this study indicated that high scores on SUB 1 and SUB 10 (Word Opposites and Word Fragments) correlated with high scores on RC on the SAT. Hamill (1980) reported similar findings in a study where the DTLA-2 was correlated with the SRA Achievement Test. The correlation coefficients for Word Fragments, Word Opposites, Story Construction and Symbolic Relations with reading were $R = .62, .91, .43$, and $.70$.

Finally, none of the variables on the ABES could be entered into the backward elimination regression equation because none of the variables met the .1500 significance level for entry into the model. This appeared to indicate that none of the subtests of the ABES was a good predictor of reading comprehension.

Dependent Variable 2-VOCABULARY: Vocabulary (VOC) was the second dependent variable used to measure achievement. The 20 domains of the AAMD ABS-SE were entered into the regression procedure. For the total group approximately 40 percent of the variability for the dependent variable VOC was accounted for by six of the predictor variables D4, D6, D11, D17, D18, and D20. The beta weight of D4 was the most statistically significant (.0001). This domain deals with language development and correlated the most with the dependent variable. The results indicated that a high score on Language Development (D4) would predict a high score on Vocabulary on the SAT. Similar findings were reported by Christian and Malone (1973) and Guaranccia (1976) relating high scores on IQ with high scores on the domain of Language Development. The beta weight of Domain 6 (Prevocational Activity) was negatively weighted indicating that a low score on such items as performing a job requiring use of tools, taking care of tools, or supplies, being absent from school or grumbling about school or work correlated with a high score on VOC. Even though the children in the study exhibited some difficulty with these areas of attitude, they still were able to achieve high scores on VOC. This fact could again be attributed to the middle class suburban school district in which this study took place and in which the district as a whole achieved above the national norms (50th percentile). The beta weights of D17 and D18 (Acceptability of Vocal Habits and Acceptability of Habits) were negatively weighted, indicating that in this study children who did not exhibit strange and unacceptable oral and physical habits had high scores on reading achievement in the area of Vocabulary. Roszkowski and Bean (1980) similarly reported a negative correlation of -.30 on Acceptability of Habits and IQ.

Finally, the 11 subtests of the DTLA-2 were entered into the backward elimination regression procedure. For the total group nearly 44 percent of the variability for the dependent variable VOC was accounted for by two of the predictor variables (SUB 1 and SUB 6). The beta weight of SUB 1 was 4.373, three times greater than that of SUB 6 and was of much greater significance than SUB 6. Word Opposites (SUB 1) requires that not only must the examinees comprehend the meaning of a stimulus word that is spoken aloud to them, they must also respond orally with a word that means the exact opposite of that word. This task reportedly requires a highly complex vocabulary ability. In the present study, a high score on this subtest was a good predictor for high scores on the vocabulary section of the SAT. SUB 6 (Design Reproduction) required that individuals depend heavily upon their memory abilities, showing their competence in recalling pictorial stimuli by drawing them from memory. In the present study, children who had high scores on this subtest, scored high on the subtest Vocabulary on the SAT. Similar findings were reported by Hamill (1985). When comparing Word Opposites and Design Reproduction with the Language subtest of the SRA Achievement Test, Hamill indicated the correlation coefficients were .76 and .38.

Backward elimination regression procedures for the ABES could not be completed because none of the variables met the .1500 significance level for entry into the model. In the present study, this indicated that the ABES did not appear to be an acceptable predictor of reading achievement as related to vocabulary development.

Dependent Variable 3-LISTENING COMPREHENSION: Listening Comprehension was the third dependent variable used to measure achievement. The 20 predictor variables of the AAMD ABS-SE were entered into the regression procedure. For the total group approximately 44 percent of the variability for the dependent variable LC was accounted for by eight of the predictor variables D3, D4, D8, D9, D13, D15, D16, and D17. The beta weights of D16 and D17 were approximately the same size (the largest of the beta weights) and were negatively weighted. These findings indicated that children who exhibited few inappropriate interpersonal manners and disturbing vocal habits had high scores on Listening Comprehension. The beta weights of D8 and D9 were also negatively weighted indicating that even though children in this study were rated as being less responsible and had problems with interacting with others, they still achieved high scores on listening comprehension. The beta weight of Domain 15 (Mannerisms) was the third largest of the predictor variables (.833) and was not negatively weighted. This means that in the present study children who had fewer stereotypical or odd mannerisms had high scores on listening comprehension. Baumeister and Forehand (1973) similarly reported that IQ has been demonstrated to be inversely related to stereotyped behaviors of the ABS. Even though the beta weights of D3 and D4 were not significant at the .05 level of statistical significance, it appeared in the present study that children who handled and budgeted money well and were rated high in language development, taken in combination with the other predictor variables, scored well on listening comprehension.

Finally, the 11 subtests of the DTLA-2 were entered into the regression procedure with the dependent variable Listening Comprehension. For the total group, 45 percent of the variability for the dependent variable LC was accounted for by four predictor variables SUB 1, SUB 2, SUB 8, and SUB 10. The beta weight of SUB 1 was approximately twice the size of the other predictor variables and the most statistically significant. Once again, it should be noted that the subtest Word Opposites involves a highly complex vocabulary ability. In the present study, high scores on this skill were an excellent predictor of high ability in Listening Comprehension as measured on the SAT. SUB 2 (Sentence Imitation) requires that examinees fall back on their knowledge of syntax to help facilitate their memory of the sentences. A high score on this ability subtest correlated with a high score on Listening Comprehension. Children who scored well on SUB 10 (Word Fragments), a closure function, also scored well on Listening Comprehension. Even though the beta weight of SUB 8 (Symbolic Relations) was not significant at the .05 level, taken in combination with the other predictor variables in the equation, it helped to account for a significant amount of the variability ($R = .675$) in Listening Comprehension. This finding indicated that the memory ability required to recall pictorial stimuli was also helpful in problems requiring Listening Comprehension.

Again, backward elimination for the ABES could not be completed because none of the variables met the .1500 significance level for entry into the model. In the present study, this finding indicated that there is little relationship between adaptive behavior as measured on the ABES and listening comprehension as measured on the SAT.

Dependent Variable 4-SPELLING: Spelling was the fourth dependent variable used to measure achievement. The 20 predictor variables of the AAMD ABS-SE were entered into the regression procedure. For the total group, 54 percent of the variability for the dependent variable was accounted for by eight of the predictor variables D1, D3, D4, D6, D8, D9, D15, and D17. The variable D17 had the largest beta weight and was negatively weighted (-2.454). These findings indicated that children who had few disturbing vocal speech habits had high scores on the spelling subtest of the SAT. The beta weights of D6 and D15 were approximately the same size (1.724 and 1.728). This finding indicated that children who had a high score on school job performance and school work habits did well on spelling. However, on Domain 15 children who exhibited high scores in stereotypical behaviors also had high scores on spelling. From this finding, one might conclude that in the present study odd or peculiar mannerisms did not appear to influence spelling achievement. The beta weight of D8 was .806 and indicated that students who were rated higher in general responsibility scored well on spelling achievement. Again D3

(Economic Activity), which deals with the handling of money, appeared to be a good predictor of achievement as indicated by the significance of the beta weight at the .0002 level of statistical significance. Similarly, Gully and Hosch (1979) found that the two domains (Numbers and Time and Economic Activity) defined the primary function that differentiated between children classified as nonretarded, educable retarded, and trainable retarded. These two domains were reported as correlating the most strongly with IQ. Even though the beta weights of D1 and D9 were not statistically significant at the .05 level of significance, taken in combination with the other predictor variables, Independent Functioning (D1) and Socialization (D9) were found to contribute to the variability of the dependent variable spelling. Independent Functioning loaded highly on Guaranccia's (1976) Personal Independence factor, and this was the factor that was most strongly related to IQ.

