THE EFFECTS OF PREVOCATIONAL GUIDANCE
ON THE RELATIONSHIP BETWEEN VOCATIONAL ABILITY
AND INTERESTS OF EDUCABLE MENTALLY RETARDED ADOLESCENTS

By
ROBERT ANDREW STODDEN

A DISSERTATION PRESENTED TO THE GRADUATE COUNCIL OF
THE UNIVERSITY OF FLORIDA
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE
DEGREE OF DOCTOR OF PHILOSOPHY

UNIVERSITY OF FLORIDA
1976
ACKNOWLEDGMENTS

The author wishes to acknowledge the following people who helped with completion of this study:

Mr. Joe Casale, Ms. Debbie Hartzell, Ms. Vickie Gonzales, Mr. Steve Boissoneault, and Mr. Jim McBride, graduate assistants in the Department of Special Education, University of Florida, for their assistance and participation in the treatment stage of this study.

The secondary level special education teachers in the City of Gainesville, Florida, for allowing their students to participate in the experimental stage of this study.

Dr. Stuart E. Schwartz, Dr. William R. Reid, Dr. Cecil D. Mercer, Dr. Cary L. Reichard, and Dr. James W. Hensel, members of the writer's supervisory committee, whose attention and assistance have been essential.
# TABLE OF CONTENTS

ACKNOWLEDGMENTS .......................................................... ii
LIST OF TABLES. ............................................................. v
ABSTRACT. ................................................................. vi

## CHAPTER

### I. INTRODUCTION ......................................................... 1

- Statement of the Problem ............................................ 5
- Purpose of the Study ................................................ 5
- Statement of the Hypothesis. ....................................... 6
- Delimitations .......................................................... 7
- Assumptions ............................................................ 7
- Definition of Terms .................................................. 8

### II. REVIEW OF RELATED LITERATURE ................................. 10

- Historical Overview. ................................................ 10
- Vocational Evaluation Approaches ................................ 15
  - Standardized Testing Approach ................................ 15
  - Work Sample Approach ........................................... 24
  - Rating Scale and Situational Assessment Approach ........... 33
- Vocational Interests and Needs .................................... 41
- Prevocational Guidance and the Mentally Retarded ............. 50
- Summary of the Literature Review ................................ 57

### III. PROCEDURES .......................................................... 59

- Statement of Null Hypotheses ...................................... 59
- Design ........................................................................ 60
- Sample ....................................................................... 62
- Instrumentation ......................................................... 63
  - Picture Interest Exploration Survey (PIES) ..................... 64
  - Worker Trait Components: Dictionary of Occupational Titles 65
- Method ........................................................................ 66
- Analysis of Data ........................................................ 69
# LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Analysis of Variance Source Table</td>
<td>73</td>
</tr>
<tr>
<td>2</td>
<td>Simple Main Effects Source Table</td>
<td>77</td>
</tr>
<tr>
<td>3</td>
<td>Simple Effects Source Table</td>
<td>80</td>
</tr>
</tbody>
</table>
Abstract of Dissertation Presented to the Graduate Council of the University of Florida in Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy

THE EFFECTS OF PREVOCATIONAL GUIDANCE ON THE RELATIONSHIP BETWEEN VOCATIONAL ABILITY AND INTERESTS OF EDUCABLE MENTALLY RETARDED ADOLESCENTS

By

Robert Andrew Stodden

August, 1976

Chairman: Dr. William R. Reid
Major Department: Special Education

This study assessed the effects of a prevocational exploratory treatment upon the relationship between assessed vocational interests and vocational ability levels of educable mentally retarded adolescents. The study investigated three major hypotheses concerned with pre- and postobservation differences or interactions in the relationship between vocational interests and vocational ability levels, accorded to the effects of a prevocational exploration treatment, different modes of treatment presentation and subject maturity level.

A sample of 78 educable mentally retarded adolescents in grades 9 through 12 were randomly assigned within
their school to one of three groups, stratified according to grade level. The subjects were pretested with the Picture Interest Exploration Survey and divided into the following randomly formed groups: Group I received a directive presentation of treatment; Group II received a nondirective presentation; and Group III received similar attention with different content.

A two hour exploratory treatment involved the expanding of career alternatives as to subject needs and interests, desired levels of education or training, and local community needs. Data were obtained for the effects of three independent variables (treatment, presentation, maturity levels) upon the dependent variable (formulated by correlating inventoried vocational interests with vocational ability levels established through the worker trait components of the Dictionary of Occupational Titles).

The statistical procedures consisted of a multivariate analysis of variance followed by appropriate univariate analysis. A significance level of .05 was selected as the level indicative of the need for further investigation.

Results for the multivariate analysis indicated a lack of significant differences among treatment groups or nestings for preobservations or postobservations when investigated separately. Significant pre-post observation differences were found for the directive presentation of
treatment and for the high maturity level (11th and 12th grades) nested within the directive treatment group.

The author concluded that a prevocational exploratory experience for educable mentally retarded adolescents was statistically effective in contributing to a positive change in the relationship between vocational interests and ability, when presented in a directive manner with higher grade level students.
CHAPTER 1
INTRODUCTION

During the past 15 years there has been a progressively increasing interest in the social and prevocational competencies that are critical determinants of postschool vocational adjustment for educable mentally retarded adolescents (Brolin, 1976; Kolstoe & Frey, 1965). Although sources estimate that the majority of retarded persons have potential for satisfactory social and vocational adjustment (Goldstein, 1964; Halpern, 1973; Kokaska, 1968; Strickland, 1967), many studies indicate this level is usually not attained or is achieved at varying levels of success (Dinger, 1961; McFall, 1966; Peterson & Smith, 1960; Saenger, 1967; Tobias, 1970). Numerous other writers are optimistic about the possibilities of occupational success for most retarded persons, particularly if provided with occupationally oriented guidance and training (Chaffin, Haring, & Smith, 1971; DiMichael, 1967; Katz, 1968; Olshansky, 1969; Wolfensberger, 1967). These studies suggest that (a) the retarded have many untapped potentialities in the personal, social, and occupational domains, (b) little is known about the mentally retarded individual's social
and vocational abilities, and (c) given further research and better training programs, the retarded individual can reach a higher level of performance than was earlier thought attainable.

Martin (1972) estimated that only 21% of the handicapped children leaving school in the next four years will be fully employed, 40% underemployed, 26% unemployed, 10% sheltered, and 3% almost totally dependent. These figures seem generally valid in light of current reports of vocational adjustment of the mentally retarded. In determining the extent of vocational adjustment success with the mentally retarded, Brolin, Durand, Kromer, and Muller (1975) followed up 71 former mildly retarded students and found that only 21% had an average or above adjustment, 35% had a fair adjustment, and 44% had a poor adjustment. These follow-up estimates were further substantiated through findings by Olshansky and Beach (1974) that only slightly more than half of the 237 former workers at a rehabilitation workshop were working a year or more after placement.

Kokaska's (1968) review of 11 follow-up studies found that many former special class students were trained, placed, and remained employed in varying service positions, but perhaps training and placement personnel may be characterizing the mentally retarded as being too limited concerning vocational abilities. In a later article,
Kokaska (1971) warned that the limited research and knowledge of vocational training and adjustment of special class students may be affecting the socio-occupational success of mentally retarded individuals, forcing them to become marginal workers within our labor force.

