

THE INFLUENCE OF THE MOTIVATIONAL PROBE TECHNIQUE ON THE
LINGUISTIC DOMAIN OF THE DETROIT TESTS OF LEARNING
APTITUDE-2 TESTING LD AND EMR STUDENTS

THESIS

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Abstract

The purpose of this study was to investigate the influence of the motivational probe technique on the posttest scores of learning disabled and educable mentally retarded students using the Word Opposites and Conceptual Matching subtests taken from the DTLA-2.

The effect of individual testing was evaluated by a pre-probe and post-probe scoring of results. A dependent t test was used to test the hypotheses presented in this study.

The findings of this study indicated that the motivational probe technique enabled both EMR and LD groups to score significantly higher on each of the four tests.

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Chapter I

Statement of the Problem

Recent research into standardized testing of educable mentally retarded and learning disabled students is revealing the possibility that alternative testing methods may produce a more accurate assessment of relationships between learning potential and resulting achievements. Certain limitations that may exist in the psychological constitution of these special students may be addressed through the use of techniques such as the motivational probe technique contained in the Detroit Tests of Learning Aptitude-2 (DTLA-2). This adaptive assessment is being found to be a valuable tool, not only for current assignment, but for evaluating future learning and remediation strategies (Hammill, 1985).

Purpose

The purpose of this study was to investigate the influence of the motivational probe technique on the test results of two subtests selected from the linguistic domain of the DTLA-2. Tests selected were Word Opposites from the verbal subtests and Conceptual Matching from the non-verbal subtests. Students were selected from educable mentally retarded and learning disabled classrooms.

Questions to Be Answered

The following questions were investigated:

1. Is there a statistically significant difference between the pre-probe and post-probe test score results of learning disabled students in the Word Opposites verbal subtest?

2. Is there a statistically significant difference between the pre-probe and post-probe test score results of learning disabled students in the Conceptual Matching non-verbal subtest?

3. Is there a statistically significant difference between the pre-probe and post-probe test score results of educable mentally retarded students in the Word Opposites verbal subtest?

4. Is there a statistically significant difference between the pre-probe and post-probe test score results of educable mentally retarded students in the Conceptual Matching non-verbal subtest?

Need for the Study

Presently, there are no provisions for including test scores derived from alternative/adaptive testing methods when decisions are made regarding placement and learning channels of educable mentally retarded and learning disabled students. A need exists to further examine information derived from "testing the limits" through motivational probing as it relates to influencing standardized test scores (Hammill, 1985). It is accepted by teaching professionals that these students require alternative

methods of presentation and modes in order to achieve success. It should follow that this alternative learning should be evaluated through a combination of standardized and alternative methods (Stauffer, 1982). The results of these combined methods could then be viewed and applied toward an accurate picture of learning aptitude and extended in determining appropriate educational placement.

Definition of Terms

Terms requiring definition are DTLA-2, learning disabled, educable mentally retarded, aptitude, achievement, intelligence, adaptive assessment, motivational probe, and linguistic domain.

DTLA-2. Detroit Tests of Learning Aptitude-Revised.

Learning Disabled. Persons of average or above average intelligence experiencing difficulty in one or more language-processing areas. These difficulties are not attributable to mental retardation, emotional problems, socio-economic or educational background.

Educable Mentally Retarded. Competing or adapting socially far below social level of age-mates, 55-80 intelligence.

Aptitude. Basic ability to achieve a purpose, acquired incidently.

Achievement. Knowledge and skills acquired through instruction.

Intelligence. Global ability or capacity supplemented by individual abilities.

Adaptive assessment. Testing the limits, deviation from standard testing procedure.

Motivational probe. Questioning technique to explore student's understanding of tasks and reasoning processes.

Linguistic domain. One of four specific domains within the DTLA-2, comprised of a verbal aptitude and non-verbal composite and containing eleven subtests.