The 11 predictor variables of the DTLA-2 were entered into the regression procedure. For the total group, nearly 38 percent of the variability for the dependent variable spelling was accounted for by two of the predictor variables SUB 8 and SUB 10. The beta weight of SUB 10 was approximately three times as large as SUB 8 and was significant at the .0001 level of significance. SUB 10 (Word Fragments) requires the examinee to read aloud a series of words that are printed with varying elements missing. Children who achieved high scores on this subtest also scored well on the spelling subtest of the SAT. The beta weight of SUB 8 was not significant at the .05 level of significance. This subtest, Symbolic Relations, measures nonverbal conceptual ability. Taken in combination with Word Fragments (Symbolic Relations) contributed to the variability of the dependent variable spelling. Similarly, Hamill (1985) reported moderate correlations (.60 and .53) for Word Fragments and Symbolic Relations when correlated with the Language subtest of the SRA Achievement Test.

Finally, the three predictor variables of the ABES were entered into the regression procedure. For the total group, five percent of the variability for the dependent variable SP was accounted for by one of the predictor variables ABEST 3. This finding appeared to indicate that high scores on task related behaviors, such as task focus, task completion, following directions, and classroom participation correlated with high scores on the spelling subtest of the SAT.

Dependent Variable 5-CONCEPTS OF NUMBERS: Concepts of Numbers was the fifth dependent variable used to measure achievement. The 20 predictor variables of the AAMD ABS-SE were entered into the regression procedure. For the total group approximately 27 percent of the variability for the dependent variable CN was accounted for by six of the predictor variables D2, D5, D11, D12, and D20. The beta weight of D5 is approximately twice as large as the other predictor variables, but was negatively weighted. This finding appears to be a contradiction since both the dependent variable and the predictor variable were assumed to be measuring numerical ability. However, to achieve a high score on Domain 5 (Numbers and Time) the student was rated a 5 (the highest score on item 37) if he or she could do simple addition and subtraction. Also, high points were given for knowing how to tell time to the minute and for knowing time concepts such as the days of the week, etc. Concepts of numbers on the SAT dealt with more complex problems. Therefore, it appears possible that a child could receive a high score on Domain 5 (Numbers and Time) while receiving a low score on Concepts of Numbers on the SAT. The beta weight of D12 was negatively weighted and statistically significant at the .0001 level of significance. This finding indicated that children who were rated as exhibiting less rebellious acts, such as ignoring regulations and routines, as well as resisting the following of instructions or orders, received high scores on the subtest of Concepts of Numbers on the SAT. The beta weight of D20 (Symptomatic Behavior) was not negatively weighted, but was statistically significant at the .0170 level. This finding indicated that children who had high scores on reacting poorly to criticism and to frustration, as well as demanding excessive attention received high scores on Concepts of Numbers as measured by the SAT. Therefore, in the present study, frustration did not appear to influence math scores as measured by the Concepts of Numbers subtest. The Domain of Language Development (D4) had a beta weight of .362 with significance at the .0216 level. High scores on Language Development correlated with high scores on Concepts of Numbers. Even though the beta weight of D2-Physical Development was not statistically significant at the .05 level of significance, when taken in combination with the other predictor variables, Physical Development contributed to the variability of the dependent variable Concept of Numbers. Again, the findings of this study are similar to the findings of other studies (Gully & Hosch, 1979; Guaranccia, 1976; Roszkowski & Bean, 1980) which found that the domains of Number and Time, Economic Activity and Language Development were the three domains that correlated most strongly with IQ.

Next, the 11 predictor variables of the subtests of the DTLA-2 were entered into the regression procedure. For the total group, 40 percent of the variability for the dependent variable CN was accounted for by three predictor variables SUB 1, SUB 5, and SUB 7. The beta weight of SUB 1 was the largest and most statistically significant of the predictor variables in the equation (1.108). This finding indicated that high scores on Word Opposites, which reportedly measures a highly complex vocabulary ability, correlated with high scores on Concepts of Numbers. High scores on SUB 5 and SUB 7 (Story Construction and Object Sequences) correlated with high scores on Concept of Numbers. Story Construction measures the ability to conceptualize and express a coherent story that is appropriate to the presented pictures, while Object Sequences measures visual memory where examinees had to demonstrate their knowledge about the series of objects by giving a motor response. Similarly, Hamill (1985) reported correlations of .83 and .47 on Word Opposites and Object Sequences when correlated with the Math subtest of the SRA Achievement Test.

Finally, the three predictor variables of the ABES were entered into the regression procedure. For the total group three percent of the variability for the dependent variable CN was accounted for by one of the predictor variables (ABEST 1). However, this beta weight was not statistically significant. This finding indicated that there is a weak relationship between high scores on the Environmental/

Interpersonal subtest and Concept of Numbers on the SAT.

Dependent Variable 6-MATH COMPUTATION: Math Computation was the sixth dependent variable used to measure achievement. The 20 predictor variables of the AAMD ABS-SE were entered into the regression procedure. For the total group 24 percent of the variability for the dependent variable MC was accounted for by five of the predictor variables D4, D12, D18, D16 and D20. The beta weight of D16 was three times as large as the other variables in the equation and was negatively weighted. This finding showed that a low score on Domain 16 (indicating few inappropriate interpersonal manners), correlated with a high score on mathematics computation. The beta weight of D12 was also negatively weighted indicating that children who had low scores on rebellious activities, such as being absent or late for activities and misbehaving in group settings, had high scores on mathematics computation. According to Roszkowski and Bean (1980) on Part II the highest correlation between IQ and the domains of the ABS are between Psychological Disturbances, Antisocial Behavior, and Untrustworthy Behavior. These domains correlate well with IQ because all three problem behaviors involve verbalization. The difference between Antisocial Behavior and Rebellious Behavior regarding the extent of their correlation with IQ is reportedly attributable to facility with language. Rebellious Behavior items, while similar to those of the Antisocial Behavior domain, involve fewer verbal misbehaviors. Once again, Domain 4 (Language Development) was positively related to math. Usually, Domains 13 and D20 would be expected to be negatively weighted. Domain 13 (Trustworthiness) deals with lying, cheating, and the taking of others property. Low scores on this domain would be expected to correlate with high scores on the dependent variable. Interestingly, this was not the case in the present study. The positively weighted beta weight in this case could be interpreted as a low score on Domain 13 (indicating trustworthiness) correlated with a low score on mathematics computation. Thus, trustworthiness would not necessarily be a good predictor of math computation. The same could be true of Domain 20 (Symptomatic Behavior). The finding that the beta weight is positively weighted could be interpreted as meaning that low scores on behaviors such as reacting poorly to criticism and frustration correlated with low scores on math computation resulted in a positive beta weight. Therefore, it appeared that Symptomatic Behaviors (D20) was not a good predictor of achievement in mathematics computation.

Next, the predictor variables of the 11 subtests of the DTLA-2 were entered into the regression procedure. For the total group, 22 percent of the variability for the dependent variable MC was accounted for by three of the predictor variables SUB 1, SUB 5, and SUB 7. The beta weight of SUB 1 is approximately twice as large as the other predictor variables, and has the greatest degree of statistical significance. Again, Word Opposites (SUB 1) correlated significantly with math, as it did with Concepts of Numbers. The beta weight of SUB 5 (.559) was positively weighted. This finding indicated that high scores on Story Construction correlated with high scores on Math Computation. Even though SUB 7 (Object Sequences) was not significant at the .05 level, taken in combination with the other predictor variables, Object Sequences accounted for significant variability in Math Computation. Hamill (1985) reported similar findings. Word Opposites had a correlation coefficient of .83 when correlated with the math subtest of the SRA, while Object Sequences had a correlation coefficient of .47 when correlated with the math subtest.

Finally, the three predictor variables of the ABES were entered into the regression procedure. For the total group 8.6 percent of the variability for the dependent variable MC was accounted for by one of the predictor variables ABEST 2 (Self-Related Behaviors). This beta weight (.971) was statisticlly significant at the .005 level of significance. This finding indicated that high scores on the ability to accept consequences and responsibilities, as well as the ability to maintain oneself in the environment relative to self-help and independent functioning, correlated with high scores on Math Computation.