One of the greatest problems that mentally retarded individuals encounter is the continual misunderstanding and underestimation of their vocational potentials. The successful evaluation and habilitation of the mentally retarded individual is precluded by several assumptions underlying successful vocational adjustment (Olshansky, 1969): (a) that we understand the level of intelligence required for different types of jobs, (b) that a slow learner is a poor learner, (c) that intelligence is a constant and global quality, (d) that the retarded person can tolerate boring tasks, and (e) that all retarded persons have the same personality characteristics.

Since many of these misconceptions continue to prevail among professionals and employers of the retarded, the task of meaningful prevocational evaluation and habilitation is quite difficult. Brolin (1972) found that 40% of the mentally retarded clients, who had been extensively evaluated at a diagnostic center, were not achieving their vocational potential despite continued rehabilitation services.
Several researchers indicate that due to the many factors related to vocational development and adjustment, no single measure is likely to be of help in programming or predicting the extent of vocational adjustment success or failure for the mentally retarded (Butler & Browning, 1970; Goldstein & Heber, 1961; Heber, 1963; Windle, 1962). The current absence of a unitary vocational prediction formula suggests that successful personal, social, and vocational outcomes are the product of many interacting variables. Scattered studies investigate individual variables (Becker, 1973, inventoried interest; Farber, 1968, basic societal expectancies; Salomone, Lehmann, & Green, 1973, vocational sophistication), while few investigate the relationship between variables involved in the prevocational evaluation process (Gold, 1973, productivity and task complexity; Lofquist, Dawis, & Weiss, 1968, work personality and vocational choice).

Despite the vocational adjustment research and expert opinions that indicate most mentally retarded individuals can reach a successful vocational level, further research indicates a great number of retarded individuals are having difficulty adjusting to the world of work. Unemployment and underemployment are constant problems for the mentally retarded due to underestimations and misconceptions as to their vocational potentials, lack of knowledge and understanding as to which variables or
interaction of variables contribute to vocational adjustment, and the lack of experimental research upon which to base prevocational exploration and evaluation programs.

**Statement of the Problem**

Research concerned with vocational adjustment of the mentally retarded has failed to identify variables or the interaction of variables necessary for successful vocational adjustment in the world of work and the development of effective prevocational exploration and evaluation programs. In an effort to meet the total life career development needs of the mentally retarded adolescent, a recent emphasis upon career education (Clark, 1974) and prevocational evaluation (Pruitt & Longfellow, 1970) has evolved, without direction from consistent, sound research studies.

The problem for the present research study is a question commonly encountered in career education and prevocational evaluation and exploration programs for the educable mentally retarded. What is the relationship between vocational interest and vocational ability, and what are the effects of prevocational exploratory treatments upon this relationship?

**Purpose of the Study**

The purpose of this study was to examine the effects of a prevocational guidance experience upon the relationship
between assessed vocational interests and vocational ability levels for educable mentally retarded adolescents. Further concerns were the examination of differences and interactions in the relationship between vocational interests and vocational ability levels accorded to directive versus nondirective presentation of treatment and different maturity levels for educable mentally retarded adolescents.

Selection of the particular variables was based upon an expressed need in the professional literature to study experimentally some of the areas of misconception and assumption with regards to prevocational exploration and evaluation of the mentally retarded. The expressed lack of research based knowledge, the conflicting findings and arguments, and the intense methodological criticism of existing studies provide purpose for the present research study.

Statement of the Hypothesis

The variables of a prevocational guidance experience, in either a directive or nondirective mode of presentation and the differing maturity levels of secondary level educable mentally retarded individuals will not individually or in interactive combination statistically affect the relationship between assessed vocational interests and vocational ability.
Delimitations

The topic for this research concerned the relationship between vocational interests and vocational ability of educable mentally retarded adolescents. The target population for this study was composed of secondary school EMR students who had been placed in special self-contained classes prior to entering secondary school. The inaccessibility of resource room or mainstream models limited generalizations to those EMR students in self-contained classrooms.

The generalizability of the study was also limited by the geographical location, nature, and size of the sample; a single urban area (university city) in North Central Florida. Therefore caution should be exercised in specific attempts to generalize findings from this study to populations outside of the sample selected.

Assumptions

For the purposes of this study it was assumed
1. that educable mentally retarded students assigned to special classes actually have needs that cannot be met in present administrative and instructional arrangements serving children of normal intelligence.
2. that the sampled students responded according to their actual interests and not according to the expectancy of others.
3. that the random sample of educable mentally retarded adolescents was representative of the general population of educable mentally retarded.

4. that the dependent variable was meaningful to the independent variable.

**Definition of Terms**

**Vocational Evaluation:** the appraisal of the individual's capacity including patterns of work behavior, ability to acquire occupational skills, and the selection of appropriate vocational goals.

**Educable Mentally Retarded Adolescents:** a secondary level school student between the chronological ages of 14 and 21, who is assigned to a special self-contained class for educable mentally retarded students in the public schools.

**Directive:** refers to a presentation of treatment from the frame of reference of the group leader (leader made suggestions and comments from his background and past experience concerning career choices of the subject).

**Nondirective:** refers to a presentation of treatment from the frame of reference of the mentally retarded student (leader did not make suggestions and comments from his background or past experience concerning career choices; suggestions came from information offered by the student).

**Maturity Levels:** refers to grade achievement levels
through 10 and 11 through 12 (grade achievement levels 9 through 10 were the low level maturity group; grade achievement levels 11 through 12 were the high level maturity group).

**Prevocational**: refers to any counseling, guidance, or training of an occupational nature before the actual employment stage.
CHAPTER II
REVIEW OF RELATED LITERATURE

This review of the literature is divided into three sections pertaining to the topic of study. The first section consists of a brief historical overview of prevocational evaluation and training of the mentally retarded. The second section consists of a research review of vocational evaluation approaches and assessment measures appropriate with the mentally retarded (standardized ability assessments, work samples, interests and needs assessments). The third section consists of a review of studies in the area of prevocational counseling and guidance efforts with the mentally retarded.

Historical Overview

The development of prevocational training programs for the mentally retarded has been a relatively recent phenomenon in the history of American education. By the 1940s several secondary level training programs existed in larger urban centers (Hungerford, 1941; Hungerford & Rosenweig, 1944; Mones, 1941, 1948). Hungerford (1941) formulated the concept of occupational education with the intention of shifting the educator's allegiance from
abstract academics to a vigorous emphasis upon the retarded individual's ability to assume vocational responsibility.

The labor deficit created by the Second World War assisted the mentally retarded in demonstrating their employability and many capabilities. The end of the war brought about new realizations concerning the goals, purposes, and functions of public education, community agencies, and the federal government.

Interest among rehabilitation researchers in predicting vocational success among the mentally retarded began when Cowdery (1922) verified that persons of limited mental specifications could successfully take part in the constructive and useful work of society. Until recently, the mentally retarded had been visualized as performing only at unskilled levels (DiMichael, 1967; Kokaska, 1968, 1971; Oswald, 1968).

