

## AN ABSTRACT OF THE DISSERTATION OF

Linda U. Keller for the degree of Doctor of Philosophy in Counseling presented June 21, 1996. Title: Personality and Interest Assessment of the Adult Learner with Learning Disabilities.

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The purpose of this research was to determine if there were any relationships between measured personality traits and vocational interests between the Adult Learner with Learning Disabilities (ALLD) and without Learning Disabilities (ALNLD). Instruments utilized to measure personality traits and vocational interests included the Myers Briggs Type Indicator (MBTI) and the Self-Directed Search-Form Easy (SDS-E). Additionally, the ALLD's assessed personality traits were compared with their overall grade point average (GPA) at the post-secondary level. Lastly, this study allowed an analysis of the level of congruence between the ALLD's expected vocational goal upon college completion and their vocational interests, as measured by the SDS-E.

The population investigated included ninety adult learners from Chemeketa Community College in Salem, Oregon. Forty of these student participants were learning disabled while the remaining fifty students were not learning disabled. Both groups completed the MBTI, the SDS-E, and a student questionnaire to provide the necessary data.

The log linear analysis indicated significant interactions between the ALLD and ALNLD groups on the MBTI with a three-way interaction of learning status, age, and MBTI preference pair Thinking-Feeling ( $p = .046$ ); and a three way interaction of learning status, age and MBTI preference pair Sensing - Intuition ( $p = .028$ ). The ALLD presented preference for Thinking (T) and Sensing (S) profiles while the ALNLD presented preference for Feeling (F) and equally for Intuitive (N) and Sensing (S) preferences.

The log linear analysis also found no significance between the ALLD and ALNLD groups vocational interests as measured by the SDS-E. This finding supports literature reviewed that purports individuals with LD have personalities and vocational interests as varied as their “non-disabled” peers.

The multiple regression test found no significant relationships between personality traits as defined by the MBTI and the GPA of the ALLD. Perhaps further investigation with a larger sample size might provide increased insight on the relationship between personality patterns and GPA of the ALLD.

Lastly, this research which compared the highest surveyed and expressed vocational interests of the ALLD, demonstrated that the SDS-E was a good interest inventory to use with persons who were learning disabled. The SDS-E presented a strong relationship (55% perfect match) between expressed and measured interests of persons who were ALLD. This finding supports use of the SDS-E as a career counseling tool for the ALLD population.

**Personality and Interest Assessment of the Adult Learner  
with Learning Disabilities**

**by**

**Linda U. Keller**

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Doctor of Philosophy dissertation of Linda U. Keller presented on June 21, 1996

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I understand that my dissertation will become part of the permanent collection of Oregon State University libraries. My signature below authorizes release of my dissertation to any reader upon request.

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Linda U. Keller, Author

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# PERSONALITY AND INTEREST ASSESSMENT OF THE ADULT LEARNER WITH LEARNING DISABILITIES

## CHAPTER 1 INTRODUCTION

### Background of the Problem

Personality and interest assessment of the Adult Learner with Learning Disabilities (ALLD) in post-secondary education programs provides an avenue to explore and increase our understanding of how personality styles and vocational interests of the ALLD impacts career planning, academic success, and job placement. In identifying an individual as learning disabled, our academic institutions have spent a great deal of energy and time administering a battery of aptitude, achievement, and intelligence tests to satisfy academia requirements. However, according to Spreen (1987), there have been relatively few studies which have focused on personality assessment and adjustment in adult populations with learning disabilities. There is an increasingly recognized need for improved methods of assessing personality, interests, and behavioral characteristics of adults and adolescents with learning disabilities for those concerned with success in educational, vocational, and employment efforts (Dowdy, Smith, & Nowell, 1992).

This dissertation examined and hopes to encourage further research in identifying personality styles and vocational interests of the ALLD. Hinkebein, Koller, and Kuncie (1992, p. 45) asserted "that by assisting learning disabled individuals to understand their personality styles and interests, they can become more effective self advocates in choosing the educational programs, occupations, and settings that best match their own natural tendencies." Furthermore, these authors maintained that by adopting a personality orientation centering on personal characteristics rather than focusing on psychopathology, we greatly enhance the education and rehabilitation outcomes for persons who are ALLD.

In 1969 Congress passed the Specific Learning Disabilities Act, thereby formally recognizing learning disabilities as a separate area of disability, and also providing the availability of Federal funding for the establishment of programs, teacher training, and facilities. There were several subsequent laws that have impacted individuals with learning disabilities in both secondary and post-secondary institutions. Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act (ADA) of 1990 were civil rights statutes that provided equal access and reasonable accommodation for "otherwise qualified" students with disabilities (Scott, 1991). Public Law 94-142 (1975) required mandated special education services for students with learning disabilities throughout their public school experiences. Recent amendments to Public Law 94-142, now the Individuals with Disabilities Education Act (IDEA), have required all states to provide transition plans while students with disabilities are still in high school.

In recent years, case law and decisions by the Office for Civil Rights based on Section 504 have provided the impetus for colleges, graduate schools, and professional schools to revise admission policies, provide accommodations, and develop support services (Brinckerhoff, Shaw, & McGuire, 1993; Scott, 1991). The Americans with Disabilities Act (ADA), Public Law 101-336 (July 1990), expanded access beyond the campus and into the private sector. Under ADA, college students with disabilities will be affected by policies regarding certification, licensure, and job hiring practices after graduation (Brinckerhoff, et al, 1993).

According to the Eleventh Annual Report to Congress prepared by the Office of Special Education in 1989, Learning Disability (LD) was the largest and fastest growing category for special education services. The numbers of pupils identified with LD increased from 750,000 in 1976-77 to 1,941,000 in 1987-88 and represented 47% of the pupils who received special education services nationally. In 1993, the U.S. Department of Education noted that 51% of the students in public special education classes were diagnosed with LD, representing a 200% increase since 1977 (Courtinho, 1995). Consequently, it is not surprising that LD was the fastest growing disability population served by the Vocational Rehabilitation system (Dowdy & Smith, 1994), which also impacted higher education. The September-October 1992 issue of HEATH

published results of a statistical study which indicated a significant increase in the percentage of college freshman with disabilities and cited learning disability as the most frequently identified and most rapidly growing disability category. In looking at the bigger picture, the Interagency Committee on Learning Disabilities (1987) reported that the learning disabilities population was the largest of all adult disability groups in the United States. As a consequence, the need for information on learning disabilities blossomed in the past decade.

The spotlight on the ALLD in post-secondary institutions continued to brighten as enrollment of adults with learning disabilities increased. In 1987 the U.S. Department of Education reported that 10% of all post secondary students in the nation had some type of a disability. These approximately 1.3 million students attended higher education programs, community colleges, and professional schools. Of these 1.3 million post secondary students identified with a disability, 12.2% (approximately 160,000) reported having a learning disability. According to Marder & D'Amico (1992), 57.5% of students served by Disabled Student Services in higher education nationwide, were learning disabled. Bogart, Eidelman, and Kujawa (1988) found that the incidence of college students identified as learning disabled increased 300% in the past ten years.

Moreover, this significant increase in the number of students identified as learning disabled attending colleges and universities in the last ten years was accompanied by a commensurate concern among service providers regarding the academic failure rate of these students. A comprehensive survey of 911 learning disabled high school graduates completed by Sitlington and Frank (1990) demonstrated that only 29 (6.5%) of the 450 learning disabled adults who enrolled in some type of post-secondary agency were still in school after one year. Vogal and Adelman (1990) compared GPAs of 110 students with learning disabilities to a random stratified sample (RSS) of 153 students attending the same college and found over a four-year period of time, the GPAs of students with learning disabilities were significantly lower than for the RSS group. Their transcripts had significantly more D and P (pass) grades than did the RSS group. The latter was expected since many of the recommended college developmental courses were offered only pass/fail.

Empirical evidence suggests college students with learning disabilities as a group, had difficulty staying in and completing a college program. Vogel and Adelman (1992) investigated the success of post-secondary ALLD attending either two-year or four-year colleges, and found only 10% degree completion. They also found that higher education failed to track progress with the LD population and reported that even with a greater number of students with learning disabilities enrolled in post-secondary institutions and an increased concern for academic success, very few institutions were systematically monitoring students academic performance or graduation and attrition rates.

National concern for students with disabilities and their educational and career development grew as these students entered the competitive employment market. Studies investigating the employment status of students post-high school reported that those with learning disabilities do not attain levels of education, independence, and employment comparable to their non-disabled peers (White et al., 1982; Horn et al., 1983; Johnston, 1984; Hartzell & Compton, 1984; & Zigmond & Thornton, 1985). According to the Rehabilitation Services Administration (RSA), amongst persons with disabilities, individuals with learning disabilities continued to represent the fastest growing impediment to employment ( Mars, 1993).

Research showed that the gap between successful school completion and gainful employment was frequently much wider for persons with disabilities than for non-disabled individuals (Harrington,1982). In a review of post-high school adjustment for individuals with learning disabilities, White (1992) assessed the results and found that learning disabilities frequently caused problems in the educational, vocational and social domains, as evidenced by the adults' high unemployment rates, underemployment, and general lack of satisfaction with their personal and vocational lives. Furthermore, White found the number of adults with LD who have been able to achieve the level of independence and self-sufficiency necessary to 'take their place in society' was disappointingly low.

Many young LD adults were dissatisfied with their work primarily because they were working in occupations incongruent with their personalities and interests (White, 1992). Individuals with LD are often stereotyped, trained for,

and placed into more limited occupational environments (Cummings and Maddux, 1987). Compared to their peers, a larger percentage of adolescents with LD dropped out of school or left school only to become unemployed or, more often, stuck in a succession of low-paying jobs (Cruickshank, 1981, Berkley, 1989, Tillman & Abbott, 1992). Cummings (1985) suggested a paradigm shift was needed in our thinking to reflect that individuals with a learning disability have personalities and vocational interests as varied as their peers. He reported that acceptance of this paradigm would promote training and preparation of individuals with learning disabilities for "best fit" occupations matching their personality traits and interests rather than encouraging underemployment due to stereotypical thinking. Cummings further stated application of this paradigm would ultimately lead to increased job stability and satisfaction for adults with learning disabilities.

Studies investigating the employment status of students with disabilities after the school years have reported that students with LD did not attain levels of independence or employment status comparable to those of their non disabled peers (Fafard & Haubrich, 1981; Hartzell & Compton, 1984; Horn, O'Donnell, & Vitulano, 1983; Johnson, 1987a; White, Alley, Deshler, Schumaker, Warner, & Clark, 1982; Zigmond & Thornton, 1985). In researching the issue of independence, Sitlington, Frank, & Carson (1992) found that sixty percent of post-high school adults with LD continued to live with their parents. Additional studies (White, 1992; DeBettencourt et al., 1989; Sitlington et al., 1989; & Wagner, 1989) document underemployment of adults with LD compared to their non-disabled peers; with the largest percentage of LD workers employed in low level service, fast food, laborer, production, and helper occupations.

The employment rate of high school graduates with learning disabilities was 75%, which was not significantly different from their non-disabled peers (Harwell, 1995). What was different was where graduates with learning disabilities are after several years of working in the labor market. Compared to their non-disabled peers, they remained in significantly greater numbers of entry level positions, usually earned minimum wages, often were employed part-time, and were dissatisfied with the job they were stuck performing (Sitlington et al., 1992).

Studies examining job success of the general population indicated that vocational satisfaction, stability, and achievement depended upon compatibility between an individual's personality and the environment in which that individual worked (Devoe, 1975; Mount & Muchinsky, 1978; Wiggins & Westlander, 1977). Additionally, Holland (1985a) found that job satisfaction and stability occurred more often if personality type and work environment were congruent. These concepts applied to the ALLD, who like the general population, have benefited by developing an understanding of variables such as personality, vocational interests and matching job environments. Such an understanding has influenced coping and adjustments in rehabilitation, training and job placement for persons with learning disabilities (Hinkebein, Koller, & Kunce, 1992).

## Statement of the Problem

Research has shown as the number of post-secondary students with learning disabilities continued to dramatically increase, the significance of the problem regarding academic failures and unsuccessful job placement of this population heightened. It was evident that a thorough understanding of the ALLD's personality and occupational interests as well as cognitive abilities was crucial in identifying training and placement needs. Therefore, by providing research that evaluated the ALLD's measured personality and vocational interests, service providers may develop increased insight on how to better address personality and vocational interest needs of the ALLD in planning successful educational and vocational placements. It was anticipated that research in this arena would not only have implications for identifying unmet assessment needs of the ALLD, but also for identifying improved planning options that further tackles the problems of reported high drop out rates, academic failures, underemployment, and unemployment of persons with learning disabilities.

This study not only produced answers to the four research questions outlined below, but also generated new questions for further research. In

evaluating the outcome of personality and vocational interest testing of the ALLD, the need for a comprehensive and wholistic approach beyond the traditional standardized assessment, e.g., aptitude, intelligence and achievement testing, was addressed. Additionally, this research permitted investigation of how the ALLD's personality preferences correlated with academic performance

## Purpose of this Study

The purpose of this study was to determine if there were any relationships between measured personality traits and vocational interests of the ALLD compared with the ALNLD. Instruments utilized to measure personality traits and vocational interests included the Myers Briggs Type Indicator (MBTI) and the Self-Directed Search (SDS), Form E (Easy). Additionally, the ALLD's assessed personality traits were compared with their academic performance, as measured by their GPA, at the post-secondary level. Lastly, this study allowed an analysis of the level of congruence between the ALLD's expected vocational goal upon college completion and their measured vocational interests. To investigate these relationships, the following four research questions were studied:

1. Is there a difference in personality patterns as defined by the Myers Briggs Type Indicator (MBTI) between community college students who are learning disabled and non-learning disabled?
2. Is there a difference in vocational interests as defined by the Self Directed Search, Form Easy (SDS-E) between community college students who are learning disabled and non-learning disabled?
3. Are there any correlations between grade point average (GPA) and personality traits identified by the MBTI of community college students with LD?
4. Are the expected vocational goals of community college students with LD congruent with their vocational interests as measured by the SDS-E?

## Learning Disability:

### Definitions of Learning Disabilities

The problem of defining the term "learning disabilities" has long challenged educators and professionals. In 1962, Sam Kirk introduced the term learning disabilities to a parent group which organized the Association for Children with Learning Disabilities. He defined learning disabilities as: ". . . 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).

"Learning disability" was developed as a broad term to cover varied subgroups of students 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. According to Ross (1976), the learning disabled were children who had often been ignored, misdiagnosed and mistreated. However, parent groups responded to this growing problem and through coordinated efforts and advocacy, pressured Congress to establish LD as a special category of disability (Ivy, 1991).

Definitions of learning disabilities varied depending on the underlying purpose. Almost all schools in the United States used either the original or modified version of the P.L. 94-142 definition of learning disabilities, which emphasized the concept of discrepancy between potential and academic achievement (Mercer et al., 1990). The definition used for vocational rehabilitation purposes emphasized factors that are significant for employment (e.g., psychological process deficits such as remembering oral directions; psychological deficits such as getting along with co-workers; and employability factors such as punctuality) (Rehabilitation Services Administration, 1985). Identification of adult learning disabilities was further complicated by the lack of

a definition in Section 504 of the Rehabilitation Act, which was the basis for the provision of college and university services (Gerber & Reiff, 1994).

The continuation of definitional controversy was reported in recent literature, including articles in the Journal of Learning Disabilities (Hammill, 1990) and in the Learning Disability Quarterly (Swanson, 1991a). Both Hammill and Swanson reviewed definitions of learning disabilities provided since 1962 and found some commonalities. Hammill discovered eleven different definitions of LD. In comparing these definitions, he found the following nine elements by which definitions might be contrasted:

1. *Underachievement determination*: All definitions reviewed adhered to the idea that an individual with LD was an underachiever. Definitions suggest that underachievement is indicated by the presence of aptitude-achievement discrepancies. Here a significant difference between intellectual ability, usually represented by an IQ, and performance in one or more of the learning disability areas was indicative of under achievement.
2. *Central nervous system dysfunction etiology*: Some definitions specified that the cause for the learning disability was known or suspected to be a problem of the central nervous system. Although this might be the case in many with severe learning disabilities, it has not yet been proven across the entire spectrum of individuals with learning disabilities (Hynd, Marshall, & Gonzeles, 1991).
3. *Process involvement*: Some definitions expressed the idea that, regardless of the learning disability's cause, its effect was to disrupt the psychological processes that made proficient performance possible in some skill or ability areas. This was a critical component for definitions regarding adults since poor teaching, diminished motivation, or educational disadvantage may also have caused process and learning problems (Brinckerhoff, Shaw, & McGuire, 1993).
4. *Being present throughout the life span*: Most current definitions implied that learning disabilities can be present at any age and

expanded throughout a life time. According to Brinckerhoff et al (1993), the very first definitions of children with LD proclaimed hope in remediation for a complete cure. Today's definitions stress this "life long" aspect is an essential consideration for those working with adults, who have ongoing challenges with their LD.

5. *Specification of spoken language problems as potential learning disabilities:* Some definitions specified that spoken language problems, e.g. those involving listening or speaking challenges, could be learning disabilities.

6. *Specification of academic problems as potential learning:* Some definitions specified that certain types of academic problem, e.g., those involving reading, writing, spelling, or math, could be learning disabilities.

7. *Specification of conceptual problems as potential learning disabilities:* Some definitions specified that certain types of conceptual problems, e.g., those involving thinking and reasoning, can be learning disabilities.

8. *Specification of other conditions as potential learning disabilities:* Some definitions specified that problems other than academic, language, or conceptual disorders could be learning disabilities. For instance, problems involving social skills, spatial orientation, integration, or motor abilities were mentioned. There has been persistent controversy over the years regarding the relevance of defining these problems as learning disabilities (Myers & Hammill, 1990).

9. *Allowance of multi-handicapping nature of learning disabilities:* Some definitions clearly indicated that LD could coexist with other kinds of disabilities, e.g., mental retardation, emotional disturbances, sensory and motor impairment. Other definitions had exclusionary clauses that were worded to eliminate the coexistence of LD with other handicapping conditions. This later definition purported it was impossible for a mentally retarded person to have a learning disability.

Of the eleven definitions of LD reviewed and compared, Hammill (1990) identified two issues:

First, and contrary to popular opinion, considerable agreement existed among the definitions and definers. This was both surprising and encouraging. Second, of the current variable definitions, the one by the National Joint Committee on Learning Disabilities (NJCLD) was probably the best descriptive statement about the nature of learning disabilities (pg. 74, Hammill, 1990).

The following definition was outlined by The National Joint Committee on Learning Disabilities (NJCLD) in 1988:

Learning disabilities is a general term that refers to a heterogeneous group of disorders manifested by significant difficulties in the acquisition and use of listening, speaking, writing, reading, reasoning, or mathematical abilities. These disorders are intrinsic to the individual, presumed to be due to central nervous system dysfunction, and may occur across the life span. Problems in self-regulatory behaviors, social perception, and social interaction may exist with learning disabilities but do not by themselves constitute a learning disability. Learning disabilities may occur concomitantly with other handicapping conditions (e.g. sensory impairment, mental retardation, serious emotional disturbance) or with extrinsic influences, such as cultural differences, insufficient or inappropriate instruction. However, they are not the result of those conditions or influences.