Dependent Variable 7-SOCIAL SCIENCES: Social Science was the seventh dependent variable used to measure achievement. Twenty predictor variables of the AAMD ABS-SE were entered into the regression procedure. For the total group 58 percent of the variability for the dependent variable SOC was accounted for by five of the predictor variables D3, D4, D9, D15, and D17. The variable D17 had the largest beta weight of all the predictor variables in the equation (-2.028) and was negatively weighted. This finding indicated that low scores on Domain 17 (Acceptability of Vocal Habits) correlated with high scores on the subtest Social Sciences. Roszkowski and Bean (1980) reported extremely low and negligible correlations (.04) between IQ and Unacceptable Vocal Habits on the ABS. Socialization (D9) had a beta weight of -.603 which indicated that high scores on socialization correlated with low scores on the Social Sciences subtest. In other words, children who interacted well with others did not score well on the Social Sciences subtest. This finding appeared to indicate that D9 (Socialization) would not be a good predictor of achievement as measured by the Social Sciences subtest. Similarly, Guaranccia (1967) reported that Socialization is only moderately related to IQ. Once again, Domains 3 and 4, Economic Activity and Language Development correlated with achievement, in this case the Social Sciences subtest. The level of significance for the beta weights of D3 and D4 was at the .0001 level. The beta weight for D15 was 1.306 and was positively weighted. One would ordinarily expect D15 to be negatively weighted. This finding showed that low scores, indicated few stereotypical behaviors, correlated with low score on the Social Sciences subtest resulting in a positively weighted beta for D15. Thus, D15 Mannerisms would not be a ood predictor of achievement as it relates to the Social Sciences subtest.

Finally, the 11 predictor variables of the DTLA-2 were entered into the regression procedure. For the total group 37 percent of the variability for the dependent variable SOC was accounted for by two of the predictor variables SUB 1 and SUB 10. The beta weights of SUB 1 and SUB 10 were approximately the same size (1.562 and 1.735), and both were found to be significant at the .0001 level of significance. This finding showed that again Word Opposites and Word Fragments (D1 and D10) were good predictors of achievement.

The backward elimination for the ABES could not be completed because none of the variables met the .1500 significance level for entry into the model. Once again, the ABES did not correlate with measures of achievement.

Based upon the foregoing discussion, Table 24 presents an overall summary of the variables which serve as good predictors for each dependent variable.

From a review of Table 25 on the next page, one can see that D4 (Language Development) correlated well with every one of the seven dependent variables. The domains of D7, D10, D14 and D19 did not correlate with any of the dependent variables. All of the remaining variables D1, D2, D3, D5, D6, D8, D9, D11, D12, D13, D15, D16, D18, and D20 correlated with at least two of the seven dependent variables.

From a review of Table 25 one can see that the predictor SUB 1-Word Opposites correlated with every dependent variable except Concept of Numbers, indicating that SUB 1 is a good predictor of achievement. The predictor variables of SUB 3, SUB 4, SUB 9, and SUB 11 did not correlate with any dependent variable. The remaining predictor variables SUB 2, SUB 5, SUB 6, SUB 7, SUB 8, SUB 10 correlated with at least one measure of achievement.

Table 24

A Comparative Summary of Predictor Variables with Each Dependent Variable

	Dependent Variables						
	RC	VOC	LC	SP	CN	MC	SOC
Predictor Variable							
AAMD ABS-SE							
D1				X			
D2	X				X		
D3	X		X	X			X
D4	X	X	X	X	X	X	X
D5					X		
D6		X		X			
D7							
D8	X		X	X			
D9	X		X	X			X
D10							
D11	X	X			X		
D12					X	X	
D13			X				
D14							
D15			X	X			X
D16	X		X			X	
D17		X	X	X			
D18	X	X				X	
D19							
D20		X			X	X	

Table 25

A Comparative Summary of Predictor Variables with Each Dependent Variable

	Dependent Variables						
	RC	VOC	LC	SP	CN	MC	SOC
Predictor Variables							
DTLA-2							
SUB 1	X	X	X		X	X	X
SUB 2			X				
SUB 3							
SUB 4							
SUB 5	X				X	X	
SUB 6		X					
SUB 7					X	X	
SUB 8	X		X	X			
SUB 9							
SUB 10	X		X	X			X
SUB 11							

Table 26

A Comparative Summary of Predictor Variables with Each Dependent Variable

	Dependent Variables						
	RC	VOC	LC	SP	CN	MC	SOC
Predictor Variables							
ABES							
ABEST 1					X		
ABEST 2						X	
ABEST 3				X			

From a review of Table 26 one can see that the predictor variables of the ABES did not correlate well with the measures of achievement. Each predictor variable correlated with only one measure of achievement. The three predictor variables taken together only correlated with Concept of Numbers, Math Computation, and Spelling, three of the seven dependent of the SAT.

Results of the present investigation related to testing Hypothesis 1, indicate that there is a significant relationship between the scores on the ABS-SE and the SAT. As previously stated, D4 (Language Development) correlated with all seven of the dependent variables of the Stanford Achievement Test. The domains of D1, D2, D3, D5, D6, D8, and D9, which comprise the majority of the subtests included in Part One, correlated with at least two of the dependent variables on the SAT. These findings are similar to those of

Roszkowski and Bean (1980). In that study Part I of the ABS had a much stronger relationship to IQ than did Part II. The correlation between IQ and Part I total score was .77 and of approximately the same importance as that reported by Christian and Malone (1973). The DTLA-2 also showed a significant relationship to achievement as measured by the SAT. Word Opposites (SUB 1) correlated with six of the seven dependent variables. This finding was substantiated by Hamill (1985) who reported correlations from .76 to .91 with the dependent variables of reading, math, language, reference skills, social studies, and science on the SRA Achievment Tests. SUB 2, SUB 5, SUB 6, SUB 7, SUB 8, and SUB 10 correlated with at least one other measure of achievement. Hamill (1985) reported low to moderate correlations (.35 to .75) of these same subtests when correlated with reading, math, language, reference skills, social studies and science on the SRA Achievement Tests. Finally, the ABES showed only a small relationship between the three subtests of the ABES and the subtests of the SAT.

Discussion Related to Null Hypothesis 2

The second null hypothesis states that there is no relationship between adaptive behavior as measured by the domain scores of the AAMD ABS-SE and adaptive behavior as measured by the subtest scores of the ABES.

Dependent Variable 1-ABEST1: The first dependent variable which was examined as a measure of adaptive behavior was ABEST 1 (Environmental/Interpersonal Behaviors). The 10 predictor variables of the AAMD ABS-SE were entered into the regression procedure. For the total group five of the predictor variables D8, D9, D12, D14, and D19 accounted for 48 percent of the variability for the dependent variable ABEST 1. The beta weight of D19 was the largest of the predictor variables (.448), was approximately three times as large as the other variables in the equation, and was negatively weighted. This finding showed that children who had low scores on Activity Level had high scores on Environmental/Interpersonal Behaviors. In other words, children who exhibited less hyperactive tendencies appeared to be rated high scores on interpersonal relations. The beta weights of D8, D9, D12, and D14 were approximately the same size. The beta weights of D12 and D14 were negatively weighted. These findings indicated that children who exhibited less rebellious attitudes and few symptoms of withdrawal, tended to receive high scores on their ability to adapt to school and general community expectations. The beta weights of D8 and D9 were .185 and .136. The beta weight of D8 was statistically significant at the .05 level, while the beta weight of D9 was not significant. However, taken in combination with the other predictor variables, the findings indicate that children who received high scores for responsibility and social awareness on the AAMD ABS-SE also received high scores on the Environmental/Interpersonal subtest of the ABES.

Dependent Variable 2-ABEST 2: The second dependent variable which was examined as a measure of adaptive behavior was ABEST 2-Self-Related Behaviors. The 20 predictor variables of the AAMD ABS-SE were entered into the regression procedure. For the total group 35.7 percent of the variability for the dependent variable was accounted for by five of the predictor variables D3, D6, D8, D12, and D14. The beta weight of D6 was the largest of the predictor variables (.429). This finding indicated that students who received high scores on their school job performance and school work habits, also received high scores on the Self-Related Behaviors subtest of the ABES which means they have the ability to accept consequences and responsibilities. Again, D12 and D14 were negatively weighted indicating that children who received low scores on Rebelliousness and Withdrawal vs. Involvement received high scores on Self-Related Behaviors. In other words, children who exhibited few symptoms of rebelliousness and withdrawal were better able to maintain themselves in the environment relative to self-help and independent functioning. Also, children who scored high on Responsibility scored high on Self-Related Behaviors.