A new appreciation of the work potential of the mentally retarded evolved from an increased understanding of the vocational assets of this group, which are often not reflected in standardized mental tests (Kennedy, 1948; O'Connor & Tizard, 1951). Taylor (1964) concluded specifically that general intelligence tests, with their emphasis on scholastic skills, may leave untapped other variables of crucial importance for the mentally retarded. Appell, Williams, and Fishell (1964) found that variables
such as general ability, vocational approach, attitudinal tone, learning speed, and psychomotor aptitude related factors were able to significantly differentiate repeatedly clients from those who became gainfully employed. In the process of distinguishing successful from nonsuccessful retarded clients, with respect for job placement, the authors found that neither intelligence nor educational level were discriminating variables.

In further investigation for a predictor of vocational success, Gragent (1962) examined a group of retarded adults and adolescents in a Goodwill Industries vocational evaluation and training program, noting that the intelligence quotient was a less effective predictor of employment than were interviews and projective techniques. Sali and Amir (1971) studied mental age as a dominant factor in the determination of rehabilitation prospects. Dependent variables were success at work and specific job level. Independent variables were personality factors affecting the work of the sample of 305 retarded individuals (over age 14; IQ, 30 to 65). Results indicated (a) success at work was most clearly related to motor coordination, (b) the relationship between IQ and output was weak, (c) personality characteristics and performance were highly correlated (+.66 to +.80), and (d) performance was related to social adjustment (+.80).
Albin (1973) examined the relationship of IQ to vocational success (average production in three different, nonconsecutive weeks) with 35 employees in a sheltered workshop. The data were analyzed with a Spearman correlation and the analysis indicated no significant relationship existed. Implications were that IQ does not seem to be a prerequisite or valid predictor for vocational production. These studies tend to contribute to the general hypothesis that mental age is not the dominant factor in the determination of vocational prospects for the mentally retarded, and that a comprehensive assessment in the form of a complete prevocational evaluation is a contributing force to socio-occupational success of mentally retarded individuals.

It is the assumption of many (Bozarth, 1968; Rosenberg, 1967) that the evaluation and prediction of vocational potential and/or success is a highly developed process. The main thrust of research in vocational evaluation has been to seek scientific support for the use of predictive devices (Overs, 1970).

In a comprehensive review of studies concerning the predictive assessment of the social and vocational adjustment of the retarded, Cobb (1969) concluded that judgments and assessments more often than not underestimate the ability of retarded persons to satisfactorily meet community and occupational demands. He summarized his review as follows:
The most consistent and outstanding finding of all follow-up studies is in the high proportion of adult retarded who achieve satisfactory adjustment, by whatever criteria are employed. It is more appropriate to make an assumption of positive adaptation on some meaningful criteria of employment until negative evidence appears, rather than assume a poor diagnosis until positive evidence appears. (p. 49)

As emphasized by Cobb (1969), traditionally work evaluation or prevocational exploration has been utilized to provide an effective method of judging client performance. In recent years the concept of work evaluation has been modified or broadened toward an interaction process (Gellman, 1968; Moed, 1960), an examination of the person, the work situation, and the interaction between them which facilitates the transition to employment of vocationally handicapped persons.

Current objectives for vocational evaluation services, as expressed by the Vocational Evaluation and Work Adjustment Association (VEWAA) Vocational Evaluation Project, Final Report (1975), reflect the trend away from prediction of success or failure as a role of evaluation programs. Prevocational evaluation as a comprehensive assessment as well as a remedial treatment process seems to be evidenced by current reports (Vocational Evaluation Project, Final Report, 1975).

Neff (1966) suggests the following differing approaches to vocational evaluation: (a) standardized psychological testing approach, (b) work sample approach, (c) job analysis
approach, and (d) situational assessment approach (interest and personality factors). The next portion of this review concerns itself with the various approaches to vocational evaluation and research pertaining to their use with mentally retarded individuals.

Vocational Evaluation Approaches

Standardized Testing Approach

Standardized testing has had wide use through attempts to predict vocational success (Overs, 1970), sharing the attributes of easy and inexpensive administration and objectivity, and acceptable reliability. According to Neff (1966), their main disadvantages are with low predictive validity, artificiality, and general inappropriateness for use with even the borderline mentally retarded. A brief review of arguments pertaining to the use of standardized vocational ability tests with the mentally retarded yielded the following statement:

by definition, retardation assumes a slow rate of learning. Standardized tests that measure one trial learning will reinforce the initial diagnosis of retardation without supplying the information necessary for the determination of vocational feasibility. (Tobias, 1960, p. 122)

In relation to the mentally retarded, Gellman (1968) suggests that the very strength of standardized tests may be their greatest weakness. They are designed and administered to maximize performance, thus resulting in a
poor reflection of the client's general orientation toward work or what would be expected from him in an actual job performance situation. Timmerman and Doctor (1974) discuss three cautions concerning the use of standard tests with the mentally retarded: (a) the specific results of standard tests are too often generalized to indicate some all-encompassing work ability, (b) frequently, inadequate work attitudes and behaviors cannot be assessed during a short standard test in an isolated administration setting, and (c) standard tests are frequently kept short to eliminate fatigue or declining motivation, thus inappropriately reflecting the employment setting.

While working with the mentally retarded, Tobias and Gorelick (1960) made an effort to determine the predictive ability of a single standardized test, the Purdue Pegboard. Eighty-one clients, with IQ ranges of retardation from 30 to 80, made up the sample. Performance on the Purdue Pegboard was correlated with quality of production on two separate bench operations. One was a ball-point pen assembly and the other a wire clamp assembly. Significant differences were found in performance on the Purdue, not only between retarded and normal adults, but also between different levels within the retarded range. The resulting scores on the various subtests of the Purdue Pegboard correlated highly (.79, .75, .69) with production output on two separate operations. The authors suggest a
substantial relationship between intellectual functioning (as measured by the WAIS) and manipulative dexterity. Despite these high correlations, Timmerman and Doctor (1974) concluded that the Purdue Pegboard had questionable value and must be used cautiously with the mentally retarded for the following reasons: (a) the high relationship between the Purdue Pegboard and workshop assembly tasks cannot guarantee significant correlations with other types of tasks such as those in service occupations and manual tasks requiring different movements (both tasks were assembly operations, expected to correlate with the Purdue Pegboard), and (b) the study dealt with only one aspect of productivity, quantity, to the exclusion of quality (does not mention whether or not incorrectly assembled units were counted as finished pieces).

Even though a significant implication from the study, that there are apparent levels of dexterity corresponding to levels of retardation, it remains unclear as to whether or not loss of dexterity is due to the level of retardation. Other factors, such as lack of vocational exposure, should be considered before making the sweeping conclusions about the relationship between dexterity and intelligence within the retarded range.

Wagner and Hawver (1965) obtained somewhat similar results in an attempt to identify one or more tests which would predict workshop success for severely retarded adults.
A sample included 27 subjects assessed by the Stanford-Binet to have an IQ of less than 55. The test instruments were the O'Connor Finger and Tweezer Dexterity Tests, subtest of the Minnesota Rate of Manipulation Test, the Goodenough Harris Draw a Man Test, the Active Score of the Hand Test, and the Bender Gestalt Test. Clients were administered the battery and the instructor ranked all subjects according to established criteria, such as respect for authority and directions, completes assignments with good quality, gets along with co-workers, and learns new task skills without too much difficulty.