The NJCLD definition addressed many of the conceptual issues cited in Hammill's review (1990) in a way that was appropriate for adults. Brinckerhoff, Shaw, & McGuire (1993, p. 73) purported that each post secondary institution needs to adopt a definition of learning disabilities, and believe the NJCLD definition was clearly the one to choose at the community college and university levels. They outlined the following reasons to support NJCLD definition as the definition of choice:

\* It was consistent with the concept of intraindividual differences in a broad range of areas including reasoning.

- \* It clearly specified that learning disabilities exist throughout the life span.
- \* It did not require identification of central nervous system etiology.
- \* It recognized that problems with related psychosocial skills may exist but did not include them as part of the definition.
- \* Although it acknowledged possible concomitant disabling conditions, it dealt with learning disabilities as the primary condition.
- \* It did not rule out the possibility that learning disabilities can occur in people with superior intellectual functioning.

### Determination of a Learning Disability

While the definition of learning disabilities has been provided and was important, the operationalizing of the definition in terms of its use for identification and diagnostic procedures was even more crucial. An operational interpretation of learning disabilities based on NJCLD's definition was outlined in a paradigm suggested by Kavale, K., Forness, S., & Lorschach, T. (1991). In this model there were four levels of investigation: Level I - Determining if there is an intraindividual discrepancy; Level II - Identifying elements indicating whether the discrepancy is intrinsic to the individual; Level III - Specifying related considerations; and Level IV - determining possible alternative explanations of the learning difficulties. These levels are delineated below:

#### *Level 1: Intraindividual Discrepancy:*

Intraindividual discrepancy involved two steps: identify a significant difficulty in any of the specified skill areas listed and identifying successful performance in several other skill areas. Information gleaned at this level might be used to

identify a learning problem and eliminate students with mental retardation or those who are slow learners. Level I alone was not sufficient to determine the presence of a learning disability.

According to Michael McCue (1994), there has been significant criticism of the use of the discrepancy formulas for the diagnosis of learning disabilities and for the entitlement to special education services. McCue stated:

Most frequently, concern is raised over the failure to identify the specific psychological and language-processing abilities and limitations in persons assessed for learning disabilities. In adults, as well as children, manifestations of learning disabilities are likely to occur outside of academic performance domains. Clinical assessment of performance must be sufficiently comprehensive to identify the breadth of psychological processing variables potentially encountered by persons with learning disabilities, and assessment must be sensitive enough to detect subtle processing deficits that may result in significant ability limitations in functioning. (pg. 56).

McCue reported that psychological assessment procedures could be quite misrepresentative because a person might function far below or even far above levels measured by psychological tests. Therefore, he suggested diagnosticians use a combination of assessment approaches that go beyond the traditional psychometrics required to identify, diagnose, and understand the effects of learning disabilities. One such approach McCue emphasized was utilizing functional assessment which he defined as the analysis and measurement of specific behaviors that occurred in real environments and were relevant to life or vocational goals.

*Level 2: Discrepancy Intrinsic to the Individual:*

Discrepancy to the individual required verification that the learning disability is intrinsic to the individual. This could involve a determination of central nervous system (CNS) dysfunction or specification of deficits in information processing (Kolligian & Sternberg, 1987; Swanson, 1987) that were related to

the skill deficits identified in Level I. It was difficult to identify specific areas of CNS dysfunction in individuals with LD and required medical orientation to do so. However, identifying deficits in information processing (e.g. memory, organization, or learning efficiency) was within the province of educators. Therefore, an information-processing perspective could help us "understand students" learning processes and the factors that affect learning processes" (Ariel, 1992).

*Level 3: Related Considerations:*

Related considerations involved the identification of concomitant limitations such as psychosocial skills (e.g. poor self-concept or learned helplessness) and physical or sensory abilities. These were not elements of a learning disability but might be viewed as related problems or might be associated with a learning disability. However, if psychosocial problems became predominant, classification in another category of disability (psychological disorder) might be more appropriate.

*Level 4: Alternative Explanations of Learning Difficulty:*

Alternative explanations of learning disabilities addressed exclusions or alternative explanations for a learning difficulty. Applications of this level provided an opportunity to specify a primary disability other than learning disability or to identify an alternative explanation of the deficits identified in Level I. For example, a student who was not motivated to learn might have learning difficulties that were unrelated to a learning disability. The diagnostic process might result in the determination of a primary disability of "other health impaired" or "psychological disorder".

Kavale's four level model outlined an operational definition of learning disabilities that could be useful for post-secondary administrators, service-delivery personnel, and related service personnel, such as vocational rehabilitation counselors, in making eligibility or classification decisions (Brinckerhoff, Shaw, & McGuire, 1993). It provided a diagnostic procedure

which assisted with making consistent, valid, and defensible decisions about which students had learning disabilities, which did not qualify for services, and why. It could provide important information when considering other factors of the ALLD, such as personality and vocational interests, in post-secondary training and occupational planning.

## Definition of Terms

Adult Learners with Learning Disabilities (ALLD) subjects: Those students attending Chemeketa Community College in Salem, Oregon, who were diagnosed with a learning disability.

Adult Learners not Learning Disabled (ALNLD) subjects: Those students attending Chemeketa Community College in Salem, Oregon, who have not been diagnosed with a learning disability.

interest assessment: Career counseling tests or inventories which measures such characteristics as opinions or attitudes regarding occupational information.

personality assessment: Psychological tests designed to measure such characteristics as emotional states, interpersonal relations, behavior patterns, motivations, interests, and attitudes.

The Myers-Briggs Type Indicator (MBTI): Four scales of this personality test:

*Scale 1: Extraversion versus Introversion*

*Extraversion (E):*

Those who prefer to focus their attention and energy on the world outside themselves. They seek out other people, enjoy frequent interaction, whether one-on-one or in groups, and like being the center of attention.

*Introversion (I):*

Those who prefer to focus their attention and energy on the world inside themselves. They try to understand the world before they experience it. They prefer social interactions on a smaller scale, avoid being the center of attention, and prefer to know new people slowly.

*Scale 2: Sensing versus Intuition**Sensing (S):*

Process of gathering data by using the five senses. Sensors are people who prefer sensing by concentrating on what can be seen, heard, felt, smelled, or tasted. They trusted what can be measured or documented and what is real and concrete. They tend to be specific, literal, and give detailed descriptions.

*Intuition (N):*

Those who prefer their "sixth sense" or intuition, naturally read between the lines, and look for meaning of all things. They trust inspiration and inference, value imagination and innovation, and enjoy new projects as they get bored easily after mastering skills.

*Scale 3: Thinking versus Feeling**Thinking (T):*

Thinking refers to making decisions impersonally. Thinkers prefer decisions that make sense logically. They prided themselves on their ability to be objective and analytical. They valued logic, justice, and fairness.

*Feeling (F):*

Feeling refers to making decisions based on personal values. Feelers make decisions based on how much they care or what they feel is right. They value empathy and harmony, and consider it important to be tactful as well as truthful.

#### *Scale 4: Judging versus Perceivers*

##### *Judging (J):*

Judgers, who have a preference for judging, tend to promote structure and are product oriented. They are happiest when decisions have been made and have a work ethic to work first, play later if there is time.

##### *Perceivers (P):*

Perceivers, those who have a preference for perceiving, like to live in a spontaneous way and are happiest when they have flexibility and open options. They are process oriented and derive satisfaction from starting projects.

#### The Self Directed Search (SDS) interest test theme areas:

*Artistic Theme (A):* people who like artistic jobs such as musician, dancer, singer, and auctioneer; they enjoy individualistic expression

*Conventional Theme (C):* people who like conventional jobs such as bookkeeper, secretary, radio dispatcher, and survey worker; they prefer highly organized activities

*Enterprising Theme (E):* people who like enterprising jobs such as salesperson, waiter/waitress, travel agent, supervisor, and store manager; they demonstrate self-confidence and leadership abilities

*Investigative Theme (I):* people who like investigative jobs such as laboratory assistant, product inspector, and medical technician; they like abstract problems and originality

*Realistic Theme (R):* people who like realistic jobs such as auto mechanic, carpenter, electrician, cook, and farmer; they prefer to deal with things rather than ideas

*Social Theme (S):* people who like jobs such as teacher, counselor, nurse, and fast food worker; they solve problems through relationships

## CHAPTER 2 REVIEW OF THE LITERATURE

This chapter contains a review of relevant literature. It begins with a historical overview of vocational and career education. Then related topics including vocational transition services, career planning and vocational rehabilitation of adults with LD are discussed. The remainder of the chapter deals with assessment of the ALLD in general and more specifically, personality and interest measurements of college students with LD and their implications for academic and employment success.

There was a serious lack of data-based research in the field of learning disability at the post-secondary level. Completing both an ERIC and Psychological Literature search, only 154 documents dealing with LD and testing were found. Of these, only 6 documents dealt with LD in higher education as follows: 2 discussed the success of ALLD; 1 presented psychological assessment of the ALLD; 1 described the scholastic aptitude of the ALLD; and 2 outlined research on the self esteem of the ALLD.

In searching literature related specifically to the Myers-Briggs Type Indicator, only one of 181 documents dealt with learning disabled (high school level only). A third search included a review of literature related to the Self Directed Search Interest inventory and only two of 21 documents dealt with learning disabled (high school level only).

In a search of 292 dissertation abstracts dating back to the early 1990's, 2 documents were found that relate to personality or interest assessment of individuals with learning disabilities. The more current one completed by R. Ivy, 1991, specifically utilized both the MBTI and the SDS-E to measure high school students (identified as LD), personality patterns and vocational interests. The older study prepared by R.E. Metts, 1979, researched personality patterns of adolescents with LD, as measured by MBTI.

## 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 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 related to agriculture, trade, and industrial education, and homemaking.

After the impact of post World War II baby boomers, existing vocational programs were not available in enough schools to accommodate the significant increase of students entering secondary schools. Additionally, programs were not preparing youth 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 difficulty, low socioeconomic status, or disabilities which interfered with their profiting from available vocational programs (Ivy, 1991). As a result, the Vocational Education Act of 1963 extended vocational 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 challenges or disabilities which prevented them from succeeding in regular vocational education programs.

The Vocational Education Act of 1963 presented a fundamental philosophical shift for Congress in stressing the needs of individuals in vocational education. According to Cegelka (1985), the Smith-Hughes Act of 1917 focused on the needs of employers while the Vocational Education Act of 1963 emphasized the importance of vocational skills to workers as a means of insuring their own welfare.

In 1968, the Vocational Act of 1963 was amended based on recommendations of the Advisory Council on Vocational Education. It included a broadening of the target population to be served and the nature of the programs to be provided. The 1963 Act specified that persons of all ages, whether or not in school, should have access to vocational training and retraining programs designed to prepare them for jobs as skilled or semiskilled workers. The 1968 amendments 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. Later, in the 1976 amendments, learning disabled students were included and identified as eligible for services.

### Vocational Emphasis Today

Students with disabilities who continued to leave educational facilities without the vocational training needed to allow them to be adequately employed have cost Americans, by the way of government funded programs, more than \$114 million a year (Poplin, 1988). However, new laws suggested hope for positive change. Because of federal mandates including P.L. 94-142 (1975), the Carl Perkins Act of 1984 (P.L. 98-524), and more recently the Education of the Handicapped Amendments of 1990 (P.L. 101-476), now titled Individuals with Disabilities Educational Act (IDEA), and the American's with Disabilities Act (ADA) (P.L. 101-336), July 1990, the vocational preparation as well as accommodations for students with disabilities received increased attention. The Perkins Act was based on the notion that students with disabilities have had relatively limited and poor access to vocational education. Students with disabilities now have the same rights to participate in educational, vocational and career development programs as do non-disabled students. Additionally, agencies, including post-secondary institutions, in accordance with section 504 of the 1973 Rehabilitation Act (P.L. 93-112) and ADA, must provide reasonable accommodations to individuals with disabilities who are pursuing academic and career goals.

IDEA has had particular relevance in emphasizing the provision of transition services at the post-secondary level. It defined transition to include facilitating students with disabilities from high school to a variety of post-secondary activities, including but not limited to, higher education, vocational training, and adult education. The IDEA also mandated that the Individual Education Plan (IEP) include an Individualized Transition Plan (ITP) for students no later than age 16, or earlier when appropriate. These significant changes in special education law facilitated the transition from high school to college for many students with learning disabilities (Brinckerhoff, Shaw, & McGuire, 1993).

Since IDEA required students have a transition plan that follows them post graduation, it is important that the plans for college-bound students reflect the realities of college life. As P.L. 94-142 applies to individuals with disabilities between the ages of 3 and 21 (or until high school graduation) who were receiving special education services, IDEA was the essential bridge which supported the transition needs of the post-secondary student. Historically, close collaboration has not been maintained by the courts between the provisions of the IDEA and the regulations under Section 504 of the Rehabilitation Act of 1973, which was more typically applied to adults (Brinckerhoff, Shaw, & McGuire, 1993).

Section 504 of the Rehabilitation Act of 1973 was the first federal civil rights legislation designed to protect the rights of individuals with disabilities. This regulation applied to both children and adults with disabilities, from preschool through adult education. Subpart E of Section 504 was applicable to all post-secondary educational programs and activities receiving federal funding. Any college or university that receives federal assistance "may not, on the basis of handicap, exclude any qualified handicapped student from any course of study or other part of its education program or activity" (34 C.F.R. Sec. 104.43 [c], 1989). College students with learning disabilities were clearly protected under Section 504 and must be granted an opportunity to compete with their non-disabled peers. Furthermore, these students expected to be provided modifications or "academic adjustments" that assist them in compensating for their learning disability (Rothstein, 1986).

The ADA, signed into law on July 26, 1990, was meant to provide equal opportunities for persons with disabilities, including persons with learning disabilities. Hedberg (1992) stated that under ADA, a disability was defined as physical or mental impairment that substantially limits a major life activity. In the case of someone who has learning disabilities, this would be the learning process.

ADA did not replace Section 504, but rather drew much of its substantive framework from both Section 504 and the Civil Rights Restoration Act of 1987. The ADA expanded the provisions of Section 504 to the private sector. It is anticipated that ADA would bring about several changes in the post-secondary setting. Brinckerhoff et al. (1993, p. 32) purported that due to ADA, there would be "an increase in attention given to instructional and programmatic access for students with disabilities, and it will most likely result in increasing numbers of students with disabilities choosing higher education". Increased participation in higher education would help focus on the rights of college students with disabilities and would renew the focus on disability access in general (Jarrow, 1991).

## Career Education

Marland defined (1971) career education as the preparation of all students for a successful life work by enhancing their options for occupational choice and maximizing their achievement in all subject matter areas. Career education was seen as a lifelong, continuous process which begins in preschool and in the home and continues through formal educational channels on into adulthood (Ivy, 1991; & Isaacson, 1986). The student would follow a developmental process through career awareness, career exploration, career preparation, and continuing education, in order to develop vocational maturity in understanding the relationship between a career and one's lifestyle. Individuals must be exposed to those learning experiences if they were to develop positive work attitudes and realistic understandings of the work world, which would allow them to make appropriate career decisions.

From their review of the literature in the area of career education for the disabled, Brolin and Kolstoe (1978) and Sitlington and Frank (1990) 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, 1984). The data from these studies suggested that youth with disabilities compared to their non disabled peers, generally were 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, these studies suggested that youth with disabilities underestimated their own abilities and aptitudes by choosing lower level jobs (Karayanni, 1981; Mori, 1981; & Plata, 1984).

Individuals with learning disabilities might well find career development an arduous task and career maturity and job satisfaction a more elusive achievement than for others due to poor reality testing, unrealistic expectations, low self-esteem and various cognitive deficits (Lerner, 1985; Rosenthal, 1985; Katz & Rosenthal, 1986). Nevertheless, Rosenthal (1989) reported that various developmental educational activities, self-exploratory processes in counseling (e.g., interest and personality testing), networking, and experiential learning help LD individuals develop metacognitive strategies to successfully negotiate the changes and challenges of independent functioning in the work world.

## Vocational Transition Needs of Persons with Learning Disabilities

Transition, commonly defined as a change or passage from one place to another, implies progression from a less developed to a more developed level. The transition from school to work, from adolescence to adulthood, is a difficult adjustment for any youth, with or without a disability. Having a learning disability or any disability compounded the pressure to achieve independence (Defur & Reiff, 1994). Young adult students with learning disabilities encountered a much lower level of success compared to their peers who are without disability (Gerber & Reiff, 1991). A primary statistic of these academic,

transition and related difficulties was the significant percentage of students with LD who withdrew from high school. Five follow-up studies (Adelman & Vogel, 1990; Cobb & Crump, 1984; Edgar, 1987; Malcolm et al., 1990; Valdes et al., 1990) reported dropout rates of 36%, 42%, 42%, 56%, and 32%, respectively.

Research from the National Longitudinal Transition Study (SRI International, 1991) found that individuals with disabilities, including LD, experienced a dropout rate almost twice that of the general population, low enrollment in post-secondary education and training, high rates of unemployment and underemployment, and lower wages than the general population. Therefore, many individuals with learning disabilities remained dependent on society which created a great loss of undeveloped individual potential as well as an economic drain (Sarkees & Scott, 1986).

Studies investigating the employment status of students with disabilities after the school years have reported that students with LD did not attain levels of independence or employment status that were comparable to those of their non disabled peers (Fafard & Haybrich, 1981; White, Alley, Deshler, Schumaker, Warner, & Clark, 1982; Horn, O'Donnell, & Vitulano, 1983; Johnson, 1987a; Hartzell & Compton, 1984; Zigmond & Thornton, 1985). Furthermore, research reported that employment of individuals with LD primarily received entry level wages and were more likely to be underemployed compared to the non disabled population (Cobb & Crump, 1984; Haring & Associates, 1990; Malcolm et al., 1990; Rusch & Phelps, 1987; Shapiro & Lentz, 1991; Siegel & Gaylord-Ross, 1991; Sitlington & Frank, 1990; and Valdes et al., 1990; & Wehman, Kregel, & Barcus, 1985). These findings have activated interest in the concept of school-to-post-school transition, which covers the period of change from secondary school status to adulthood.

The Carl Perkins Vocational Education Act (1984) and the Applied Technology Act (1990) maintained assurances for special populations, such as learning disabilities, and strengthened the role of vocational education in the provision of transition services for youth with disabilities. P.L. 101-476 (IDEA), defined transition and mandated the identification of needed transition services on the individualized education program (IEP) of all youths who received special education no later than age 16, and placed secondary education in a

clearly defined role as coordinator of transition planning (Defur & McCue, 1994). Will (1984), reported that transition required a shared responsibility of all partners and should extend beyond the traditional notion of service coordinators. Recent models of transition extend beyond just the school-to-work transition and include school to post-secondary education and to independent living (Defur & Reiff, 1994).

Before addressing the needs of college students with LD, it was important to reflect back on the secondary level that set the foundation for these adults. Research has shown that high school students with learning disabilities often found the transition from high school to college a source of anxiety and panic (Fass, 1989). This was often due to the fact that they felt unprepared for the rigors of college life. They might not have experienced college preparatory classes in high school, either because they were tracked into lower-level courses or because they were taking academic courses in the resource room (McGuire, Norlander, & Shaw, 1990).