Dependent Variable 3-ABEST 3: The third dependent variable which was examined as a measure of adaptive behavior was ABEST 3-Task Related Behaviors. The 20 predictor variables of the ABS-SE were entered into the regression procedure. For the total group 35.8 percent of the variability for the dependent variable was accounted for by four of the predictor variables D6, D7, D8, and D9. The beta weight of D8 was the largest (.372) of the other predictor variables and the most statistically significant (.0001). This finding indicated that children who scored high on general responsibility also scored high on work-study skills including task focus, task completion, following directions, and classroom participation. Even though the beta weight of D7 is not statistically significant at the

.05 level, taken in combination with D6 and D8, D7 accounted for a significant amount of the variability in the dependent variable. In other words, D7-Self-Direction taken in combination with D6-Prevocational Activity and D8-Responsibility contributed to the variability of Task-Related Behaviors on the ABES.

The results reported above are summarized in Table 27.

Variable D8 (Responsibility) correlated with all three dependent variables of the ABES. These included the Environmental/Interpersonal Behaviors, the Self-Related Behaviors, and the Task-Related Behaviors. The predictor variables of D2, D4, D5, D10, D11, D13, D15, D16, D17, D18 and D20 did not correlate with any of the subtests of the ABES. The remaining predictor variables (D1, D3, D6, D7, D8, D9, D12, D14, and D19) correlated with at least one of the subtests on the ABES.

Results of the present investigation related to testing Hypothesis 2 indicate that there is a strong relationship between the three subtests of the ABES and the nine subtests of Part One of the ABES-SE. On Part Two of the ABES-SE, which deals with maladaptive behaviors, there is only a relationship with the first subtest (Environmental/Interpersonal Behaviors) of the ABES.

Discussion Related to Null Hypothesis 3

The third null hypothesis states that there is no significant relationship between the scores on the ABES when rated by the classroom teacher and the scores of the ABES when rated by the classroom aide. A correlation ratio was obtained as a measure of association between each independent variable and each dependent variable. There were moderately strong correlations (.49-.66) between

Table 27

A Comparative Summary of Predictor Variables with Each Dependent Variable

	Dependent Variables		
	ABEST 1	ABEST 2	ABEST 3
Predictor Variables			
D1			
D2			
D3		X	
D4			
D5			
D6		X	X
D7			X
D8	X	X	X
D9	X		
D10			
D11			
D12	X	X	
D13			
D14	X		
D15			
D16			
D17			
D18			
D19	X		
D20			

the dependent variable ABESA 1 and the independent variables ABEST 2, ABESTT, and ABQT. In other words the Environmental/Interpersonal Behaviors subtest rated by the aide correlated with the Self-Related Behaviors subtest, the total score of the three subtests, and the Adaptive Behavior Quotient, each rated by the classroom teacher. The ABQ is determined by adding the three subscale standard scores and converting this score to the age appropriate Adaptive Behavior Quotient (McCarney, 1983).

There were moderately strong correlations (.46-.66) between the dependent variable ABESA 2 and the independent variables ABEST 2 and ABQT. In other words, the Self-Related Behaviors subscale rated by the aide correlated with the Self-Related Behaviors subscale rated by the teacher, and also, correlated with the Adaptive Behavior Quotient as rated by the teacher.

There were moderately strong correlations (.46-.60) between the dependent variable ABESA 3 and the independent variable ABQT. This means that the Task-Related Behaviors subtest rated by the aide correlated with the Adaptive Behavior Quotient rated by the teacher.

There were moderately strong correlations (.61-.70) between the dependent variable ABESAT and the independent variables ABEST 1, ABEST 2, ABESTT, and ABQT. In other words, the total score of the ABES subtests rated by the aide correlated with all the subtests except Task-Related Behaviors. This included the total scores and the Adaptive Behavior Quotient rated by the teacher.

There were also moderately strong correlations (.60-.78) between the dependent variable ABQA and the independent variables ABEST 1, ABEST 2, ABESTT, and ABQT. This means that the Adaptive Behavior Quotient rated by the aide correlated with all the independent variables except the Task-Related Behaviors.

Finally, it is important to note that all of these moderately strong correlations were significant at the .0001 level.

Results of the present investigation related to testing Hypothesis 3 indicate that there are moderately strong relationships (.46-.78) on all the subtests, total scores, and adaptive behavior quotients with the exception of subtest 3 (Task-Related Behaviors). In reviewing the findings there were only low correlations (.28-.48) on task-related behaviors rated by the teacher and rated by the aide.

General Discussion of Results

Several observations from the foregoing analyses are particularly interesting to note. The AAMD ABS-SE correlated very well with the achievement measures of the SAT. The Domain-Language Development (D4) correlated with all seven achievement measures. The Domains-Socialization (D9) and Acceptability of Vocal Habits (D17) correlated with a total of four of the achievement measures. Six of the domains [Responsibility (D8), Antisocial vs. Social Behavior (D11), Mannerisms (D15), Appropriateness of Interpersonal Manners (D16), Acceptability of Habits (D18), Symptomatic Behavior (D20)] correlated with three measures of achievement. Three of the domains [Physical Development (D2), Prevocational Activity (D6), Rebelliousness (D12)] correlated with two of the measures of achievement. Three of the domains [Independent Functioning (D1), Numbers and Time (D5), Trustworthiness (D13)] correlated with at least one of the measures of achievement. Only four of the domains [Self-Direction (D7), Aggressiveness (D10), Withdrawal vs. Involvement (D14), Activity Level (D19)] did not significiantly correlate with any measure of achievement.

Looking at the findings from a somewhat different perspective, it is interesting to see that Listening Comprehension on the SAT correlated with nine of the domains on the AAMD ABS-SE, Reading Comprehension correlated with eight domains, and Spelling correlated with seven domains. Each of the subtests of Vocabulary and Concepts of Numbers correlated with six domains, while the subtests of Math Computation and Social Sciences correlated with at least five domains on the AAMD ABS-SE.

Looking at the DTLA-2, it was interesting to note that SUB 1-Word Opposites correlated with six of the measures of achievement. The only measure SUB 1 did not correlate with was Spelling. SUB 10-Word Fragments correlated with Reading Comprehension, Listening Comprehension, Spelling, and Social Sciences. SUB 5 and SUB 8 (Story Construction and Symbolic Relations) correlated with three measures of achievement. Object Sequences (SUB 7) correlated with Math Computation and Social Sciences. SUB 2 and SUB 6 (Sentence Imitation and Design Reproduction) correlated with one measure of achievement. Four of the 11 subtests of the DTLA-2 [Oral Directions (SUB 3), Word Sequences (SUB 4), Conceptual Matching (SUB 9), Letter Sequences (SUB 11)] did not correlate with any measure of achievement.

The ABES did not correlate well with the SAT. The Environmental/Interpersonal Behaviors subtest correlated with Concept of Numbers. The Self-Related Behaviors subtest correlated with Math Computation. Finally, the Task-Related Behaviors correlated with Spelling. In other words, each one of the three subtests of the ABES correlated with only one measure of achievement on the SAT.

In comparing the relationship of the AAMD ABS-SE with the ABES, it is important to note that the three subtests of the ABES (ABEST 1, ABEST 2, ABEST 3) together correlated with only one domain-Socialization (D8) on the AAMD ABS-SE. Two of the subtests [Self-Related Behaviors (ABEST 2) and Task-Related Behaviors (ABEST 3)] correlated with Prevocational Activity (D6). Two other subtests [Environmental/Interpersonal (ABEST 1) and Self-Related Behaviors (ABEST 2)] correlated with Rebelliousness (D12). The subtest Environmental/Interpersonal Behaviors (ABEST 1) correlated with D8, D9, D12, D14, and D10 (Responsibility, Socialization, Rebelliousness, Withdrawal vs. Involvement, and Activity Level). The subtest of Self-Related Behaviors (ABEST 2) correlated with D3, D6, D8, and D12 (Economic Activity, Prevocational Activity, Responsibility, Rebelliousness). Finally, the subtest of Task-Related Behaviors (ABEST 3) correlated with D6, D7, and D8 (Prevocational Activity, Self-Direction, Responsibility).

