

**PERSONALITY PATTERNS AND VOCATIONAL INTERESTS OF LEARNING
DISABLED AND NONLEARNING DISABLED HIGH SCHOOL STUDENTS**

by

Robert J. Ivy

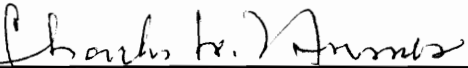
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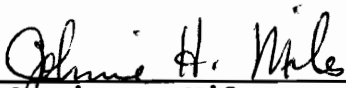

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(ABSTRACT)

There is a lack of research based data in the field of learning disabilities, especially at the secondary level. The purpose of this study was to evaluate personality configuration patterns and vocational interests through the administration of the Myers-Briggs Type Indicator, Abbreviated Version (AV) and the Self-Directed Search, Form E (EASY) for learning disabled (LD) and non-learning disabled (NLD) students. The sample included 90 LD students and 100 Non-LD students grades 9 through 12 in a large suburban school system. Research questions considered: (1) differences in personality and vocational interest between LD and NLD students; (2) age and gender of LD and NLD students in relationship to vocational interests; (3) relationship between personality

patterns and vocational interests between LD and NLD students. Treatment of the data used both descriptive and inferential statistical analyses. Analyses relied on categorical data, and the chi-square test was the statistical test used. Demographics provided data on groups regarding ability level and reading achievement scores related to occupational preferences and gender characteristics. Results indicated that no significant personality differences existed between LD and NLD adolescents. It was found, after looking at all possible interactions between vocational preferences and personality, age, grade, and gender, that significant differences occurred with gender and vocational preferences for both LD/NLD groups. Additionally, EI and TF differences in vocational preferences existed for LD and NLD students. EI and TF differences between LD and NLD career preference showed LD I's and T's prefer mechanical careers, whereas NLD I's and T's prefer teaching and sales. This is correlated with gender preference of LD males for mechanical (non interactive careers), whereas NLD prefer interactive careers.

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DEDICATION

This doctoral dissertation is dedicated to my mother,
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encouragement throughout my life has been the
inspiration for me to achieve my goals.

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Chapter 1

INTRODUCTION

The transition of disabled youth from school to work has been identified as a major priority of the Office of Special Education and Rehabilitative Services (OSERS; Will, 1984). Recent figures in the Department of Education's Ninth Annual Report to Congress on the Implementation of P.L. 94-142 in 1987 indicated that over half of high school students with disabilities age 16 years and older graduated with a certificate or diploma in 1984-1985. Despite increasing interest in the transition of disabled youth from school to postsecondary training and employment, available data indicate that few secondary school special education programs provide relevant services. The OSERS view of transition involves three major components: (a) the high school foundation; (b) employment opportunities; and (c) the bridge between these two components, which may involve the provision of a continuum of services ranging from no special services and time-limited services to ongoing vocational support throughout an

individual's life. This process of transitioning from dependence as a student to independence as an adult must be accompanied by adequate planning. The transition is easier if there has been sound preparation in the secondary school, appropriate planning for postsecondary services, and adequate services for adjustments in the community.

Students who are disabled have the same rights to participate in vocational and career development programs as do nondisabled students as a result of state and federal mandates. Though attention has been devoted to the vocational needs of disabled students, data continue to show that these individuals are consistently overrepresented among the underemployed and unemployed (Bell & Burgdorf, 1983; Bove, 1980). Disabled students continue to leave our schools without the vocational training needed to allow them to compete adequately for jobs in their communities.

Edgar (1987) provided significant research findings concerning disabled students who had been in high school special education programs or received special education services while in school. Edgar's

study indicated: 1) few students with disabled conditions move from school to independent living in their communities, 2) secondary special education programs appear to have little influence on the adjustment of students to community life, 3) more than 30 percent of the students enrolled in secondary special education programs drop out, and 4) neither graduates nor dropouts of programs involving special education programs or services find adequate employment.

The EHA Amendments of 1983 and 1986 have supported important research and data collection and analysis activities which, taken together, provide a portrait of the educational, vocational, and independent living status and outcomes of secondary age disabled students who are in the process of leaving special education. Despite the concern for transition evidenced in federal legislation, many students with disabilities "transition" from school to unemployment (Schmitt, Growick, & Klein, 1988). The Office of Special Education Programs reported data that showed that nearly 60 percent of disabled youth between the ages of 16 and 21 who exited the educational system during the

1986-87 school year exited by graduating with either a diploma or a certificate. This figure is significantly lower than the graduation rate for students as a whole.

The U.S. Department of Education's "State Education Statistics" wall chart (1987) estimates the graduation rate for students as a whole to be 70.6 percent, which is similar to the 75 percent rate reported by the U.S. Bureau of the Census and the U.S. National Center for Education Statistics (NCES, 1986; figures are for 1985). These figures are reinforced by data for 1985-1986 that further identified students with learning disabilities, mental retardation, and emotional disturbance over 16 years of age as most likely to drop out (Hume, 1988).

Special education graduates also receive lower wages than nondisabled graduates. Wehman and colleagues (1985), confirmed that disabled people earn significantly less than nondisabled people. They found in their study that 75 percent of disabled individuals earned less than \$500 per month.

These findings concerning graduation rate, unemployment and underemployment of youth and adults with handicaps have major implications for their

personal futures, as well as for society as a whole. If disabled youth are to be prepared for the world, it should be determined what is needed to encourage success and develop a delivery system that ensures relevant instruction and services.

In an article concerning the role of special education in learning disabled (LD) adolescents' transition from school to work, Okolo and Sitlington (1986) concluded that secondary special education programs should provide six types of relevant activities: (a) occupational awareness, exploration, and basic work experience; (b) in depth career/vocational assessment; (c) instruction in job-related academic skills; (d) instruction in job-related interpersonal skills; (e) support services to other disciplines involved in vocational programming; and (f) post-school placement and follow-up.

The career/vocational assessment process forms the basis for appropriate individualized educational services. Counselors and teachers using a comprehensive career guidance approach should view assessment as a basic process for getting information

needed in assisting students to make decisions and work toward goals. Assessment, as a functional element of a guidance program is the responsibility of all personnel who work with special-needs students. It is important to identify the differences between LD and non-learning disabled (NLD) adolescents' career choices, vocational-career patterns and personalities so that guidance counselors and school personnel can be more effective in working with LD adolescents. If there are differences, it should be known what these are so that one can best assist LD adolescents and young adults in creating career plans and seeking appropriate employment.

The vocational literature suggests that an individual's personality and interests are important determiners of the occupations in which a person will experience job satisfaction and success (Holland, 1966; Ostipow, 1983). Personality and vocational interest inventories provide individuals with information to enable them to make better, more informed, occupational choices. Interest inventories are a necessary means of eliciting from learning disabled individuals their career preferences. Although personal interests may

not interface with functional strengths, interest inventories can provide useful information. If interests are not compatible with abilities, career counseling and self-awareness education may be needed. If compatibility is evident, directions for career selection will evolve. Motivation, self-direction, independence, and perseverance can be significantly tied to the information gained through an interest inventory. Many LD individuals are willing to invest inordinate amounts of time and energy in attaining their goals (Weller & Buchanan, 1983). While personality and interests alone are not sufficient for success in a given career, a person with the personality, interests and abilities suitable for a given occupation is more likely to do well and be satisfied in that occupation (Cronbach, 1960). Unfortunately, much of the research concerning occupational aspiration has not been concerned with the influences on special or disabled populations' occupational choice. Career planning for this population is contingent on better assessment of the important variables of career success; that is, personality and interests. To prepare LD students for

occupations suited to their interests and personalities, interest and personality assessment should be considered an essential component of career/vocational assessment procedures.

Learning Disability

Kirk introduced the term learning disabilities in 1962 to the parent group which organized the Association for Children with Learning Disabilities (ACLD). Learning disability was used to cover varied subgroups of children who shared a problem in academic learning without an apparent cause. Learning Disability has been used to describe individuals diagnosed as having minimal brain damage, dyslexia, central processing dysfunction, aphasia, minimal cerebral dysfunction, etc. The learning disabled were children who had often been ignored, misdiagnosed and mistreated (Ross, 1976). Under the pressure of parent groups, the movement to establish LD as a special category rapidly gained momentum. Since 1969, varied professionals - neurologists, teachers, clinical and school psychologists, pediatricians, ophthalmologists, optometrists and physical therapists - have been involved with learning disabilities.

Definition of Learning Disability

Kirk first defined learning disabilities as follows:

A learning disability refers to a retardation disorder, or delayed development in one or more of the processes of speech, language, reading, spelling, writing, or arithmetic resulting from a possible cerebral dysfunction and /or emotional or behavioral disturbance and not from mental retardation, sensory deprivation, or cultural or instructional factors. (Kirk, 1962, p. 263).

The term learning disabilities became popular in 1963 when, at a joint meeting of the Fund for Perceptually Handicapped Children and the National Orthopsychiatric Association, Samuel Kirk suggested the term learning disabilities be used to describe affected children (Siegel & Gold, 1982). Since 1963 there have been other attempts to define the term learning disability. However, revised definitions have remained remarkably similar to the early conceptualization. The condition is currently referred to as specific learning disability in federal regulations and the definition is as follows:

Specific Learning Disability (SLD) means a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, which may manifest itself in an imperfect ability to listen, think, speak, read, write, spell or to do mathematical

calculations. The term includes such conditions as perceptual handicaps, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia. The term does not include children who have learning problems which are primarily the result of visual, hearing, or motor handicaps, of mental retardation, of emotional disturbance, or of environmental, cultural, or economic disadvantage. (Federal Register, August 23, 1977).

While the definition of a handicapping condition is important, the operationalizing of the definition in terms of its use for identification and diagnostic procedures is even more crucial. Although accepted definitions of learning disabilities have varied since the 1960's, the operational definition has not varied greatly. It has traditionally made use of three basic criteria, all of which should be satisfied before a diagnosis of learning disabilities can be made: (a) the discrepancy criterion, (b) the process deficit criterion, and (c) the exclusion criterion.

The Discrepancy Criterion

The discrepancy criterion requires that the child demonstrate a significant discrepancy between ability and academic achievement. In other words, evidence is required that the child is capable of achieving more than (s)he actually is achieving in one or more academic areas. Thus, the discrepancy requires that the child be an underachiever.

There are many problems with use of the discrepancy criterion for diagnosing learning disabilities. The U.S. Office of Education cautioned "... other handicapping and sociological conditions may result in a discrepancy between ability and achievement. There are those for whom these conditions are the primary factors affecting achievement...for the purpose of these regulations, when a severe discrepancy between ability and achievement exists which cannot be explained by the presence of other known factors that lead to such a discrepancy, the cause is believed to be a specific learning disability." (U.S. Office of Education, Federal Register, vol. 47, No. 250,

"Procedures for Evaluating Specific Learning Disabilities", 1977).

Other problems include (a) determining how large the discrepancy can be before it is considered significant; (b) deciding which academic areas to include when determining whether or not a child demonstrates a significant discrepancy between ability and achievement; (c) the implicit assumption that a direct relationship exists between ability and achievement; and (d) the assumption that both ability and achievement can be accurately and reliably measured. These problems are statistical or philosophical in nature (Ysseldyke, 1977, 1978).

The Process Deficit Criterion

The process deficit criterion has been even more controversial than the discrepancy criterion. This criterion requires that the child be shown to have a deficit in one or more of the basic psychological processes. A major problem has always been that while most authorities agree that basic psychological

processes do indeed exist, there is little agreement as to what these processes are or how to measure them.

The Exclusion Criterion

The exclusion criterion simply requires that the child's primary problem not be because of other conditions such as visual, hearing, or motor handicaps, mental retardation, or environmental, cultural, or economic disadvantage.