Making the transition from secondary to post-secondary settings often was difficult for any student, but for students with learning disabilities, these changes could be particularly dramatic (Dalke & Franzene, 1988; Trapani, 1990). According to Shaw, Brinckerhoff, Kristler, and McGuire (1991), the inherent differences in the structure of the secondary and post-secondary settings, added to the transition challenges. They found the following differences: class time in high school was 1,080 hours per year while college is only 336 hours per year; study time averaged 1-2 hours per day in high school and in college, averaged 3-4 hours per day; instruction at the high school level required more student interaction and teacher/student accountability, while college instruction was often non stop lecture and required a high level of independence, analytical ability and problem solving skills to complete projects and library research.

Although youths with learning disabilities often attained greater post-secondary success than many other individuals with different disabilities, they did not achieve post-secondary independence to the degree or with the ease that is often assumed (Gerber & Reiff, 1991). Upon leaving the public school system, young adults with learning disabilities faced the reality of little or no

employment, low income, social isolation, and inadequate support services (Edgar, 1987; Hasazi et al., 1985; Mithaug & Horiuchi, 1983; Rusch & Phelps, 1987; Wehman et al., 1985). The National Longitudinal Transition Study (Wagner, 1989) reported a graduation rate of 61% for youths with learning disabilities compared to 56.2% for all youths with disabilities and 71 to 75% for the general population. Thirty-five percent of youths with learning disabilities drop out of high school and frequently left school at age 16 with minimal academic skills and minimal, if any vocational training (Defur & Reiff, 1994).

## Post-Secondary Education for Persons with Learning Disabilities

In comparison to their non disabled peers, students with learning disabilities were much less likely to participate in any post-secondary education (Fairweather & Shaver, 1991; Valdes, et al., 1990). Valdes and associates (1990) reported that only 15% of the high school graduates with learning disabilities that they followed had completed a post-secondary course in the year prior to their study. Fairweather & Shaver (1991) reported through their research they found only 17% of youth with learning disabilities compared to 56% of their non disabled peers who exited high school enrolled in post-secondary educational programs.

Limited placement opportunities in post-secondary programs for the LD adult was indicated in other research. In a study of 245 students with learning disabilities one to two years after leaving high school, Wagner (1989) found that 16.7% were taking courses from a post-secondary institution (9.6% at a vocational or trade school, 6.9% at a two-year college, and 1.8% at a four-year college) compared with 56% of the general population. Most students with learning disabilities who attend post-secondary programs opt for a two-year college rather than a four-year college (Miller, Rzonca, & Snider, 1991) as the differences between high school and the two-year colleges are less dramatic and had greater support services available.

Over the years, students with disabilities have received limited placement opportunities in both post-secondary programs and in vocational settings. According to Levinson (1987), all too often, disabled students were placed in

vocational or educational training programs in which they had no interest and for which they were unsuited. Levinson points out that such placements rarely result in acquisition of the vocational skills these students needed to compete adequately for the labor market.

A common assumption in delivering transition services to mildly disabled individuals, such as those with LD, was that this population was able to move from school to work with greater ease than their severely disabled peers (Wehman, Kregel, & Barcus, 1985; and Rusch & Phelps, 1987). One specific issue addressed within the federal transition model is that if services were required, a majority of mildly handicapped individuals need only time-limited services, such as assistance from a work-study coordinator or vocational rehabilitation counselor (Will, 1984). There was little empirical research to support these assumptions (Neubert, Tilson, & Ianacone, 1989). Furthermore, few researchers have investigated the amount and type of support individuals with mild disabilities might require to obtain jobs, maintain employment (Wehman & Barcus, 1985), and negotiate job changes that would lead to greater economic and social independence (Edgar, 1987).

A number of authors (Halpern, 1985; Johnson, 1980; Kavale & Forness, 1996; Meers, 1980; Sitlington, 1981, & Will, 1984) emphasized the joint role of special education and vocational education in laying the foundation for transition to post-secondary education and/or the world of work. Such cooperation between these agencies was also congruent with the position of the Office of Special Education and Rehabilitation Services (Will, 1984) and with legislation in special education, vocational education, and vocational rehabilitation (P.L. 94-142; Carl D. Perkins Vocational Education Act, 1984; IDEA, 1990, & Vocational Rehabilitation Act Amendments, 1984, 1988, 1992). A coordinated effort between special education, vocational education, and post-secondary agencies offered the greatest promise for delivering the range of services necessary in fostering independence and in promoting the future success of youth with learning disabilities (Ivy, 1991; Kavale & Forness, 1996).

plague most youth (Humes, 1986). Counseling has covered problems of both adjustment and career dimensions and aided in the transition from learner to earner (Ivy, 1991).

Dowdy, Carter, & Smith (1990) conducted extensive review of studies pertaining to the transition and rehabilitation of the young adults with LD. They found if adult learners with LD were to maximize their chances for post-secondary and career success, VR agencies had to a better job in transitioning programming with this population. They supported VR agencies' intervention at an earlier stage than was practiced (junior or senior year in high school) as well as improved attention to the individualized needs of the young adult with learning disabilities.

### Success of College Students with Learning Disabilities

To date, only Vogel and Adelman (1990 & 1992) have addressed the issue of educational attainment of the ALLD in a systematic way. In 1990 they compared a group of 110 college students with learning disabilities (the LD group) to a random stratified sample (the RSS group) of 153 students attending the same college. They compared the two groups on American College Testing (ACT) composite, college grade-point average (GPA), and academic failure rate. The LD group scored significantly poorer than the RSS group on all four ACT subtests. Vogel and Adelman raised the question about the predictive power of the ACT for individuals with LD attending college and recommended ACT information be supplemented by a careful analysis of other information, such as high school transcripts, WAIS-R or other aptitude measurements completed, and a person's case history.

Vogel and Adelman (1990) also reported that the GPA's of students with LD were significantly lower than for the RSS group. Their transcripts had significantly more D and P (pass) grades than did the RSS group. The latter is to be expected in the LD group because many recommended college developmental courses were offered only with a pass/fail option. However, they found no differences between the two groups in the number of withdrawals, incompletes, or "F" grades.

## Vocational Rehabilitation of Adults with Learning Disabilities

Although vocational rehabilitation services have been available to eligible persons with learning disabilities since 1981, this population was nationally the fastest-growing disability population in the state/federal VR program (Dowdy & Smith, 1994). Fiscal year 1988 data from the Rehabilitation Services Administration (RSA) indicated that 10,733 of the 29,000 specific learning disability cases in the VR program were closed as successfully rehabilitated, with a rehabilitation rate of 67%, which was slightly higher than the rate of 64 % for non-specific learning disabled clients. In fiscal year 1989, specific learning disability comprised 5.3% of all clients rehabilitated, compared with only 1.3% in fiscal year 1983.

Individuals with LD have experienced difficulty achieving at levels consistent with their potential in such areas as academics, receptive and/or expressive language, memory, and social and vocational adjustment (Fafard & Haubrich, 1981; Geist & McGrath, 1983; and Cox, 1987). A history of struggling to achieve and frequent failure almost inevitably impacted on the self-image of adults with learning disabilities, and rehabilitation professionals were often faced with the cumulative effects of this history (Quinn, 1984). Even if adults with LD could adequately perform required jobs tasks, they must still be able to function adequately in a personal, social, and emotional context both on and off the job or failure might be inevitable (RSA, 1990). Often individuals with LD developed overt and covert maladaptive ways of coping with stresses encountered during life. Consequently, an understanding of variables, such as personality and vocational interests, that might influence coping and adjustment in individuals with LD, would be useful to rehabilitation professionals who provided services to this population (Hinkebein, Koller, & Kuncce, 1992).

According to Patterson (1992), research has shown that rehabilitation counseling could assist persons with LD in personal growth development and realization of potential. It has been observed that individuals with long-standing learning disabilities frequently demonstrated a variety of secondary behavioral symptoms, such as poor self-esteem, anxiety, anger and frustration (Lombana, 1982). Those serving in counseling roles have to deal with these variables, as well as ambivalence over intelligence; the latter was a belief that appeared to

Through further research on success of the post-secondary ALLD, Vogel and Adelman (1992) found only 10 % degree completion of ALLD at both two and four-year institutions. They also reported that even with a greater number of students with learning disabilities enrolling in post-secondary institutions and a growing concern for academic success, very few institutions were systematically monitoring students' academic performance or graduation and attrition rates.

Although an increasing number of colleges and universities were offering support services (Mangrum & Stichert, 1988) challenging issues remained with respect to admission policies (Spillane, McGuire, & Norlander, 1992), course requirements, particularly languages (Gajar, 1987; Ganschow, Meyer, & Roeger, 1989), and writing requirements (Collins & Price, 1986). In a survey of practices and attitudes among post-secondary LD service providers, Yost, Shaw, Cullen, and Bigaj (1994) found that services were usually developed in a haphazard manner, and, while sincere, attempts to meet student needs represented only a "menu" of options with little or no philosophical grounding. Nevertheless, it has been found that when appropriate services are provided to students with LD, they seemed to have a more successful retention and graduation rate than many other students (American College Testing, 1988).

## Assessment of the Adult Learner with Learning Disability

The assessment and diagnosis of traditional college-age students with learning disabilities was one of the most controversial topics in the area of post-secondary LD service delivery (Brinckerhoff, Shaw, & McGuire, 1993). The growing number of self-identified students with learning disabilities enrolling in colleges across the country (Henderson, 1992) as well as an increasing number of referrals of students with suspected but undiagnosed learning disabilities (Jarrow, 1991) created challenges for post-secondary personnel. Additional concerns included the heterogeneity of the LD population (Algozzine & Ysseldyke, 1986; Bursuck et al., 1989); inconsistent criteria for defining learning disabilities (Johnson, 1987a; Mercer et al, 1990; and Hammill, 1990) the complex nature of diagnosing adults with learning disabilities (Blalock, 1981; Cohen, 1984; and Vogel, 1985); and a lack of adequate tests and trained professionals ( Shephard & Smith, 1983; Vogel, 1987a, 1987b; D.J. Johnson,

1987b; Gregg & Hoy, 1990; Norlander et al., 1990; Carlton & Walkenshaw, 1991; and Koller, 1994).

Brinckerhoff et al. (1993) purported that for post-secondary LD service providers, most who did not provide diagnostic services on their college campuses, the most significant concerns included: how to use assessment information to determine eligibility for services under Section 504; the relevancy of data for assisting students to make appropriate vocational programming choices; and the utility of assessment for determining effective academic adjustments or auxiliary aids that were needed to assure equal educational opportunity at the post-secondary level.

Information regarding the availability or function of LD diagnostic assessment services on college campuses was scarce and what little research that has been performed was primarily limited to general surveys or descriptions of LD assessment in a single institution or geographical area (Brinckerhoff et al, 1993). Beirne-Smith & Deck (1989) surveyed 108 contact persons at four-year institutions regarding the type of services provided to students with LD during the 1986-87 academic year. The respondents reported the availability of the following assessment services for the LD population: 58 percent provided intellectual testing; 43 percent offered career or vocational assessment; 40 percent provided psychological or personality testing; and 29 percent did not provide any type of assessment at all. Parks, Antonoff, Drake, Skiba, & Soberman (1987) surveyed 223 post-secondary schools and found some conflicting results, but clearly found that less than 25 percent surveyed offered on-site diagnostic testing services to the ALLD.

Only one descriptive study was found that focused exclusively on diagnostic assessment practices and procedures for students with LD at the post-secondary level. Carlton & Walkenshaw (1991) surveyed thirty-five two and four year college programs that provided support services for college students with LD and included a diagnostic component. All programs in the sample required documentation for those previously diagnosed, including psycho educational assessment and/or an IEP from a previous school, preferably, completed within the previous three years. Carlton & Walkershaw reported that 50 percent of the schools appeared to be using a diagnostic team of two or

more individuals, although a single person made the diagnosis in 40 percent of the responding institutions.

Although the evidence was sparse, several institutions have begun to seriously grapple with various aspects of providing assessment services for the ALLD, e.g., University of Georgia and University of Wisconsin-Madison. (Brinckerhoff, Shaw, & McGuire, 1993). Both of these institutions have taken proactive approaches to ensure available diagnostic services to any student diagnosed or suspected of LD.

### Personality and Interest Measurements and their Implications for Academic and Employment Success of the Adult Learner with Learning Disability

The vocational literature suggested that an individual's personality and vocational interests were important determinants of the occupations in which a person will experience job satisfaction and success (Holland, 1979; Ivy, 1991; & Ostipow, 1983). Holland (1979, 1985a) aligned himself clearly with those who regard occupational preferences as the choice of a way of life; a choice that reflected the individual's self-concept and major personality characteristics. More specifically, Holland's (1985a) theory viewed vocational interests as expressions of personality and argued that individuals made occupational choices which placed them in work environments that were commensurate with their predominant personality characteristics. When this compatibility occurred, Holland argued (1985a) that individuals are more successful. Consequently, it might be expected that the more compatible the chosen concentration was with interest and personality type, the more likely it was that the student would be successful in the particular program (Ivy, 1991).

Ivy (1991) purported that personality and vocational interest inventories provided individuals who were learning disabled, with information which enabled them to make more informed, educational and occupational choices. Additionally, Ivy contended interest inventories were a useful means to identify the ALLD's career preferences and, if they were not compatible with abilities or

current vocational goals, career counseling and self-awareness education might be necessary.

Literature showed that a lack of vocational direction for the ALLD affects academic success. Because some individuals with LD possessed limited or unrealistic goals, they had difficulty in school and needed reality-based counseling and vocational exploration (Dowdy, 1992). Vocationally undecided college students tended to drop out, earned fewer credits, and got lower grades as reported by Elton and Rose (1978) and Levinson (1987). This burdened the existing problem of the high drop out rate and lower GPAs already reported with the ALLD population, who were often underemployed and at risk for job failure (Berkeley, 1989; Tilman & Abbott, 1992).

Motivation, self-direction, independence, and perseverance were significantly tied to the information gained through an interest inventory (Ivy, 1991). Unfortunately, much of the research concerning occupational interests or goals had not been concerned with the influences on special or disabled populations' occupational choices (Ivy, 1991). According to Weller & Buchanan (1983), many LD individuals were willing to invest inordinate amounts of time and energy in attaining their vocational goals if they were clearly identified.

The only research found regarding interest testing of persons with learning disabilities were completed by Ivy (1991) and Humes (1992). Ivy's study included 190 learning disabled and non-learning disabled high school students, and compared their vocational interests and personality traits. Using the Self Directed Search Interest Inventory-Easy Form (SDS-E), Ivy found there were some differences between students with LD and non-LD's vocational preferences, as well as gender preferences. Students with LD presented a strong preference for Realistic (mechanical) occupations while students without LD presented a strong preference for Social occupations. LD and NLD males together presented preference for Realistic occupations. However, looking at LD and NLD separately, LD males preferred Realistic (mechanical) occupations (non-interactive careers) while non-LD males preferred Social (teaching) and Enterprising (sales) occupations (interactive careers). LD and non-LD females both preferred jobs in the Social field.

Gender differences on the SDS-E associated with the Realistic and Social scales were reported by Holland, Powell, & Fritzsche (1994). Women were more likely to have low scores on Realistic and high scores on Social while men were more likely to score high scores on Realistic and low scores on Social.

Humes (1992), who only tested the LD group, administered the SDS-E Interest Inventory to 141 high school students with LD enrolled in IEP resource rooms. Humes found students in this sample had particular kinds of vocational interests as assessed by the SDS. Among male students with LD, the first preference was realistic occupations (45.92%), while for females with LD, the first choice reported was social (52.63%) occupations. These results on first choice preferences for both males and females were consistent with Ivy's (1991) findings, who also used the SDS-E with LD adolescents. Humes reported several second preferences for males with LD, including enterprising (25%), investigative (23%), and social (21%). For females with LD, the second choices indicated were artistic and social (each, 31.6%).

The literature review presented limited research on vocational interest testing of individuals with LD. This was similarly true of personality assessment with this population. Research conducted by Hinkebein, Koller, & Kuncze (1992), Humes (1992), Ivy (1991), and Metts (1979) were the only studies found to investigate "normal" personality traits of the LD population, with the later two dealing specifically with administration of the MBTI. Furthermore, Hinkebein et al (1992, pg. 41) reported, "very few studies have focused on "normal" personality traits in the LD sample. Normal personality traits might be more useful in describing how such an individual perceives oneself, how others viewed the individual, and how one coped with everyday situations."

Hinkebein et al. (1992), administered a personality test titled the Personal Styles Inventory (PSI) to 46 persons with LD who were current consumers of vocational rehabilitation. The PSI looked at the 'normal' personality traits in a sample of LD participants. Hinkebein and associates found heterogeneity of personality types and significant relations between personality type and self-reported problem behaviors of the LD sample. The distribution of participants by personality types were: 33% stability-oriented extraverts (SOE); 33%

change-oriented extraverts (COE); 19% stability-oriented introverts (SOI); and 15% change-oriented introverts (COI). SOE's were encouraging, sympathetic, avoided conflict, and sought to maintain equilibrium and balance. COE's were energetic, active, flexible, and easily bored. SOI's preferred "hands-on" type activities of a practical nature and tended to be reserved. COI's tended to be individualistic, improvising, and serious about interpersonal relationships.

Research conducted by Humes (1992), who administered the MBTI personality inventory to 141 high school students with LD, reported the students presented consistent temperament characteristics. The MBTI personality types reported by a four letter preference code, indicated at least 10% of the students as a group were: ESTP, ESFP, and ENTP. In looking at each of the four dimensions on the MBTI, Humes found some differences between male and female students: Although there were more Extraverts (E) than Introverts (I) for both male and female students, 79.49% of the females compared to 58% of males fell into the E category. Another difference was found between male and female students in the Thinking (T) and Feeling (F) category. 74% of the males preferred the T category, while 69.23% of the female students preferred the F category.

In reviewing research on the MBTI, it was important to consider estimated trends identified by the test maker. According to the MBTI manual (1985), Isabel Meyers in 1962 made the following estimates of type in the general population in the United States:

- \* About 75% of the population preferred Extraversion (E)
- \* About 75% of the population preferred Sensing (S)
- \* About 60% of males preferred Thinking (T)
- \* About 65% of females preferred Feeling (F)
- \* About 55% to 60% preferred Judging (J)

Based on his administration of the MBTI to 141 high school resource room students with LD, Humes found the most frequent preference to fall on the Extraversion-Perception (E-P) continuum. For the purpose of career planning, Humes suggested high school students with LD be provided career exploration related to the E-P temperament axis. In Extraversion (E) attitude, energy flowed to objects and people of the environment. In the Perception (P) attitude, an individual was tuned to incoming information. Humes described EPs as active, energetic, sociable, and always seeking new experiences. In the general population, 55% to 60% preferred Judging (J); in Humes sample, 67% preferred Perception (P), which was a reversal.