Limitations of the Study

This study was limited to forty students. Twenty learning disabled and twenty educable mentally retarded students between the ages of thirteen and fifteen participated. They were all from the same public junior high school in an urban setting. Subtests were limited to one verbal and one non-verbal chosen from the linguistic domain of the DTLA-2.

Summary

Research indicates a need for further study in the areas of adaptive testing methods for educable mentally retarded and learning disabled students. These two groups are of special concern since they are given the opportunity to participate in standardized state exams. Currently, it is felt that a true assessment is not revealed with this limited testing situation.

This present study takes such a situation one step further through exploring the motivational probe technique using a verbal and non-verbal subtest contained in the DTLA-2.

Chapter II

Review of the Literature

Purpose

The purpose of the study was to determine the degree to which the motivational probe technique of the DTLA-2 influenced test scores of educable mentally retarded and learning disabled students. Comparisons between the verbal test of Word Opposites and the non-verbal test of Conceptual Matching were also made to determine any significant relationship between learning modes and specific disability.

History of Intelligence Testing

The works of several early pioneers involved in the research of intelligence and testing in the early part of this century include Binet and Simon's scale of 1905 and the Stanford-Binet Intelligence Scale of 1916 and 1937. These scales reported results only in terms of a single score regarding a person's overall mental ability level (Hammill, 1985). The test items did not incorporate any standard or objective methods to determine specific abilities. If an examiner wanted to measure specific abilities, a collection of tests, standardized and normed on different populations, had to be assembled. Comparisons of test

performance under these conditions were not accurate or valid. Binet, however, believed that intelligence included many different abilities. Regardless, he did not attempt to provide specific scores for each ability measured on his test.

Spearman (1927) offered the formal hypothesis that intelligence comprises a global ability supplemented by individual abilities. This hypothesis is documented through factor analysis techniques. Spearman posed a two-factor theory to explain aptitude: a general factor (g) that is present in all intellectual pursuits and specific factors (s) that vary from task to task. This position has considerable common sense validity. When individuals perform relatively well in one cognitive activity, they tend to perform equally well in other such activities (Hammill, 1985). There is considerable research available for Spearman's hypothesis of the common factor (g) underlying all intellectual endeavor. Invariably the subtest or item scores associated with these batteries correlate highly with the total score of the battery. Does the presence of g in these subtests make the correlations so large or is it the presence of s (and test error) that makes the correlations less than perfect? (Anastasi, 1983).

Spearman's ideas have been expanded and built upon, but none of the recent work done in the area of cognition contradicts his basic assertions. Guilford (1967) developed a model comprising 120 different factors that might be present in intelligence. Osgood (1967) offered a mediation-integration behavioral model.

to explain language function. Luria (1966), Bogan (1969), Sperry (1968), and Neisser (1967) independently discovered a sequential and simultaneous processing dichotomy in intellectual activity. Cattell (1963), Horn and Cattell (1966) set forth the notion of fluid and crystallized thinking. All these new ideas about intelligence can still be viewed as elaborations of Spearman's g and s factors. Even Piaget's (1950) interactive scheme with its emphasis on accommodation and assimilation seems to be a sophisticated explanation about how Spearman's g factor is developed in individuals. Baker and Leland (1967) and other test builders, including Binet and Simon (1905), Kaufman and Kaufman (1983), Kirk, McCarthy, and Kirk (1968), and Terman and Merrill (1973), all adhere to Spearman's basic positions to a considerable degree. They all accept the idea of general and specific factors when describing aptitude, but differ in the emphasis of specific abilities in their tests. Those giving more emphasis to the value of special abilities are Baker and Leland in their Detroit Tests of Learning Aptitude (1967), Dunn, in the Illinois Test of Psycholinguistic Abilities (1968), and Kaufman and Kaufman, in the Kaufman Assessment Battery for Children (1983). These authors are all advocates of the aptitude-treatment-interaction model and recommend considering specific mental ability strengths and weaknesses in planning educational programs. Occasionally Kirk (Kirk & Kirk, 1971) goes so far as to advocate the actual remediation of certain specific abilities.