In looking at the relationship between the scores of the ABES as rated by the teacher and the scores of the ABES when rated by the aide, it is important to note that only moderately strong correlations (.50-.70) were obtained which does not verify the .97-.99 interrater reliability reported in the manual of the ABES.

Significance of the Study

This study has shown that the domain scores of the AAMD ABS-SE are reasonably valid for making estimates of group membership when used in conjunction with aptitude and achievement. The present study coincided with a study conducted by Spreat (1980) which verified that the following variables were significant predictors of group membership: Numbers and Time, Unacceptable Vocal Habits, Untrustworthy Behavior, Independent Functioning, Physical Development, Economic Activity, and Psychological Disturbances.

The results of this study also clearly seem to indicate a need for more precise measures of adaptive behavior that can be obtained from the usual informed sources. Although different types of raters will provide stable ratings, results of adaptive behavior assessment may vary significantly as seen in this study on the ABES when rated by the teacher, and on the ABES when rated by the aide. These differences may be attributable to varying familiarity with the assessment instrument, varying amounts of observation time, biases resulting from experiences with different reference groups, biases resulting from the nature of the relationship with the child, varying perceptions of the value of behaviors, and finally, actual variations in child behavior.

If results of adaptive behavior assessment are to be used to determine placement in special education programs, state and local education agencies may need to develop more precise evaluation criteria that include specification of raters for this type of assessment.

Attempts at gaining more consistency among raters may involve more extensive rater training. However, another approach to obtaining optimal information from the scale would involve using ratings that are jointly established. Raters might first complete the scale independently and later complete it jointly in a conference. In addition to addressing effects of rater bias,, this procedure would also address real variations in child behavior.

The use of adaptive behavior measures to facilitate educationally relevant placement decisions is an issue which is far from being resolved. An important dimension of this issue is the observed relationship between means of adaptive behavior and intellectual ability. Because measures of intellectual ability are for all practical purposes measures of academic functioning, and because academic functioning is an important developmental requirement for virtually all children, forced separation of the constructs of intelligence and adaptive behavior may have deleterious effects on educational decision-making.

In this study, the results of negligible to low correlations of the ABES with the aptitude and achievement measure may suggest that adaptive behavior may not be the most valid indicator of learning potential. Consequently, declassification of students from special education programs with subsequent placement of all children with age-appropriate adaptive behavior in regular classrooms, regardless of IQ, may result in failure experiences for some. Just as IQ should not be the sole basis for placement in special classes, perhaps adaptive behavior alone should not determine regular classroom placement, particularly if regular classroom placement implies the absence of any individualization in instruction or programming.

Findings from this study also verified that, although many instruments are labeled as "adaptive behavior" scales, it is likely that the developers of each measure tend to define the concept in a different manner.

Differences between various instruments may be the result of categorical differences as noted by Bailey and Harbin (1980). They classified the ABS-SE as a psychosocial measure, whereas the Adaptive Behavior Inventory for Children (ABIC) was classified as a social systems measure of adaptive behavior. Perhaps these categories are more distinct than initially realized, and there is a need to decide, prior to administration just what type of information is desired.

There is a higher probability of a discrepancy between adaptive behavior and intelligence when measures of adaptive behavior are comprised entirely of items reflecting skills exhibited outside of school (e.g., the ABIC). Information should be obtained relevant to a variety of settings.

By definition, adaptive behavior is a function of both a child's development and cultural expectations. Because children between the ages of five and 18 spend a large amount of time in school, it would seem that the acquisition of adaptive behavior appropriate to that setting is an important prerequisite. In addition, because virtually all children are required to participate in public education, it would also appear that strong cultural expectations are operating regarding the acquisition of adaptive behavior in these settings. Therefore, the exclusion of efforts to assess adaptive behavior in academic settings by instruments such as the ABIC would appear to be inconsistent with the original conceptualization of the construct. This same argument could be applied to the ABES which appeared to be measuring other factors than aptitude and achievement.

Suggestions for Future Research

It would be interesting to replicate this study with a township so that comparisons could be made between the two groups LD/Resource and LD/Self-Contained. A weakness of this study is that the number of subjects was too small (N > 90) to divide the data into two comparison groups. Sampling an entire township would make it possible to have larger numbers, permitting variability to manifest itself across groups.

Another interesting possibility for future research would be to replicate systematically the system examining the interrelationships among adaptive behavior, aptitude and achievement across self-contained BD classes versus self-contained LD classes or self-contained BD classes versus self-contained LD classes. Again, dealing with a larger school district would make such a comparative study feasible.

Finally, it would also be of interest to use the data gathered from the AAMD ABS-SE and the ABES and add the scores from the WISC-R to substantiate further the relationships between aptitude with the measures of adaptive behavior and achievement.

REFERENCES

Adams, J. (1973). Adaptive behavior and measured intelligence in the classification of mental retardation. American Journal of Mental Deficiency, 78, 77-81.

Bailey, D.B., Jr., & Harbin, G.L. (1980). Nondiscriminatory evaluation. Exceptional Children, 46, 590-596.

Baker, H.J. (1919). Educational disability and case studies in remedial teaching. Bloomington, IL: The Public School Publishing Company.

Baker, H.J. (1927). Characteristic differences in bright and dull children. Bloomington, IL: The Public School Publishing Company.

Baker, H.J. (1959). Introduction to exceptional children. New York: Macmillan.

Baker, H.J. (1975). Description, interpretation, and application of the Detroit Tests of Learning Aptitude. Indianapolis: Bobbs-Merrill.

Baker, H.J., & Leland, B. (1967). Detroit tests of learning aptitude. Examiner's handbook. Indianapolis: Bobbs-Merrill.

Baumeister, A.A., & Forehand, R. (1973). Stereotyped acts. In N.R. Ellis (Eds.), International review of research in mental retardation (Vol. 6). New York: Academic Press.

Baumeister, A.A., & Muma, J.R. (1975). On defining mental retardation. The Journal of Special Education, 9, 293-306.

Bloom, B.S. (1972). Innocence in education. School Review, 333-352.

Brown, A.L., & French, L.A. (1979). The zone of potential development: Implications for intelligence testing in the year 1000. Intelligence, 3, 255-273.

Brown, A.L., & Hammill, D.J. (1978). Behavior rating profile: An ecological approach to behavioral assessment. Austin: PRO-ED.

Cain, L.F., Levine, S., & Elzey, F. (1963). F. Cain-Levine social competency scale. Palo Alto, CA: Consulting Psychological Press.

Christian, W.P., Jr., & Malone, D.R. (1973). Relationships among three measures used in screening mentally retarded for placement in special education. Psychological Reports, 33, 415-418.

Clausen, J. (1972a). Quo vadis AAMD? Journal of Special Education, 6, 51-60.

Clausen, J. (1972b). The continuing problem of defining mental deficiency. Journal of Special Education, 6, 97-106.

Coleman, J.S., et al. (1967). Equality of educational opportunity. Washington, D.C.: U.S. Department of Health, Education and Welfare, Office of Education. U.S. Government Printing Office.

Coulter, W.C., & Morrow, H.W. (Eds.) (1978). Adaptive behavior: Concepts and measurements. New York: Grune and Stratton.

Datta, L.E., Schaefer, E., & Davis, M. (1968). Sex and scholastic aptitude as variables in teacher's ratings of the adjustment and classroom behavior of Negro and other seventh grade students. Journal of Educational Psychology, 59, 94-101.

Doll, E.A. (1965). Vineland Social Maturity Scale. Circle Pines, MN: American Guidance Service.

Eysenck, H.J. (1953). The structure of human personality. New York: John Wiley.

Feld, S., & Lewis, J. (1967). The assessment of anxiety responses in children: How important is response set and multi-dimensionality in the test anxiety scale for children? Paper presented at the Graduate Center, City University of New York. (ED 025 313)

Givens, T. (1980). Scorer reliability on the AAMD adaptive behavior scale, public school version, Part one. Psychology in the Schools, 17, 335-338.

Goodman, J.F. (1979). Is tissue the issue? A critique of SOMPA's models and tests. School Psychology Digest, 8, 47-62.