One problem with this criterion involves children who have learning disabilities and another handicapping condition such as emotional disturbance. In such cases, it must be shown that the child's primary problem is the learning disability rather than the emotional disturbance. This requirement frequently presents a dilemma since it may be difficult or impossible to say which came first, or which is primary.

Research and anecdotal evidence suggest that the exclusionary clause is the least used and most often ignored part of the eligibility criteria. Careful considerations of exclusionary factors would ensure

that fewer students are misidentified as learning disabled and that students with learning problems caused by factors other than a specific learning disability would be better served by alternative means including the general education classroom.

Prevalence, Incidence and Placements

In 1969 the Congress passed the Specific Learning Disabilities Act, thereby not only formally recognizing learning disabilities as a distinct and separate area of handicap, but also providing for the availability of federal funding for the establishment of programs, teacher training, and facilities. LD is the single largest category of special education services (Eleventh Annual Report to Congress, prepared by the Office of Special Education Programs, 1989). LD is also the fastest growing category of special education services, the numbers of LD identified pupils increasing from 757,213 in 1976-77 to 1,745,871 in 1982-83, to 1,941,731 in 1987-88. The 1987-88 figure represents 4.4% of school children nationally and 47% of children receiving special education services.

Department of Education reports have identified modest increases in the number of school-age children served in recent years, though concern has been expressed over the large increase in children classified as learning disabled (127%) while other classifications decreased during the first decade of implementation; and the percent of school enrollment served increased from 8.3% to 10% (Fraas, 1986). Clearly, LD is an important component of American education, yet it continues to be a service category characterized by inconsistency and disagreement. The prevalence of students identified as having specific learning disabilities in Virginia has increased markedly over the past three years. In 1985, of the total number of school-aged children identified as disabled, 39.8% were receiving services for specific learning disabilities; in 1986 this percent had increased to 45.7%, and by 1987, 50.9% of all disabled children in Virginia were classified as SLD (Child Count, 1988).

Many school children are labeled LD for a variety of reasons. In many instances, children are labeled LD who are underachieving because of environmental problems rather than because they are disabled. In

fact, DeLoach, Earl, Brown, Poplin, and Warner (1981) reported that approximately 30% of students in LD classes were not considered by their teachers to be LD. However, The Council for Learning Disabilities (1986) determined that a major reason for the high prevalence rates of children identified as SLD was the inclusion of students whose underachievement reflected factors other than SLD. Therefore, Federal and State regulations require documentation to ensure that the severe discrepancy (underachievement) was not due to exclusionary factors.

The caution of P.L. 94-142 must be kept in mind: "Special classes, separate schooling or other removal of handicapped children from the regular education environment occurs only when the nature or severity of the handicap is such that education in regular classes with the use of supplementary aids cannot be achieved satisfactorily."

"We see today a new confidence on the part of many regular and special program educators that children with learning problems can be effectively served in the regular education classroom. In addition, there is increasing evidence that it is better academically,

socially, and psychologically to educate mildly handicapped children with nonhandicapped children preferably within the regular education classroom. A child is not handicapped unless he or she needs special education." By-Laws and Regulations of the Board of Education of Commonwealth of Virginia, "Regulations for Special Education", (IIa. 300.14). Hume (1988) reported that Department of Education data indicated that more than nine of ten students with disabilities received special education in regular school buildings.

Conclusions

Typically, children with learning disabilities show normal or above-normal intelligence, in combination with pronounced difficulties in learning one or more basic educational skills. It should be noted however, that specific learning disabilities may occur at any intellectual level, even though a mentally retarded LD child would not meet the legal definition of learning disabled (Cruickshank, 1977). LD children also manifest various combinations of associated behavioral symptoms. Chief among such symptoms are

perceptual disorders in one or more sense modalities, as well as poor integration of input from different modalities and disruption of sensory motor coordination. These perceptual disorders are often directly related to their reading difficulty and other learning problems. Deficiencies in memory, attention control, and conceptual skills are common, as are certain emotional and motivational symptoms.

Regardless of theoretical orientation, there is general agreement that the identification of learning disabilities requires a wide assortment of tests and supplementary observational procedures.

More knowledge about the underlying causes of learning disabilities should contribute to the accuracy of diagnosis and enhance the effectiveness of the treatment program in individual cases. Partly for this reason, available procedures for both diagnosis and remediation of learning disabilities need to remain flexible and responsive to new advances. It should also be recognized that there are still wide individual differences in theoretical orientation among specialists on learning disabilities.

Statement of the Problem

In the years since PL 94-142, The Education for All Children Act, (Federal Register, 1975) went into effect, there has been a steady increase in the number of children diagnosed as LD and placed into programs to remediate their academic deficiencies (Johnson & Marasky, 1977). During the early years of the learning disabilities movement, psychologists, educators and other professionals centered their attention on the study of young children, or those in the elementary years of schooling. As knowledge accumulated about early development, it became increasingly apparent that despite the best intervention efforts some students continued to present unique problems during junior high and high school years. Early attempts to remediate academic skill deficits have not been successful with many LD students (Kendall, 1981). Frequently, LD students manage to graduate with skill levels that limit vocational opportunities. Studies reveal that over 75 percent of learning disabled students leave high school unemployed and without plans or resources for employment (Tyrell, 1986). From the school's

viewpoint, the problem ends with graduation, but for the learning disabled young adult, the problems are just beginning (Bursch, 1983). The same parents of the learning disabled that fought previously for more effective school placements are now concerned over post high school placements. This concern is based on earlier investigations that show adults with residual learning disabilities demonstrating a variety of employment problems (Crimando, 1984).

National concern for the disabled and their career development is growing as these students leave the protected educational environment and enter the competitive employment market. Research indicates that the gap between school and work is frequently much wider for disabled than for non-disabled individuals (Harrington, 1982). Many young LD adults are dissatisfied with their work which for some, must surely be below their abilities (White, 1982). Also, many learning disabled adults are not as successful vocationally as non-learning disabled adults. One reason for their lack of success may be that they are working in occupations incongruent with their personalities and interests. While non-learning

disabled individuals are considered to have a variety of occupational interests, learning disabled persons are often occupationally stereotyped, trained for and placed into a more limited variety of occupational environments (Cummings and Maddux, 1987). Perhaps if one considered learning disabled individuals as having personalities and vocational interests as varied as those of nondisabled individuals, one would be more likely to train them for occupations suited to their interests and in which they can experience success and satisfaction (Cummings, 1985).

Studies examining job stability and success indicate that vocational satisfaction, stability, and achievement depend on compatibility between an individual's personality and the environment in which that individual works (Devoe, 1975; Mount & Muchinsky, 1978; Wiggins, 1976). Additionally, Holland (1985) indicated that job satisfaction and stability occur more often if personality type and work environment are congruent. Job training programs for learning disabled individuals may prepare participants for jobs which fit a constricted stereotypic view of their abilities and

interests rather than for jobs which are actually congruent with their personalities.

Making an appropriate career choice is a problem shared by many adolescents. However, the problem of career choice is frequently more difficult for disabled adolescents than it is for "normal" adolescents. Societal barriers to employment and lack of appropriate occupational training narrow the choice of careers available to disabled adolescents (Weinstein, 1979). In addition, the disabled often restrict themselves to lower level jobs by making inappropriate career choices (Plata, 1981). A large percentage of disabled adolescents leave school only to become unemployed or, more often, stuck in a succession of low-paying jobs (Cruickshank, 1981).

A real need exists to provide guidance from a vocational perspective to LD high school students and young adults. However, if such guidance is to be effective, it must be based on knowledge of how this population arrives at a career decision. It is only in this manner that schools can alter or affect the antecedent conditions leading up to occupational choice (Bursch, 1983).

Federal legislative mandates to provide career education and vocational education to the disabled have made the need for improving the employability of the disabled a national education priority (Davis & Weintraub, 1978; Rezeghi & Davis, 1979; Sitlington, 1979). Despite the problems in program development and implementation that need to be resolved (Brolin & D'Alonzo, 1979; Gillet, 1979), career and vocational preparation programs have potential to help the disabled student make deliberate choices from the expanded range of occupations that are now open to them in business, industry, education, the arts, and the sciences. Non-discriminatory hiring practices by employers and the inclusion of vocational and career education in public school programs for the learning disabled hold promise for improved occupational opportunities which depends on their ability to choose and to train for occupations for which they are individually suited (Weisenstein, 1979). So that they might avoid the pitfall of passively accepting just any job, Hohenshil and Humes (1979) emphasize that "the handicapped must be made aware that they can influence their lives and careers instead of just being fitted

into stereotyped placement niches". It is imperative that the disabled, particularly the mildly disabled, make career choices from a wider range of occupations. More importantly, career choices need to be based on a knowledge of those occupations to which the individual is suited. As Hoyt (1975) reminds us, "We have far too long...seemed to assume that most persons should seek work compatible with their interest and aptitudes; however, such considerations are not necessary when seeking to find employment for disabled persons".

Research Problem

Recently, there has been increased interest in career and vocational assessment and planning for secondary students with learning disabilities. A number of persons have speculated about how learning disabled adolescents differ from their normally developing peers (Anderson, 1970; Schloss, 1971), but few studies exist that have examined systematically the influence of a learning disability on critical areas of life adjustment. One area of behavior that assumes more and more importance in the activities of high

school students and young adults is that of making an appropriate career choice. An issue that needs to be investigated is whether the career choice process for the learning disabled differs from that of their non-learning disabled peers.

Although nondisabled individuals have traditionally been considered as having a variety of occupational interests (Campbell, 1981; Holland, 1985; Kuder, 1966), the same has not been true for disabled persons. If learning disabled individuals have as much variety of vocational interests as nondisabled individuals, then vocational programs should consider those interests in terms of occupational training and counseling approaches. One way to determine personality and vocational interests is by administering personality and interest inventories.

There is a serious lack of research based data in the field of learning disabilities, especially at the secondary level. In the literature, less than fifteen references to LD career development were reported in 1978 (Irvine, Goodman & Mann, cited in Mori, 1979). Two years later an ERIC search (Nazzaro, 1980) covering both vocational education and career education for

learning disabled adolescents obtained only twelve titles. A recent ERIC search (1989) covering the same descriptors as above, revealed thirty two titles. While there has been an increase in the number of articles concerning the career/vocational needs of LD adolescents, more research is needed.

Information is specifically needed to determine if there are general or specific differences in the career choices of LD students and non-LD students. The magnitude of the problem is significant and has important implications for society as well as the involved individuals. Further research is required to provide the data base for a thorough understanding of the vocational/career needs of LD students.

Purpose of the Study

The purpose of the proposed study is to evaluate personality configuration patterns and vocational interests through the administration of the Myers-Briggs Type Indicator, Abbreviated Version (AV) and the Self-Directed Search, Form E (EASY) for

learning disabled and non-learning disabled (NLD) students.

If LD students are as varied as NLD students in their vocational interests and personalities, then career/vocational programs for LD students should focus on preparing them for occupational roles as diverse as those filled by NLD individuals. The research questions are:

1. Is there a difference in personality and vocational interests between learning disabled and nonlearning disabled students?
2. Are age and gender of learning disabled and nonlearning disabled students important variables when examining vocational interests?
3. Is there a relationship between personality patterns and vocational interests between high school learning disabled and nonlearning disabled students?

Definition of Terms

For the purpose of this study, the following operational definitions will be used:

1. Learning disabled subjects: Those 9th, 10th, 11th, and 12th grade students currently placed in the

LD program of a Northern Virginia school system in accord with federal and state regulations, whose full scale intelligence quotient on the Wechsler Intelligence Scale for Children-Revised (WISC-R FS IQ) or Wechsler Intelligence Scale for Adults-Revised (WAIS-R FS IQ) are at least in the average range of intelligence.