Since 1905, the purpose of an aptitude test has been to gain information, inferences, and decisions about children's capacity for school work. As time passed, and the numbers of children attending school increased, discrepancies between intelligence and performance surfaced and increased also. A closer look into the testing process was suggested, since another population was on the increase, special education students. The number of identified handicapped children in the United States has increased from 800,000 in 1976-77 school year to 1.7 million in the 1982-83 school year (Salvia & Yselldyke, 1981). According to Boyan (1985), California assessment scores and eligibility criteria formerly derived from standardized test scores are being evaluated for their validity in assessing special education students. The suggestion was submitted that alternative testing methods could produce a more accurate picture of aptitude/intelligence. The current trend to reduce numbers placed in self-contained classrooms is discussed by Bullock (1980) regarding combining alternative test results with standardized results for placement purposes.

Interpretation of Intelligence Tests

Anastasi (1983) discusses batteries in intelligence tests that may be primarily numerical, spatial, and perceptual verbal skills. On the other hand, other batteries may tap mechanical, motor, and other non-verbal skills. In an early study, (Anastasi,

1936), she administered five specifically designed tests, followed by instruction in the use of appropriate problem-solving strategies for three of the tests. Obtained correlations and factor patterns suggested that organization can be altered through brief, sharply focused intervention. In the emerging field of cognitive psychology, types of tasks in intelligence tests are being examined and matched with stages of development in regard to information processing. It is focusing on processes rather than end-products. By analyzing the performance of individuals and their method of processing, it is hoped that their sources of weakness and strength might be discovered (Guthrie, Goldberg, & Finucci, 1972). The diagnostic use of tests could possibly be expanded for instructional value, through adaptive testing situations and motivational methods.

The selection and appropriate use of testing instruments which measure various factors is very important. Gehman and Maytas (1951) found that both the WISC and the revised Stanford-Binet, Form L, showed a higher relationship between the WISC performance scale and reading than between the WISC verbal scale and reading (Sandstedt, 1964). Plattor (1959) found that a verbal-loaded intelligence test does not accurately assess the intelligence of pupils with reading disabilities.

Special Considerations in Testing LD & EMR

Testing procedures for students classified as learning disabled or educable mentally retarded often produce results that are not a true picture of aptitude/intelligence. Norm-referenced assessment involves strict adherence to standardized procedures. The special student is at an immediate disadvantage having had limited exposure to standardized tests, group administration and an extensive range of topics and difficulty. Frequently, the special student will know the information and understand the concept, but cannot demonstrate his knowledge on a standardized test. Considerations to be addressed when administering tests to these special students are test directions, test items, and test design (Wood, 1985). These three aspects of a test may be adjusted to address individual needs, depending on a student's preferred learning mode and specific needs for attaining success.

Careful analysis of the testing environment and considered attention to the strategies employed as a student attempts various subtests must be utilized by the examiner. Emerging will be a meaningful learning profile and specific instructional techniques to be applied to the profile. All individuals possess "learner aptitudes." Students in special education display these aptitudes during testing situations. Teachers have the opportunity to utilize techniques such as the motivational probe technique along with other adaptive testing measures. Through the use of these techniques, deficit areas may be more easily targeted and

remediation can take place to possibly produce a more accurate test score (Sabatino & Dorfman, 1974).

The DTLA-2 is used at Pineland Hospital and Training Center as a diagnostic instrument to predict which psychosensory approaches would be appropriate in facilitating individual learning by learning disabled students. The intelligence score that results is not used for placement due to the high verbal content of this test. Included in the assessment, however, is the use of motivational probing to facilitate performance. This is to distinguish which psychosensory approach should be utilized for learning (Chiappone, 1968).