The only research found which compared personality patterns between individuals with LD and the general population was that reported by Ivy (1991), and Metts (1979). Ivy found no significant differences in personality patterns between 190 learning and non-learning disabled adolescents as measured on the MBTI. Initially looking at the data, Ivy found some differences on the Thinking (T) - Feeling (F) scales. Students with LD (both male and female) tended toward Thinking (60%) while the non-LD group tended toward Feeling (65%). However, since the LD sample was dominated by females, further testing of data accounting for the gender differences was necessary. Once this testing was completed, no personality differences were detected between the LD and non-LD students.

Metts (1979) research, though somewhat dated, provided some historical data regarding investigation of the distribution of MBTI of 113 adolescents with learning disabilities compared to a McCaulley composite sample of 961 high school students identified as non-learning disabled. Metts found two significant differences existed between the sixteen personality types of the two groups. First, he found the adolescents with LD had significantly more Thinking types (T's) than did the sample group. The logical converse, since Thinking and Feeling were dichotomies, the adolescent with LD had fewer Feeling (F's) than the sample group. Secondly, Metts discovered significantly more of the adolescents with LD had Sensing-Thinking (ST) combinations than did the composite sample.

## Summary

The literature review outlined in this chapter presented many issues and problems which has been faced by persons with learning disabilities. These issues have been pushed to the forefront as the number of persons identified with learning disabilities has continued to significantly increase in the elementary and secondary grades (Courtinho, 1995). Also, increases were dramatically noted in post-secondary (Bogart, Eidelman, & Kujawa, 1988; and Marder & D'Amico, 1992) and in vocational rehabilitation and adult agencies (Mars, 1993; Dowdy & Smith, 1994; and Interagency Committee on Learning Disabilities, 1987). Looking at the historical trends presented in case law and considering LD determination and assessment practices in our educational institutions, it is evident that the assessment, accommodation, transition, training, and placement needs of persons with learning disabilities have long been ignored or abused. Fortunately, recent case law, including IDEA and ADA has directed agencies to take a closer look at their interpretations of previous laws (such as 504) that has impacted services for the ALLD. It has also shook the foundations of how agencies provide appropriate assessment, planning, and career placement services for persons with learning disabilities.

While personality and interests alone were not sufficient for determining success in a given career, a person with the personality, interests, and abilities that were suitable for a given occupation was more likely to do well and be satisfied in that occupation (Cronbach, 1978; Cummings, 1985; Holland, 1985; and Hinkebein et al, 1992). Educational and career planning for the ALLD was contingent on better assessment of the important variables, including personality and interests, for career success. Therefore, interest and personality assessments should be considered an essential component of educational and vocational assessment procedures (Ivy, 1991; Humes, 1992).

## CHAPTER 3 METHODOLOGY

The purpose of this study was to determine if there were any relationships between measured personality traits and vocational interests of the ALLD compared with the ALNLD. The MBTI and the SDS-E were the instruments used to measure personality types and vocational interests in this study. Additionally, the ALLD's assessed personality traits were compared with their academic performance, as measured by their GPA, at the post-secondary level. Lastly, this study allowed an analysis of the level of congruence between the ALLD's expected vocational goal upon college completion and their measured vocational interests.

This chapter outlines the research methods and procedures implemented. It includes a description of the subjects, selection methods, research instruments, experimental procedures, data collection methods, research design, statistical procedures, and the research questions with their attendant hypotheses.

### Subjects

The Myers-Briggs Type Indicator and Self-Directed Search, Form E, were administered to 90 students attending Chemeketa Community College (CCC) in Salem, Oregon. Forty of these students (experimental group) had received a formal diagnosis as learning disabled, verified by Chemeketa Community College's diagnostician. The other fifty participants (control group) were non-learning disabled peers attending CCC. Ages of the all subjects ranged from 17 to 50 years. These individuals were recruited through the following methods:

1. Advertised in the school newspaper and poster in announcements recruiting volunteers.

2. Recruited volunteer students who had completed a learning disability assessment through CCC's Counseling Center within the past three calendar years and had been identified as learning disabled.
3. Reviewed available records from the Office of Students with Disabilities and identified students with learning disabilities with an active student status. From this list, volunteers were contacted and recruited to participate in this study.
4. Invited students seeking advisement through the school counseling center.
5. Invited students enrolled in introductory psychology classes.
6. Invited student veterans active in a Veteran's Administration vocational rehabilitation program and who had been identified as LD.

### Subject Demographic Information

The total number of subjects in the investigation was ninety. Table 3.1 indicates the number of participants by learning status (LD or NLD) and the mean age by gender.

TABLE 3.1

#### **Demographic Information on the LD and NLD participants**

<u>GROUP</u>	<u>N</u>	<u>N-Males</u>	<u>Mean age-Males</u>	<u>N-Females</u>	<u>Mean age-Females</u>
LD	40	12	29	28	30
NLD	50	20	26	30	23

## Selection Methods of Instrumentation

### Selection of Personality Instrument for this Study

Often the instrument of choice in measuring personality is the Minnesota Multiphasic Personality Inventory-2 (MMPI-2), which is primarily a measure of psychopathology and is used for diagnostic purposes as a predictor of personality traits or states. The MMPI-2 is made up of three validity scales and ten clinical scales scored from 567 items. This instrument heavily stresses maladaptive behavior rather than normal personality traits, and is very lengthy, which is problematic for the ALLD and, therefore, not selected for this study. According to Hinkebein, Kollar, and Kunce (1992), "identification of normal personality traits may be more useful in describing how a learning disabled individual copes with everyday situations, including academic settings".

Other common personality assessment tools have included the California Psychological Inventory (CPI), the Sixteen Personality Factor Questionnaire (16PF), the Personality Styles Indicator (PSI), and the Myers-Briggs Type Indicator (MBTI). While drawing nearly half of its' items from the MMPI, the CPI was specifically designed for use with normal adult populations. Consisting of 480 items, the 1987 CPI revision yields scores on 18 scales. It provides a better description of the normal personality than the MMPI and can be useful in providing clear measures of socially desirable tendencies. However, like the MMPI, the CPI's length can be problematic for the ALLD, and was therefore, ruled out as an appropriate instrument for this study.

The 16PF, PSI and MBTI each measures and identifies commonplace personality characteristics that can have implications for both normal and maladaptive behavior. The 16PF is an inventory that yields 16 scores addressing bipolar factors such as reserved verses outgoing and humble verses assertive. There is a Form E available for the culturally disadvantaged or academically challenged, which required between a third and sixth grade reading level. In looking at the construct of the 16PF and the shortness of its scales, reliability of factor scores are generally rated low. There is also some question about the factorial homogeneity of items within each scale. Available information on normative samples is lacking. Since this instrument requires

further development, standardization, and validation, it was not chosen for this research project.

The Personality Styles Indicator (PSI) was designed to measure commonplace personality characteristics using two basic bipolar dimensions of personality: introversion versus extroversion and change versus stability. The PSI, developed by Kuncce, was a conceptualization of the nonpathological implications of the MMPI scores (Kuncce & Tamkin, 1987). The PSI, Form E, which has an eighth grade reading level, consists of two parts, a 250-item true-false section and a 24-item personal styles self ratings component which utilizes a 10 point Likert scale. Considerable research exists that supports the PSI's construct, content, and concurrent validity while reliability estimates range from .71 to .82 (Cope, Kuncce, & Roland, 1990). However, the PSI instrument profile report provides charts and supporting narratives that are confusing and cumbersome to interpret. This may be particularly problematic for the ALLD and therefore, not chosen for the study.

In reviewing the various personality measurement tools, the MBTI was selected as the best instrument for use with the population of this study. Rationale for selecting the MBTI included the following:

1. It has successfully measured personality patterns of the person with LD (Metts, 1979; and Ivy, 1991) and has identified characteristics that can have implications on both normal and maladaptive behavior.
2. It has presented non-intrusive questions compared to other instruments, such as the MMPI, which is primarily a measure of psychopathology (Ackerman, McGraw, & Dykman, 1987).
3. It provides a 7th grade reading level and takes less time to administer (126 items), important considerations for the LD test taker (Ivy, 1991).
4. It is an instrument successfully utilized with young adult and adult learning disabled populations (Ivy, 1991; Humes, 1992).

5. It has been well researched and demonstrates good reliability and validity (Briggs, Myers, & McCaulley, 1985).

### Instrumentation: The Myers-Briggs Type Indicator

The Myers-Briggs Type Indicator (MBTI) was a questionnaire developed by Isabel Briggs Myers and her mother, Katherine C. Briggs. The MBTI was based on Swiss psychiatrist, C.J. 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 measures an individual's ideas about perception and judgment as well as one's differing attitudes. Jung saw patterns he labeled personality or psychological types (Lawrence, 1982). The essence of Jung's comprehensive theory that relates to psychological types was the belief that everyone uses four basic mental functions or processes which are called Sensing (S), Intuition (I), Thinking (T), and Feeling (F). MBTI reports 8 possible preferences, with two opposites for each of the four scales: Extraversion-Introversion (E-I), Sensing-Intuition (S-N), Thinking-Feeling (T-F), and Judging-Perceptive (J-P).

A person's type, measured by responses on the MBTI, is reflected through the combination and interaction of the four preferences. There are a total of sixteen different personality patterns designated by codes called "types" denoted by four letters of the preferences, (e.g. ENFJ and ISTF). There is a score associated with each letter of the personality type. These scores show how consistently a person chooses one preference over its opposite. High scores generally mean a clear preference, but do not suggest how well developed that preference is, or how well a person used that preference.

Subjects were given the MBTI, form G, which is the standard form for the MBTI. It is a self-scoring test with 126 items, designed for individual or group situations. It has less than items the long form F (166 items) and has a seventh grade reading level. The test is untimed and most people complete the MBTI in 20 to 30 minutes. The reliability and validity are highly comparable to the longer form (Briggs, Myers & McCaulley, 1985). Based on MBTI preference scores on four dimensions (Extraversion verses Introversion; Sensing verses Thinking;

Thinking verses Feeling; and Judging verses Perception), an individual is designated one of the sixteen personality types.

### *Reliability of the MBTI*

According to the Ninth Mental Measurements Yearbook (1985), data are presented from two perspectives. For adherents of the type theory, the greatest interest is in seeing that type remain the same upon readministration of the MBTI. For those with a more traditional psychometric orientation, the stability of the continuous scores is based on opposing scores. Test-retest reliability coefficients are good, ranging from .48 to .87. Reliability studies on Form G in the MBTI manual dealing with internal consistency (split-half) measures showed correlations mostly in .80's range for continuous scores. These figures are comparable to those of leading personality inventories.

### *Validity of the MBTI*

According to the Ninth Mental Measurements Yearbook (1985), the MBTI has presented acceptable validity. The data reviewed shows that the MBTI is related to variables such as personality measures, SAT performance, selected Strong Vocational Interest Blank Scales, and the Edwards Personal Preference Schedule.

### Selection of the Interest Inventory for this Study

Though there have been numerous vocational interest inventories on the market, the interest inventory selected as the most applicable for use with the learning disabled population was the Self-Directed Search (SDS) (Cummings & Maddux, 1987; Ivy, 1992; & Humes, 1992), developed by John Holland and first published in 1970. The SDS (Holland, 1979) is a popular vocational interest inventory that has received considerable study and has been used to assess occupational interests and personalities. Another reason why SDS was selected is that Holland's career theory suggested that an individual's career choice reflects that person's personality and behavioral styles (Ostipow, 1983).

This provided additional insight and support as personality patterns were measured by the MBTI, the second instrument utilized in this study.

More importantly, the SDS-E, Form Easy, was chosen because it was designed specifically for individuals who have difficulty with reading. This was an important consideration given that half of the subjects of the study were learning disabled. The SDS-E has a scoring scheme that is simplified and yields a two-letter rather than three-letter codes (Holland, 1985). It has been used successfully with poor readers (Winer, Wisin, & Pierce, 1983) and with LD students (Cummings & Maddux, 1987b; Maddux & Cummings, 1986).

### Instrumentation: The Self Directed Search

The SDS is based on Holland's theory of vocational choice and occupational classification system. His theory suggested that an individual's career choice reflects that person's personality and behavior. He argued that individuals are more successful when they operate in environments that are congruent with their interest and personality type (Holland, 1985b). Consequently, it might be expected that the more compatible the chosen concentration is with interest and personality type, the more likely it is that the person will be successful in a particular academic program (Ivy, 1991).

The skillful use of the SDS depends on a clear understanding of typology (Holland, 1992a) that guided its development. The typology was developed to organize voluminous data about people in different jobs and the data about different work environments (Holland, et al., 1994). According to Holland (1994), typology is based on the following seven assumptions:

1. Most people can be categorized as one of six personality types: realistic (R), investigative (I), artistic (A), social (S), enterprising (E), and conventional (C). They are categorized in a two-type or three-type summary code, e.g., IA or IAS, which has reduced problems inherent in defining a person with a single type.
2. There are six kinds of environments: R, I, A, S, E, and C. Each environment is dominated by a given type of personality and is typified by physical settings posing special problems. For example, an R environment is dominated by

realistic types of people and this environment often requires interaction with mechanical objects. In contrast, a S environment is dominated by social types and often requires interaction with people in helping or teaching activities.

3. People search for environments that will let them exercise their abilities, express their attitudes and values, and take on agreeable problems and roles.
4. A person's behavior is determined by an interaction between his or her personality and the characteristics of the environment. Based on an individual's personality pattern and the pattern of the environment, some of the outcomes of such pairing can be forecasted by using knowledge of personality types and environmental models. Such outcomes have included choice of education, vocation, job changes, personal competence, and social behavior.
5. The degree of congruence (or agreement), between a person and an occupation (environment) can be estimated by a hexagonal model. The shorter the distance between personality type and the occupational type on the model, the closer the relationship of the person-environment fit.
6. The degree of consistency within a person or an environment is also defined by using the hexagonal model. Adjacent types on the hexagon, e.g. realistic-investigative are most consistent or have compatible interests or job duties.
7. The degree of differentiation of a person or an environment modifies predictions made from a person's two or three digit SDS or SDS-E profile, from an occupational code, or from the interaction of both.

According to Holland (1985), personalities and work environments are classified into one of six categories or personality types. These categories include the following preferences: Realistic (R): prefers to deal with things not ideas; Investigative (I): likes abstract problems and is original; Artistic (A): needs individualistic expression; Social (S): solves problems through relationships; Enterprising (E): is self-confident and shows leadership; and Conventional (C): prefers highly organized activities.

The SDS-E was designed as a self-administered, self-scored, and self-interpreted vocational counseling instrument. It takes on average, about 40 to 50 minutes to complete. The items are organized around interests, but also requires self-ratings of abilities or reported competencies. The participant completes the self-assessment booklet, scores the responses, and calculates six summary scores corresponding to the six categories of the Holland model. Results of the SDS-E indicate the participants first and second vocational interest preferences called scales or codes. An accompanying booklet, the Occupations Finder, is employed to locate, among 1,156 occupations, those whose codes resembles the respondent's summary codes. These occupations were chosen by the developer to represent 99% of all workers with a conversion score to explore all occupations selected in the Dictionary of Occupational Titles.

As compared to the SDS, the SDS-E uses a lower-level vocabulary, less complex scoring instructions, and fewer items (203 vs. 228). As with the SDS, the SDS-E has scales for Activities that are termed "likes", competencies and occupations termed "jobs" and self-estimates termed "rating your abilities". An Occupational Daydream section, titled "possible jobs" and instructions for self-scoring of the booklet are included. The SDS-E provides an occupational classification book, called Jobs Finder, which is used to find vocational possibilities that match personality types.

### *Reliability of the SDS*

The SDS is considered to possess acceptable reliability (Ostipow, 1983). Holland (1994) has summarized reliability data for the SDS-E and concluded that the 10 or 12 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. This conclusion was based on Wirtenberg's study of internal reliability using 236 seventh-grade students (cited in Holland, 1985). Another study conducted by Cummings & Maddux (1987) who administered both the SDS and SDS-E to a sample of high school students, 96 students with LD and 96 students without LD. These studies found the 10 or 12 item scales of Form E have moderate to high reliability (internal coefficients ranged from .56 to .92).

The SDS Technical Manual (Holland, Fritzsche, & Powell, 1994) reported reliable scales with internal consistency coefficients of .84 to .92 for the summary scales. The test-retest data collected on college students presented correlations that ranged from .57 to .78 for the summary scales. Test retest data from a sample of 2,600 students and working adults in 25 states over a 12 week range, reported coefficients from .76 to .89.

### *Validity of the SDS*

The SDS is considered to possess acceptable validity (Ostipow, 1983). Validity reported in the SDS Technical Manual (1994) indicated scale intercorrelations for high school, college, and adult samples by gender were similar across samples, and ranged between .43 to .84. In reporting concurrent validity, Holland and Rayman (1986) stated, "a review of the concurrent and predictive validity studies of interest inventories indicates that most interest inventories have hit rates in the range of 40% to 55% hits in a six-category scheme". The overall hit rate was at the high end of the range (54%).

### Research Procedures

All volunteer community college participants in the study were administered both the MBTI and the SDS- E by trained community college diagnosticians. Generally, completion of both instruments required an average time under two hours. Although both the MBTI and SDS are self-scoring, they were scored by the test administrators to eliminate scoring errors.

A large conference room, located in Building 2 on the CCC campus that comfortably seats 25 people, was reserved for test administration. Two, three and a half hour blocks were scheduled approximately each week from October, 1995 through February, 1996. Student participants pre-registered for the most convenient appointment date and time to complete both the MBTI and SDS-E with the college's tutoring center reception booth. Students who were unable to complete both the MBTI and SDS-E Fall term 1995, were given opportunity to complete both instruments Winter term, 1996. Each subject was given an

appointment card as a reminder to attend the confirmed appointment. A subject roster was maintained by the tutoring center receptionist. Group testing was administered to small groups of five to thirteen students and completed on the following dates: 1995: October 26; November 2, 9, 16, and 30; and December 1; and 1996: January 11, 24, and 26; and February 5, and 24.

Prior to administering the two instruments, each volunteer student completed an informed consent form (see Appendix A), a confidential disclaimer and waiver form (see Appendix B), and a participant's questionnaire (see Appendix C). This questionnaire provided important subject data for the study such as, age, gender, occupational goal, and type of identified learning disability. The confidential release of information form was signed by each subject to protect confidentiality of student records. CCC staff were the only persons allowed to review the participants records to secure the students' GPA. Once this information was obtained, it was recorded on the bottom portion of the student questionnaire, which was void of any personal data identification. This allowed securement of necessary data without violating the subjects' privacy.

Any ALLD participant who needed test accommodations, was provided the following items to meet their individual requests: a tape recorder and an audio-tape of both the MBTI and the SDS-E; a reader; and a separate room to allow reduced distractions or to provide privacy for persons who needed to read material out loud in processing written information. Three students requested the audio-taped format of both the MBTI and the SDS-E; one student requested a reader; and two students asked for a private room to complete the two tests.

After the subjects' tests were scored and a MBTI assessment profile prepared, five separate follow-up group sessions in the format of a class seminar were held to review test results and provide further interpretation of both the MBTI and SDS-E. These seminars were facilitated by the researcher and directed on November 30 and December 5, 1995 and March 4, 6, and 13, 1996. Seminar participants reported very favorable responses after receiving test profile interpretations and the application to their educational and vocational planning. Several ALLD students commented that the tests were very useful, easy to follow, enjoyable to complete, and provided very useful information.