2. Normal subjects: Those 9th, 10th, 11th, and 12th grade students currently receiving regular education services in a Northern Virginia school system.

3. Types of placement: Students in the learning disabled program are in a LD resource class receiving three hours or less of support services daily.

4. TAP: The Tests of Achievement and Proficiency is given to all regular education students in grades 9 through 12. The TAP provides an efficient and comprehensive appraisal of student progress toward widely accepted secondary-school goals in the basic skill and basic curricular areas. The six forty-minute tests in the Complete Battery are Reading Comprehension, Mathematics, Written Expression, Using Sources of Information, Social Studies, and Science.

The Reading Comprehension Test score was used to determine Normal subjects reading comprehension level. The reading comprehension measures the student understanding of passages similar to those assigned in social studies, literature, and the sciences.

5. E.A.S.: The Educational Ability Series (EAS) is used in conjunction with the Achievement Series (SRA Test) on all regular education students. The EAS provides an estimate of educational ability. Items measure vocabulary, arithmetic computation, number patterns, letter patterns, word differences, and manipulation of forms in space.

6. WJ-R: Woodcock-Johnson Psycho-Educational Battery-Revised (WJ-R) is given to all special education students. The Passage Comprehension of the WJ-R measures the subject's skill in reading a short passage. The subject must exercise a variety of comprehension and vocabulary skills.

7. WISC-R, WAIS-R: The Wechsler Intelligence Scale for Children-Revised (WISC-R) and the Wechsler Adult Intelligence Scale-Revised (WAIS-R) are psychometric devices administered by certified school

psychologists on special education students to
determine cognitive abilities.

Chapter II

REVIEW OF LITERATURE

This chapter contains a review of relevant literature. It begins with an overview of vocational education and career education. The related topics of career/vocational education and the specific learning disabled and vocational school psychology are also discussed. The remainder of the chapter deals with career vocational assessment as it relates to learning disabilities. Special consideration is given to studies which include learning disabilities in ways particularly pertinent for this study.

Vocational Education

A Historical Review

During the late nineteenth and early twentieth centuries, industrialization, increased immigration, and greater numbers of students in secondary schools resulted in demands for public school vocational education programs (Cegelka, 1985). Due to these

demands, laws were passed to provide for vocational education for secondary students. The vocational education movement began with Congress passing the Smith-Hughes Act of 1917. This act provided funds to the states "to promote and develop vocational education as it was related to agriculture, trade and industrial education, and homemaking."

A panel of consultants on vocational education observed that existing vocational programs were not available in enough schools for enough students. Programs were not preparing people for enough kinds of jobs; the training offered was not geared to the nation's manpower needs; the methods and equipment were often obsolete and inadequate; and, a large number of youth had academic, socioeconomic or other handicaps which interfered with their profiting from available vocational programs. As a result, the Vocational Education Act of 1963 extended vocational education services to include individuals who had left school, who needed vocational training to gain entry into the job market or to maintain or advance in present jobs, and who had academic, socioeconomic, or other handicaps that prevented them from succeeding in regular

vocational education programs. According to Cegelka (1979):

This emphasis on the needs of individuals represents a fundamental philosophical shift in the approach of Congress to vocational education. While the Smith-Hughes Act of 1917 focused on the needs of employers, the Vocational Education Act of 1963 emphasized the importance of vocational skills to workers as a means of insuring their own welfares. (p. 163). Virtually all the recommendations of the

Advisory Council on vocational education were incorporated into a new law passed in 1968, called the Amendments to the Vocational Education Act of 1963. In an effort to deal with these shortcomings, the Vocational Education Act of 1963 broadened the concept of the target population to be served and the nature of the programs to be provided. The act specified that persons of all ages, whether or not still in school, should have access to vocational training and retraining programs designed to prepare them for jobs as skilled or semiskilled workers or technicians. The

1968 Amendments to the Vocational Act of 1963 specified that monies be set aside for the provision of vocational education programs for disabled and disadvantaged students. It also defined the term handicapped for vocational education. All categories of handicapped students were included except that of learning disabilities. The 1976 amendments included learning disabled students as eligible for services.

Despite agreement that schools have a responsibility for preparing youth and young adults to enter the world of work, serious shortcomings in the educational system's discharge of this obligation existed. With the passage of such legislation as the Manpower Development and Training Act of 1962, the Vocational Education Act of 1963, the Vocational Education Amendments in 1968, and related acts and amendments came a variety of training arrangements and services which have since been provided through

classroom instruction in public school systems, by business and industrial firms on-the-job, and by various institutions and agencies, public and private.

Special education programs for students with disabilities were criticized in the 1950's and 1960's for being primarily academic. The Vocational Education Amendments of 1976 (PL 94-482) were passed to attempt to remedy the exclusion of disabled people in vocational education. The Rehabilitation, Comprehensive Services, and Developmental Disabilities Amendments of 1978 (PL 95-602) provided another step forward in attempting to correct service gaps by providing for needs not covered by other legislation.

Two new professional divisions were established within existing national organizations during the 1970's. In 1975, the National Association of Vocational Education Special Needs Personnel (NAVESNP) and in 1976, the Division on Career Development (DCD) was

created within the structure of the Council for Exceptional Children. Both of these organizations have made rapid strides in promoting career education through collaborative efforts, their own publications, legislative endeavors, research, and inservice and pre-service activities.

Vocational Emphasis Today

Because of state and federal mandates, (PL 94-142; Carl Perkins Vocational Education Act, 1984) the vocational preparation of disabled youth has received increased attention. The Perkins Act is based on the notion that disabled students have had relatively limited and poorer access to vocational education. Students with handicaps now have the same rights to participate in vocational and career development programs as do non-disabled students. Students with disabilities however continue to leave our schools without the vocational training needed to allow them to compete adequately for jobs in their communities. The economic cost to society of this situation has been estimated at more than \$114 billion a year (Poplin, 1981). Over the years, disabled

students in secondary schools have traditionally been provided with an academically oriented program, despite their need for vocational education. All too often, disabled students are placed in vocational training programs they have no interest in and for which they are unsuited. Such placements rarely result in acquisition of the vocational skills these students need to compete adequately for jobs in their communities (Levinson, 1987). As discussed in the National Assessment of Vocational Education (NAVE, 1989) report on access, disabled secondary students take more vocational education than other students, and vocational education occupies a greater proportion of their total secondary education hours because they take fewer units than other students. In addition, disabled students obtain most of their vocational education in mainstreamed settings (81.7 percent) and are more

likely to be in mainstreamed settings for vocational education than for other students.

Vocational education is designed to provide training for employment in skilled or semi-skilled occupations. In a study of perceived importance of twenty three occupations by sixty-five adolescents with learning disabilities and eighty-five adolescents without learning disabilities, occupations were ranked similarly by the two groups though students with learning disabilities held occupations classified as skilled, semi-skilled, or unskilled in higher regard than nondisabled students (Plata & Bone, 1989).

In addition to specific vocational skill training, students may attain other benefits by participating in secondary-school vocational education. Vocational educators can assist students in making important contacts with potential employers, thereby helping them secure a job upon graduation. Further, since many

disabled students perceive vocational education as a desirable alternative to academically oriented courses, it may deter them from dropping out of school (Mertens, Seltz & Cox, 1984; Perlmutter, 1982). Other data suggests that vocational education participants are more likely than nonparticipants to be employed and earn higher wages upon graduation (Campbell, 1981; Li, 1981: National Center for Educational Statistics, 1982). Thus, vocational education can be an important and potent contributor to successful transition.

Based on the analysis of the status of secondary vocational education, NAVE has identified six primary objectives for federal policy. The objectives address the major needs and opportunities for improving secondary vocational education. Two objectives are specifically intended to increase the access of special populations to quality vocational education. These objectives are: (1) integrate high school academic and

vocational curricula so that: (a) students come to vocational programs well equipped with fundamental academic skills and that (b) vocational courses provide an applied context based on broad and specific job training that reinforces and enhances academic skills and motivates students to excel in both academic and vocational courses, and (2) accelerate the education of at-risk students by providing them with the extra assistance they need to succeed in demanding and highly rewarding vocational courses.

Career Education

Marland (1971) defined career education as the preparation of all students for a successful life work by enhancing their options for occupational choice and maximizing their learning achievement in all subject matter areas. Career education is viewed as a lifelong, continuous process which begins in preschool or in the home and continues through formal educational channels on into adulthood . The learner is exposed to career awareness, career exploration, career preparation, and continuing education in order to understand the relationship between a career and their lifestyle. Individuals must be exposed to those learning experiences which will allow them to develop positive work attitudes, to develop a concept of the world of work, to develop the ability to choose

alternative careers, and to acquire marketable job skills.

Career/Vocational Education
and the
Specific Learning Disabled

A primary goal of education is to assist all individuals in becoming competent - to "maximize their potential". Deficient experiences and opportunities, a frequent problem for children with severe disabilities, can limit development of independence, work personality, and ability to fully participate in career decision making (Daniels, 1987; Szymanski, E.M., Hershenson, D.B., & Power, P.W., 1988). Many disabled students may need more than the traditional amount of time to prepare for an occupation, and additional sources of training may need to be made available for more extensive career

education exploration and preparation (Adelman & Taylor, 1986). Career education aimed at influencing career development in a positive way was made a top priority for education in the early 1970's by federal policy makers, but it has been slow to reach disabled populations (Brolin, 1978). This condition exists in spite of:

Vocational Education Amendment of 1968, PL 90-576
Amendment to the Vocational Education Act, PL 94-482
Vocational Rehabilitation Act of 1973, PL 94-112
Education for All Handicapped Children Act, PL 94-142

which mandate the availability of career and vocational education programs for disabled students who might benefit. While there is a fairly significant body of information regarding career development, vocational education and career counseling for the disabled as a single population, there has been a dearth of information for the specific LD population.

In spite of these significant pieces of legislation to help propel disabled citizens into the mainstream of society, Fafard and Haubrich (1981), revealed in their study that many learning disabled individuals leave school unprepared either for college, vocational/technical school, or employment. In their study, twenty-one young adults who had received educational services for learning disabilities as young children were interviewed in regard to their adjustment as adults. An interview technique was used to obtain: (a) demographic information, (b) school adjustment information, (c) vocational adjustment information, and (d) social adjustment information. Analysis of the results indicated that the majority of subjects 1) had required additional supportive educational service throughout their schooling; 2) needed vocational assistance; and 3) were often dependent on family support for social activities. Additionally, Fafard

and Haubrich found that career information that was provided to this group of learning disabled students while in high school was primarily limited to information provided by parents. Also important was the fact that, while these LD young adults could identify future career aspirations, they had difficulty expressing plans to accomplish these aspirations. Many of the learning disabled young adults indicated that they were most interested in finding a "good" job, a job other than the one they currently held.

Learning disabled persons often have difficulty finding employment, and if they do find a job, they often cannot keep it because of their poor work habits and inadequate interpersonal skills. Crimando and Nichols (1982) state that learning disabled individuals may become victims of an invisible handicap which neither they nor their employers understand.

Children with specific learning disabilities are among the groups included in career education programs. Typically, such children have had less success with school related tasks than have those without specific learning disabilities. If achievement in school is viewed as a precursor of achievement in the broader society, then it might be questioned whether children with specific learning disabilities have incorporated attitudes about themselves and their eventual work behaviors that are reflective of their unsuccessful experiences with school.

Current conceptualizations of career education for exceptional children emphasize affective experiences and activities in regard to occupational choice, as well as preparation in specific job related skills. Career education should lead to the development of appropriate self-awareness regarding one's interests and abilities; the development of positive personal,

social, and work attitudes; and the development of entry-level skills in a selected area of specialization. Career education for the learning disabled student is an essential element in the total educational program.