Indicators can be found on achievement tests as to which sensorimotor or cognitive skills are tending to lower the child's performance. The DTLA-2 subtest scores can be profitably analyzed for appropriate assessment for the special education student. Both the learning disabled student and the educable mentally retarded student will exhibit some or all of the following behaviors:

1. Deficits in skills of verbal retrieval, auditory discrimination, and receptive comprehension.
2. Primary deficits in sound blending and graphomotor skills.
3. Deficiencies in visual-spatial and visual-memory abilities.

These skills are all contained in some form in most subtests (Baker & Leland, 1967).

The successful instruction of LD and EMR students involves the development of a meaningful learning profile, and specific instructional techniques must be utilized to meet the student's needs. Sorting out test scores is the first step toward successful instruction, but it takes more than test scores to obtain a complete picture of the student's unique learning style. Careful analysis of the learning task is required and considerable attention to the strategies employed by the student as he attempts each task in the test battery. Many instructional strategies may be developed to address individual deficits that may turn up in testing results (Ritter & Maestas, 1987).

The following prescriptive techniques described in Thibodeau (1985) may be transferred to test-taking strategies or adaptations:

1. visual memory: use verbal mediation
2. auditory reception: try to visualize directions
use visual imagery
request oral repetition by student
3. visual motor skills: reduce length of task
4. auditory memory: predetermine that the amount of information required to process is within student's ability: practice remembering directions.
5. auditory sequential memory: have student orally repeat directions.
6. receptive language comprehension: provide instruction and practice with "direction" words.

As test scores are viewed as an analysis of the learning task, prescriptive techniques emerge and educational programming becomes

a reality. All individuals employ specific styles of thinking. When viewing special students, it is important to analyze particular style since they may be rigidly locked into one or the other of these two entirely different styles: verbal and non-verbal. The non-verbal oriented individual will utilize visual-spatial and holistic strategies when learning. These students tend to be divergent, concrete, literal, pattern-oriented, intuitive, articulate, and musical. This style thinker is more emotional, action-oriented, tactual, and frequently more impulsive. In contrast, the verbal oriented individual is analytical and detailed in his thinking. This type of student employs strategies that are convergent, abstract, logical, sequential, and categorical. This style of thinker also tends to be more rational, linear, and localized. These styles are particularly important for teachers to discover and to understand when observing their students while teaching and testing (Ritter & Idol-Maestas, 1987).

It is crucial to decide which style of learning an individual may use in certain situations in order to evaluate achievement effectively. Generally, the learner who is verbal, analytic, and detail-oriented is considered to be more successful. Learners are evaluated by how they do on tests. These tests usually require convergent, logical, and localized thinking. In order to do well under present test administrations, students must be organized and reflective in thinking strategies. These are characteristics of the verbal/analytic and detail-oriented thinker. Educators of

special students must assist in developing alternative cognitive styles of thinking and learning in order to insure a channeling of these particular styles toward an accurate measurement of their achievement. The LD & EMR curriculums include large segments targeted as compensatory skills. These skills should certainly extend into "test-taking" strategies in order to further insure academic success (Kane, 1984).

There is consistent evidence that LD readers do not initially take advantage of the organizational features of materials. On a free recall task when non-explicit instructions were presented prior to recall, LD readers' responses were inferior to non-disabled readers on memory performance. The disabled students displayed an uneven distribution of attention to word organization and had difficulty with automaticity. However, when LD readers were required to actively sort items into semantic categories, their recall performance was comparable to non-disabled readers. This finding supports the positive effects of training studies prior to recall (Weinstein, 1983).

The Probe Technique in Adaptive Assessment

Adaptive assessment involves alternative measures in a testing situation. These alternative measures may take place before, during, or after the initial testing experience. Some students are instructed in test-taking strategies prior to testing. This is a form of adaptive assessment. Some measures included on special

education students' individualized education program (IEP) are adaptations to assist in testing such as: untimed or extended testing, availability of a reader or writer in appropriate situations, isolation or preferred seating. The motivational probe technique or "testing the limits" discussed in this study is a recent method of alternative testing suggested in the DTLA-2. It is easily adapted to several subtests contained in this aptitude test and an appropriate tool when testing special education students (Baker, 1975).