## Research Questions and Hypothesis

### Research Question 1

Is there a difference in personality patterns as defined by the Myers Briggs Type Indicator (MBTI) between community college students who are learning disabled and non-learning disabled?

#### *Hypothesis 1:1*

There will be no personality differences between learning disabled and non-learning disabled groups as measured by the MBTI.

### Research Question 2

Is there a difference in vocational interests as defined by the Self Directed Search, Form Easy (SDS-E) between community college students who are learning disabled and non-learning disabled?

#### *Hypothesis 2:1*

There will be no vocational interest differences as measured by the SDS-E between the two groups.

### Research Question 3

Are there any correlations between grade point average (GPA) and personality traits identified by the MBTI of community college students with LD?

#### *Hypothesis 3:1*

There will be no correlations between personality traits as measured by the GPA and MBTI of community college students with LD.

### Research Question 4

Are the expected vocational goals of community college students with LD congruent with their vocational interests as measured by the SDS-E?

#### *Hypothesis 4:1*

There will be no relationship between the community college students with LD's expected vocational goals and vocational goals measured by the SDS-E.

## Statistical Analysis

The research design for this study included utilization of both log linear and multiple regression analyses. These two statistical procedures were applied through the use of a microcomputer software program called Statsgraphics, copyright @ 1992, Manugistics, Incorporated. The log linear analysis was applied to allow interpretation of data stemming from research questions number one and two. The multiple regression analysis was utilized in answering research question number three. A statistical analysis was not needed for question number four as it required only a percentage match analysis of measured and expressed interests.

The log linear method provided a systematic, multi-way cross tabulation to obtain estimates of relationships among several variables, such as those identified in research questions one and two. Log linear analysis of categorical data was analogous to regression analysis for parametric data. It allowed a systematic analysis of multi-way cross-tabulation tables to obtain estimates of their interaction effects among the variables, unlike the multiple regression model, did not require identification of independent and dependent variables. Rather, it identified which relationships were most significant using the simplest equation possible and eliminated any negligible factors.

In research question one, the log linear test permitted an evaluation of relationships between the following factors: MBTI personality patterns, learning status (learning disabled (LD) versus non-learning disabled (NLD)) of community college students, age, and gender. In research question two, the log linear test allowed for examination of associations between the following factors: highest surveyed vocational interest on the SDS-E, such as mechanical or artistic; learning status (LD versus NLD) of community college students; age (five age levels represented); and gender (male or female).

The regression model was selected as the most appropriate statistical tool for application in answering research question number three, since a multi-cross tabulation was not needed as only the ALLD group was tested. The multiple regression procedure allowed an analysis of the relationship between one dependent variable and one or more independent variables. The regression

model applied to question number three allowed an analysis of relationships between the ALLD's GPA (dependent variable) and personality patterns as measured on the MBTI, age, and gender (dependent variables).

Research question number four looked at the relationship between the ALLD's surveyed vocational interests and their expected vocational goals upon college completion. To answer this question, the percentage of matches between the highest surveyed vocational interests measured by one of the six categories on the SDS-E (Realistic, Investigative, Artistic, Social, Enterprising, and Conventional) and the student's reported expected vocational goal upon school completion were calculated. The student's reported expected vocational goal was classified categorically through identification with one of the six vocational categories described on the SDS-E.

## CHAPTER 4 RESULTS

The purpose of this chapter is to present the results of the investigation in relation to the four research questions and their accompanying hypotheses. These research questions and hypotheses will be restated and followed by a statistical analysis and results summary.

In analyzing the statistical data from research questions number one through three, this investigator set the significance level at .05 for each of the first three null hypotheses. When significance falls between .051 and .10, this investigator labels the relationship as "approaching significance". Cohen (1990) supports the above approach regarding significance level as described in the following quote:

The prevailing yes-no decision at the magic .05 level from a single research is a far cry from the use of informed judgment. Science simply doesn't work that way. A successful piece of research doesn't conclusively settle an issue, it just makes some theoretical proposition to some degree more likely. Only successful further replication in the same and different settings ( as might be found through meta-analysis) provides an approach to settling the issue. How much more likely this single research makes the proposition depends on many things, but not on whether  $p$  is equal or greater than .05; .05 is not a cliff but a convenient reference point along the possibility-probability continuum. There is no ontological basis for dichotomous decision making in psychological inquiry. The point was neatly made by Rosnow and Rosenthal (1989) last year in American Psychologist. They wrote "surely God loves the .06 nearly as much as .05" (p. 1277) to which I say amen! (p. 1311)

### Distribution of Participants

The sample includes forty community college students with diagnosed learning disabilities and fifty community college students without any diagnosed learning disabilities. Participants are selected on a volunteer basis without regard to gender or any other characteristics. Of the forty ALLD participants, twelve are male and twenty-eight were female. In the ALNLD group of fifty, twenty are male and thirty were female. The log linear and multiple regression

models both take into account the differences in gender and in numbers when analyzing the data secured from questions number 1, 2, and 3.

## Research Question 1

Is there a difference in personality patterns as defined by the Myers Briggs Type Indicator (MBTI) between community college students who are learning disabled and non-learning disabled?

### *Hypothesis 1:1*

There will be no personality differences between learning disabled and non-learning disabled groups as measured by the MBTI.

## Statistical Analysis - Question 1

In research question 1, the log linear analysis is applied that initially tested a seven-way interaction of factors in a  $2 \times 2 \times 5 \times 2 \times 2 \times 2 \times 2$  model that represents: learning status (LD verses NLD), gender (male verses female), age groups (5 age levels: 16-20, 21-25, 26-30, 31-35, 36+), and the following eight MBTI preferences grouped into four's with their opposites: E-I, S-N, T-F, and J-P. As the log linear method provides systematically, a multi-way cross tabulation to obtain estimates of relationships among several variables, significance is found by testing the various interaction of factors listed above. Results of the log linear test on these multi-way cross tabulations are presented in Tables and Figures 4.1 through 4.4.

## Results - Question 1

Tables and Figures 4.1 and 4.2 present an overview of the data tested in question one and provide descriptive information. Table 4.1 displays the number of participants categorized according to learning status (LD vs. NLD); MBTI preferences (Extraversion, Introversion, Sensing, Intuition, Thinking, Feeling, Judging, and Perceiving); and age group (five age levels). Though

significance between factors is not reported in Table 4.1, it is interesting to note that the split between E and I is similar to both groups at almost a 50/50 E-I split for each of the LD and NLD groups. This is different than E-I preferences reported by the general population, which presents a 75% preference for E and 25% preference for I (Myers, 1962). Also, along the J-P preference scales, both the LD (22 out of 40 or 55%) and NLD (31 out of 50 or 62%) populations present higher preference for J than P. This is consistent with what is reported for the general population in which J is rates between 55% to 60% (Myers, 1962). Figure 4.1 provides a bar graph displaying data from Table 4.1.

Table 4.2 and corresponding Figure 4.2 present another angle in viewing the descriptive data collected in analyzing question one. Information displayed includes the interaction of participants according to learning status (LD /NLD), MBTI indicator (E, I, S, N, T, F, J, or P), and gender (male/female). Percentages are listed according to MBTI preference pairs, such as E plus I of both the LD and NLD groups, which together total to 100 percent. Some interesting comparisons are presented in Table and Figure 4.2 include the following:

- \* On the E scale: LD and NLD females are equal (16 participants each) and more females than males from both LD and NLD groups are E.
- \* On the S scale: LD and NLD females are close to equal in their frequency (19 and 18 respectively). LD males rate much higher on S (11) than on N (1).
- \* On the T and F scales: LD males score more frequently on T (10 participants) than on F (2 participants) while NLD males are equal on T and F (10 participants each). LD females score more frequently on T (18 participants) than F (10 participants) while NLD females present the opposite with T at 9 participants and F at 21 participants.
- \* On the J scale: LD females, NLD females, and NLD males all score higher on J than on P. This is consistent with what is reported with the general population (Myers, 1962), that J is preferred (55% to 60%) over P.

**Table 4.1: Number of Participants Categorized by  
Myers-Briggs Type Indicator, Learning Status, and Age Group**

<u>MBTI</u>	<u>Age Group</u>	<u># LD in Age Grp</u>	<u># NLD in Age Grp</u>
Extroversion(E)	16 - 20	6	14
	21 - 25	5	4
	26 - 30	3	4
	31 - 35	2	3
	36+	4	1
		<u>20 (22.2%)</u>	<u>26 (28.9%)</u>
Introversion(I)	16 - 20	3	13
	21 - 25	3	3
	26 - 30	3	1
	31 - 35	3	1
	36+	8	6
		<u>20 (22.2%)</u>	<u>24 (26.7%)</u>
<b>E+I = 100%</b>			
Sensing(S)	16 - 20	8	15
	21 - 25	2	4
	26 - 30	5	1
	31 - 35	5	1
	36+	10	5
		<u>30 (33.3%)</u>	<u>26 (28.9%)</u>
Intuition(N)	16 - 20	1	12
	21 - 25	6	3
	26 - 30	1	4
	31 - 35	0	3
	36+	2	2
		<u>10 (11.1%)</u>	<u>24 (26.7%)</u>
<b>S+N = 100%</b>			

**Table 4.1 Continued:**

<u>MBTI</u>	<u>Age Group</u>	<u># LD in Age Grp</u>	<u># NLD in Age Grp</u>
Thinking(T)	16 - 20	5	11
	21 - 25	5	5
	26 - 30	4	0
	31 - 35	5	1
	36+	9	2
		<u>28 (31.1%)</u>	<u>19 (21.1%)</u>
Feeling(F)	16 - 20	4	16
	21 - 25	3	2
	26 - 30	2	5
	31 - 35	0	3
	36+	3	5
		<u>12 (13.3%)</u>	<u>31 (34.5%)</u>

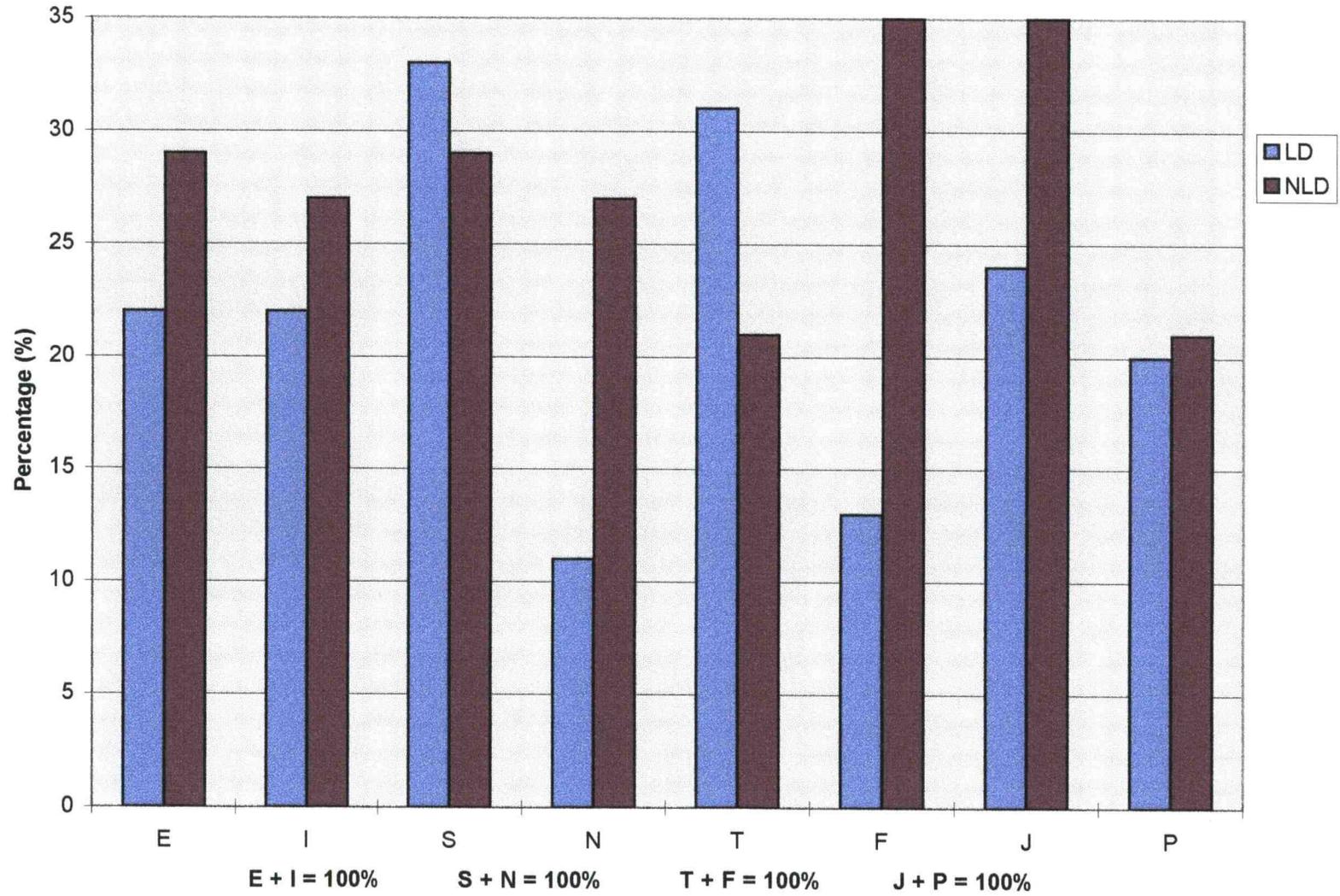
**T+F = 100%**


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Judging(J)	16 - 20	5	15
	21 - 25	4	7
	26 - 30	4	2
	31 - 35	3	0
	36+	6	7
		<u>22 (24.4%)</u>	<u>31 (34.5%)</u>
Perceiving(P)	16 - 20	4	12
	21 - 25	4	0
	26 - 30	2	3
	31 - 35	2	4
	36+	6	0
		<u>18 (20.0%)</u>	<u>19 (21.1%)</u>

**J+P = 100%**

**Figure 4.1: Participants Categorized by MBTI and Learning Status**



**Table 4.2: Number of Participants Categorized by  
Myers-Briggs Type Indicator, Learning Status, and Gender**

<u>MBTI</u>	<u>Gender</u>	<u># LD by Gender</u>	<u># NLD by Gender</u>
Extroversion(E)	M	4	10
	F	<u>16</u>	<u>16</u>
		20 (22.2%)	26 (28.9%)
Introversion(I)	M	8	10
	F	<u>12</u>	<u>14</u>
		20 (22.2%)	24 (26.7%)
<b>E+I=100%</b>			
Sensing(S)	M	11	8
	F	<u>19</u>	<u>18</u>
		30 (33.3%)	26 (28.9%)
Intuition(N)	M	1	12
	F	<u>9</u>	<u>12</u>
		10 (11.1%)	24 (26.7%)
<b>S+N=100%</b>			
Thinking(T)	M	10	10
	F	<u>18</u>	<u>9</u>
		28 (31.1%)	19 (21.1%)
Feeling(F)	M	2	10
	F	<u>10</u>	<u>21</u>
		12 (13.3%)	31 (34.5%)
<b>T+F=100%</b>			
Judging(J)	M	5	12
	F	<u>17</u>	<u>19</u>
		22 (24.4%)	31 (34.5%)
Perceiving(P)	M	7	8
	F	<u>11</u>	<u>11</u>
		18 (20.0%)	19 (21.1%)
<b>J+P=100%</b>			

**Figure 4.2: Participants Categorized by MBTI, Learning Status, and Gender**

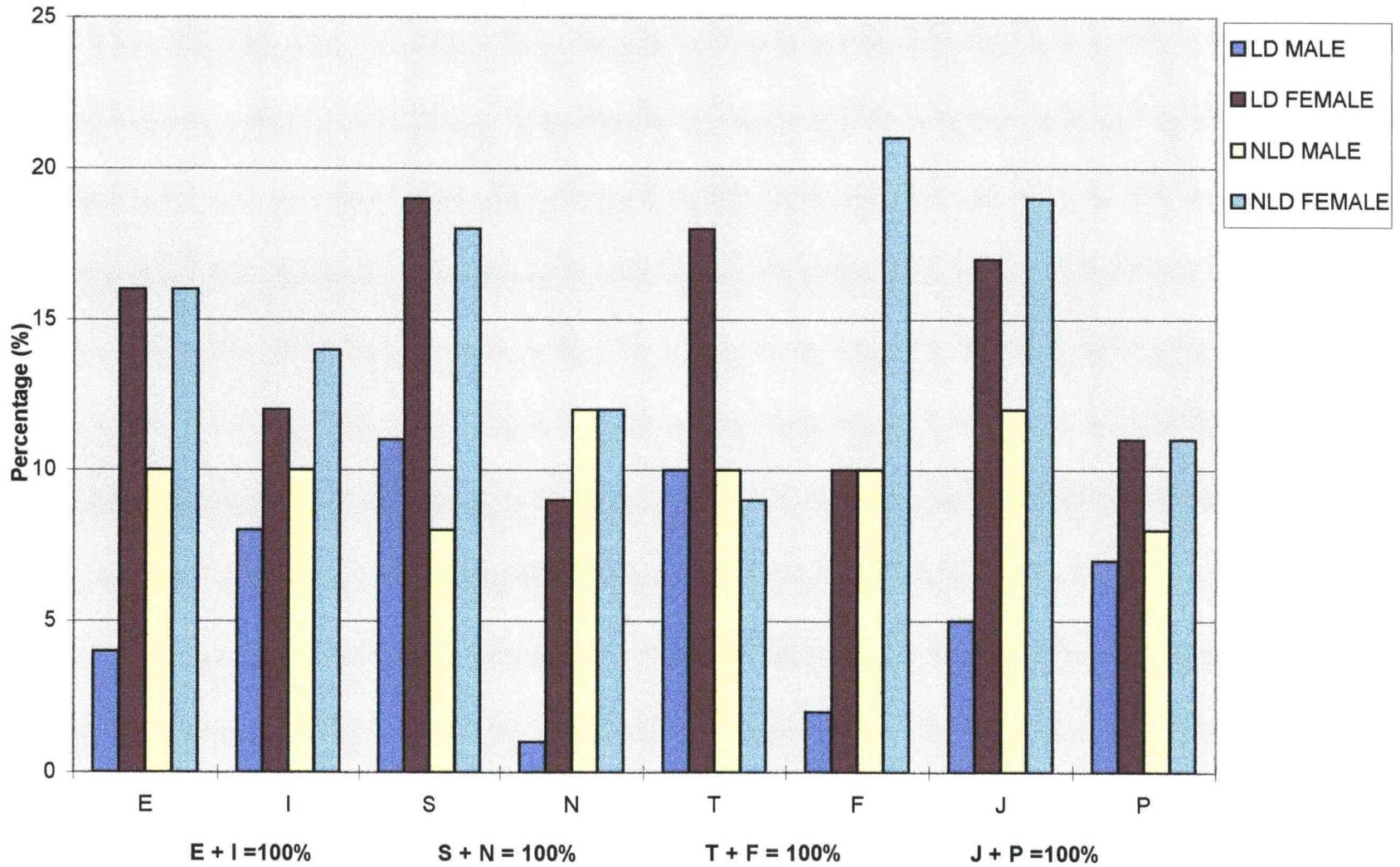


Table 4.3a and Figure 4.3 demonstrate log linear testing of correlations found between the three-way interaction of learning status (LD/NLD), age (five levels) and the MBTI preference pair: Thinking (T) - Feeling (F). Using the log linear analysis of the interaction of these factors, a significant relationship is found ( $p = .046$ ). Interesting comparisons are in Table 4.3a and Figure 4.3 and include the following:

\* The older the LD participant, the higher the incidence of T, while the converse is true for the NLD participant: the older the NLD participant, the lower the incidence of T.