From their review of the literature in the area of career education for the disabled, Broolin and Kolstoe (1978) and Sitlington and Wimmer (1981) have concluded that few empirically based studies have been conducted. The few studies that have been done on career choice behaviors of the disabled, have concentrated on career choice attitudes (Bingham, 1978; Karayanni, 1981; Kendall, 1981; Mori, 1980). The data from these studies suggest that disabled adolescents generally are immature in the following affective areas related to career choice; (a) involvement in the process of vocational choice, (b) orientation toward the problem of vocational choice, (c) independence in decision

making, (d) preference for factors in vocational choice, and (e) concepts of vocational choice. Further, the career choices made in these studies suggest that disabled adolescents underestimate their own abilities and aptitudes by choosing lower level jobs (Karayanni, 1981; Mori, 1980; Plata, 1981).

According to Nelson (1980), "handicapped students may have real deficits in this area (career choice) due to lack of information or lack of opportunity to make any of their own decisions". Kendall (1981), investigated the extent to which three groups of learning disabled adolescents differed on social maturity and career attitudes. The subjects included: (a) twenty LD students enrolled in secondary regular classes, (b) twenty LD students in vocational training classes, and (c) twenty LD students integrated into regular secondary classes and receiving additional assistance in learning resource centers. The results

indicated that subjects in the vocational training class were superior to the other two groups in social maturity and career attitudes. Brown, (1982) administered The Career Development Inventory to seventy-seven LD high school students. The results indicated that LD students as a group are more like than unlike their non-handicapped peers in career maturity. Results of the study also supported the developmental premise that career maturity in LD students increases with grade level. Bingham, (1978) used the attitude scale of the Career Maturity Inventory to measure career attitude of a public school sample with and without specific learning disabilities at two different levels of development: preadolescent (6th grade) and adolescent (9th and 10th grades). The study found that males with specific learning disabilities scored significantly lower on career attitude than did males without significant learning

disabilities at both levels of development. Bingham latter replicated a portion of the study using a private school sample of learning disabled adolescents to see if they would see delays in career attitudes similar to those manifested by the public school sample of the earlier study. The second purpose was to assess the performance of the present group of learning disabled adolescents on the cognitive dimensions of career maturity to determine if delays would emerge as well on this aspect of vocational development. The difference in career attitudes found in the private school adolescent LD males when compared to nonLD males lends further support to Bingham's (1978) finding that the affective dimensions of career behavior are influenced in some way by the presence of a learning disability. It was also found that the LD adolescents showed no delay in cognitive variables of career

maturity when compared to a standardization group of normally developing 9th graders.

It is apparent from the literature that the transition of students with disabilities from school to work is no better today than it was in previous decades. Studies of former students with disabilities (Hasazi, Gordon, & Roe, 1985; Mithaug, Horiuchi, & Fanning, 1985; Edgar, 1985) clearly reveal that the majority of them have extreme difficulties finding and securing adequate employment and becoming independent.

Vocational Education Programming

Adolescents are obviously approaching the life period in which they are expected to assume economic independence and productivity. Because our society views vocational achievement as closely related to adult adjustment, secondary school pupils must become

aware of various career possibilities, learn skills essential to acquiring and holding employment, and otherwise prepare for employment. Many educationally disabled pupils in the secondary schools are likely to fall short of the desired level of movement toward career preparedness (Epstein 1982).

Although current legislation (PL 94-142; Carl Perkins Vocational Education Act, 1984) identifies as a priority the inclusion of learners with disabilities in vocational education, LD students remain underrepresented in such programs (Cobb & Phelps, 1983; Corman, 1980; Nascon & Kelly, 1980). Only about 2% of the students enrolled in vocational education programs are considered mildly disabled, although 10% of the school aged population has been classified as such (Benson, 1981; President's Commission on Employment of the Handicapped, 1983). Moreover, LD students appear to be participating in vocational education programs

that underestimate their potential. Data from a survey of over 10,500 schools, conducted by the U.S Department of Civil Rights (1980), shows that disabled students are overrepresented in nonskilled work-experience programs (such as custodial services) while being underrepresented in higher level programs (such as dental hygiene).

A number of authors (Halpern, 1985; Johnson, 1980; Meers, 1980; Sitlington, 1981) emphasize the joint role of special education and vocational education in laying the foundation for transition to the world of work. Such cooperation between disciplines is also congruent with the position of the Office of Special Education and Rehabilitative Services (Will, 1984) and with current legislation in special education, vocational education, and vocational rehabilitation (PL 94-142; Carl D. Perkins Vocational Education Act, 1984; Vocational Rehabilitation Act Amendments, 1984). Yet

available data suggest that neither secondary special education nor vocational education programs are upholding their responsibility for preparing LD adolescents, and that cooperative programming rarely exists.

Various factors appear to contribute to the underutilization of vocational education in the transition process. First, data suggests that cooperation and communication between special educators and vocational educators is infrequent. A barrier to the inclusion of LD youth in vocational education is the increasingly stringent academic and interpersonal skill requirements of these programs and the occupations they represent. Once enrolled, LD students may find that the classroom components and the textbooks used in vocational programs place heavy demands on academic skills (Sherrell, 1981; Sitlington, 1981) and limit the probability of success.

Despite its assets, vocational education is not sufficiently comprehensive to ensure successful transition for all LD adolescents. Although vocational education can provide specific vocational skill training, it does not systematically address the work habits and attitudes that are equally critical to employment success (Sitlington, 1981). Moreover, most vocational education programs do not begin until the 11th grade, and thus may provide too little, too late for some learners. A coordinated effort between special education and vocational education offers the greatest promise for delivering the complete range of services necessary to the future success of the LD adolescent, with special education programs offering instruction in job related academic and interpersonal skills prior to and throughout the high school years.

Occupational awareness and exploration activities include instruction related to career development and

work habits and attitudes. Such activities are often needed by LD adolescents, who tend to hold unrealistic or uninformed career aspirations (Clark, 1981; Gardner, Beatty, & Gardner, 1984). Occupational awareness and exploration can lay a foundation for developing job-related academic and interpersonal skills and may be provided in conjunction with or independent of work-experience activities. Gardner et al. (1984) provided an example of an occupational awareness curriculum designed to enhance LD adolescents' work personality through self concept and goal setting activities. Biller (1985) recommended that local school districts provide students with a preinstructional orientation to services and opportunities within their communities, including information about vocational programs related to student interests and abilities, range and location of

employment options, and available counseling and support services.

In an attempt to identify training options for disabled students, school systems are increasingly establishing vocational assessment programs as they are now responsible for providing vocational aptitude and interest assessments to all disabled students who participate in vocational education programs. Such assessments will provide data related to a student's vocational interests, aptitudes, and work habits and allow more realistic and informed decisions to be made about vocational programs. Preparation for most students with disabilities requires a substantial experiential component. Comprehensive vocational evaluation (vocational tests, work/job samples, situation assessment, job tryouts) also is important in examining the realism of their choices and their education and training needs.

It appears that meaningful vocational activities often change the SLD's perception of school since apparent lack of motivation seems to result from frustration with the academic process, a process which concentrates on the very areas in which the SLD individual may be deficient (e.g. math and reading). Early assistance from vocational rehabilitation during the high school years can help young learning disabled students avoid later transition difficulties. Through early assistance, a multitude of concomitant problems that intensify the learning disability can be solved before life adjustment becomes extremely difficult. The ideal time for such assistance is prior to graduation from high school.

Counseling

It is generally agreed that counseling can assist individuals in personal growth and realization of potential (C. Patterson, 1986). That the counselor has a central role to play in the lives of LD adolescents and young adults is starting to emerge (Humes & Brammer 1985). It has been observed that individuals with long-standing learning disabilities frequently demonstrate a variety of secondary behavioral symptoms, such as poor self-esteem, anxiety, anger and frustration (Lombana, 1982). Those serving in counseling roles must deal with these variables, as well as ambivalence over intelligence, the latter a belief that appears to plague most adolescents (Humes, 1974). Counseling can cover problems of adjustment and/or career dimensions, depending on the client's type or level of need. Further, counseling services

can be rendered by a variety of service providers. Counseling for students with disabilities is not only provided by school counselors, but by psychologists, social workers, nurses, speech clinicians, occupational therapists, etc. There is a trend towards a transdisciplinary approach (Szymanski, Hanley Maxwell, & Parker, in press). But whoever renders the service, the bridge between school and work/higher education can be built and maintained only if competent and knowledgeable interveners are on the scene ready to be of assistance (Humes, 1986).

As pointed out by Lombana (1982), counseling intervention strategies must take into account the invisibility of the handicap, frequent instances of delayed diagnoses, and mislabeling. In addition, those with learning disabilities often have a limited understanding of the handicap and the effect of their actions on others. They are painfully aware that they

do not meet the expectations of parents and teachers. Such awareness leads to discouragement and feelings of failure. By the time they reach adolescence, they feel that they are limited in ability, often hold lower expectations for future success, and are willing to settle for the minimum.

Different counselors will use different approaches, but they are advised to build their strategies on the specific needs of the individuals to be served. The most important ingredient is for the counselor to recognize and implement strategies that will aid in the transition from learner to earner. This is most feasible at the secondary level or during the school separation period, but it is equally applicable to all ages and transitions in life-long adjustments (Humes, 1986). Career assessment is a vital and necessary part of career counseling. The counselor must assist the person to review relevant

educational and occupational information, conduct exploratory activities, and do self-evaluation. After these stages the client must convert data into career plans and decisions. Career assessment cannot be separated from the total assessment process, but it has special significance for adolescents and young adults who are making the transition from school to work/higher education. Efficient career counseling will be difficult without the existence of such information (Humes, 1986).

The ability to project into the future and set realistic short and long term goals is often lacking in learning disabled young adults (Kronick, 1978). White, Schumacker, Warner, Alley & Deshler, (1980) examined the status of forty-seven young adults previously classified as LD and compared them to fifty-nine young adults not so identified. Subjects had been out of school from one to seven years. The LD students were

found to hold jobs at approximately the same rate as their peers, but their jobs had less social status and the LD individuals were less satisfied with their employment situations than the comparison group.

The counselor must play a key role in the assessment process if the results of testing are to be made meaningful to clients and/or parents. Interest inventories are a necessary means of eliciting from learning disabled individuals their personal career preferences. Although personal interests may not interface with functional strengths, interest inventories can provide useful information. If interests are not compatible with abilities, career counseling and self-awareness education may be needed. If compatibility is evident, directions for career selection will evolve. Motivation, self-direction, independence, and perseverance can be significantly tied to the information gained through an interest

inventory. Many learning disabled individuals are willing to invest inordinate amounts of time and energy in attaining their goals. The teacher or counselor will want to use the results of interest inventories to give the student a more sophisticated view of the world of work, of the choices open to him, and of his own range of potentialities for achievement and satisfaction.

Vocational School Psychology

The vocational school psychology concept was initiated in response to federal legislation which provided for significantly expanded career services to disabled students. The Vocational Education Amendments of 1976, the Career Education Incentive Act of 1975, the Vocational Rehabilitation Act of 1973 (especially Sections 503 and 504), the Education for All

Handicapped Children Act of 1975, and the 1978 Amendments of the Comprehensive Employment and Training Act were instrumental in the inception of the first recognized specialty in the profession of school psychology. School psychology's involvement in vocational/career education is relatively recent. The first published reference to potential roles for school psychologists in vocational education did not appear until 1974. In an exhaustive computer search of the literature, Hohenshil (1974) failed to find a single reference relating school psychology and vocational education.