All of the test scores registered a significant relationship with the instructor's rankings of clients. The Bender-Gestalt displayed the highest correlation (+.89) suggesting the possibility of predicting rankings of work performance with some degree of accuracy. Wagner and Hawver (1965) suggest two implications from their study: first, that there seems to be a single intactness factor found in low level mental ranges, or that there is a single factor in retardation which causes repression in other areas of learning and performance, due to the high degree of correlation between several different tests and the criteria measured, and second, that the high correlations support the validity of psychological testing with a retarded population.
Timmerman and Doctor (1974) considered the following limitations to the Wagner and Hawver (1965) study: that of the difficulty of generalizing the results due to small sample size and geographic areas, that the results could only purport to predict performance in a sheltered workshop (noncompetitive situation), and that predictive-ness appears to apply only to bench work and woodworking tasks. Despite the limitations and criticisms of aptitude assessment as a prediction tool, instruments such as the Purdue Pegboard appear to be valid and useful instruments, especially for the lower level retarded individuals.

When assessing the abilities of the mildly retarded, different generalizations would appear to apply and different assumptions need to be examined.

An instrument having some applicability for the mentally retarded is the General Aptitude Test Battery (GATB), a test used commonly in employee selection. Developed by the United States Employment Service, this instrument battery was designed to assess vocationally significant aptitudes for vocational counseling, job selection, and job placement (Brolin, 1976). The battery makes predictions for about 500 occupations, primarily of the unskilled or semi-skilled type, and measures aptitudes in nine areas: general learning, verbal aptitude, numerical ability, spatial aptitude, form perception, clerical perception, motor coordination, finger dexterity, and manual dexterity.
According to the United States Department of Labor (1970), the GATB is the most widely used aptitude test and one of the best validated and most carefully researched psychometric tests in existence. A particular strength is its close integration with the Dictionary of Occupational Titles (DOT) which constitutes the most comprehensive taxonomy of the American job market (Bacher, 1972). Unfortunately, the GATB requires a reading ability for direction and calculations at about the seventh grade level. For this reason, the Manpower Administration initiated research on a battery of tests that would measure the same nine aptitude areas as the GATB, but would also be suitable for use with many nonreading and disadvantaged clients. The resulting instrument, the Nonreading Aptitude Test Battery (NATB), has similar subtests as the GATB and supposingly is understood by individuals with limited verbal abilities.

Carbuhn and Wells (1973) attempted to establish concurrent validity of NATB factors which would significantly differentiate the vocational trainees rated as good and excellent workers from those rated as fair and poor competitive workers by on-the-job training supervisors. Their sample included 102 subjects with IQs ranging from 42 to 83 and a mean reading ability of 3.0 grade level. The criterion for admission to the preplacement program was assumed potential for returning to the community as
semi-independent and economically productive individuals. Predictive measures included the WAIS, WRAT, and the NATB, while criterion measures were three ratings on a nine-factor, five-point rating scale of each trainee's job performance. Results indicated that the NATB Factor I (space or nonverbal intelligence) is related to such job characteristics as learning time and resourcefulness for females. Factor II (perceptual speed) was related to learning time for males. Factors III and IV (internalization of rules and general learning ability) were highly related to females' learning time, ability to handle equipment, and resourcefulness. Factor V (dexterity and speed) was the most important characteristic of overall job performance for females. The authors concluded that the NATB could be used with levels of mental retardation above a minimum of 40 IQ (mild and moderate levels). Both Carbuhn and Wells (1973) and Brolin (1976) in reviews of aptitude tests recommended the NATB as a valuable source of measurement of vocational aptitude for higher level mentally retarded individuals.

Despite limitations of many of the studies conducted with standardized vocational or psychological instruments and the mentally retarded, Cobb (1969) suggests from his review of predictive studies "that the most stable predictive indicators have been found to be standard measures of manual dexterity to criteria of work competence" (p. 143).
In reviewing manual dexterity tests, Overs (1970) suggests that standardized instruments of dexterity predict as well as or better than job samples, and may be administered in a much shorter time at a greater savings to clients and staff.

As indicated by Super and Crites (1962) manual dexterity is not a singular trait. The authors view isolated movements as lacking significance when an entire patterning of movements is required by workers on the job. Implications are drawn that standardized tests of manual dexterity should be recommended for use, but with caution, when working with the mentally retarded.

Jacobs and Weingold (1958) indicate that psychological testing of the mentally retarded has value in that the results (a) allow for an objective comparison of the client with his peers, (b) give general indicators as to areas to be stressed or eliminated, (c) allow for an assessment of changing capabilities of the client, and (c) may suggest that beginning or continuing training is not feasible for the client. Burdett (1963) viewed the value of psychological examinations of the mentally retarded to be in the ability of the interpretation of test results to discover areas of training as well as giving an adequate estimate of motivational abilities, personality, and level of functioning. Bitter (1967) viewed standardized instruments as valuable in exploring
personality and adjustment difficulties which could potentially affect job performance.

Several authors have heavily criticized standardized testing as the dominant predictor of vocational success with the mentally retarded. Wolfensberger (1967), in his extensive review of literature of vocational rehabilitation of the mentally retarded, critized the conceptualization of the evaluation process as the "sacred cow" of vocational rehabilitation programs, despite the lack of evidence as to its value. Wolfensberger discussed several criticisms common with studies using psychological predictive instruments. He mentions the common practice of validating a predictive technique with workshop performance rather than competitive employment, the poor control and design of studies, often plagued with selection problems, and the consistent failure to emphasize variables other than retardation as significant causal factors.

Wolfensberger (1967) and Neff (1970) argue the need for improved experimental conditions and new, more productive evaluation approaches to the vocational evaluation of the mentally retarded. Neff (1970) further criticized the traditional psychological assessment approach as being roundabout and indirect in achieving a measurement of crucial variables necessary in the real world of work. The following criticisms are posed: (a) the time
span is usually very short, (b) an encouragement to work toward full potential is given in the testing situation but is lacking in the employment situation, and (c) lack of reality in assessment situations.

The heavy criticism of studies involving standardized psychological or mental assessment instruments as an approach to vocational evaluation (Hoffman, 1970; Neff, 1970; Overs, 1968; Wolfensberger, 1967) has led to evaluation approaches providing a valid and more realistic picture of actual work capabilities.

**Work Sample Approach**

A work sample, according to Neff (1966), is a "mock up, a close simulation of an actual industrial operation, not different in its essentials from the kind of work a potential employee would be required to perform on an ordinary job" (p. 27). A number of vocational evaluators view work samples as superior to standardized tests, especially with a mentally retarded population (Gold, 1973; Hoffman, 1970; Neff, 1970). Yet, others indicate that standardized tests reveal as much if not more than work samples (Cobb, 1969; Sankovsky, Arthur, & Mann, 1968; Super & Crities, 1962).

Several arguments were noted in the literature in favor of the use of work samples as an approach to vocational assessment: (a) that they assess the same skills, aptitudes, and abilities required by competitive employment
situations (JEVS, 1968; Overs, 1968; Usdane, 1963), (b) since they are much like real work, they motivate clients more than standardized tests (Hoffman, 1970; Neff, 1966; Overs, 1968), and (c) work samples are much less affected than standardized tests by factors such as educational level, speech and hearing impairments, and excessive anxiety (JEVS, 1968; Lustig, 1966; Overs, 1968).