Goulet, L.R., & Barclay, A. (1963). The Vineland Social Maturity Scale: Utility in assessment of Binet MA. American Journal of Mental Deficiency, 67, 916-921.

Gronlund, N.E. (1981). Measurement and evaluation in teaching (4th ed.). New York: Macmillan.

Grossman, H.J. (1973). Manual on terminology and classification in mental retardation (rev. ed.). Baltimore: Garamond/Pridemark Press.

Grossman, H.J. (1977). Manual on terminology and classification in mental retardation (3rd rev.). Washington, D.C.: American Association on Mental Deficiency.

Guaranccia, V.J. (1976). Factor structure and correlates of adaptive behavior in noninstitutionalized retarded adults. American Journal of Mental Deficiency, 80, 543-547.

Gully, K.J., & Hosch, H.M. (1979). Adaptive Behavior Scale: Development as a diagnostic tool vis discriminant analysis. American Journal of Mental Deficiency, 83, 518-523.

Gutsch, K.U., & Casse, R.M. (1970). A comparison of mothers' and teachers' perceptions of normal and retarded preschool and adolescent children. Southern Journal of Educational Research, 4, 1-17.

Hamill, D.D. (1985). The manual for the DTLA-2 (Detroit Tests of Learning Aptitude). Texas: PRO-ED.

Heath, C.P., & Obrzut, J.E. (1984). Comparison of three measures of adaptive behavior. Journal of Mental Deficiency, 2, 205-208.

Heber, R. (1961). Modifications in the manual on terminology and classification in mental retardation. American Journal of Mental Deficiency, 65, 499-500.

Hewitt, L.E., & Jenkins, R.L. (1946). Fundamental patterns of maladjustment: The dynamics and their origin. Chicago: State of Illinois.

Huberty, T.J., Koller, J.R., & Ten Brink, T.D. (1980). Adaptive behavior in the definition of mental retardation. Exceptional Children, 46 (4), 256-260.

Isett, R.D., & Spreat, S. (1979). Test-retest and interrater reliability of the AAMD adaptive behavior scale. American Journal of Mental Deficiency, 84, 93-95.

Jensen, A. (1980). Bias in mental testing. New York: Free Press.

Jensen, A.R. (1969). How much can we boost IQ and scholastic achievement? In Environment, heredity, and intelligence (pp. 1, 12). Harvard Educational Review. Reprint Series No. 2.

Johnson, R.C. (1970). Prediction of independent functioning and problem behavior from measures of IQ and SQ. American Journal of Mental Deficiency, 74, 591-593.

Kaplan, H.E., & Alatishe, M. (1976). Comparison of ratings by mothers and teachers on preschool children using the Vineland Social Maturity Scale. Psychology in the Schools, 13, 27-28.

Kelley, T., Madden, R., Gardner, E., & Rudman, H. (1966). Stanford Achievement Test, Primary Battery. New York: Harcourt Brace, Jovanovich, Inc.

Lambert, N. (1981). Diagnostic and technical manual of the AAMD Adaptive Behavior Scale-School Edition. California: Publishers Test Service.

Lambert, N.M. (1979). Contributions of school classification, sex, and ethnic status to adaptive behavior assessment. Journal of School Psychology, 17 (1), pp. 3-15.

Lambert, N.M., & Nicoll, R. (in press). A conceptual model for non-intellectual behavior and its relationship to early reading achievement. Journal of Educational Psychology.

Lambert, N., Windmiller, M., & Cole, L. (1974). AAMD Adaptive Behavior Scale (Public School Version). Washington, D.C.: American Association on Mental Deficiency.

Larry P. v. Riles. (1972) 343 F. Supp. 1306.

Leland, H.W. (1978a). From concepts to measurement in adaptive behavior. Columbus: Ohio State University. (ERIC Document Reproduction Service No. ED 170 168).

Leland, H. (1978b). Theoretical considerations of adaptive behavior. In W.A. Coulter & H.W. Morrow (Eds.), Adaptive behavior: Concepts and measurements. New York: Grune and Stratton.

Leland, H.W., Nihira, K., Foster, R., Shellhass, M., & Kagin, E. (1968). Conference on the measurement of adaptive behavior. Parsons State Hospital and Training Center.

MacMillan, D.L., & Jones, R.L. (1972). Lions in search of more Christians. Journal of Special Education, 6, 81-91.

Mayfield, K.L., Forman, S.G., & Nagle, R.J. (1984). Reliability of the AAMD Adaptive Behavior Scale: Public school version. Journal of School Psychology, 22, 53-61.

McCarney, S.B. (1983). Manual for the Adaptive Behavior Evaluation Scale. Missouri: Hawthorne Educational Services.

McLoughlin, J.A., & Lewis, R.B. (1981). Assessing special students. Columbus: Charles E. Merrill.

Mealor, D.J., & Richmond, B.O. (1980). Adaptive behavior: Teachers and parents disagree. Exceptional Children, 46 (5), 368-389.

Mercer, J.R. (1979). SOMPA: System of multicultural pluralistic assessment-Concepts and technical manual. New York: The Psychological Corporation.

Mercer, J.R., & Lewis, J.F. (1977). System of multicultural pluralistic assessment: Parent's interview manual and student assessment manual. New York: The Psychological Corporation.

Miller, L.C. (1972). School behavior checklist: An inventory of deviant behavior for elementary school children. Journal of Consulting and Clinical Psychology, 38, 124-144.

Nihira, K., Foster, R., Shellhaas, M., & Leland, H. (1969). Adaptive Behavior Scales: Manual. Washington, D.C.: American Association on Mental Deficiency.

Oakland, T. (1979). Research on the adaptive behavior inventory for children and the estimated learning potential. School Psychololgy Digest, 8, 63-70.

Oakland, T. (1979). An evaluation of the ABIC, pluralistic norms, and estimated learning potential. Journal of School Psychology, 18 (1), 4-11.

Oakland, T., & Feingenbaum, D. (1980). Comparisons of the psychometric characteristics of the adaptive behavior inventory for children for different subgroups of children. Journal of School Psychology, 18 (4), 307-315.

Popoff-Walker, L.E. (1982). IQ, SES, adaptive behavior and performance on a learning potential measure. Journal of School Psychology, 20 (3), 231.

Prichard, K.W., & Buxton, T.H. (1973). Concepts and theories in sociology of education. Lincoln, NE: Professional Educators Publications.

Richmond, B.O., & Horn, W. (1980). Children's adaptive behavior scale. Psychology in the Schools, 17 (2), 159-162.

Richmond, B.O., & Mealor, D. (1980). Adaptive behavior: Teachers and parents disagree. Exceptional Children.

Ross, R.T. (1972). Behavioral correlates of levels of intelligence. American Journal of Mental Deficiency, 76, 545-549.

Roszkowski, M.J., & Bean, A.G. (1980). The Adaptive Behavior Scale (ABS) and IQ: How much unshared variance is there? Psychology in the Schools, 17, 452-459.

Roszkowski, M.J., & Spreat, S. (1983). Assessment of effective intelligence: Does scatter matter? The Journal of Special Education, 17 (4), 453-460.

Roszkowski, M.J., Spreat, S., & Waldman, R. (1983). A canonical correlation between adaptive and maladaptive aspects of adaptive behavior. Journal of Mental Deficiency, 88 (3), 225-228.

Salvia, J., & Ysseldyke, J.E. (1981). Assessment in special and remedial education. Boston: Houghton, Mifflin.

Sarason, S.B., et al. (1958). Classroom observations of high and low anxiety children. Child Development, 29, 293-296.

Sattler, J.M. (1982). Assessment of children's intelligence and special abilities (2nd ed.). Boston: Allyn and Bacon, Inc.

Shertzer, B., & Stone, S.C. (1980). Fundamentals of counseling (3rd ed.). Boston: Houghton-Mifflin.

Singer, R.D., & Singer, A. (1969). Psychological development in children. Philadelphia: W.B. Saunders Co.

Slate, N.M. (1983). Nonbiased assessment of adaptive behavior: Comparison of three instruments. Exceptional Children, 50 (1), 67-70.

Spearman, C. (1927). The abilities of man. New York: Macmillan.

Stack, J.G. (1984). Interrater reliabilities of the adaptive behavior scale with environmental effects controlled. American Journal of Mental Deficiency, 4, 396-400.