The profession of school psychology has traditionally been supported and strongly influenced by trends in special education. In the 70's, special education was largely confined to the elementary level, with few programs at the secondary level. In the past, the goals of most secondary special education programs

were similar to those provided in the elementary schools (Hohenshil, 1984). In a survey of individuals in leadership positions with NASP a majority of the respondents viewed career counseling and development as an area in which school psychologists should participate in the future (Pfeffer, 1978). Hohenshil (1975) called for re-direction in school psychology to promote greater involvement in vocational education in general and in vocational education for the disabled and disadvantaged in particular. School psychologists have functioned traditionally as assessment specialists, but there is a steady movement toward counseling and consultation activities (Hummel & Humes, 1984). Fagan and Hohenshil (1976) proposed a variety of methods to integrate career education concepts into the training of school psychologists. Hohenshil, Ryan, and Warden (1978) noted that what are seen as major needs by vocational educators might well be viewed as

significant opportunities for the expansion of school psychological services at the secondary level.

Hohenshil & Warden (1978) outlined proposed functions of vocational school psychologists to include knowledge and skills with vocational aptitude batteries, vocational interest inventories, career maturity measures, and such environmental assessment techniques as work sampling and job analysis. In addition, vocational school psychologists need to provide such services as work adjustment counseling, job interviewing procedures, and preparation for employment testing. Further, Hohenshil & Warden (1978) proposed that vocational school psychologists provide vocational teachers of special needs students with knowledge of the learning and behavioral styles to expect from students exhibiting various types of learning and behavioral disabilities. To provide maximum assistance, the school psychologist will need to assist

vocational educators in developing procedures to predict the probability of success in a wide range of vocational programs so that students will be placed appropriately for training.

In Shepard's (1982) national study of practicing school psychologists, he found that more than 90% believed that they should significantly expand their services in the areas of vocational assessment, career counseling, consultation, and liaison services in career development programs. Since school psychologists are employed in increasing numbers throughout the nation to provide support services for disabled students, their teachers, and their parents, they will need to acquire additional information about career development programs offered in the public schools. According to Hohenshil (1984), present and future trends will find vocational educators, special educators, and school psychologists developing a closer

working relationship. Through a collaborative type of interaction, psychological services can be more relevant and effective for youths with special learning needs.

Career/Vocational Assessment

The career/vocational assessment process forms the basis for appropriate individualized educational services. Such assessment includes identification of academic, interpersonal, and vocational skills as well as interests related to current and future employment. The Division on Career Development of the Council for Exceptional Children stresses that career/vocational assessment should be continuous process that begins in the elementary grades and continues throughout adulthood (Sitlington, Brolin, Clark, & Vacanti, 1985).

If vocational interests are an expression of personality, then it follows that interest inventories are personality inventories. Forer (1948) was probably the first to develop an inventory to assess personality from interests and activities, and to illustrate how a subject's responses to apparently neutral content (vocational interests and activities) could be interpreted as expressions of various dimensions of personality. Forer's theorizing led to the construction of Holland's Vocational Preference Inventory (1958, 1965), a personality inventory composed entirely of occupational titles. In general, the scales were developed by hypothesizing that preferences for occupations are expressions of personality.

The development and validation of the Vocational Preference Inventory made it clear that vocational preferences are indeed signs of personality traits.

Holland (1966, 1985a) aligns himself clearly with those who regard occupational preferences as the choice of a way of life - a choice that reflects the individual's self-concept and major personality characteristics. More specifically, Holland's (1985a) theory views vocational interests as expressions of personality and argues that individuals make occupational choices which will place them in environments that are compatible with their predominant personality characteristics. Each of Holland's occupational themes corresponds to a "type" or cluster of personal attributes. A given individual may be described in terms of one or more predominant types. The occupational themes also correspond to model environments in terms of which different occupational environments may be characterized. These environments comprise not only physical features and work demands but also the kinds of persons with whom the individual works (i.e.

co-workers, supervisors, customers, clients, students). One important aspect of Holland's theory centers on the concept of congruence between personality type and one's chosen occupational environment. Holland (1985a) argues that individuals are more successful when they operate in environments that are congruent with their personality type because such environments provide opportunities and rewards that are more compatible with their needs. Consequently, it might be expected that the more compatible the chosen concentration is with personality type, the more likely it is that the student will be successful in the particular academic program. Work by Baird (1970), Campbell (1971), and others also showed that interests scales are positively related to a person's values, academic achievement, liberalism, adventurousness, and other personal characteristics.

To summarize, it seems useful to interpret vocational interest inventories as personality inventories. The members of a vocation have similar personalities and similar histories of personal development. If a person enters a given vocation because of his particular personality and history, it follows that each vocation attracts and retains people with similar personalities. Vocational satisfaction, stability, and achievement depend on the congruence between one's personality and environment (composed largely of other people) in which one works.

Chapter III

METHOD

The purpose of the study was to investigate whether learning disabled high school students have vocational interests and personalities as varied as those of nonlearning disabled students. John Holland's Self-Directed Search Form Easy (SDS-E) and the Myers-Briggs Type Indicator Abbreviated Version (MBTI-AV) were the instruments used to measure vocational interests and personalities. The following research null hypotheses were tested:

1. There is no difference in the distributions of high school student personality preferences between LD and non-LD.

2. There is no difference in the distribution of high school students' vocational interests between LD and non-LD and by age and gender.

3. There is no relationship that exists between personality preferences and vocational interests between high school LD and non-LD students.

This chapter will discuss the methods which were used in testing these hypotheses.

Research Population

The research population consisted of the total population of learning disabled students from a large high school in suburban Northern Virginia. The total number of LD students from the high school was ninety. All participants were administered the two instruments. The age range was fourteen through nineteen. Students were enrolled in the 9th through the 12th grade. The researcher administered the same two instruments to a randomly selected group of non-LD students from the same high school. The non-LD group was sampled from the 9th through 12th grade as well. The group identified as non-LD did not receive any special education services. The total number of subjects in the non-LD group was 100 out of a total school population of 2740 students.

Instrumentation

The MBTI, Abbreviated Version (AV) and the SDS, Form E (Form Easy) were chosen as the instruments.

The Self-Directed Search

A vocational interest inventory which is applicable for use with learning disabled students is the Self-Directed Search (SDS) developed by John Holland and first published in 1970. The Self-Directed Search (Holland, 1979) is a popular vocational interest inventory that has received considerable study and has been used to assess occupational interests and personalities. It is based on Holland's theory of vocational choice and occupational classification system. The theory suggests that an individual's career choice reflects that person's personality and

behavioral styles (Ostipow, 1983). According to Holland (1985), personalities and work environments can be classified into one of six categories: Realistic (R), Investigative (I), Artistic (A), Social (S), Enterprising (E), and Conventional (C).

As its title implies, the SDS was designed as a self-administered, self-scored, and self-interpreted vocational counseling instrument. Although organized around interests, the procedure also calls for self-ratings of abilities and reported competencies. The individual fills out the Self-Assessment Booklet, scores the responses, and calculates six summary scores corresponding to the themes of the Holland model (Realistic, Investigative, Artistic, social, Enterprising, Conventional).

The Self-Directed Search - Form EASY is much like its parent instrument, the SDS, but is designed to be easier to read (Holland, 1985). The SDS-E is an

instrument which is used with adolescents and adults with limited reading skills. The scoring scheme is also simplified in that Form E yields two-letter rather than three-letter codes (Holland, 1985). It has been used successfully with poor readers (Winer, Wilson & Pierce, 1983) and with LD students (Cummings & Maddux, 1987; Maddux & Cummings, 1986). Results of the SDS-E indicate the students first and second vocational interest preferences. Categories include vocational choices based upon the following preferences:

- realistic
- investigative
- artistic
- social
- enterprising
- conventional

As compared to the SDS, it uses a lower-level vocabulary, less complex scoring instructions, and fewer items (203 vs. 228). Holland (1979) claims that 80% to 100% of American 4th graders know the vocabulary used in the directions for the SDS-E. As in the SDS, the SDS-E has scales for Activities (termed Likes in the SDS-E), Competencies, Occupations (Jobs), and Self-Estimates (Rating Your Abilities). An Occupational Daydreams section (Possible Jobs) and instructions for self-scoring of the assessment booklet are also included. The SDS-E provides the student with an occupational classification booklet (termed the Occupations Finder in the SDS and Jobs Finder in the SDS-E), which is used to find vocational possibilities that match personality types. The occupational titles that comprise one of the scales in the SDS are supplemented by simple definitions in the SDS-E. Because the SDS-E may be easier to read and simpler for

test takers to score and interpret, it may be more appropriate than the SDS for mildly disabled individuals who frequently have difficulty reading and following directions.

Reliability/Validity

The SDS is generally considered to possess acceptable reliability and validity (Ostipow, 1983). The evidence for the reliability, validity, and effects of the 1985 Edition of the SDS on the test taker is summarized in the manual (Holland, 1985). Specifically, Holland (1985b) has summarized reliability data for the SDS-E and concluded that, "The ten or twelve-item subscales of Form E have moderate to high reliability and differ in no substantial way from the reliabilities obtained for the full scales in the regular form" (pp47-48). This conclusion was based on

Wirtenberg's study of internal reliability using 236 seventh-grade students (cited in Holland, 1985).

Further, a sample of ninety-six learning disabled (LD) and ninety-six non-learning disabled (NLD) high school students was administered both the SDS and the SDS-E (Cummings & Maddux, 1987). Coefficients of equivalence and stability were computed between the six raw scores of the SDS and SDS-E for the LD group, the NLD group, and both groups combined. All coefficients were significant and compared favorably with test-retest reliabilities for the SDS.

Myers-Briggs Type Indicator

The Myers-Briggs Type Indicator (MBTI) is a questionnaire developed by Isabel Briggs Myers and her mother, Katherine C. Briggs. The MBTI is based on C.G. Jung's theory that variations in behavior which

may seem random are actually consistent and orderly when one understands differences in the ways people prefer to take in information and make decisions (Myers & McCaulley, 1985).

The MBTI is based on Jung's ideas about perception and judgment and the attitudes in which these are used in different types of people. The essence of Jung's comprehensive theory that relates to psychological types is the belief that everyone uses four basic mental functions or processes which are called sensing (S), intuition (N), thinking (T), and feeling (F). Everyone uses these four essential functions daily. The four contrasting areas that establishes a person's preference are: Extraversion (E) with its focus on the outer world of people and things -- Introversion (I) with its focus on the inner world of concepts and ideas; Sensing (S), a process of perception that involves the use of the five senses -- Intuition (N),

an indirect process of perception by means of ideas, inspirations, and hunches; Thinking (T), a logical and analytical process of decision making -- Feeling (F), a person oriented, subjective decision making process; and Judgment (J), a decisive, planned manner of living -- Perception (P), a flexible, spontaneous way of living.

According to Jung's theory one pole of each of the four preferences is preferred over the other pole for each of the sixteen MBTI types. The indices EI, SN, TF, and JP are designed to reflect habitual choice between rival alternatives -- every person is assumed to use both poles of each of the four preferences, but to respond first or most often with the preferred functions or attitudes. The preference on each index is independent of preferences for the other three indices, so that the four indices yield sixteen possible combinations called "types" denoted by the

four letters of the preferences (e.g., ESTJ, INFP, etc.).

The MBTI items scored for each index offer forced choices between the poles of the preference at issue. All choices reflect the two poles of the same Jungian preference (e.g., E or I, S or N). Each response of a question is weighted as a 0, 1, or 2 points. After the weighted scores are totaled for each preference it is converted to points. When the person has the highest points for an E versus an I, the person is determined as an Extravert. If the person has a preference score letter of E, it suggests that the person prefers extraverting to introverting.