\* In four of the five age groups (16 to 20, 26 to 30, 31 to 35, and 35+ years), significantly more NLD participants prefer F (44%, 45%, 33%, and 26% respectively) than did the LD participants (11%, 18%, 0%, and 15% respectively).

A significant relationship is also found in a two-way interaction between learning status and the T-F preference pair ( $p = .002$ ). As displayed in Table 4.3b, the LD participants rate 70% on the T preference and only 30% on the F preference, while the NLD present almost a reversal percentage with 38% on the T preference and 62% on the F preference. The LD group presents a much higher incidence of T and lower incidence of F than the NLD group.

**Table 4.3a: Number of T-F Participants Categorized by Age Grp and Learning Status**

<b>Age: 16-20</b>	<u>LD</u>	<u>NLD</u>	<b>Age: 21-25</b>	<u>LD</u>	<u>NLD</u>
Thinking (T)	5 (13.9%)	11 (30.6%)	Thinking (T)	5 (33.3%)	5 (33.3%)
Feeling (F)	4 (11.1%)	16 (44.4%)	Feeling (F)	3 (20.0%)	2 (13.4%)
	<u>9 (25.0%)</u>	<u>27 (75.0%)</u>		<u>8 (53.3%)</u>	<u>7 (46.7%)</u>
<b>Age: 26-30</b>	<u>LD</u>	<u>NLD</u>	<b>Age: 31-35</b>	<u>LD</u>	<u>NLD</u>
Thinking (T)	4 (36.4%)	0 (00.0%)	Thinking (T)	5 (55.6%)	1 (11.1%)
Feeling (F)	2 (18.2%)	5 (45.4%)	Feeling (F)	0 (00.0%)	3 (33.3%)
	<u>6 (54.6%)</u>	<u>5 (45.4%)</u>		<u>5 (55.6%)</u>	<u>4 (44.4%)</u>
<b>Age: 36+</b>	<u>LD</u>	<u>NLD</u>			
Thinking (T)	9 (47.4%)	2 (10.5%)			
Feeling (F)	3 (15.8%)	5 (26.3%)			
	<u>12 (63.2%)</u>	<u>7 (36.8%)</u>			

$p = 0.046$

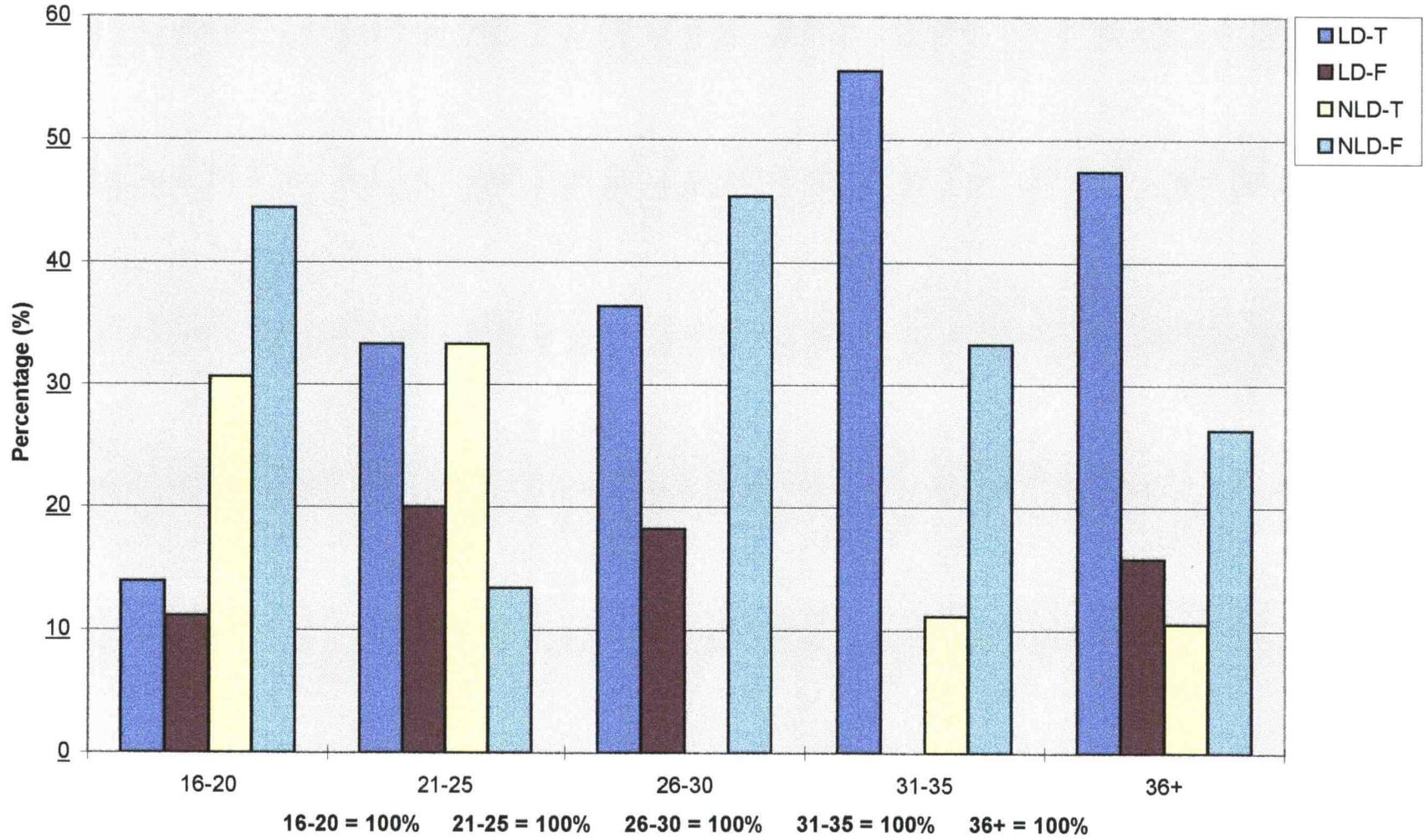
LD + NLD = 100%

**Table 4.3b: Number of T-F Participants Categorized by Learning Status**

	<u>LD</u>	<u>NLD</u>
T (Thinking)	28 (70%)	19 (38%)
F (Feeling)	12 (30%)	31 (62%)
	<u>40 (100%)</u>	<u>50 (100%)</u>

$p = 0.002$

**Figure 4.3: T-F Participants Categorized by Age Group and Learning Status**



Present in Table 4.4a are results of log linear testing of correlations found between the three-way interaction of learning status (LD/NLD), age (five age levels) and the MBTI preference pair S-N. Using the log linear analysis of the interaction of these factors, a significant relationship was found ( $p = .02$ ). Interesting comparisons presented in Table 4.4a and Figure 4.4 include the following:

- \* The older the LD participant, the higher incidence of S.
- \* The LD participant in four of the five age groups presents very low incidence of N (2.8%, 1%, 0%, and 10%). Only in age group 21 to 25 years did the incidence of N (40%) rate higher.

A three-way model that presents significant interactions between S-N participants, gender and learning status ( $p = .028$ ) is displayed in Table 4.4b. Significant differences include the following:

- \* More LD males prefer S (11 out of 12) while NLD males present preference for N (12 out of 20).
- \* Both LD and NLD females prefer S over N (19 out 28 and 18 out of 30, respectively).

A significant relationship is also found in a two-way interaction between learning status and the S-N preference pair ( $p = .002$ ) as presented in Table 4.4c. The split for S and N between the LD and NLD groups presents the following: the LD group score 75 % on the S preference and 25% on the N preference, while the NLD group score 52% on the S preference and 48% on the N preference. The LD group presents a higher incidence of S and lower incidence of N than does the NLD group.

**Table 4.4a: Number of S-N Participants Categorized by Age Grp and Learning Status**

<b>Age: 16-20</b>	<u>LD</u>	<u>NLD</u>	<b>Age: 21-25</b>	<u>LD</u>	<u>NLD</u>
Sensing (S)	8 (22.2%)	15 (41.7%)	Sensing (S)	2 (13.3%)	4 (26.7%)
Intuition (N)	1 (2.8%)	12 (33.3%)	Intuition (N)	6 (40.0%)	3 (20.0%)
	<u>9 (25.0%)</u>	<u>27 (75.0%)</u>		<u>8 (53.3%)</u>	<u>7 (46.7%)</u>
<b>Age: 26-30</b>	<u>LD</u>	<u>NLD</u>	<b>Age: 31-35</b>	<u>LD</u>	<u>NLD</u>
Sensing (S)	5 (45.5%)	1 (9.1%)	Sensing (S)	5 (55.6%)	1 (11.1%)
Intuition (N)	1 (9.0%)	4 (36.4%)	Intuition (N)	0 (00.0%)	3 (33.3%)
	<u>6 (54.5%)</u>	<u>5 (45.5%)</u>		<u>5 (55.6%)</u>	<u>4 (44.4%)</u>
<b>Age: 36+</b>	<u>LD</u>	<u>NLD</u>			
Sensing (S)	10 (52.7%)	5 (26.3%)			
Intuition (N)	2 (10.5%)	2 (10.5%)			
	<u>12 (63.2%)</u>	<u>7 (36.8%)</u>			

$p = 0.020$   
LD + NLD = 100%

**Table 4.4b: Number of S-N Participants Categorized by Gender and Learning Status**

<b>MALE</b>	<u>LD</u>	<u>NLD</u>	<b>FEMALE</b>	<u>LD</u>	<u>NLD</u>
Sensing (S)	11 (34.4%)	8 (25.0%)	Sensing (S)	19 (32.8%)	18 (31.0%)
Intuition (N)	1 (3.1%)	12 (37.5%)	Intuition (N)	9 (15.5%)	12 (20.7%)
	<u>12 (37.5%)</u>	<u>20 (62.5%)</u>		<u>28 (48.3%)</u>	<u>30 (51.7%)</u>

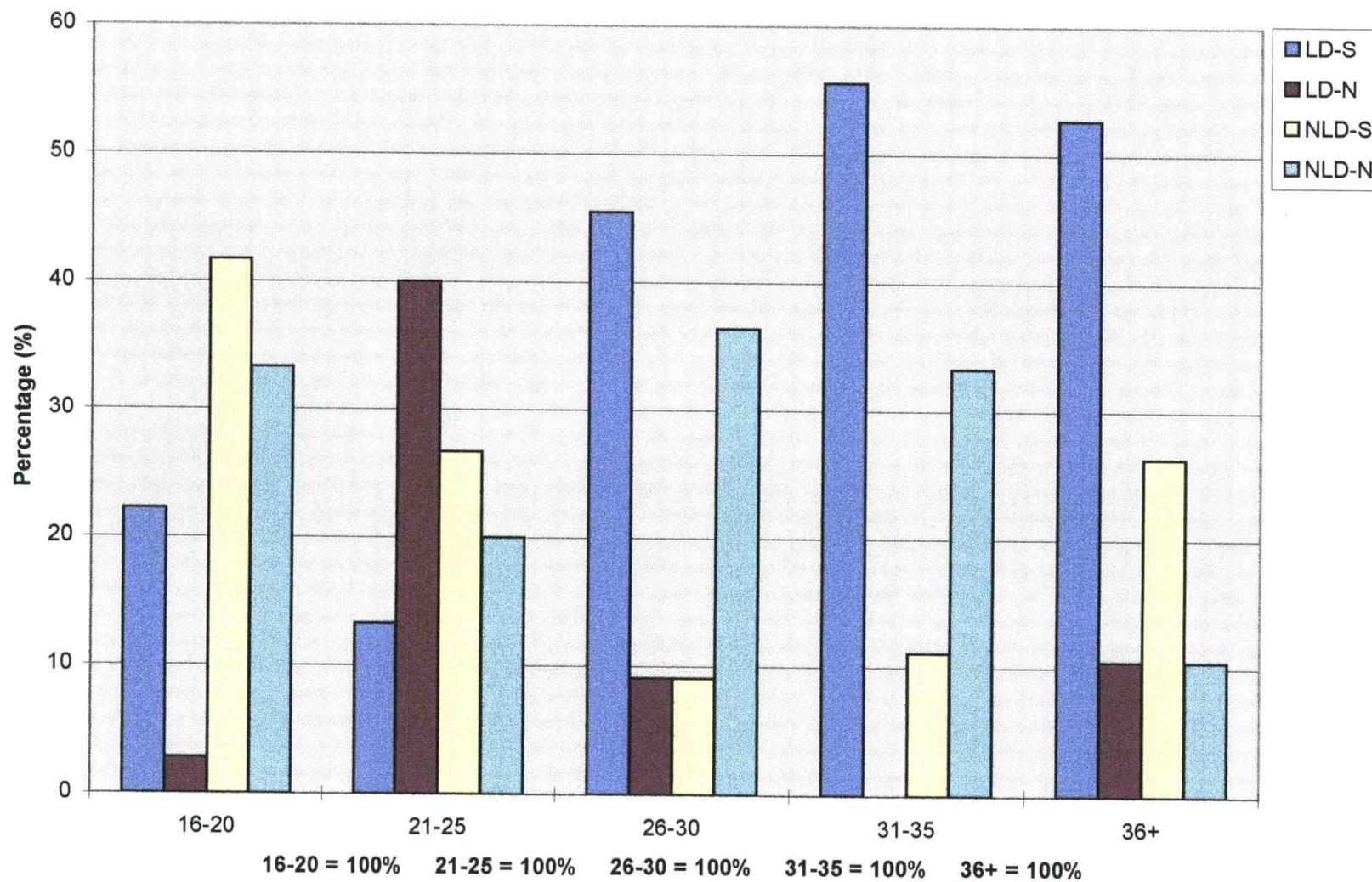
$p = 0.028$   
LD + NLD = 100%

**Table 4.4c: Number of S-N Participants Categorized by Learning Status**

	<u>LD</u>	<u>NLD</u>
<b>S</b> (Sensing)	30 (75%)	26 (52%)
<b>N</b> (Intuition)	10 (25%)	24 (48%)
	<u>40 (100%)</u>	<u>50 (100%)</u>

$p = 0.024$

**Figure 4.4: S-N Participants Categorized by Age Group and Learning Status**



### Summary Question 1

The results of the log linear test applied in question number one presents significant relationships amongst the following factors: participants learning status (LD and NLD), age (five age levels), and the following MBTI preference pairs: Thinking (T) - Feeling (F) and Sensing (S) - Intuition (N). Table 4.3a demonstrates correlations found between the three-way interaction of learning status, age and the MBTI preference pair: T - F ( $p = .046$ ). A significant relationship is also discovered in a two-way interaction between learning status and the MBTI preference pair T-F ( $p = .002$ ) and is reported in Table 4.3b. Lastly, significant correlations are found between the following factors: a three-way interaction between learning status, age and the MBTI preference pair S-N ( $p = .02$ ) (Table 4.4a); a three-way interaction between learning status, S-N, and gender ( $p = .028$ ) (Table 4.4b); and a two-way interaction of learning status and the MBTI preference pair S-N ( $p = .002$ ) (Table 4.4c).

The log liner analysis finds significant relationships in question one. Therefore, the first null hypothesis is rejected.

## RESEARCH QUESTION 2

Is there a difference in vocational interests as defined by the Self Directed Search, Form Easy (SDS-E) between community college students who are learning disabled and non-learning disabled?

### *Hypothesis 2:1*

There will be no vocational interest differences as measured by the SDS-E between the two groups.

### Statistical Analysis - Question 2

This hypothesis is tested through log linear analysis that initially entails evaluating a four-way interaction model (6 x 2 x 2 x 5) between subjects highest surveyed vocational interests as measured by the SDS-E (Realistic (R), Investigative (I), Artistic (A) Social (S), Enterprising (E), and Conventional (C) themes); learning status (LD versus NLD); gender (male/female); and age (5 age levels). As the log linear method provides a systematic, multi-way cross tabulation to obtain estimates of relationships among several variables, significance and approaching significance are found by testing the various interactions of factors listed above and are presented in Tables 4.5 through 4.7 and in Figures 4.5 through 4.7. Table and Figure 4.8 provide an overview of descriptive data analyzed in question number two.

### Results - Question 2

Table and Figure 4.5 displays the two-way interaction between learning status (LD/NLD) and the highest measured interest on the SDS-E (R, I, A, S, E, C) and approaches significance ( $p = .08$ ). Differences noted include the following:

- \* LD participants highest measured interest falls into the Social (S) category (37.5%) followed by next highest in Realistic (R) occupations (20%); NLD participants also score highest on the Social (S) theme (40%), followed by second highest in Artistic (A) occupations (22%).

Table and Figure 4.6 present a two-way interaction between gender (male/female) and highest measured interests on the SDS-E (R, I, A, S, E, C) that is significant ( $p = .001$ ). This effect was expected given research which documents differences in measured interests on the SDS-E between male and females. Holland et al. (1994) report that women are more likely to have low scores on R and high scores on S while conversely, men are more likely to present high scores on R and low scores on S. The gender difference that Holland reports is found in this study, is displayed in Table and Figure 4.6, and summarized below:

\* Significantly more males (28%) than females (3.4%) score higher in the Realistic (R) category.

\* Significantly more females (29%) than males (18.8%) score higher in the Social (S) category.