Although favoring the increased use of the work sample approach to evaluation, Timmerman and Doctor (1974) present general cautions against a heavy reliance upon the use of work samples with the mentally retarded. These cautions include the fact that the resemblance of work samples to actual jobs does not assure their predictive validity since many job differences cannot be duplicated in work samples, the problem of subjective observation and interpretation by raters, and the existence of a widespread lack of standardization among work samples, with very few being validated with the mentally retarded.

In the field of work evaluation for the handicapped, some efforts have been made to devise batteries of work samples which would have universal significance. One well accepted work sample system is the Wide Range Employment Sample Test (WREST), also titled the Jastak-King Work Samples, a recent development of Jastak and
King (1972). It consists of a short battery of 10 work samples developed at a workshop for the mentally and physically handicapped. The primary purpose of the WREST, according to its authors, is to evaluate dexterity and perceptual abilities in small groups within a two hour time period. Brolin (1976) discusses the strengths of the battery, for use with the mentally retarded client, as providing the opportunity for the client to practice exercises prior to timing and evaluation of the work sample, by listing industrial norms (both competitive and workshop), along with short administration time and precise instructions.

In contrast, Timmerman and Doctor (1974) reported the normative data for the WREST as sketchy, found the instructions as confusing and obscure, thus making it necessary to modify instructions and procedures in several areas to closer approximate the needs of the mentally retarded. In criticism, Brolin (1976) also noted a need for further and more systematic procedures concerning the observation of client behavior when using the WREST battery. A further problem concerned the application of results of the evaluation to any specific jobs or occupational groups, since the battery does not relate its work samples to the DOT or any other job classification system. Botterbusch (1973) noted that there was no way of knowing what competitive jobs were related to specific samples or
to the battery as a whole. Despite the obvious shortcomings the test battery appears to have potential for both mild and moderately retarded groups (Brolin, 1976; Timmerman & Doctor, 1974).

One of the better known work evaluation systems is the TOWER (Testing, Orientation, and Work Evaluation in Rehabilitation), developed in 1936 at the Institute for the Crippled and Disabled (ICD). The TOWER system includes 14 broad areas of work evaluation and over 110 work samples in all. Evaluation takes approximately three weeks with each occupational task presented in a gradual sequence from simple to complex.

Some of the advantages of the system, according to Rosenberg (1967), are that service procedures are flexible rather than rigid making the tasks adaptable to the mentally retarded, and the tasks relate directly to skill potential needed in vocational training. Rosenberg views the TOWER as an approach to vocational evaluation rather than an exact "test" of the client's vocational potential. In turn, the same flexibility of instruction and administration (modifications made to compensate for high reading and comprehension levels, pretimed practice trials, and adaptability to local placement opportunities) would appear to effect the already weak validity reports of the test samples, as well as the norms concerning quality and quantity of performance (Rabucha, 1975; Timmerman &
Doctor, 1974). Brolin (1976) suggests that the TOWER has applicability with the mentally retarded, at mild levels, at least in some work sample areas, with appropriate modifications. One of the more advantageous reasons for its applicability with the mentally retarded is the wide variety of occupational exposure available through the work task samples.

Another evaluation instrument, the Jewish Employment Vocational Service (JEVS), was developed under a contract with the Manpower Administration, Department of Labor. The system consists of 28 work samples covering 20 different work areas within 10 worker trait groups (Brolin, 1976). Several of the work tasks have been adapted (VIWES, 1976) to assess the work potential of persons with learning disabilities and various levels of mental retardation. The evaluation period, involving approximately two weeks, is initiated with the simplest work samples and proceeds towards increasing complexity. Each work sample is administered under actual work conditions for that specific task, with the client observed, timed, and rated on a three point scale; the higher scores indicative of performance and behavior required in competitive employment.

One of the major strengths of the system (Brolin, 1976) is that each work sample is directly related to the "work trait group" arrangement in the Dictionary of Occupational Titles (DOT), allowing for a direct comparison
between actual occupational categories and evaluated skills. Weaknesses of the JEVS system (Brolin, 1976; Timmerman & Doctor, 1974) are that the instructions for the tasks are not suited to reading levels of the mentally retarded, that the pressure of time limits upon the client causes undue anxiety and mistakes, the inability of the client to conceive the work samples as related to real work situations, and the need to disassemble the work samples before they can be used again. With an increasing use of JEVS by state employment agencies, and the introduction of the new work samples (VIEWS, 1976) for the mentally retarded, consideration is warranted by those involved in the vocational evaluation of the mentally retarded.

Another evaluation unit, the Singer Vocational Evaluation System, is a work-oriented screening device designed to help the individual make a vocational choice through a "hands on" exploration experience of several job tasks. The system utilizes an audiovisual approach to present programmed instruction on the performance of specific tasks selected in 17 occupational clusters, self-contained within work stations, each outfitted with the necessary instructional tools. Purportedly the system avoids the pitfalls of reading deficiencies, through the combined film strip and tape presentation, and also permits the trainee to work at his own pace. The "hands on" nature of the system is considered a very positive aspect for
prevocational exploration and awareness, particularly for the mildly retarded (Brolin, 1976), yet caution must be exercised when using the system for purposes of evaluation. Only one or two of the work stations are considered appropriate for the more seriously retarded individual, with indications that some of the work tasks were too involved for the retarded population. According to Rabucha (1974), problems have existed in the oral presentation of instructions, the small screen size, and poor audio when used with the retarded or handicapped.

The Goodwill Industries of Chicago and Cook County Inc. produced the Multidimensional Objective Vocational Evaluation (MOVE) system, a computerized method of assessing an individual's vocational abilities. The system consists of 32 factor-pure tests (completely objective) which take approximately three hours to administer (Hester, 1975). After testing the raw aptitude scores and additional personality characteristics of the individual, these are all fed into the MOVE computer program. The data are analyzed by the computer to determine how the individual's abilities relate to jobs contained in the Dictionary of Occupational Titles. According to Hester (1975), the MOVE system does not duplicate information offered by the other major systems, thus it can be used in conjunction with JEVS and TOWER as a further guidance information aid. Hester suggests that because of the
factor-pure nature of the MOVE tests, the system can be used with all levels of persons regardless of background or handicap (with the exception of the blind). Due to the relative newness of the system and the lack of use outside of Chicago, only the original test reports could be found on the system.

The MacDonald Vocational Capacity Scale (VCS) developed at the MacDonald Training Center (Pinkard, Gilmore, Richer, & Williams, 1963) consists of eight separate tests or ratings administered in an evaluation setting where observations can be made over a two week period, for the purpose of predicting the vocational potentialities of young retarded adults. The VCS purports to differentiate among persons needing close and constant supervision, those of workshop potential and those capable of some level of competitive employment. As initially designed, the VCS was comprised of eight measures: (a) work habits, (b) physical capacity, (c) social maturity, (d) general health, (e) manual skills, (f) arithmetic, (g) direction following, and (h) motivation. Further research by Ho (1972) revealed that physical capacity, general health, and motivation were not significantly predictive to warrant their inclusion in the VCS. Based on an individual's scores on each of the eight measures, which have varying weights, the scores are recorded and tallied on a profile sheet and a prediction of the individual's vocational
capacity as day care, sheltered, borderline, or competitive is ascertained.