There is a national move toward competency testing. Publishers and educators have become increasingly concerned about test validity, item construction, and, in particular, item readability. The readability level of a test item can contaminate test results. While using the verbal portion of the DTLA-2, the examiner reads the items to the student. This intervention of oral reading of a test was used in a test situation in Central Florida (Hall, 1987) with 4,000 fifth grade students. Findings suggested that having teachers read test items aloud during administration yielded, overall, higher scores than having students read for themselves. Studies such as these reflect a movement toward development of techniques of adaptive assessment.

The suggestion of the motivational probe technique in the DTLA-2 is one method of further evaluation and usage of an additional tool in testing. Much of the research into test-taking strategies as related to test results has come from studies

conducted using college students. The probe technique has not been used extensively, but test-taking strategy training and individualized instruction along with some test adaptations have been studied with excellent results (Homan, 1986).

Two conclusions emerged from a study of study strategies as related to testing habits conducted by Simpson and Hogrebe (1985). The first, and most obvious, is that when students used appropriate study strategies, their test scores were enhanced. The second is less clear-cut. The data suggest that even when explicit rules, modeling, or talk-through and application exercises in realistic contexts are provided, there will be some students who will choose not to employ these strategies. Classroom instructors responsible for teaching learning strategies at any level, but particularly those teaching special education students, should realize that a student's knowledge or awareness of a strategy is not enough. Teacher ingenuity will be needed to assist students in learning how to apply and regulate new strategies to future tasks.

Current research shows a trend toward extending standardized testing for certain students either through deviation from established procedures by re-testing or use of probe techniques.

Chapter III

The Research Design

Purpose

This study was designed to determine whether the use of the motivational probe technique would influence the posttest scores of learning disabled and educable mentally retarded students. Subtests contained in the Detroit Test of Learning Aptitude-2 (DTLA-2) were administered, the verbal test of Word Opposites and the non-verbal test of Conceptual Matching. Relationships between the pretest and the posttest scores were investigated regarding the use of the motivational probe technique.

The Hypothesis

The null hypotheses in the study are as follows:

There is no significant difference between the mean pre-probe and post-probe test score results of learning disabled students in the Word Opposites verbal subtest.

There is no significant difference between the mean pre-probe and post-probe test score results of learning disabled students in the Conceptual Matching non-verbal subtest.

There is no significant difference between the mean pre-probe and post-probe test score results of educable mentally retarded students in the Word Opposites verbal subtest.

There is no significant difference between the mean pre-probe and post-probe test score results of educable mentally retarded students in the Conceptual Matching non-verbal subtest.

Methodology

Subjects

The subjects in this study were 40 students between the ages of 13-15. Twenty of the students were classified as learning disabled and twenty were classified as educable mentally retarded. They were selected from four self-contained classrooms within the same urban public school.

Instruments

Detroit Tests of Learning Aptitude-Revised (DTLA-2). The rationale underlying the DTLA-2 is the measurement of composite scores to acquire the best estimate of general aptitude. The test, however, provides for a consideration of certain limitations of the student's psychological constitution. The DTLA-2, though extremely language and verbal oriented, contains verbal and non-verbal quotients within the linguistic domain. Use of specific subtests and composites reveal strengths and weaknesses which can be re-examined and reviewed. It is a model of aptitude, followed by intervention and possible re-testing.

Baker and Leland (DTLA, 1930) intended to construct an aptitude/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. They referred to this as "aptitude." The terms, aptitude and intelligence, interchange synonymously throughout the manual. When referring to that which a person has already learned through actual instruction, the authors use the term "achievement" (Hammill, 1985).

Eleven subtests constitute the DTLA-2 along with nine composite scores. These scores are formed by combining different sets of subtest scores. Interpretation of these scores allows the examiner to estimate a person's aptitude relative to the psychological constructs incorporated into the battery, physical test-taking limitations, special ability competence, and intra-individual ability comparisons. The following descriptions reflect the rationale for the format and items of the two tests used in this particular study: Word Opposites and Conceptual Matching.