**Table 4.5: Number of Participants Categorized by SDS-E and Learning Status**

<u>SDS-E</u>	<u>LD</u>	<u>NLD</u>	<u>TOTAL</u>
Realistic (R)	8 (20.0%)	3 (6.0%)	11 (12.2%)
Investigative (I)	2 (5.0%)	8 (16.0%)	10 (11.1%)
Artistic (A)	6 (15.0%)	11 (22.0%)	17 (18.9%)
Social (S)	15 (37.5%)	20 (40.0%)	35 (38.9%)
Enterprising (E)	4 (10.0%)	4 (8.0%)	8 (8.9%)
Conventional (C)	5 (12.5%)	4 (8.0%)	9 (10.0%)
TOTAL	40 (44.4%)	50 (55.6%)	90 (100.0%)

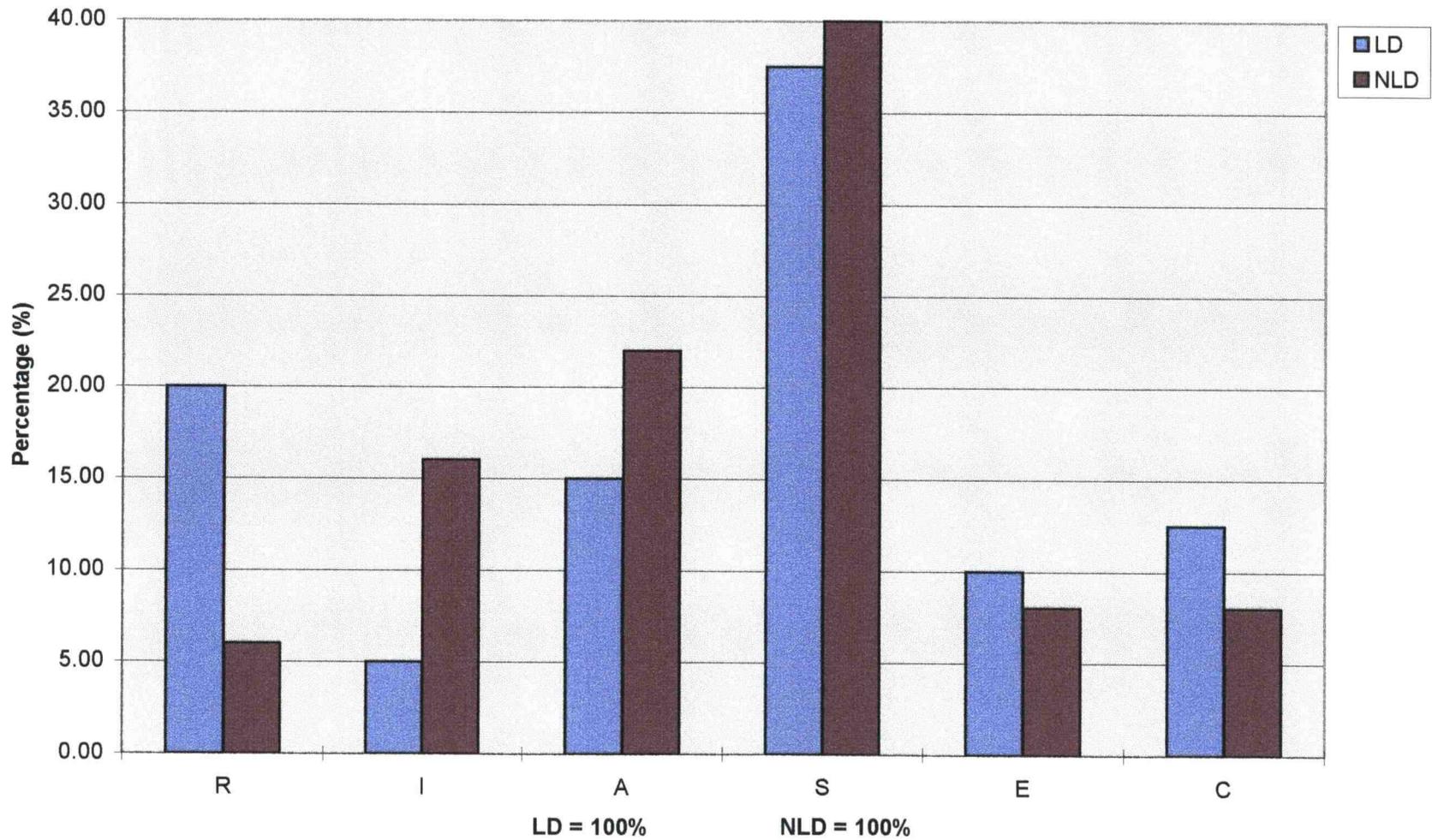
***p* = 0.080**

**Table 4.6: Number of Participants Categorized by SDS-E and Gender**

<u>SDS-E</u>	<u>MALE</u>	<u>FEMALE</u>	<u>TOTAL</u>
Realistic (R)	9 (28.1%)	2 (3.4%)	11 (12.2%)
Investigative (I)	4 (12.5%)	6 (10.3%)	10 (11.1%)
Artistic (A)	7 (21.9%)	10 (17.2%)	17 (18.9%)
Social (S)	6 (18.8%)	29 (50.0%)	35 (38.9%)
Enterprising (E)	4 (12.5%)	4 (6.9%)	8 (8.9%)
Conventional (C)	2 (6.3%)	7 (12.1%)	9 (10.0%)
TOTAL	32 (35.6%)	58 (64.4%)	90 (100.0%)

***p* = 0.001**

**Figure 4.5: Participants Categorized by SDS-E and Learning Status**



**Figure 4.6: Participants Categorized by SDS-E and Gender**

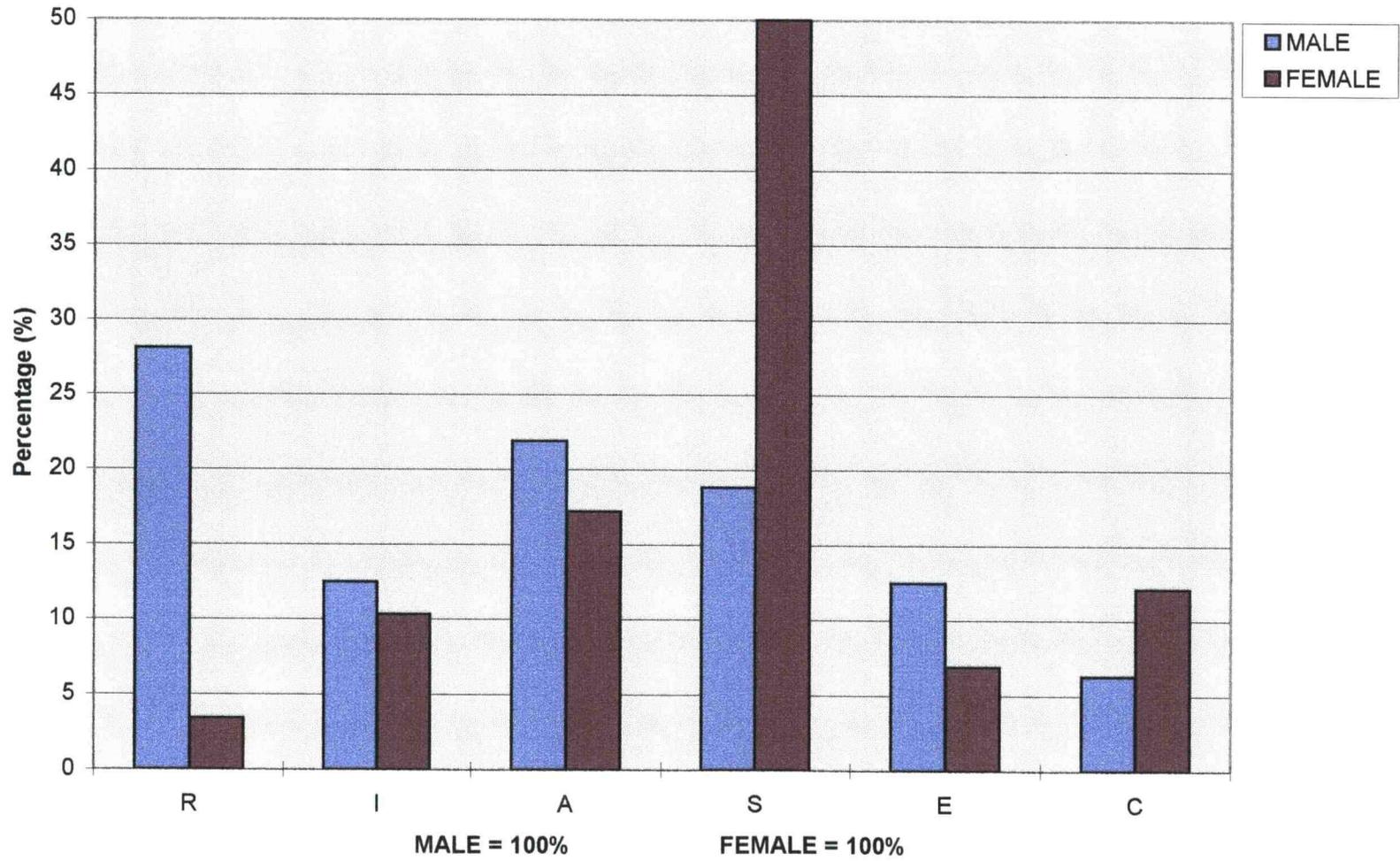


Table 4.7a and Figure 4.7 display the two-way interaction between learning status (LD/NLD) and age (five age levels) and approaches significance ( $p = .06$ ). Differences found include the following:

- \* Significantly more NLD participants (52%) fall into the 16 to 20 year old age group than the LD participants (22.5%).
  
- \* Significantly more LD participants (30%) fall into the 36+ year old age group than the NLD participants (14%).

Table 4.7b displays the two-way interaction between learning status (LD/NLD) and gender (male/female) and approaches significance ( $p = .065$ ). In the LD group, 30% are male and 70% are female. In the NLD group, 40% are male and 60% are female. Both the NLD and LD groups report a higher percentage of female participants (60% and 70% respectively), with a much higher percentage of females in the later group.

**Table 4.7a: Number of Participants Categorized by Age Group and Learning Status**

<u>Age Group</u>	<u>LD</u>	<u>NLD</u>	<u>TOTAL</u>
16 - 20	9 (22.5%)	26 (52.0%)	35 (38.9%)
21 - 25	8 (20.0%)	7 (14.0%)	15 (16.7%)
26 - 30	6 (15.0%)	6 (12.0%)	12 (13.3%)
31 - 35	5 (12.5%)	4 (8.0%)	9 (10.0%)
36+	12 (30.0%)	7 (14.0%)	19 (21.1%)
TOTAL	40 (44.4%)	50 (55.6%)	90 (100.0%)

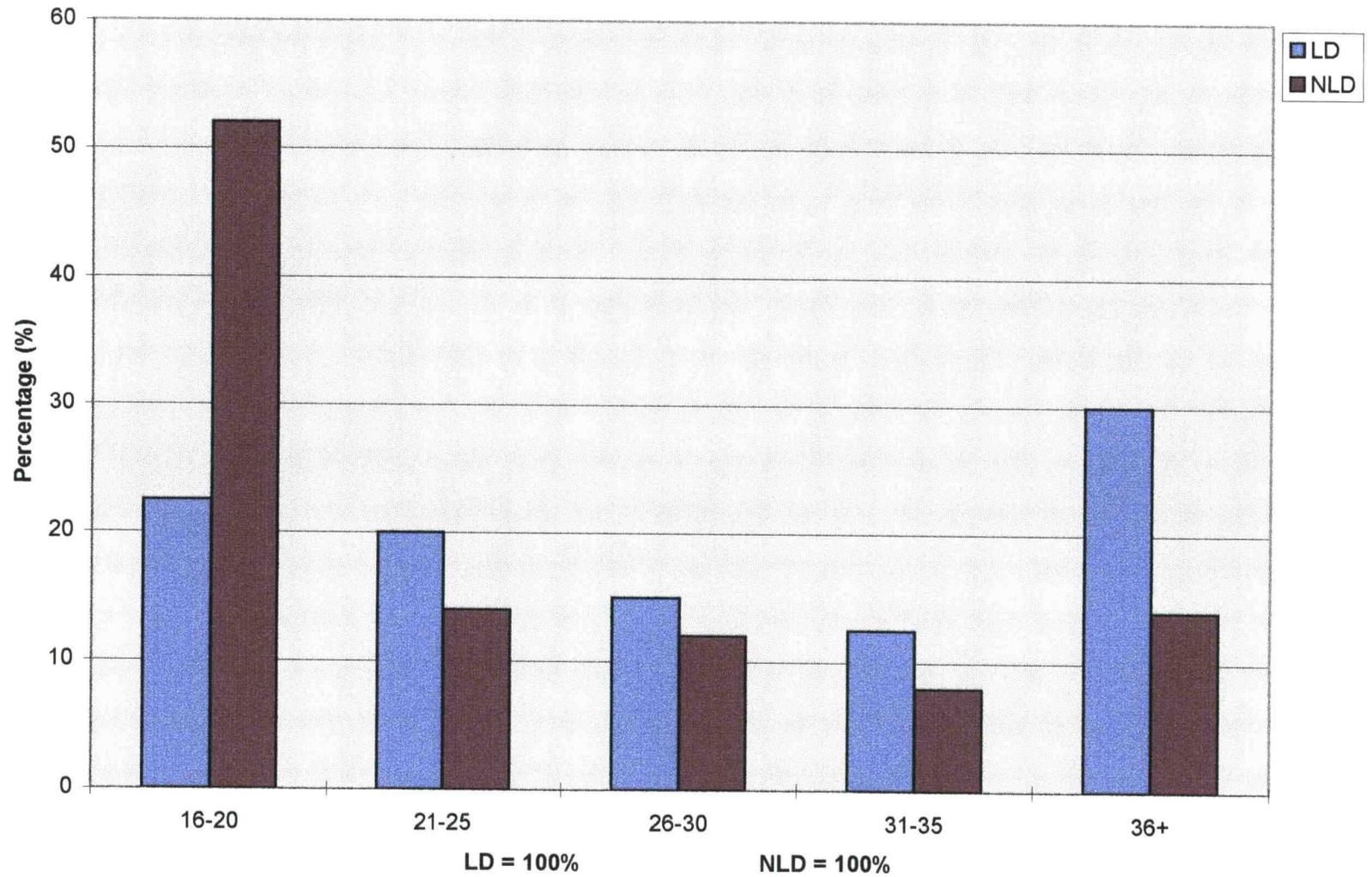
***p = 0.060***

**Table 4.7b: Number of Participants Categorized by Gender and Learning Status**

<u>Gender</u>	<u>LD</u>	<u>NLD</u>	<u>TOTAL</u>
Male	12 (30.0%)	20 (40.0%)	32 (35.6%)
Female	28 (70.0%)	30 (60.0%)	58 (64.4%)
TOTAL	40 (44.4%)	50 (55.6%)	90 (100.0%)

***p = 0.065***

**Figure 4.7: Participants Categorized by Age Group and Learning Status**



## Summary - Question 2

In analyzing data from question number two, Table and Figure 4.8 provide a descriptive analysis of factors tested that include the number of participants categorized by learning status (LD vs. NLD), highest measured interest on the SDS-E (R, I, A, S, E, and C) and gender (male vs. female). Table 4.8 serves to provide descriptive data and is not a presentation of any significant interactions. Looking the scales in Table 4.8, it is clear that both LD and NLD females score significantly higher on Social (S), while LD males score higher on Realistic (R) and NLD males score higher on Artistic (A) and Social (S) themes.

The results of the log linear test applied in question number two presents a significant relationship between the highest measured interests on the SDS-E, and gender. Table and Figure 4.6 present a two-way interaction between gender (male/female) and highest measured interest on the SDS-E (R, I, A, S, E, C) that is significant ( $p = .001$ ). This effect was expected given documented research (Holland et al, 1994) which reports gender differences in the Realistic and Social themes: women are more likely to have low scores on Realistic and high scores on Social while men are more likely to have high scores on Realistic and low scores on Social.

Relationships are found that approach significance in analyzing data from question number two in three different interactions of factors reported. The first interaction is displayed in Table 4.5, which presents a two-way interaction between learning status and highest measured interests on the SDS-E ( $p = .08$ ). Table 4.7a demonstrates a second relationship found which is between learning status and age ( $p = .06$ ). Lastly, Table 4.7b displays a relationship between learning status (LD vs. NLD) and gender ( $p = .065$ ).

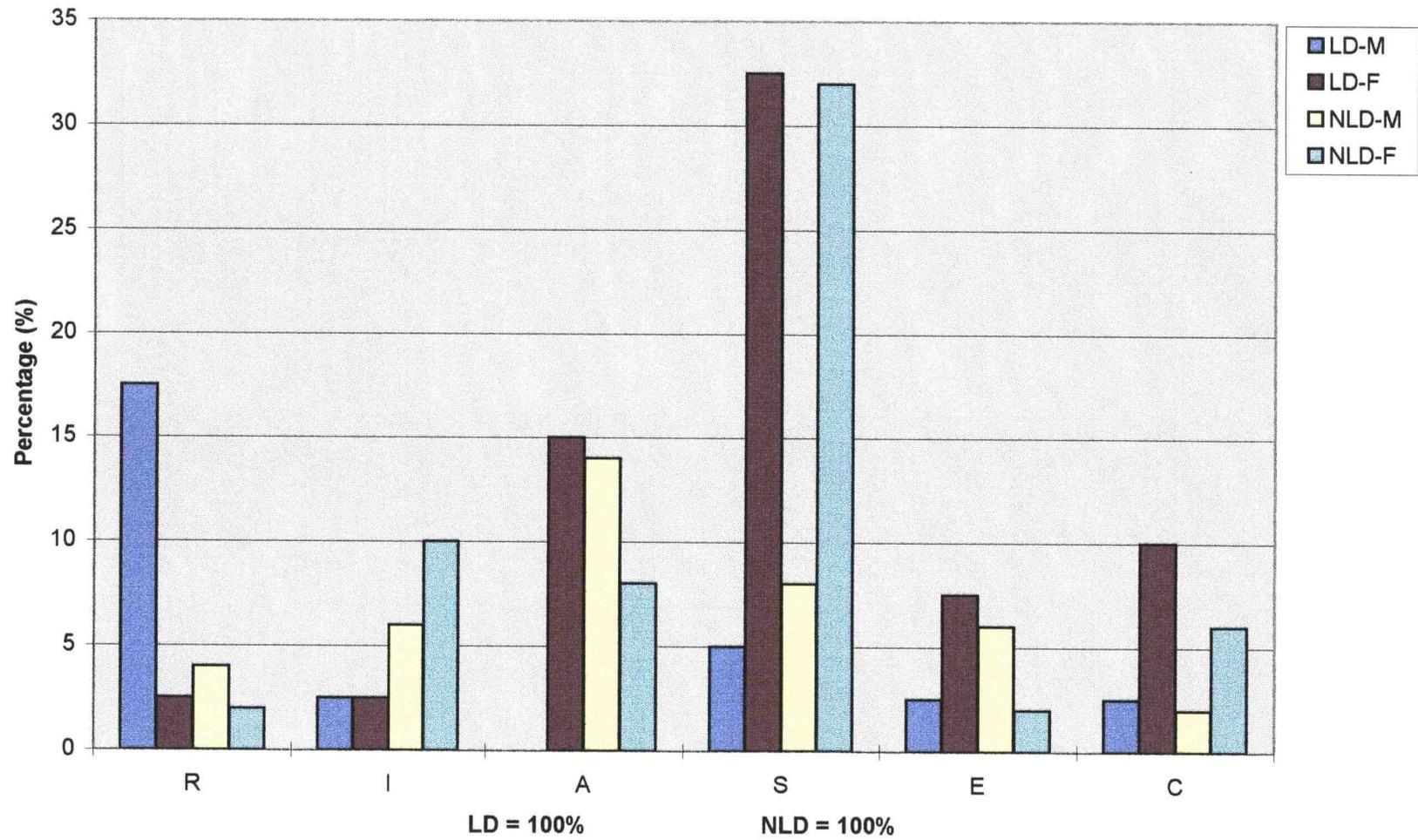
Question number two asks whether or not there are differences in vocational interests as defined by the SDS-E between the LD and NLD groups tested. In answering this question, the log linear test (refer to Table 4.5) is applied and finds a relationship that approaches significance ( $p = .08$ ). Given this relationship found between measured vocational interests of the LD and NLD groups as defined by the SDS-E ( $p = .08$ ), the second null hypothesis is accepted.