The VCS was developed especially for use with the mentally retarded, yet some serious questions have been raised concerning some of the procedures involved in the original study with the instrument. Windle (1962) suggests that the MacDonald (VCS) study contained such serious methodological shortcomings that it was worthless as a predictive study. He noted in particular that the reasons for placement were not independent of the descriptive characteristics of the client, and thus retrospectively related to placement (self-fulfilling prophecy). This would entail placing a client at a certain level due to his performance on a test battery and then using the placement to establish the validity of the test battery, without consideration as to whether the client performed any better. Windle (1962) also criticized the use of chi squares with unequal group cells and pointed out serious computational errors in the original VCS study.

Dayan (1968) in another study, attempted to validate the VCS using a population of mentally retarded young adults. Three hundred and sixty-six institutional residents were each administered the VCS twice, with care taken to avoid contamination of ratings by staff members. The VCS scores were not used in making programming determinations, thus avoiding the main objection to the
MacDonald study. Dayan indicated significant findings concerning vocational capacity with the mentally retarded. These included little or no discrimination accorded to age, some relationship existing between IQ and the level of employment, and disproportionate percentages of minorities in the competitively employed group.

Comparison between the mean scores of each VCS measure and various criterion groups indicated that differences were all in the same direction; competitively employed, sheltered workshop, nonemployed, and day care. According to Brolin (1976) and Timmerman and Doctor (1974), the VCS does appear to have some predictive value for discrimination levels of placement for the mentally retarded. Wright and Trotter (1968) and Wolfensberger (1967) recommended further research with the VCS to determine the validity of the scale, by increasing sample size, further cross-validation, and studies of the instrument's predictive value. Further revision of the scale by Ho (1972) is a significant starting point in this direction.

**Rating Scale and Situational Assessment Approach**

According to Dunn (1973) vocational evaluation predictors can be expected to reach their greatest validity when they closely approximate a real work setting. This philosophy has given birth to the situational assessment, defined by Dunn (1973) as "a systematic procedure for observing, recording, and interpreting work behavior . . .
applicable to a variety of real or simulated work situations" (p. 5).

Brolin (1976) provides several advantages and disadvantages of the situational assessment approach to vocational evaluation (assessed through a rating scale) for the mentally retarded. Some advantages are (a) activity approximates the real work situation, (b) eliminates the typical testing situation (anxiety), (c) is possible to assess many typical work behaviors (interpersonal relationships, cooperation, pressures, authority), (d) gives the individual more time to adjust to the situation before assessment, and (e) individual can be evaluated under various conditions, with several supervisors, and in several work situations. Some disadvantages are (a) is dependent upon accurate interpretation of observations, (b) problem of variance among raters on observed behavior, and (c) the group setting may effect the rater's evaluations.

Several rating instruments on the vocational behavior of the mentally retarded have been developed. Daniels (1972) designed the Vocational Adjustment Rating Scale (VARS) with 90 items, 42 of which reflected positive vocational adjustment and 48 which are negative. Reliability was ascertained by comparing scores of three raters who independently assessed each group of trainees in each of the four job areas rated by the instruments.
The test population was composed of 40 young adult males (age range, 17 to 28) (IQ, 50 to 80) enrolled in a rehabilitation center. A basic weakness of the study, according to Timmerman and Doctor (1974), was that the rating scale consisted of only a small part of a project on self-concept and vocational adjustment, thus efforts to establish predictive validity for the scale never occurred.

Another behavior rating scale is the Work Adjustment Rating Form (WARF) developed by Bitter and Bolanovich (1970) designed to predict job readiness of mentally retarded individuals. It was designed to provide a systematic observation, relevance, reliability observations, and verifications of behavior patterns. A study by Bitter and Bolanovich (1970) to validate the form used a sample of 40 clients (mean age, 19.41; mean IQ, 59.25) in light of four criteria mentioned. The ratings were completed by three counselors and one foreman after the third and 16th weeks of training. The WARF contains eight subscales, consisting of areas of work behavior, each broken down into five levels of performance.

Correlations were conducted between counselor ratings, after both three and 16 weeks, and job success. Correlational studies were also conducted involving one counselor and the foreman pertaining to each subscale of the test and eventual job success. In general, the WARF ratings
corresponded to the counselor’s pooled judgment of employability at the end of the 16 week training period with actual job success determined by six months employment. Significant differences in the number of clients assessed at each time by each rater make the correlations relatively useless for determining the effect of the additional 13 weeks. Bitter and Bolanovich (1970) indicate a need for further research in the areas of identification of specific behaviors, attainment of observer consistency, and the development of normative information.

An assessment tool developed by Levine and Freeman (1968), the San Francisco Vocational Competency Scale, is described as assessing vocational competence of mentally retarded adults. The scale contains 30 items relating to motor skills, cognition, responsibility, and social-emotional behavior. Two pretests, each involving 330 individuals, were conducted to produce the 30 items. These were then normed using a population of 562 mentally retarded individuals in 45 workshops representing all geographic areas of the United States. According to Downie (1972) the test appears to have face validity, but the potential responses are in ambiguous terms, such as "hardly ever." Recommendations are for further study with the instrument to establish predictive validity through additional norms.
The Vocational Adjustment Rating Scale for the Retarded (Song & Song, 1971) is used to measure the performance and specific behaviors of the client in all types of work settings. The test population was composed of 113 clients (age range, 15-44; IQ range, 36 to 76) from a rehabilitation center. Five areas (work ability, work habits, withdrawn behavior, aggressive behavior, and bizarre behavior) were rated on a five point continuum ranging from "very poor" to "excellent." The same supervisory personnel who had completed the rating scale also completed classification of the workers, thus possibly contaminating the results and explaining the high correlations that were found. On a two week follow-up, employers' ratings only displayed predictive validity ($r = .42$) on scale number two (work habits). The authors blame the lack of predictive validity and differences in criteria between that of the workshop and that required on the job.

The use of work samples and rating scales in vocational evaluation of the retarded has received sharp criticism by authorities in the field of special education. Wolfensberger (1967) contends that the work sample has rather doubtful value in evaluating the mentally retarded because of a number of behavioral as well as practical considerations. He suggests that caution be taken in that work sampling can deaden motivation, since no reward is generally given for working on samples. Also, the
work is often contrived or make believe and clients often do not exert their optimum effort in performing these tasks. Wolfensberger also indicated that some work samples appear to measure skills that should be taught for long periods of time before being evaluated, such as the coordinated use of tools. He warned that in working through a series of work tasks, clients are often shifted from task to task and do not remain long enough in one activity to reach their highest level of performance (limited task performance may not accurately predict later performance in the retarded).