The MBTI-AV is self-scoring, has fewer items than the long form, is easier to read at the fourth grade level, and takes less time to administer. It contains the first 50 items from Form G and is a unisex version. The reliability and validity are comparable

to the longer forms (Briggs, Myers & McCaulley, 1985). Based on MBTI preference scores on four dimensions, an individual is designated one of sixteen personality types. Dimensions which are included:

-extraversion vs. introversion

-sensing vs. thinking

-thinking vs. feeling

-judging vs. perception

were determined and combinations of those dimensional components were assessed to designate each MBTI type.

Reliability/Validity

Reliability studies in the manual dealing with internal consistency (split-half) measures show correlations mostly in the .70 and .80 range for continuous scores. These figures are comparable to those of leading personality inventories. The manual

also states that test-retest reliabilities of the MBTI show consistency over time. When subjects report a change in type, it is most likely to occur in only one preference, and in scales where the original preference was low.

Procedures

All LD students and NLD students participating in the study were administered the instruments. Students that were selected for group testing did not require parental permission because group testing was considered a routine education procedure in the school district. The school psychologist acted as collaborator and determined that all LD participants had a current Individualized Education Program (IEP) and were classified as LD and that all NLD participants

had never been in special education programs. The instruments were distributed to LD classroom teachers who were trained by the school psychologist prior to administering the instruments. All LD students were administered both tests by a special education instructor in small groups of three or four students. The NLD students were selected from a sequentially numbered student roster by matching random digits from a sequence generated by a math teacher in the school using a micro-computer package. All NLD students were called to the school psychologist's office and tested in groups of three or four students. A supplementary sheet that defined the less well known MBTI terms had been prepared and was distributed with the booklet. Although both instruments are self scoring the instruments were scored by a special education instructor familiar with them. This decision had been made in order to eliminate scoring errors.

Treatment of the data used both descriptive and inferential statistical analyses. The data was primarily categorical, so nonparametric methods were used. Given the survey design and the anticipated research sample size, a chi-square test of contingency table was the statistical test used. Frequencies of responses for the LD and non-LD students were computed and cross-tabulated into cells. The magnitude of the differences provided the basis for analytical conclusions.

Chapter IV

RESULTS

The chapter is organized according to the research hypotheses, followed by an a priori differential comparison and descriptive demographics.

Distribution of Participants

The sample included all 90 LD students and a random sample of 100 Non-LD students selected by student number without regard to gender or other characteristics. The following table shows the distribution of final sample participants by gender and grade. Four of the LD students and seven of the non-LD students were excluded from the sample for incomplete profiles of required scores.

Grade	LD Group			Non-LD Group		
	Males	Females		Males	Females	
9	18	7	(25)	5	13	(18)
10	24	4	(28)	8	14	(22)
11	13	5	(18)	4	13	(17)
12	10	5	(15)	15	21	(36)
Total	65	21	(86)	32	61	(93)

Research Hypotheses

The hypotheses were as follows:

H1 : There will be no personality differences between learning disabled and non-learning disabled groups as measured by the Myers-Briggs Type Indicator Abbreviated Version (MBTI-AV).

H2 : There will be no vocational preference differences as measured by the Self-Directed Search-Form E between groups.

H3 : There will be no vocational preference interaction with gender within group as measured by the Self-Directed Search-Form E.

H4 : There will be no vocational preference interaction with grade within group as measured by the Self-Directed Search-Form E.

H5 : There will be no vocational preference interaction with age within group as measured by the Self-Directed Search-Form E.

H6 : There will be no interactions of EI personality preference with vocational preference within group.

H7 : There will be no interactions of SN personality preference with vocational preference within group.

H8 : There will be no interactions of TF personality preference with vocational preference within group.

H9 : There will be no interactions of JP personality preference with vocational preference within group.

Hypothesis One

The appropriate analysis for testing hypothesis 1 (LD/Non-LD personality differences) is by contingency table.

As noted in Table 4.1 the results for EI, SN, and JP are from the chi square tests below each two way group, by personality factor table. These

indicate there are no differences between learning disabled and non-learning disabled students. Differences were noted, however, for Thinking/Feeling Scales. LD students tended toward Thinking (60%) while the non-LD group tended toward Feeling (65%). Since the LD sample was dominated by males while the NLD sample was dominated by females, the analysis was further broken down by gender as shown in Table 4.2.

Table 4.2 is included since Myers Briggs notes male and female estimates distributions of the United States population differed for Thinking/Feeling as noted in the United States Estimates line. Because the sample for LD students was 3:1 males to females, while the non-LD student sample was 2:1 females to males, the group test used for E/I, S/N, and J/P was not adequate. Table 4.2 shows that, when the gender differences are accounted for, there are no LD/NLD differences. Therefore, no personality differences were detected between LD and NLD students and the first null hypothesis cannot be rejected.

The T-Values below each table compare the combined LD/NLD sample against the United States

population estimates. The Myers-Briggs reported estimates for the U.S. population as a whole (p45-manual) of .75 Extrovert, .75 Sensing, between .55 and .60 (arbitrarily estimate .57) .60 Thinking for Males, .65 Feeling for Females. Our sample is significantly different than these U.S. estimates for all EI, JP, SN, and TF (male and female). While these results are not atypical of selected subsamples, they serve to show that a distinct subpopulation of the U.S. has been selected.

Table 4.1

MBTI-AV by Group

	<u>Extrovert</u>	<u>Introvert</u>	<u>Judging</u>	<u>Perceiving</u>
LD	54 (.63)	32 (.37)	26 (.30)	60 (.70)
NLD	<u>61 (.66)</u>	<u>32 (.34)</u>	<u>31 (.33)</u>	<u>62 (.67)</u>
	115 (.64)	64 (.36)	57 (.32)	122 (.68)
US EST.	(.75)	(.25)	(.57)	(.43)

LD/NLD: Chi-Square = .15 P-Value=.70 Chi-Square = .20 P-Value=.66

Grp/US: t-Value= -1.76 P-Value= .04 t-Value= -7.00 P-Value <0.01

	<u>Sensing</u>	<u>Intuition</u>	<u>Thinking</u>	<u>Feeling</u>
LD	54 (.63)	32 (.37)	51 (.60)	35 (.40)
NLD	<u>49 (.53)</u>	<u>44 (.47)</u>	<u>34 (.35)</u>	<u>59 (.65)</u>
	103 (.58)	76 (.42)	85 (.47)	94 (.53)
US EST.	(.75)	(.25)	(.60)	(.40)

LD/NLD: Chi-Square = 1.87 P-Value=.17 Chi-Square =9.27 P-Value=.002*

GRP/US: t-Value= -2.52 P-Value< 0.01 t-Value=N/A P-Value= N/A

Table 4.2
TF by LD by Gender

	<u>Males</u>			<u>Females</u>		
	<u>T</u>	<u>F</u>	<u>Total</u>	<u>T</u>	<u>F</u>	<u>Total</u>
LD	46 (.71)	19 (.29)	65	5 (.24)	16 (.76)	21
Non-LD	<u>20 (.63)</u>	<u>12 (.37)</u>	<u>32</u>	<u>14 (.23)</u>	<u>47 (.77)</u>	<u>61</u>
	66 (.69)	31 (.31)	97	19 (.23)	63 (.77)	82
US EST.	(.60)	(.40)		(.35)	(.65)	

Chi-Square = .674

LD/NLD: P-Value = .41

GRP/US: T-Value= 1.81

P-Value= 0.04 *

Chi-Square = .006

P-Value = .94

T-Value= -2.28

P-Value= 0.02 *

Hypothesis Two

The second hypothesis is also tested by contingency tables. The limited sample size made it difficult to analyze multi-variable tables because of the imbalance in cell sizes. Table 4.3 shows the SDS-E by group results that address this hypothesis.

Hypothesis two was rejected that there are no differences between LD and non-LD students, but conclude there are over-representations of LD students with preferences for mechanical and scientific career and under representations in teaching, sales, and clerical, when compared to "normal" students.

Table 4.3

SDS-E by Group

	<u>Mechanical</u>	<u>Scientific</u>	<u>Artistic</u>	<u>Teaching</u>	<u>Sales</u>	<u>Clerical</u>
LD	34 (.40)	6 (.07)	9 (.10)	25 (.29)	8 (.09)	4 (.05)
NLD	<u>5 (.05)</u>	<u>3 (.03)</u>	<u>12 (.13)</u>	<u>42 (.45)</u>	<u>21 (.23)</u>	<u>10 (.11)</u>
	39 (.22)	9 (.05)	21 (.12)	67 (.37)	29 (.16)	14 (.08)
Chi-Square =35.49 (P-Value =.001)						

Hypotheses three, four and five, cross SDS-E with group and with gender, grade, and age respectively. Often cells have fewer than five observations, one of the conditions for valid use of the Chi-Square test.

Hypothesis Three

For hypothesis H 3, Table 4.4 shows strong differences exist in the proportions for males/females who have various career choices, and the corresponding chi-square testing Hypothesis three is highly significant. Key among these differences is whereas the top four LD male choices are mechanical, teaching, artistic, and sales, the top four Non-LD male choices are sales, teaching, mechanical and artistic. Thus mechanical and sales relative interests are reversed. The top LD female choices are teaching, clerical, and artistic with only minor variations in relative percentages compared to non-LD female. One can conclude that the LD and non-LD students differ in gender-career choice interaction.

Table 4.4

Test of SDS-E by Gender Interaction Within Group

SDS-E/SEX:	LD Group			NLD Group		
	Male	Female	Total	Male	Female	Total
Mechanical (R)	34 (.52)	0 (.00)	34	4 (.13)	1 (.02)	5
Scientific (I)	5 (.08)	1 (.05)	6	2 (.06)	1 (.02)	3
Artistic (A)	7 (.11)	2 (.10)	9	3 (.09)	9 (.15)	12
Teaching (S)	11 (.16)	14 (.66)	25	7 (.22)	35 (.57)	42
Sales (E)	7 (.11)	1 (.05)	8	14 (.44)	7 (.11)	21
Clerical (C)	1 (.02)	3 (.14)	4	2 (.06)	8 (.13)	10

Chi-Square = 30.875

Chi-Square = 22.92

(P-Value = 0.001)

(P-Value = 0.001)

Hypotheses Four and Five

As seen in results Table 4.5 and Table 4.6, no significant results were recorded for the grade or age contingency tables for either group, which is not surprising with the small cell sizes and flat distributions evident in the tables. It is notable that the LD ages are shifted. That is, LD's appear to be generally one year older than their non-LD counterparts across the age distribution. One therefore failed to reject hypothesis H 4 or H 5 that there are no LD/non-LD interactions between career choice and grade or age.