Word Opposites. This is a verbal vocabulary test that measures spoken language and ability. The format of this subtest has a long history of psychological assessment. It is basically a variation of the popular word-association technique. It assesses knowledge about more complex and diverse word forms than is measured by other popular vocabulary tests. Others, such as Peabody Picture Vocabulary Test, Wechsler Adult Intelligence Scale, Kaufman Assessment Battery for Children: emphasize defining nouns to the exclusion of defining other parts of speech. In the DTLA-2,

only 16% of the words to be defined are nouns. This subtest measures only one oral skill (i.e., the knowledge of vocabulary items called antonyms).

Conceptual Matching. Several complex non-verbal abilities are measured by this subtest, including the abilities to categorize, associate, and abstract. The task of associating a stimulus picture with one of a series of other pictures is uncommon in aptitude testing. Only one other popular individually administered aptitude test, the Illinois Test of Psycholinguistic Abilities (Visual Reception and Visual Association subtests), makes use of this format.

Testing the Limits

Norm-referenced assessment involves strict adherence to standardized procedures. There may be circumstances, however, when an examiner may wish to use the content of a normed test for adaptive assessment. Once scores are recorded from a standardized administration, this extra step of "testing the limits" may be helpful in interpreting test performance and formulating the next steps in assessment. Testing the limits occurs when the examiner deviates from the standard testing procedures and probes students' understanding of the tasks and their reasoning processes as they undertake the testing.

Procedure

The subtests of Word Opposites and Conceptual Matching were administered to each individual student to obtain a pre-probe test score. The subtest of Word Opposites began with item #1 and continued to item #34. The subtest of Copnceptual Matching began with item #1 and continued to item #30. After each pre-probe test, the motivational probe was administered. Typical questioning for the individual tests were as follows:

Word Opposites:

1. Try and picture this word or something similar to this word. Now remember, you must say a word meaning something completely different, the opposite. Let's go through the example again.
Up - down. Top - bottom. Try again.

Conceptual Matching:

1. Do you have any idea what this picture is or where you might see it? Inside or outside?
2. Does this picture seem to hook up to any of the other pictures below? Think about it again, see if there is a better choice.
3. Perhaps you need to spend more time sorting out all these pictures. Find a couple that may match better and narrow it down. Take your time.

When motivational probes produce great differences in performance, conditions of the difference should be considered in planning the goals and procedures of intervention and remediation.

Statistical Analysis

A dependent t test of differences between two means was used to compare the mean scores of the pretest and posttest of the Word Opposites and Conceptual Matching subtests of the DTLA-2 using the motivational probe technique. The investigation established the relationship between the pre-probe and post-probe scores of learning disabled students and educable mentally retarded students taking the Word Opposites verbal subtest and Conceptual Matching non-verbal subtest.

Summary

There appear to be many new approaches being researched in regards to adaptive assessment and deviation from standard testing procedures within the realm of special education. Since these students ultimately operate in classrooms with individualized instruction, these methods of alternative testing may well insure the success of the remediation program, particularly if their performance results as well as overall intelligence are considered when planning academic learning (Sattler, 1982).

Chapter IV

Analysis of Data

Purpose

The purpose of this study was to determine whether the use of the motivational probe technique would influence the posttest scores of learning disabled and educable mentally retarded students using the subtests of Word Opposites and Conceptual Matching taken from the DTLA-2.

Findings and Interpretations of Data

The null hypotheses in this study were as follows:

There is no significant difference between the mean pre-probe and post-probe test score results of learning disabled students in the Word Opposites verbal subtest.

There is no significant difference between the mean pre-probe and post-probe test score results of learning disabled students in the Conceptual Matching non-verbal subtest.

There is no significant difference between the mean pre-probe and post-probe test score results of educable mentally retarded students in the Word Opposites verbal subtest.