Wolfensberger (1967) suggests that we reduce evaluation time and increase training experiences with regard to mentally retarded clients. Jastak and King (1972) and Brolin (1976) encourage multiple administration of evaluation batteries, with the role of training or exploring as an objective, to increase the client's functioning ability. Patterson (1964) points out that what often is overlooked in discussions of the work sampling approach is that research indicates "that it is not only or mainly, inability or lack of manual skill which makes for failure in employment" (p. 145). Thus the research tends to support the need to further investigate the use of present work samples as a predictive or evaluative instrument with the mentally retarded. Rather it may be necessary to investigate other variables important for
successful employment and other uses of the work sample approach, such as exploratory or training tools.

Studies support the hypothesis of poor adaptability, rather than poor ability, as an explanation for low scores on initial trials on motor tasks with the mentally retarded. Clarke (1958) suggests that with practice the mentally retarded closely approach the performance level of normal individuals who have also had the advantage of practice. Gordan (1969) and Reynolds and Adams (1954) found that the difference in performance level between subjects of high and low ability diminished with increasing practice. Lower rates of improvement for normal individuals were explained by a high initial performance, "an activating of a pool of previously acquired relevant responses carried over from psycho-motor tasks encountered in everyday situations" (Reynolds & Adams, 1954, p. 276).

Current studies relating to performance on work tasks by the mentally retarded are beginning to show that even individuals with lower levels of retardation can achieve success on high level tasks with proper training practice. Gold (1973), in attempting to obtain base-rate data of nonreinforced performance on acquisition and production with moderately and severely retarded individuals producing a complex assembly, found an exceptionally high rate and quality of performance in the absence of pay. The findings offered an indication that more should be done
to increase the level and value of work which the retarded do, instead of attempting to develop larger evaluation and reinforcement systems. With the general increase in productivity and the drop in mean errors, the author concluded that the task itself had strong reinforcing properties.

Gold (1973) also noted a nonsignificant relationship between acquisition and production, rejecting the assumption that a strong relationship exists between learning ability and production (assumption made by TOWER (1967), JEVS (1968), and other evaluation systems and standardized instruments). The data (Gold, 1973) indicate that current evaluation procedures result in a misleading underestimate of the performance capabilities of the retarded (Gold, 1972) and raise serious questions about the limiting effects of current vocational diagnostic and evaluative procedures for the mentally retarded. Gold (1973) suggests that future research focus on (a) program development rather than organization, (b) procedures of evaluation which produce demonstrably useful information rather than more prediction, and (c) development of universal reinforcement systems and clarification of training objectives.

As reflected by the VEWAA Vocational Evaluation Project Final Report (1975), the current objectives for vocational evaluation services seem to be progressing toward a more treatment oriented service, rather than
the strict assessment and predictive procedure. The current objectives are to identify an optimal outcome for the individual, to intensify the functional competencies and functional disabilities of the individual (medical, psychological, social, vocational, educational, cultural, economic), to identify those services needed to overcome the functional disabilities, and to reduce or eliminate functional disabilities of the individual in a new situation.

There appears to be evidence to suggest that current assessment and evaluation systems affect the client in a positive manner. Gwillian (1970) identified several direct client benefits from vocational evaluation, including greater awareness of goals, a better understanding of personal abilities, capacity, and potential, along with more realistic aspirations. The remaining section of this literature review indicates the importance of these variables (awareness, interests, and aspirations) in the career development of the mentally retarded individual.

Vocational Interests and Needs

A number of studies on vocational placement of the retarded include follow-up and analysis of reasons for job failure. In the majority of cases the clients were able to meet the skill and strength demands of the job, but failures appeared to reflect difficulties pertaining to work interest, habits, motivation, and understanding

For the above reasons there has been a steadily increasing concern shown in the area of vocational interest evaluation of the mentally retarded. Timmerman and Doctor (1974) suggest three possible reasons why the area of interest assessment has lagged behind other areas of vocational evaluation for the mentally retarded. These are that the mentally retarded have not been considered as serious candidates for competitive employment in the past, that due to the mentally retarded individual's limited social maturity and exposure to job differences, their ability to make occupational choices has been questioned, and lastly, that very few interest assessment instruments are appropriate for the mentally retarded population.

Well-known and commonly used interest inventories such as the Strong Vocational Interest Blank (SVIB) and the Kuder have proven to be unsatisfactory for use with the mentally retarded because of their dependence upon verbal abilities and a wide range of experiences (Brolin, 1976).

With the desire to assess the validity of occupational choices among various levels of the mentally retarded population, Cohen and Rusalem (1964) conducted a study
using three subgroups: normal, noninstitutionalized mentally retarded, and institutionalized mentally retarded. The students were presented nine occupational values: advancement, benefits, independence, interesting work, prestige, interpersonal relations, salary, security, and working conditions. Each student was asked to identify the most important occupational value (oral and written presentation). The mean ranks for the nine items were computed both for the three major groups and for subgroups of boys and girls. Results indicated a greater resemblance between subgroups of girls than between groups of boys which was viewed as a reflection of greater similarities of perceived roles across intellectual levels. Both sexes and subgroups placed high value upon job advancement, suggesting that despite intellectual capacity, students have high expectations of achieving high-level vocational objectives. The mentally retarded boys placed greater emphasis on job benefits and less upon relations with others and interesting work, thus indicating that boys seemed to prefer immediate or early gratification. Whether or not the choices reflect legitimate, consistent interests was not really established. The author indicated the need for similar studies with older age groups to evaluate if interests expressed at the younger age level remain constant.
Burg and Burnett (1965) noted that with interest assessment of the mentally retarded (a) tests requiring even a minimum of reading ability were unrealistic, and (b) that even in picture tests, response was frequently to specific people or items within the picture rather than to the occupation illustrated. To counteract this affect, the authors devised a set of verbal descriptions to accompany a standardized interest instrument, the Geist Picture Interest Inventory (GPII). In some cases original titles were used, while for the majority of titles, simplifications of a more descriptive nature were adopted. During the test administration, the examiner reads the questions and describes each picture, then asks the client to indicate his preference by raising the appropriate number of fingers or pointing to her preference. This bi-sensory form of administration for the retarded (no established validity) yielded scores which were compared with scores from the GEIST manual. Comparisons indicated that the retarded sample obtained mean scores exceeding the general population in the areas of mechanical, clerical, outdoor, social service, and dramatic. The authors do not draw specific conclusions from the findings, leaving open the question of valid interest patterns for the mentally retarded.

Another interest inventory, the Vocational Interest and Sophistication Assessment (VISA) developed as part
of the Johnstone Project by Parnicky and Kahn (1963), was designed specifically for a mentally retarded population. The interest portion of the instrument consists of a number of line drawings showing people working at various jobs usually considered as suitable for the retarded (males in the areas of construction-maintenance, farm-grounds, food service, garage, industrial and laundry; females in the areas of business-clerical, food science, housekeeping and laundry). The client is shown each drawing and asked if he would like to perform the work "a lot," "a little," or "not at all" (problem of response set with the client).

The sophistication portion of the VISA consists of a series of questions asked about pictures taken from the interest portion of the test, to assess the subject's knowledge of the jobs which are illustrated. According to the authors, the premise is that for an individual's interest to have high validity, the interest should reflect knowledge of the job area.