Table 4.5

Test of SDS-E by Grade Interaction Within Group

GROUP: SDS-E \ GRADE	LD				NON-LD			
	9	10	11	12	9	10	11	12
Mechanical (R)	12 (.48)	9 (.32)	5 (.28)	8 (.53)	1 (.06)	0 (.00)	0 (.00)	4 (.11)
Scientific (I)	1 (.04)	3 (.11)	2 (.11)	0 (.00)	1 (.06)	0 (.00)	2 (.12)	0 (.00)
Artistic (A)	1 (.04)	5 (.18)	2 (.11)	1 (.07)	2 (.11)	5 (.23)	2 (.12)	3 (.08)
Teaching (S)	8 (.32)	6 (.21)	7 (.39)	4 (.27)	8 (.44)	8 (.36)	7 (.41)	19(.53)
Sales (E)	2 (.08)	4 (.14)	1 (.06)	1 (.07)	4 (.22)	6 (.27)	5 (.29)	6 (.06)
Clerical (C)	1 (.04)	1 (.04)	1 (.06)	1 (.07)	2 (.11)	3 (.14)	1 (.06)	4 (.11)
	---	---	---	---	---	---	---	---
Total:	25	30	18	15	18	22	17	36

Chi-Square - 9.93

Chi-Square - 15.18

P-Value - .824

P-Value - .438

Table 4.6

Test of SDS-E by Age Interaction Within Group

GROUP: SDS-E \ AGE:	LD						NON-LD				
	14	15	16	17	18	19	14	15	16	17	18
Mechanical (R)	1 (100)	8 (.43)	13 (.39)	5 (.29)	4 (.29)	3 (100)	1 (.06)	---	---	2 (.06)	2 (.50)
Scientific (I)	---	1 (.06)	2 (.06)	3 (.18)	---	---	1 (.06)	---	2 (.07)	---	---
Artistic (A)	---	1 (.06)	5 (.15)	1 (.06)	2 (.14)	---	2 (.13)	1 (.08)	6 (.21)	3 (.10)	---
Teaching (S)	---	6 (.33)	9 (.28)	6 (.35)	4 (.29)	---	6 (.37)	6 (.46)	12 (.41)	17 (.55)	---
Sales (E)	---	1 (.06)	3 (.09)	2 (.12)	2 (.14)	---	4 (.25)	5 (.38)	6 (.21)	6 (.19)	---
Clerical (C)	---	1 (.06)	1 (.03)	---	2 (.14)	---	2 (.13)	1 (.08)	3 (.10)	3 (.10)	1 (.25)
Totals:	1	18	33	17	14	3	16	13	29	31	4

Chi-Square - 17.52

Chi-Square - 27.62

P-Value - 0.862

P-Value - 0.119

Hypothesis Six

Table 4.7 presents a test of Hypothesis 6, that there are no interactions between career choice and personality within group. If one group is strongly significant and the other is not, the hypothesis will be rejected. There is a strong trend towards EI differences in vocational preferences for LD students (probability=0.10) while the NLD students registered a significant difference (probability=0.02). For LD students in teaching, 21 of 25 are E's and only 4 are I's whereas the percentage between E and I is fairly even otherwise. For non-LD students, there is a large proportion difference not only for teaching but also for sales, comparing NLD to LD students. E respondents are a much higher relative percentage than is for both of these career choice areas. Because the p-value for NLD students is highly significant, hypothesis 6 is rejected and conclude EI by Group (LD/NLD) makes a difference in career choice.

Table 4.7

Test of SDS-E by EI Interaction Within Group

SDS-E/EI	LD Group			NLD Group		
	E	I	Total	E	I	Total
Mechanical (R)	16 (.30)	18 (.56)	34	2 (.03)	3 (.09)	5
Scientific (I)	4 (.07)	2 (.06)	6	0 (.00)	3 (.09)	3
Artistic (A)	6 (.11)	3 (.09)	9	7 (.11)	5 (.16)	12
Teaching (S)	21 (.39)	4 (.13)	25	33 (.54)	9 (.28)	42
Sales (E)	4 (.07)	4 (.13)	8	15 (.25)	6 (.19)	21
Clerical (C)	3 (.06)	1 (.03)	4	4 (.07)	6 (.19)	10

Chi-Square = 9.33 Chi-Square = 13.80
 (P-Value = 0.10) (P-Value = 0.02)

Hypothesis Seven

Based on Table 4.8 results, there are no statistical differences within the LD and non-LD group for Sensing/Intuition and vocational preferences (Hypothesis H 7).

Hypothesis Eight

Based on Table 4.9, the differences in LD are from higher percentage thinking on mechanical, and reversed percentages on teaching. For NLD, the big differences are artistic (1:5 ratio T/F) and teaching (1:3 ratio T/F). Since the LD group results are very significant, while the NLD group results are not, the hypothesis is rejected that there is no interaction between T/F and career choice area within groups (Hypothesis H 8).

Table 4.8

Test of SDS-E by SN Interaction within Group

SDS-E/SN	LD Group			NLD Group		
	S	N	Total	S	N	Total
Mechanical (R)	24 (.45)	10 (.31)	34	5 (.10)	0 (.00)	5
Scientific (I)	2 (.04)	4 (.13)	6	1 (.02)	2 (.05)	3
Artistic (A)	6 (.11)	3 (.09)	9	3 (.06)	9 (.20)	12
Teaching (S)	13 (.24)	12 (.38)	25	21 (.43)	21 (.48)	42
Sales (E)	5 (.09)	3 (.09)	8	13 (.27)	8 (.18)	21
Clerical (C)	4 (.07)	0 (.00)	4	6 (.12)	4 (.09)	10

Chi-Square =6.79

Chi-Square =9.68

(P-Value=0.24)

(P-Value=0.09)

Table 4.9

Test of SDS-E by TF Interaction Within Group

SDS-E/TF	LD Group			NLD Group		
	T	F	Total	T	F	Total
Mechanical (R)	27 (.53)	7 (.20)	34	3 (.09)	2 (.03)	5
Scientific (I)	5 (.10)	1 (.03)	6	2 (.06)	1 (.02)	3
Artistic (A)	4 (.08)	5 (.14)	9	2 (.06)	10 (.17)	12
Teaching (S)	8 (.15)	17 (.48)	25	11 (.32)	31 (.53)	42
Sales (E)	5 (.10)	3 (.09)	8	12 (.35)	9 (.15)	21
Clerical (C)	2 (.04)	2 (.06)	4	4 (.12)	6 (.10)	10

Chi-Square=15.85

Chi-Square=10.24

(P-Value=0.01)

(P-Value=0.07)

Hypothesis Nine

Based on Table 4.10, there is no difference in occupational preferences by group for Judging and Perceptual preferring students. Therefore, one failed to reject the hypothesis of an interaction within group, JP personality difference, and career choice (Hypothesis H 9).

Demographics

This subsection of the results chapter provides background data to help explain differences and generally describe the groups and their ability levels. Table 4.11 shows that there are no significant differences between IQ's of students choosing occupational preferences within each group. Some percentage of the differences between LD and NLD is accounted for by testing instrument accuracy (that is, the NonLD test [group test] tends to score a little high compared to the LD test [individual test]).

Table 4.10

Test of SDS-E by JP Interaction Within Group

SDS-E/JP	LD Group			NLD Group		
	J	P	Total	J	P	Total
Mechanical (R)	11 (.41)	23 (.38)	34	1 (.03)	4 (.06)	5
Scientific (I)	1 (.04)	5 (.08)	6	0 (.00)	3 (.05)	3
Artistic (A)	3 (.12)	6 (.10)	9	2 (.06)	10 (.16)	12
Teaching (S)	7 (.27)	18 (.30)	25	17 (.56)	25 (.40)	42
Sales (E)	1 (.04)	7 (.12)	8	5 (.16)	16 (.27)	21
Clerical (C)	3 (.12)	1 (.02)	4	6 (.19)	4 (.06)	10

Chi-Square=5.69

Chi-Square=8.42

(P-Value=0.34)

(P-Value=0.13)

Table 4.11
SDS-E by Group by IQ

SDS-E/IQ	LD Group			NLD Group			
	Mean	Std Dev	N	Mean	Std Dev	N	
Mechanical (R)	99.26	8.89	34	112.20	10.18	5	*
Scientific (I)	99.33	10.13	6	107.00	2.65	3	
Artistic (A)	102.00	10.62	9	109.75	11.86	12	
Teaching (S)	99.64	10.49	25	106.74	11.21	42	*
Sales (E)	95.75	4.46	8	106.52	7.62	21	*
Clerical (C)	99.00	9.06	4	106.00	17.73	10	

* Significantly different at 0.05 level

It was determined in this unbalanced case, that the test of LD/NLD was significant if neither confidence interval covered the other group mean, where the confidence was selected so that the six tests collectively produce A Type I error of .05. That is, an individual test Type I error of .008 produces an alpha of .047 in the aggregate. In no case was there a significant difference under the "grouped" criterion. Thus, there appears to be no overall IQ differences by group and career choice area, even given the instrument differences.

One purpose of Table 4.12 is to demonstrate that all students were capable of reading the test instruments (SDS-E). As is evident, all were able to read above the fifth grade level. Interestingly, the clerical LD students could read on average one grade level higher than scientific preference LD students, although both means are within two standard deviations for the clerical group (no statistical difference). There are no apparent differences between non-LD occupational preference groups by reading proficiency. A score below 30 would indicate the student was at least one grade behind reading proficiency for NLD's. No students in the sample scored below 34 percentile.

Table 4.12

SDS-E by Group by Reading Achievement

SDS-E/Group	LD (GE)			NLD (TAP)		
	Grade Equiv	Std Dev	N	Percentile	Std Dev	N
Total	6.7	1.50	179	63.5	19.0	93
Mechanical (R)	7.0	0.78	34	65.4	16.7	5
Scientific (I)	6.7	0.90	6	62.3	30.7	3
Artistic (A)	7.2	1.40	9	65.4	17.5	12
Teaching (S)	7.2	0.85	25	63.1	19.6	42
Sales (E)	7.2	0.80	8	61.5	19.1	21
Clerical (C)	7.6	1.20	4	66.2	20.3	10

Table 4.13 shows there are no differences within group for reading levels and the slight female "edge" is reflected in both groups.

Table 4.14 shows a distinct difference in IQ change by grade. Non-LD seniors are significantly brighter than 9th-11th grade non-LD's, although they are all within the range of "average intelligence." The LD students show two related trends: there are fewer older LD students and they are not as bright although still within the classification, "average intelligence." It appears at first glance, that brighter LD students drop out within a year after turning sixteen.

The reading achievement varies by grade for both LD and non-LD. The consistent result with Table 4.15 is that less capable LD students surviving into higher grades achieve less (that is, probably because higher achieving ones leave after 10th and 11th grades). The non-LD instrument is administered every other year, so there is no reason for the mean (compared to national norms) to vary rather than increase every year.

Table 4.13

Reading Achievement by Gender

Non-LD	TAP (Percentile)			LD	Grade Equivalent		
	Mean	Std Dev	N		Mean	Std Dev	N
Males	61.5	19.0	32	Males	7.1	0.85	65
Females	64.5	19.1	61	Females	7.2	1.0	21

Table 4.14

Intelligence Quotient by Grade by Non-LD and LD

	Grade Levels			
	9th	10th	11th	12th
Non-LD (Mean)	105.5	105.8	105.9	109.8
(Std Dev)	9.0	11.3	12.4	11.3
N	18	22	17	36
LD (Mean)	101.8	100.4	97.0	96.0
(Std dev)	10.2	9.4	7.3	8.4
N	25	28	18	15

Table 4.15

Reading Achievement by Grade by Non-LD and LD

	Grade Levels			
	9th	10th	11th	12th
Non-LD (Mean) (%)	60.0	64.6	61.2	65.6
(Std Dev)	19.9	21.1	19.4	17.6
N	18	22	17	36

	Grade Levels			
	9th	10th	11th	12th
LD (Mean) (G.E.)	7.2	7.3	6.8	6.8
(Std dev)	0.6	0.1	0.1	0.9
N	25	28	18	15

Chapter V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The primary purpose of this research study was to determine if differences existed between learning disabled and non-learning disabled adolescents regarding personality patterns and vocational interests. Demographics provided background data on groups regarding ability level and reading achievement scores as related to occupational preferences and gender characteristics. The results reported in Chapter 4 focused directly on this goal. Generalization from the results to other groups, or other apparently similar groups must be done with caution. Because of the limited sample size and imbalance in cell sizes, analysis of multi-variable

tables was difficult. Important findings are listed, followed by conclusions and recommendations.

Summary of Major Findings

1. There were some strong indications, but no significant results for differences between LD/NLD students' vocational preferences and cognitive ability in areas of mechanical, teaching, and sales. As previously noted, there are probable accuracy differences between the LD/NLD instrument (NLD is higher). Notable results were that the highest average NLD IQ was on mechanical and the lowest was clerical, while for LD students, the highest was in artistic and the lowest was also in clerical. All cognitive scores were well within the average range.