Stanley, J.C., & Hopkins, K.D. (1972). Educational and psychological measurement and evaluation. Englewood Cliffs: Prentice Hall.

Stringer, L.A., & Glidewall, J.C. (1967). Early detection of emotional illnesses in school children. Final Report. St. Louis, Missouri: St. Louis County Health Department, Division of Research and Development.

Swift, M., & Spivack, G. (1968). The assessment of achievement-related classroom behavior. Journal of Special Education, 2, 137-153.

Taylor, R.L., & Ivimey, J.K. (1982). Considering alternative methods of measurement on the adaptive behavior scale. Psychology in the Schools, 19, 117-121.

Torshen, K. (1969). The relation of classroom evaluation to students (self-concepts and mental health). Unpublished Doctoral Dissertation, University of Chicago.

Tucker, J. (1977). Operationalizing a diagnostic-intervention process. In T. Oakland (Ed.), Psychological and educational assessment in minority children. New York: Brunner/Mazel.

Wall, S.M., & Paradise, L.V. (1981). A comparison of parent and teacher reports of selected adaptive behavior of children. Journal of School Psychology, 19 (1), 73-76.

Zuk, G.H. (1959). Autistic distortions in parents of retarded children. Journal of Consulting Psychology, 23, 171-176.

APPENDIX A

SUMMARY OF VARIABLE NAMES USED IN THE STUDY

Dependent Variables (Stanford Achievement Test)

RC	Reading Comprehension
VOC	Vocabulary
LC	Listening Comprehension
SP	Spelling
CN	Concept of Numbers
MC	Math Computation
SOC	Social Sciences

Independent Variables

D1	Domain 1-Independent Functioning
D2	Domain 2-Physical Development
D3	Domain 3-Economic Activity
D4	Domain 4-Language Development
D5	Domain 5-Numbers and Time
D6	Domain 6-Prevocational Activity
D7	Domain 7-Self-Direction
D8	Domain 8-Responsibility
D9	Domain 9-Socialization
D10	Domain 10-Aggressiveness
D11	Domain 11-Antisocial vs. Social Behaviors
D12	Domain 12-Rebelliousness
D13	Domain 13-Trustworthiness
D14	Domain 14-Withdrawal vs. Involvement
D15	Domain 15-Mannerisms
D16	Domain 16-Appropriateness of Interpersonal Manners
D17	Domain 17-Acceptability of Vocal Habits
D18	Domain 18-Acceptability of Habits
D19	Domain 19-Activity Level
D20	Domain 20-Symptomatic Behavior

(DTLA-2)

SUB 1	Subtest 1-Word Opposites
SUB 2	Subtest 2-Sentence Imitation
SUB 3	Subtest 3-Oral Directions
SUB 4	Subtest 4-Word Sequences
SUB 5	Subtest 5-Story Construction
SUB 6	Subtest 6-Design Reproduction
SUB 7	Subtest 7-Object Sequences
SUB 8	Subtest 8-Symbolic Relations
SUB 9	Subtest 9-Conceptual Matching
SUB 10	Subtest 10-Word Fragments
SUB 11	Subtest 11-Letter Sequences

(ABESA)	ABES subscales rated by the aide
ABESA 1	Subscale 1-Environmental/Interpersonal Behaviors
ABESA 2	Subscale 2-Self-Related Behaviors
ABESA 3	Subscale 3-Task-Related Behaviors
ABESAT	ABES total score of subtests
ABQA	Adaptive Behavior Quotient

(ABEST)	ABES subscales rated by the teacher
ABEST 1	Subscale 1-Environmental/Interpersonal Behaviors
ABEST 2	Subscale 2-Self-Related Behaviors
ABEST 3	Subscale 3-Task-Related Behaviors
ABESTT	ABES total score of subtests
ABQT	Adaptive Behavior Quotient

APPENDIX B

A Descriptive Survey of Independent Variables Chosen for Inclusion in Multiple Regression Equations (Correlation Ratios Between Continuous Independent Variables and Dependent Variables)

	D1		D2		D3		D4		D5	
	corr.	sig.	corr.	sig.	corr.	sig.	corr.	sig.	corr.	sig.
RC	.272	.009*	.181	.085	.323	.001*	.472	.000*	.098	.351
VOC	.304	.003*	.292	.004*	.196	.061	.475	.000*	.217	.038*
LC	.414	.000*	.280	.007*	.370	.000*	.514	.000*	.267	.010*
SP	.392	.000*	.254	.014*	.499	.000*	.466	.000*	.428	.000*
CN	.037	.727	.172	.102	-.039	.711	.181	.084	.010	.920
MC	.091	.390	.190	.072	-.010	.918	.196	.063	.085	.424
SOC	.493	.000*	.313	.002*	.629	.000*	.542	.000*	.461	.000*

*Significant at the .05 level and included in the multiple regression equation

A Descriptive Survey of Independent Variables Chosen for Inclusion in Multiple Regression Equations (Correlation Ratios Between Continuous Independent Variables and Dependent Variables)

	D6		D7		D8		D9		D10	
	corr.	sig.	corr.	sig.	corr.	sig.	corr.	sig.	corr.	sig.
RC	.171	.104	.115	.274	-.001	.987	.071	.498	-.256	.014*
VOC	-.063	.551	.202	.053*	.047	.653	.204	.052*	.027	.797
LC	.118	.262	.231	.027*	-.029	.779	.170	.106	-.123	.244
SP	.378	.002*	.246	.018*	.204	.051*	.152	.148	-.278	.007*
CN	.069	.512	.077	.465	-.051	.630	.213	.042*	.041	.699
MC	.072	.495	.136	.199	.112	.291	.186	.078	.033	.756
SOC	.209	.046*	.287	.005*	-.000	.997	.106	.316	-.200	.057

*Significant at the .05 level and included in the multiple regression equation

A Descriptive Survey of Independent Variables Chosen for Inclusion in Multiple Regression Equations (Correlation Ratios Between Continuous Independent Variables and Dependent Variables)

	D11		D12		D13		D14		D15	
	corr.	sig.	corr.	sig.	corr.	sig.	corr.	sig.	corr.	sig.
RC	-.299	.003	-.212	.043*	-.254	.015*	-.218	.037*	-.143	.174
VOC	.117	.265	.031	.769	.034	.746	-.250	.016*	-.276	.007
LC	-.081	.442	-.105	.317	-.054	.605	-.295	.004*	-.104	.325
SP	-.311	.002*	-.262	.012	-.303	.003*	-.124	.240	-.061	.561
CN	.110	.297	-.085	.421	.116	.272	-.175	.095	-.217	.038*
MC	.071	.505	-.075	.480	.164	.121	-.225	.032*	-.138	.192
SOC	-.184	.080	-.118	.263	-.240	.021*	-.120	.255	-.041	.694

*Significant at the .05 level and included in the multiple regression equation

A Descriptive Survey

of Independent Variables Chosen for

Inclusion in Multiple Regression Equations

(Correlation Ratios Between

Continuous Independent Variables

and Dependent Variables)

	D16		D17		D18		D19		D20	
	corr.	sig.	corr.	sig.	corr.	sig.	corr.	sig.	corr.	sig.
RC	-.140	.183	-.241	.021*	-.203	.052*	-.104	.324	-.306	.003*
VOC	-.076	.472	-.207	.048*	-.139	.187	-.102	.334	.044	.674
LC	-.195	.062	-.206	.050*	-.172	.101	-.036	.734	-.219	.036*
SP	-.117	.269	-.272	.008*	-.277	.007*	-.090	.391	-.313	.002*
CN	-.132	.212	-.149	.158	-.043	.680	-.081	.442	-.088	.405
MC	-.240	.022*	-.112	.293	-.075	.476	-.036	.733	.041	.695
SOC	-.010	.920	-.158	.132	-.262	.011*	.032	.760	-.233	.026*

*Significant at the .05 level and included in the multiple regression equation

A Descriptive Survey of Independent Variables Chosen for Inclusion in Multiple Regression Equations (Correlation Ratios Between Continuous Independent Variables and Dependent Variables)