There is no significant difference between the mean pre-probe and post-probe test score results of educable mentally retarded students in the Conceptual Matching non-verbal subtest.

A dependent t test was used to compare the pretest and posttest raw scores in the subtests of Word Opposite and Conceptual Matching with learning disabled and educable mentally retarded students (Table 1). Analysis of the data resulted in the rejection of all four of the null hypotheses. There were significant differences between the mean scores of the pretest and the mean scores of the posttest ($p < .00001$) after using the motivational probe technique.

Table 1

t test of Differences of Pre-probe and Post-probe Scores of Learning Disabled and Educable Mentally Retarded Students Taking Word Opposites and Conceptual Matching Tests

	Pre-Probe	Post-Probe	t	Sig.
EMR - Word Opposites	$\bar{x}16.10$	$\bar{x}26.85$	17.165	>.00001
EMR - Conceptual Matching	$\bar{x}13.60$	$\bar{x}25.00$	16.005	>.00001
LD - Word Opposites	$\bar{x}20.90$	$\bar{x}31.10$	14.018	>.00001
LD - Conceptual Matching	$\bar{x}18.25$	$\bar{x}26.45$	13.747	>.00001

95% $t_{crit.} \pm 2.09$

It appears that the motivational probe technique enabled both EMR and LD groups to score significantly higher on each of the four tests.

Chapter V

Conclusions and Implications

Purpose

This study was designed to determine whether the scores on two subtests taken from the DTLA-2 could be enhanced through the use of the motivational probe technique. Subjects were selected from the learning disabled and educably mentally retarded groups of exceptionality. Comparisons were examined between pretest and posttest means within each specific group.

Conclusions

The results of the study rejected the null hypotheses which stated that there would be no significant difference between the mean scores of the pretest and posttest using the motivational probe technique when administering Word Opposites and Conceptual Matching subtests with learning disabled and mentally retarded students.

The findings of this study show that the use of the motivational probe technique was effective in obtaining a clearer picture of knowledge and ability of these students. The significant increase in test scores following the use of this adaptive testing technique implies that additional cues on the part of the examiner tend to

elicit more hidden knowledge from the student. These cues also appear to trigger compensatory processing skills that may not be activated during the standard testing routine currently used in assessing knowledge or aptitude. The relationship between adaptive testing and significant increases in test scores is worthy of future investigation.

Implications for Classroom Practice

Special Education students would benefit from a practical application of the findings of this study. Test-taking procedures and skills for these two exceptionalities, learning disabled and educable mental retardation, should be addressed and utilized in the classroom. These skills and procedures might be included in the curriculum with test-taking strategies and problem-solving skills being addressed in content areas (Thibodeau, 1985). This is especially important since children with these exceptionalities often do not have the same amount of exposure to standardized testing as regular classroom students (Salvia & Yselldyke, 1985).

Modification strategies, such as allowing the examiner to orally administer appropriate sections of an exam or having a writer available to act as a scribe while a student dictates his thoughts are other practical applications of adaptive testing (Homan, 1986). Adaptations and compensatory skills are utilized in the daily classroom routines of these special students. However when assignments are conducted, they are expected to participate

and perform within the criteria of regular classroom situations. Consideration should be given to allowing such students utilization of adaptations and compensatory skills during the testing situation. The result would be a clearer assessment of ability and achievement and possibly a more accurate placement.

Implications for Further Research

This study could be replicated with younger age groups. The assessment of readiness in kindergarten and first grade could be an area open to adaptive techniques in testing. The tests presently used could be adapted to include the probe technique for "hidden" knowledge.

Further research to include other exceptionalities might also be considered. This study concentrated on the two groups of learning disabled and educable mentally retarded. The physically handicapped, visually and hearing impaired might also be included in extended research that involve the probe technique. It might be interesting to view these groups since the I.Q. levels would be higher along with differences in processing skills.

Further research could even include the regular classroom student at any age. If research did show a significant increase in scores after using the motivational probe, it might suggest another tool by which regular classroom teachers could gauge future placement.

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