2. With respect to reading achievement, since all students were capable of reading at the sixth grade level or higher, they could read and understand the test instruments. There were no gender differences within groups.

3. Although there is not a statistical difference, the IQ and reading means and counts of students show a decided trend for NLD's with higher IQ's and achievement to stay in school, while the opposite is true for LD students.

4. Of all the possible complex interactions between vocational preferences and personality, age, grade, and gender, it was found that gender and vocational preferences occurred for both LD/NLD groups. LD males prefer mechanical while females prefer teaching. NLD males prefer sales while females again prefer teaching. In fact, it was found that LD/NLD males differed in vocational preference order for three of four top choices while females did not.

5. There is a strong trend towards EI differences in vocational preferences for LD students while the NLD students registered a significant difference. EI by SDS interactions appear to be accounted for by mechanical (strong I) and teaching (strong E) orientations. Between the groups, only sales and clerical differed. For sales, LD/EI percentages ratio was 1:2 (E:I) while

NLD/EI ratio was 5:4. For clericals, the ratios were LD 2:1 and NLD 1:6 (E:I).

6. There are significant TF differences in vocational preferences for LD students, while the NLD students registered a strong trend. Thinking LD's preferred mechanical, while feeling preference was for teaching. For NLD's, thinking was evenly divided between teaching/sales while feeling was concentrated in teaching.

7. There were no differences between groups with JP and SN personality preferences.

Conclusions

The present study found no differences in personality patterns between learning and non-learning disabled adolescents as measured on the MBTI-AV. Students with learning disabilities are individuals who should not be categorized or treated differently in terms of their career expectations without data proving how they are limited. Since the literature suggests that learning disabled individuals in schools are often placed into vocational classes that prepare them for low-level jobs fitting a stereotypic view of the their abilities and personality characteristics, one can conclude that educators (school administrators, guidance counselors, teachers, and school psychologists) will need to have a better understanding of the learning disabled student.

Another significant finding of this study was that differences exist between LD and NLD students regarding vocational preferences. LD adolescents had strong preferences for mechanical but were also interested in scientific careers. One would think that with current emphasis in the curriculum focusing on science and mathematics in our education system, that NLD students would have a strong preference for the science areas, but this was not observed in this study.

Vocational preferences are related in some ways to personality patterns. With respect to the LD group, extroversion (E) was highly concentrated in the teaching field whereas introversion (I) characterized a preference for mechanical careers. For the NLD group, the majority of students who were either E's or I's preferred the teaching field. The NLD I's appear to feel they can pursue a career in

teaching, whereas the LD I's prefer a non-interactive career.

For the LD students, thinking (T) prefer mechanical careers, while feeling (F) students prefer teaching. NLD T students prefer teaching and sales equally, while F students prefer teaching. Careers in the field of teaching or sales emphasize personalities that are more extroverted (socially interactive) than introverted and this is evident with the NLD and LD students in this study. In particular, females tended to be feeling oriented, while males were more thinking. Again LD males prefer mechanical (non-interactive) and NLD males prefer interactive careers (teaching and sales).

It has been the author's observation that the school system appears to lose brighter LD students while the less capable LD students are surviving into the higher grades. The literature review notes

the high degree of "dropouts" with the disabled school population and their inability to find meaningful employment compared to the nondisabled after leaving school. The educational system therefore appears to be not meeting the academic (stimulating the brighter) or career needs (ability to find work) of the LD population.

This study also shows gender differences in occupational preferences. This could be easily caused by environmental influences (parental, societal, educational). Females have the gender role models from teachers and parents influencing them towards clerical, teaching, and artistic occupations. Males, in particular LD males, are directed by the educational system to vocational education programs (mechanical, construction) and this is consistent with informal observations of the researcher.

These results together with the literature review, suggests that LD students may be disproportionately underemployed or unemployed when they leave school (finish or drop out), distinctly implying the educational system is not preparing them for the world of work. One can no longer pigeonhole LD students into traditional vocational programs because there are no personality differences and those career choice differences contradict the traditional career counseling given them.

The MBTI documentation notes reliability coefficients in the .6 range for these scales. Whereas EI and TF are in the high .7 range. Low reliability means less precision.

Recommendations

The following recommendations flow from the study and should be viewed only as the beginning of a solution to the larger problem of the LD individual in our society.

1. The career/vocational education programs in high school and options beyond high school for LD adolescents require better feedback. Any feedback mechanisms must integrate society's needs for training and skills with the preparation provided by the educational curriculum.

2. The results of this study indicated a need to better prepare adolescents with learning disabilities for transition into the world of work.

Personality tests and vocational assessments could be used both with the LD adolescent and NLD adolescent to help them make better educational and career decisions. Additionally, these tests could be helpful to adolescents in the area of self-knowledge.

3. Guidance and counseling activities are needed to assist students in developing and clarifying their personal, social, occupational knowledge and skills. Relationships between specific interests, aptitudes, and competencies should be further identified for a wide range of career choices. In the occupational area, career choice requirements can be identified in terms of vocational and academic prerequisites. The findings of this study, which showed that LD adolescents perceived mechanical and scientific occupations as preferences over other occupations are important for

educators at the secondary level to know, especially if they are concerned with these students' transition into mainstreamed society. Counselors, special educators, and school psychologists may use this information to develop relevant classroom activities and to motivate LD students to participate in them.

4. Longitudinal studies should be initiated on previously labeled LD students who have left high school. The LD adults who are presently employed could be administered the SDS-E and MBTI-AV to provide information regarding whether or not "successful" LD adults are actually working in occupations suited to their interests and personalities, and to begin scientific career choice targeting. Such targeting of students would center

around probing statements such as this: "you will probably be successful doing these things although you may choose other careers".

5. Replication of the present study is needed to further investigate other disabled individuals (mentally retarded, emotionally disturbed, etc.) when compared to interests and personalities of nondisabled individuals.

6. Further investigation is necessary using a wider population sample than this study used. Research studies should be conducted using a larger number of LD secondary students across the United States with more females represented. This would allow generalization to a wider group of students.

7. There is a need to examine the occupations and socioeconomic status of LD students' parents. Particularly, since parents appear to exert an influence on the career development of their

children, future research should investigate the nature and extent of parental influences with regard to LD adolescents' career choices.

8. Gender differences among adolescents are substantial and support the notion of male and female students as two distinct populations. Because of various factors now present in our society, it is time to examine the program options for the delivery of guidance services for gender and vocational choices.

9. The use of different personality instrumentation might lead to more precise differentiation.

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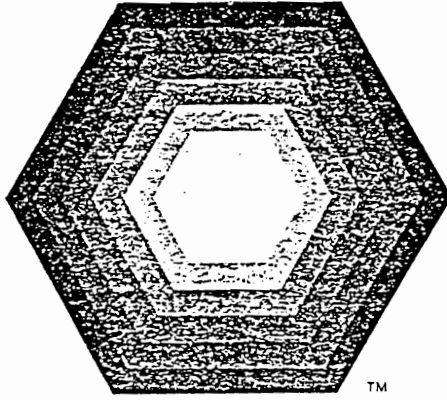
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APPENDIX A

The Self-Directed Search-Form E



The Self-Directed SearchTM - Form E _____

For Educational and Vocational Planning

by John L. Holland, Ph.D.

This booklet should help you find out what kind of job or work you might like to do when you must go to work. You might already have some ideas about your *future* work. If not, the booklet may help you find out.

Most people have fun filling out this booklet. If you *carefully* follow the directions from page to page you should enjoy it and learn some useful things about yourself and the world of work. All the instructions you need are in the booklet, so if you have a question, carefully read the directions.

Name _____

Age _____ Sex _____ Date _____



PSYCHOLOGICAL ASSESSMENT RESOURCES, INC. P.O. Box 98 / Odessa, Florida 33556

APPENDIX B

Myers-Briggs Type Indicator-Abbreviated Version

MYERS-BRIGGS TYPE INDICATOR™

ABBREVIATED VERSION

by Katharine C. Briggs and Isabel Briggs Myers

DIRECTIONS

Do not open the booklet until you have read all the directions and answered all the questions.

There are no "right" or "wrong" answers to the questions on this inventory. Your answers will help show how you like to look at things and how you like to go about deciding things. Knowing your own preferences and learning about other people's can help you understand where your special strengths are, what kinds of work you might enjoy and be successful doing, and how people with different preferences can relate to each other and be valuable to society.

Read each question carefully and indicate your answer by making an X in the appropriate box next to the response you select. Do not think too long about any question. If you cannot decide on a question, skip it and return to it later. Because this is a shortened version of the complete inventory, try to answer every item. If you make a mistake, do not erase but blacken in the box marked in error.

Now, unless you have been instructed otherwise, turn the booklet over and begin answering the questions.

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APPENDIX C

Definition of MBTI terms

Appendix C

Definition of words

- accordingly- in a fitting or suitable manner
- admire- to regard with wonder, delight, and pleased approval
- analyze- to separate or break up anything or idea into its parts so as to examine them and see how they fit together
- appeal- to ask for help
- compassion- a feeling of being sorry for others and wanting to help them
- compliment- something said when one wants to praise
- concept- an idea or thought
- conspicuous- easy to see, plainly seen
- conventional- behaving in the way that most people do or in ways that most people approve

- fascinating- to hold the attention of by being interesting or delightful; charm
- figurative- using, based on, or characteristic of a figure of speech; not literal
- foresight- the power to foresee; looking ahead and planning for the future
- imaginative- having or showing imagination; the power or process of forming images in the mind of things that are not actually present
- ingenious- clever or skillful, as at inventing things
- literal- following the original, word for word
- logic- correct reasoning; sound thinking
- practical- that can be put to use
- realistic- facing facts with realism; practical
- sentiment- a feeling about something

spontaneous- acting or done in a free, natural way,
without effort or much thought

sympathize- to share the feelings or ideas of
another

systematic- having or done by a system, method, or
plan

theory- an explanation of how or why something
happens

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VITA

Robert Jon Ivy was born in Los Angeles, California. He graduated in 1968 from Murray State University, Murray Kentucky with a Bachelor of Science in psychology. He continued his studies at Murray State University from 1968 to 1969 in the clinical psychology program. In 1969, he received a stipend to continue his education at Scranton University, Scranton, Pennsylvania. He earned a Master of Science Degree in counseling psychology at Scranton University in 1971. During the next three years, he worked as a vocational counselor and basic education instructor at a Manpower Development and Training Center, Binghamton, New York. Additionally, he interned at a psychiatric hospital in Binghamton and became certified in the State of New York as a school psychologist. In 1974, he worked as a school psychologist in the Poughkeepsie City School District. In 1975, he entered graduate school at SUNY college at Buffalo. He was awarded the degree of Master of Education in learning and behavioral disorders in June 1976. He was employed as a school psychologist with the Board of Cooperative Education Services (BOCES) while working on his second master's degree. In addition to working for BOCES for three years, he was a

consultant to a residential treatment facility for seriously emotionally disturbed adolescents and worked as a consultant to various school systems located around Buffalo, New York. In 1978, he was employed as a developmental psychologist for the State of New York Department of Mental Hygiene and Retardation in Perrysburg, New York. During this time, he presented papers at AAMD state and national conferences on the topic of reducing self injurious and aggressive behaviors of the severely and profoundly retarded. In 1981, he relocated to the State of Virginia and began working for the Prince William County Public Schools in Northern Virginia. In addition to these responsibilities as a school psychologist, he has taught in the adult education program in the school district. He is an associate member of American Psychology Association and member of National Association of School Psychologists. He is also certified as a school psychologist in Virginia.