	SUB 1		SUB 2		SUB 3		SUB 4		SUB 5	
	corr.	sig.	corr.	sig.	corr.	sig.	corr.	sig.	corr.	sig.
RC	.421	.000*	.241	.021*	.377	.000*	.255	.014*	.190	.070
VOC	.631	.000*	.359	.000*	.434	.000*	.244	.019*	.200	.056
LC	.592	.000*	.469	.000*	.448	.000*	.398	.000*	.102	.333
SP	.243	.020*	.233	.025*	.171	.103	.227	.030*	.022	.830
CN	.502	.000*	.325	.001*	.486	.000*	.290	.005*	.387	.000*
MC	.375	.000*	.196	.063	.304	.003*	.162	.126	.270	.009*
SOC	.442	.000*	.297	.004*	.335	.001*	.208	.047*	-.034	.742

*Significant at the .05 level and included in the multiple regression equation

A Descriptive Survey of Independent Variables Chosen for Inclusion in Multiple Regression Equations (Correlation Ratios Between Continuous Independent Variables and Dependent Variables)

	SUB 6		SUB 7		SUB 8		SUB 9		SUB 10		SUB 11	
	corr.	sig.	corr.	sig.	corr.	sig.	corr.	sig.	corr.	sig.	corr.	sig.
RC	.242	.020*	.294	.004*	.375	.000*	.227	.030*	.484	.000*	.285	.006*
VOC	.423	.000*	.176	.094	.402	.000*	.341	.000*	.184	.079	.198	.059
LC	.241	.021*	.220	.035*	.394	.000*	.374	.000*	.326	.001*	.239	.022*
SP	.010	.917	.112	.288	.255	.031*	.067	.527	.602	.000*	.179	.088
CN	.281	.007*	.328	.001*	.350	.000*	.304	.003*	-.014	.891	.286	.005*
MC	.287	.005*	.255	.015*	.229	.029*	.152	.152	.023	.824	.137	.197
SOC	.185	.079	.193	.066	.280	.007*	.288	.005*	.511	.000*	.215	.040*

*Significant at the .05 level and included in the multiple regression equation

A Descriptive Survey

of Independent Variables Chosen for

Inclusion in Multiple Regression Equations

(Correlation Ratios Between

Continuous Independent Variables

and Dependent Variables)

	ABEST 1		ABEST 2		ABEST 3	
	corr.	sig.	corr.	sig.	corr.	sig.
RC	.151	.150	-.004	.968	-.002	.981
VOC	.074	.480	.028	.791	.022	.833
LC	.121	.252	.008	.936	.076	.470
SP	.161	.126	.099	.349	.244	.019*
CN	.178	.091	.167	.111	.083	.429
MC	.252	.016*	.293	.005*	.197	.062
SOC	-.048	.650	-.108	.305	.031	.763

*Significant at the .05 level and included in the multiple regression equations

APPENDIX C

PROCEDURE I

Backward Elimination for D1 through D20

RC	VOC	LC	SP	CN	MC	SOC
D2	D4	D3	D1	D2	D4	D3
D3	D6	D4	D3	D4	D12	D4
D4	D11	D8	D4	D5	D13	D9
D8	D17	D9	D6	D11	D16	D15
D9	D18	D13	D8	D12	D20	D17
D11	D20	D15	D9	D20		
D18		D16	D15			
		D17	D17			

Backward Elimination with SUB 1 through SUB 11

RC	VOC	LC	SP	CN	MC	SOC
SUB1	SUB1	SUB1	SUB8	SUB1	SUB1	SUB1
SUB5	SUB6	SUB2	SUB10	SUB5	SUB5	SUB10
SUB8		SUB8		SUB7	SUB7	
SUB10		SUB10				

Backward Elimination with ABEST 1 through ABEST 3

RC	VOC	LC	SP	CN	MC	SOC
			ABEST 3	ABEST 1	ABEST 2	

PROCEDURE II

Backward Elimination with All Thirty-Four IVS

RC	VOC	LC	SP	CN	MC	SOC
D2*	D6*	D1	D3*	D3	D12*	D3*
D4*	D7	D7	D4*	D7	D13*	D4*
D11*	D14	D8*	D6*	D12*	D16*	D15*
D16*	D17*	D9*	D8*	D16*	D19	D17*
D13*	D20*	D11	D15*	D20*	D20*	SUB1*
SUB1*	SUB1*	D14	D14*	SUB1*	SUB1*	SUB10*
SUB7	SUB6*	D18	SUB10*	SUB5*	SUB6	ABEST 1
SUB10*		SUB1*		SUB7*	ABEST 1	
		SUB 4				

*Indicates predictor variables of Procedure I
which coincide with predictor variables of Procedure II

APPENDIX D

A Descriptive Survey

of Independent Variables Chosen for

Inclusion in Multiple Regression Equations

(Correlation Ratios Between

Continuous Independent Variables

and Dependent Variables)

	D1		D2		D3		D4	
	corr.	sig.	corr.	sig.	corr.	sig.	corr.	sig.
ABEST1	.263	.010*	.149	.151	.051	.624	.178	.087
ABEST2	.280	.006*	.088	.396	-.092	.379	.033	.752
ABEST3	.305	.002*	.115	.269	.070	.501	.194	.061

	D5		D6		D7		D8	
	corr.	sig.	corr.	sig.	corr.	sig.	corr.	sig.
ABEST1	-.129	.21	.318	.001*	.100	.340	.255	.013*
ABEST2	-.032	.757	.410	.000*	.123	.238	.221	.032*
ABEST3	.144	.168	.348	.000*	.304	.003*	.376	.000*

*Significant at the .05 level and included in the multiple regression equations

A Descriptive Survey of Independent Variables Chosen for Inclusion in Multiple Regression Equations (Correlation Ratios Between Continuous Independent Variables and Dependent Variables)

	D9		D10		D11		D12	
	corr.	sig.	corr.	sig.	corr.	sig.	corr.	sig.
ABEST1	.396	.000*	-.444	.000*	-.426	.000*	-.538	.000*
ABEST2	.288	.005*	-.344	.000*	-.260	.011*	-.434	.000*
ABEST3	.362	.000*	-.287	.005*	-.125	.231	-.238	.021*

	D13		D14		D15		D16	
	corr.	sig.	corr.	sig.	corr.	sig.	corr.	sig.
ABEST1	-.283	.005*	-.443	.000*	-.429	.000*	-.445	.000*
ABEST2	-.199	.344	-.329	.001*	-.370	.000*	-.399	.000*
ABEST3	-.038	.715	-.294	.004*	-.216	.037*	-.284	.005*

*Significant at the .05 level and included in the multiple regression equations

A Descriptive Survey

of Independent Variables Chosen for

Inclusion in Multiple Regression Equations

(Correlation Ratios Between

Continuous Independent Variables

and Dependent Variables)

	D17		D18		D19		D20	
	corr.	sig.	corr.	sig.	corr.	sig.	corr.	sig.
ABEST1	-.520	.000*	-.439	.000*	-.535	.000*	-.414	.000*
ABEST2	-.399	.000*	-.394	.000*	-.406	.000*	-.385	.005*
ABEST3	-.230	.026*	-.253	.014*	-.292	.004*	-.281	.006*

*Significant at the .05 level and included in the multiple regression equations

APPROVAL SHEET

The dissertation submitted by Julia A. Long has been read and approved by the following committee:

Dr. Nancy Hablutzel, Co-Director
Assistant Professor, Counseling and Educational Psychology, Loyola

Dr. Ronald Morgan, Co-Director
Associate Professor, Counseling and Educational Psychology, Loyola

Dr. Joy Rogers
Associate Professor, Counseling and Educational Psychology, Loyola

Dr. Jack A. Kavanagh
Professor & Chairperson, Curriculum and Human Resource Development, Loyola

Dr. William Watts
Adjunct Professor, Counseling and Educational Psychology, Loyola

The final copies have been examined by the director of the dissertation and the signature which appears below verifies the fact that any necessary changes have been incorporated and that the dissertation is now given final approval by the Committee with reference to content and form.

The dissertation is therefore accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

10/29/86
Date

Nancy Hablutzel
Co-Director's Signature

10/29/86.
Date

Ronald R. Morgan
Co-Director's Signature