Parnicky, Kahn, and Burdett (1968) reported temporal reliability data for terms of one month and 12 to 18 month test-retest correlation coefficients. The mean, short-term correlation coefficient for males and females was +.74. The mean, long-term correlation coefficient for males was +.85; for females, the r = +.97. Validity reports consisted of VISA scores favorably compared with
ratings of work supervisors. A later report by Parnicky, Kahn, and Burdett (1971) indicated that interests, as measured by the VISA, appear to be independent of the level of intelligence, CA, and knowledge of jobs. The strength of associations between IQ and sophistication scores were low to moderate. Also, a high degree of construct validity was found through a factor analysis for both male and female forms of the interest scales.

In a study to determine the effects of various exploratory treatments upon the sophistication level of mildly retarded students, Salomone, Lehmann, and Green (1973) administered the VISA with some perceived shortcomings: (a) the personality of the VISA administrator may affect the scores, (b) a need for extensive normative data on the VISA with normal individuals, and (c) the need for a greater number of realistic, potential job employment areas for the retarded. Timmerman and Doctor (1974), in their review of assessment instruments for the mentally retarded, offer some positive aspects of the VISA: it gives appropriate jobs in simple, line drawings, it attempts to deal with the problem of sophistication, and it has the advantage of the client not having to make forced choices between pictures. Several problems with use of the VISA are also pointed out by Timmerman and Doctor (1974): the simple response format often does not discriminate between job areas, some of the drawings are
ambiguous as to what the job is or which of the persons pictured is related to the job, the sophistication element of the test requires constant updating and change, and it offers a limited view of a small number of fields which are illustrated.

The Reading Free Vocational Interest Inventory was developed by Becker (1967, 1969, 1973) to objectively assess a retarded individual's performance for particular work areas. The Guide to Jobs for the Mentally Retarded (Peterson & Jones, 1964) served as the primary source of work areas which the mentally retarded have demonstrated proficiency and productivity within. Eleven male job cluster scales and eight female scales were developed. The client was presented with three pictures of job areas and was allowed to make only one choice, although all three areas may have been of interest to him.

The normative sample for the study (Becker, 1969) consisted of 6400 EMR subjects from all geographical sections of the United States. Norms are available for male and female subjects in the public schools and from institutions. Validity of the inventory was obtained with concurrent testing using the Geist Picture Interest Inventory (GPII), since it contains male and female forms similar to the Reading Free Vocational Interest Inventory. Coefficients of correlation were computed with the interest scales, resulting in a positive relationship. The test-retest
method of establishing reliability coefficients (two-week interval) for males and females yielded the following values: .75 (public school, male); .92 (institution, male); .72 (public school, female); .88 (institution, female). There remains a need to establish predictive validity of the scales for the Reading Free Vocational Interest Inventory and to assess its vulnerability to the same criticisms brought against the Geist and VISA, due to the many similarities among the three instruments.

The Wide Range Interest Opinion Test (WRIOT) is a recent test published by Jastak and Jastak (1972), which is composed of 150 sets of three pictures each. The client is to respond to the most and least liked pictures in each set. No reading is required on the part of the client. The instrument was normed on the general population (adults and high school students) including a high percentage of rehabilitation clients. Varying validity coefficients were obtained through concurrent testing using the GPII, but the authors discount the value of validity estimates by implying that the instrument should be validated each time it is used. Reliability coefficients were obtained through a split-half method for males and females within each of the cluster areas. The length of the test is rather long, especially for those with limited attention spans, making use of the instrument with the mentally retarded questionable.
Another instrument which focuses specifically upon competencies needed for postschool adjustment is the Social and Prevocational Information Battery (SPIB) which was developed by Halpern, Raffeld, Irvin, and Link (1975) to evaluate the impact of prevocational (work-study) programs upon the mildly retarded. The SPIB assesses knowledge in nine skill areas related to community adjustment. Norms were gathered on the mildly retarded for sample groups from different regions within the United States. Reliability estimates were established with varying sample sizes through the test-retest method. Validity figures were obtained by comparing the relationship between the nine tests of the battery and the five criterion subscales over a one year period. Only tentative coefficients were available due to the newness of the instrument.

While reporting work with the Minnesota studies, Dawis (1967) introduced a theory of work adjustment to assess the appropriateness of job placement according to the degree of correspondence between an individual's work personality (abilities and needs) and the work environment (abilities required and needs satisfiable by the reinforcer system of the job). To match an assessed individual with an assessed work environment satisfactorily assumes that work environments and personalities are stable and consistent. Dawis (1967) indicates that mental ability and interests are found to be stable, but admits that the
assumption is a weak point in the theory. The work adjustment theory has been used with disadvantaged individuals primarily, but seems to have implications for prevocational programs for the mentally retarded.

The need to investigate variables or combinations of variables other than just vocational aptitude or ability seems to be well supported in the literature. The failure of many aptitude instruments to predict or contribute to the vocational success of the mentally retarded has encouraged the development of several interest and needs inventories. This review of literature indicates varying levels of success, with conflicting conclusions concerning assessment in this important area of study. Further concerns are with the use of the results of interest assessments to best help the mentally retarded individual to attain the highest level of career development possible.

**Prevocational Guidance and the Mentally Retarded**

With the development of several prevocational interest assessment instruments there is concern for the career development levels attainable by the mentally retarded and the necessary prevocational guidance programs necessary to facilitate this development.

Related to the current interest in vocational adjustment of the mentally retarded, several studies have investigated variables of concern in prevocational guidance programs. Ginzberg (1951) described three periods in
the development of occupational choice for individuals of average ability. During the fantasy period, extending to 11 years of age, the individual is motivated by hero figures; there is little reality testing of the appropriateness of his choice, which often lacks stability.

During the second stage, 11 to 17 years, the individual becomes aware of the qualifications (ability and training) and personal values supporting his choices, with more realistic conceptions of the preparations needed to attain the job.

A review of selected studies indicates that the mildly retarded adolescent may have problems which hinder him in the development of realistic vocational goals. Kuhn (1966) interviewed mildly retarded junior high school students and normal CA and MA controls, reporting that the mildly retarded students had a significantly lower level of understanding of their selected future occupations than the other groups. Katzen (1966), working with the mildly retarded in a special class, found that the degree of realism in vocational preference was related to IQ and degree of self-acceptance. The author also found that for all subjects there was an inverse relationship between self-acceptance and realism of vocational choice, but for male groups the degree of realism was also a function of IQ.
Jones (1967) investigated the relationship between vocational outlook and type of program with 373 special class students. Using a self-constructed instrument, the findings indicated that the appropriateness of vocational preference increased with IQ for both sexes; in general, females were less realistic in their choices than males, the degree of realism of vocational choice also increased with chronological age, and white students were more realistic than nonwhite.

Folman and Budoff (1971) also studied the relationship of IQ to the development of realistic vocational choice (interests and aspirations). The retarded population was further divided into groupings of high scorers or gainers and nongainers (determined by scores on the Kohs' Block Design Test). Findings consisted of the following: (a) there were few or no differences between retarded and nonretarded adolescents in vocational development, (b) the high learning potential retarded students aspired for and expected to obtain lower level jobs (minimized the risk of failure), but displayed realistic awareness and involvement in the future job choice. (c) the nongaining retarded responded very positively initially concerning vocational aspirations (wishful thinking), but could not offer any solid evidence about the reality of his responses (appeared to be in the fantasy period), and (d) the high level retarded tend to express the same outcomes as their