Ivy's study (1991), which is the only research reported that compares vocational interests as measured by the SDS-E between LD and NLD groups, found that students with LD prefer Realistic occupations (non-interactive careers) while students who are NLD prefer Social occupations (interactive). Though significance is not found in Ivy's study, it is interesting to note that current patterns present in this study are similar with Ivy's findings in that one of the two highest interest areas preferred by the ALLD participants is Realistic while for the LD participants, the highest interest area preferred is Social. Humes (1992), who only measured SDS-E interests of students who are LD, also found high preference for Realistic (males) and Social (females) occupations amongst the LD population. There is indication for further research in measuring interests of the ALLD.

**Table 4.8: Number of Participants Categorized by Learning Status, SDS-E, and Gender**

<u>LEARNING STATUS</u>		<u>SDS-E</u>	<u>GENDER</u>	
LD	40	Realistic (R)	8 (20.0%)	Male 7 (17.5%) Female 1 (2.5%)
		Investigative (I)	2 (5.0%)	Male 1 (2.5%) Female 1 (2.5%)
		Artistic (A)	6 (15.0%)	Male 0 (00.0%) Female 6 (15.0%)
		Social (S)	15 (37.5%)	Male 2 (5.0%) Female 13 (32.5%)
		Enterprising (E)	4 (10.0%)	Male 1 (2.5%) Female 3 (7.5%)
		Conventional (C)	5 (12.5%)	Male 1 (2.5%) Female 4 (10.0%)
NLD	50	Realistic (R)	3 (6.0%)	Male 2 (4.0%) Female 1 (2.0%)
		Investigative (I)	8 (16.0%)	Male 3 (6.0%) Female 5 (10.0%)
		Artistic (A)	11 (22.0%)	Male 7 (14.0%) Female 4 (8.0%)
		Social (S)	20 (40.0%)	Male 4 (8.0%) Female 16 (32.0%)
		Enterprising (E)	4 (8.0%)	Male 3 (6.0%) Female 1 (2.0%)
		Conventional (C)	4 (8.0%)	Male 1 (2.0%) Female 3 (6.0%)

**Figure 4.8: Participants Categorized by Learning Status, SDS-E, and Gender**



## RESEARCH QUESTION 3

Are there any correlations between grade point average (GPA) and personality traits identified by the MBTI of community college students with LD?

### *Hypothesis 3:1*

There will be no correlations between personality traits as measured by the MBTI and GPA of community college students with LD.

### Statistical Analysis - Question 3

Unlike research question one and two which both requires a cross-tabulation to evaluate their attending hypotheses, hypothesis three is tested by utilization of the multiple regression analysis. The multiple regression model allows for an analysis of relationships between the ALLD's GPA (dependent variable) and personality patterns as measured by the MBTI, age, and gender (all independent variables).

### Results - Question 3

No significant differences are found between the ALLD'S GPA and personality patterns as measured by the MBTI. It appears that personality patterns of persons who are ALLD do not have any implications for academic success.

### Summary - Question 3

Using the multiple regression model, there are no relationships found. It is believed that the finding of no relationships may be due in part to the sample size (forty participants) and the broad dispersement of the ALLD participants ages (18 to 50 years) as well as their GPAs. Given results of the multiple regression model applied, the null hypothesis for question three is accepted.

## RESEARCH QUESTION 4

Are the expected vocational goals of community college students with LD congruent with their vocational interests as measured by the SDS-E?

### *Hypothesis 4:1*

There will be no relationship between the community college students with LD's expected vocational goals and vocational goals measured by the SDS-E.

### Statistical Analysis - Question 4

This hypothesis is analyzed by evaluating the relationship between the ALLD's surveyed vocational interests as measured by the SDS-E and expected vocational goals upon college completion. After tabulating the percentage match between the students surveyed and expected vocational goals, the statistical confidence level is calculated to provide a further look at the true band of perfect matches.

### Results - Question 4

Out of forty participants identified as LD, twenty-two or 55% present a perfect match between their assessed interests as measured by the SDS-E and their expressed vocational interests. The confidence level is calculated to fall between 39% and 71%. If the test was worthless and matches are by pure chance, the match is expected to be at 7%. Looking at this data, there is confidence in stating that at least 39% of the population tested present a perfect match between measured and expressed vocational interests, which is a significant correlation and exceeds the random chance of 7% expected match.

### Summary - Question 4

In tabulating a percentage match, congruence is found between expected and measured vocational interests of the ALLD. Therefore, the fourth null hypothesis that there will be no relationship between expressed interests and measured interests according to the SDS-E is rejected.

## CHAPTER 5 DISCUSSION AND CONCLUSIONS

The results of this investigation will be discussed in accordance with the following areas: (a) the research results and theoretical implications of the results, (b) the limitations of the present study, (c) recommendations for future research, and (d) conclusions.

### The Research Results and Theoretical Implications

The purpose of this study is to determine if there are any relationships between measured personality traits and vocational interests of the ALLD compared with the ALNLD. Additionally, the ALLD's assessed personality traits are compared with their academic performance, as measured by their GPA, at the post-secondary level. Lastly, this study allows an analysis of the level of congruence between the ALLD's expected vocational goal upon college completion and their measured vocational interests.

#### Research Question 1 Findings

There is significant interaction between the two groups, ALLD and ALNLD, and the MBTI. More ALLD participants present preference for the Thinking (T) and the Sensing (S) profiles while the ALNLD present preference for Feeling (F) and equally for Intuitive (N) and Sensing (S) preferences. This significant interaction of T - S and F -N is also reported by Metts (1979) in his research which compares the MBTI preferences between adolescents with LD with a composite sample of high school students not identified as LD. Metts findings further support findings of this study.

In Ivy's study (1991), though he did not find significant correlations between MBTI type and learning status, he did report that LD students tended toward Thinking (60%) while the NLD students tended toward Feeling (65%). These tendencies are found in this current study, with LD participants rating high on T

(70%) while the NLD participants rate high on the F (62%) category. Ivy also reports gender differences (though not found to be significant) with males with LD who tend toward T (74%) category while females with LD tended toward the F (69.23%) category. Additionally, though also not found statistically significant, this current study finds LD male participants score more frequently on the T category (10 out of 12 or 83%) rather than on the F category (17%).

The discovery of more Thinking preferences as a means of judgment provides interesting descriptive information about the ALLD. The presence of more Thinking types is viewed as the result of many factors. The first and most obvious explanation for the presence of more Thinking types among Adults with LD is that they truly prefer Thinking as a means of decision making, possibly as a result of their learning disability and its cause.

Another possible reason that more ALLD prefer Thinking may be the result of the educational procedures, which may over-stress such characteristics as clear, logical, objective thinking, that have been employed in remediation of deficits. The Thinking function may have developed at the expense of the Feeling function to obtain better academic achievement. The ALLD may also have learned to distrust Feeling because of a lack of social, academic, and familial success and subsequent feelings of inadequacy. The result may be a turning to Thinking and away from Feeling as a means to compensate in areas where lack of success has been experienced. If this turning away from Feeling is true, responses on the MBTI may have in some way been influenced by the learning disability with the results that expressed preference for Thinking may not be the ALLD's true preference. While these reasons are hypothetical, the presence of more Thinking types among ALLD remains an area of interest for future investigation.

The finding that the ALLD responds to the Sensing (S) preference (75%) as a means of perception while the ALNLD prefers almost equally Intuition (N) (48%) and Sensing (S) (52%), provides further insight into the two groups measured personality types. Sensing directs a person to seek the fullest possible experience of what is immediate and real by way of the senses. The Intuitive person seeks the perceptions of possibilities, meanings, and relationships by way of insight. Intuition permits what is beyond what is visible

to the senses, including possible future events. Perhaps the ALLD who has struggled with deficit areas has been conditioned in their remediation to key into reading his or her environment by taking in information that can be measured through use of one's senses rather than by trusting intuition. It is also interesting to point out that the older the LD participant, the higher the incidence of S. It also finds that more LD males present a higher incidence of S while both females who are LD and NLD tend to have higher preference for N. Possibly age or even gender may impact this finding. Therefore, in addition to learning status, gender also appears to have implication on the S-N preference.

### Research Question 2 Findings

There is a significant relationship between gender and the SDS-E, which was expected given research reported by Holland (1994) Ivy (1991), and Humes (1992), which support this current finding. The key points in the significant relationship include: the top choice for males is Realistic occupations, whereas the top choice for females is Social occupations. Significance regarding the three-way interaction of gender, the SDS-E, and learning status, is not found in this study.

Relationships which approach significance are found between learning status (LD verses NLD) and age ( $p = .06$ ) and learning status and gender ( $p = .065$ ). In this study, more NLD (52%) are younger and fall into the 16 - 20 year old age group while the LD are older and fall into the 36+ year old age group (14%), which is typical of a community college population. Regarding gender, more females than males are in both the LD (70%) and NLD (60%) groups.

In answering question number two which asks if there are any differences in vocational interests between the ALLD and the ALNLD groups, the only interaction of factors that even hints at significance is the two-way interaction of SDS-E and learning status. However, this two-way interaction only approaches significance ( $p = .08$ ) and is not convincingly significant. Therefore, the second null hypothesis is accepted. It can be concluded that there are no vocational differences as measured by the SDS-E between learning and non-learning disabled community college students.

Contrary to this current finding, research completed by Ivy (1991) reported significance in the relationship between vocational preferences as measured by the SDS-E and learning status (student's with LD and without LD) and does provide insight into this current study. Ivy found that LD prefer Realistic occupations (non-interactive careers) while students who are not LD prefer Social occupations (interactive). Though significance between vocational preferences and learning status is not found in this study ( $p = .08$ ), it is interesting to note that current patterns presented in this study are similar with Ivy's, in that one of the two highest interest areas of preference by the ALLD participants is Realistic while for the LD participants, the highest interest area preferred is Social. Humes (1992), who only measured SDS-E interests of students who are LD, also found high preference for Realistic (males) and Social (females) occupations amongst the LD population. There is indication for further research.

### Research Question 3 Findings

No significant relationships are found between personality traits as measured by the MBTI and GPA of community college students with LD. Given results of the multiple regression test on the following factors: GPA (dependent variable) and measured MBTI preferences, age, and gender, of the ALLD (independent variables); no significance is found. Therefore, the null hypothesis for question three is plausible. Thus, there appears to be no correlation between grade point average (GPA) and personality traits as measured by the MBTI of persons who are ALLD.

### Research Question 4 Findings

Research results suggest the SDS-E is a good interest inventory to measure vocational interests of persons who are ALLD. Question number four is analyzed by evaluating the relationship between the ALLD's surveyed and expected vocational goals upon college completion. After tabulating the percentage match between the students surveyed and expected vocational

goals, the statistical confidence level is calculated to fall between 39% and 71%. This is a significant confidence level and exceeds the random chance of 7% expected match. Therefore, the fourth null hypothesis that there will be no relationship between expressed interests and measured interests according to the SDS-E is rejected. These findings suggest the SDS-E is a very good predictor in identifying the ALLD's vocational interests and provides a good tool in educational and career planning.

## Limitations of this Present Study

### The Sample Size

The current investigation may be limited in terms of generalizability by its small sample size (40 ALLD participants and 50 ALNLD participants). The "goodness of fit" test is successfully applied to each statistical analysis utilized in this study indicating an adequate sample for this study. However, the small sample size does suggest caution in extending the conclusions of the current investigation to the adult LD population in general.

### Gender Distribution

The high number of females (28 LD and 30 NLD) and the low the number of males (12 LD and 20 NLD) may impact results of this research. When recruiting volunteers, there is no guarantee in securing an equal distribution in the number of male and female participants. Therefore, additional research that would draw from a larger pool of male participants would further support research in this and subsequent studies.

### Volunteer Participants

The fact that participants are "volunteers" may have had an influence on this study. Perhaps individuals who are more willing to volunteer have a tendency towards a certain personality type; therefore, this may have effected sample results. Further replication of this research is needed.

## Recommendations for Future Studies

The results of this investigation will provide an impetus to further study personality types and vocational interests of person who are ALLD. Such work should focus on the assessment and planning needs of adults with LD who are preparing for post-secondary training. Since very few empirical studies have been performed which measure the ALLD's personality traits and interests, it is recommended that future research should attempt the following:

1. To obtain a larger sample size to improve representativeness and generalizability of this study.
2. To include other adult LD populations, such as consumers of State Vocational Rehabilitation Services or Veteran's involved in Vocational Rehabilitation through Veteran's Administration, who might be well served by personality and interest assessment in developing their educational and vocational goals and plans. This will also permit increased generalizability of findings regarding interest and personality assessment of persons who are ALLD.
3. To measure the impact of gender (including a wider sample of males) or cultural differences on assessed interests and personalities of persons who are ALLD, which may provide additional insight into this study's current findings.
4. To conduct follow-up research and longitudinal research in evaluating the predictive validity of the MBTI and SDS-E with persons who are ALLD and to secure information regarding whether or not "successful" adults with LD are actually working in occupations suited to their interests and personalities.
5. To investigate interests and personalities of other community college populations representing different disability groups other than the learning disabled population. This may be useful in determining application of the SDS and MBTI with other populations in the college setting.

6. To examine the occupations and socioeconomic status of the parents of students who are ALLD as the family influence on career development may shed important light on the ALLD's career choices.
7. To utilize different interest and personality instruments that may lead to more precise differentiation.
8. To investigate the learning styles of the ALLD and whether their learning styles have any relationships with their personalities or interests as measured by the MBTI and SDS-E.

## Conclusions

The present study finds some differences in personality patterns as measured by the MBTI between Adult Learners with and without learning disabilities. Compared to the ALNLD group, the ALLD group displays differences in two areas: First, they prefer the Thinking over the Feeling trait, suggesting a tendency for characteristics such as logical and objective thinking. Second, they present preference for the Sensing over the Intuitive trait, reflecting a tendency for experiencing and taking in information by way of senses rather than through intuition. Perhaps these differences may provide service providers with increased insight into counseling persons who are ALLD, to help them better understand their personality traits and the implications for individualized and effective educational and vocational planning. Additionally, the MBTI proves to be a useful personality measurement tool that was well received by the ALLD participants in this study.

Another finding as a result of this research is that there appears to be no significant differences between ALLD and ALNLD groups regarding vocational preferences. However, significant gender differences that had no relationship with learning status (LD versus NLD) are found as expected given previous findings regarding vocational differences. Males preferred Realistic (mechanical) themes while females preferred Social (teaching/helping)

occupations. Perhaps these differences are influenced by environmental and cultural experiences. The only other research found that examined relationships between persons with and without LD and vocational preferences as measured by the SDS-E was reported by Ivy (1991). Ivy did find some significance in these relationships. Further research is needed.

Regardless of the type of relationship between the ALLD and the ALNLD groups vocational preferences, the literature does suggest that persons who are LD are often placed into vocational tracks and occupations that promote low-level employment, fitting a stereotypic view of their abilities and vocational interests. One may conclude that educators, including school counselors, administrators, teachers, and school psychologists, will need to have a better understanding of persons who are learning disabled, who do have vocational interests as varied as those persons who are not learning disabled. Including vocational interest testing and exploration, which has proven to be limited in our educational systems, appears to be a critical step needed in effective transition and career planning for person who are LD.

In researching the relationship between the ALLD's personality traits as measured by the MBTI and their Grade Point Average (GPA), no correlations are found. Additionally, there is no previous research reported that addresses this relationship. Perhaps further investigation with a larger sample size might provide a different relationship outcome than reported in this study. Such research might prove useful in helping persons who are LD to better understand their strengths and problems of their personality styles and how they impact their capacity to be successful in a post-secondary program. Additional research is indicated.

Lastly, in this study, a relationship was found between the ALLD's expressed and measured vocational goal. The SDS-E proves to be a very good instrument to measure vocational interests of persons who are ALLD. The SDS-E interest inventory is an outgrowth of a theory of vocational choice (Holland, 1994) that has undergone extensive investigation, and has won wide acceptance. The SDS-E, validated and normed on the SDS, is at a low reading level which increases its effectiveness for persons with LD who have limited reading ability. The literature review indicates our educational institutions do a

poor job in the vocational preparation of persons with learning disabilities for suitable employment. Motivation, self-direction, and independence can be significantly tied to the information gained through an interest inventory (Ivy, 1991). The SDS-E is found to be a useful tool that can provide increased self-understanding to help persons who are LD make appropriate educational and vocational decisions.

The literature reviewed presents significant problems with high drop out rates, academic failures, underemployment, and unemployment of young adults with learning disabilities. The educational system therefore, appears to be not meeting the academic and career needs of persons who are learning disabled. As a society, we have failed to provide adequate assessment and planning services for the ALLD in preparation for post-secondary education and employment consistent with their abilities, personalities, and interests. According to Hinkebein, Koller, and Kuncze (1992), by assisting individuals with LD to understand their personality traits and vocational interests, they are better prepared to become self advocates in selecting educational programs, occupations, and settings that best match their own natural tendencies, which greatly enhances their educational and/or rehabilitation outcomes. Based on results of this study, it appears that both the MBTI and the SDS-E are good personality and interest assessment tools that can be utilized for persons who are LD to empower them by strengthening their educational and career decision making efforts for meaningful life planning.

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## **APPENDICES**

## APPENDIX A

### KELLER LEARNING DISABILITY RESEARCH PROJECT

## INFORMED CONSENT AGREEMENT

This study involves both psychological and vocational research to evaluate relationships between interests and vocational goals of college students. Those who agree to participate, will meet for a two to three hour block of time to complete both the Myers Briggs Type Indicator, which measures personality styles, and the Self Directed Search Inventory, which measures vocational interests. You will also be asked to complete a very brief questionnaire. After both your completed tests are scored, you will be provided copies of your final test results.

At the end of this school term, a free seminar, which is optional attendance for students who completed both tests, will provide an overview and further interpretation of both the Myers Briggs Type Indicator and the Self Directed Search. You may sign up for this seminar the same time you complete your testing.

It is expected that student participants will benefit from this experience as they may gain knowledge about their vocational goals and career direction as well as obtain a clearer understanding of one's personality and communication style in relating to others. The identity of students and individual records will remain confidential. Participation in the testing or seminar is voluntary and any student may discontinue their involvement at any time without penalty or loss.

For questions regarding the research or research subjects' rights, participants may contact Dr. Joe Sendelbaugh, Western Oregon State College, at 838-8730.

\_\_\_\_\_  
Please PRINT your name

\_\_\_\_\_  
Date

\_\_\_\_\_  
List the first six numbers of your social security #

\_\_\_\_\_  
Your date of Birth

APPENDIX B

KELLER LEARNING DISABILITY RESEARCH PROJECT

DISCLAIMER AND WAIVER

Information used on the attached Questionnaire and results of the Evaluation will be kept strictly CONFIDENTIAL. Only a generalized summary with no names or social security numbers attached will be used by the researchers for this project.

We need your social security number so that authorized Chemeketa College staff can find GPA information in your school files. Only your GPA and the number of hours you have completed in college will be released.

\*\*\*\*\*

I give Chemeketa Community College permission to release my GPA and College hours completed to the researchers involved in the Keller Learning Disability Project. I understand the above disclaimer and acknowledge that my name and social security number will be kept confidential and used only by the Chemeketa Community College staff to access my Grade History files.

\_\_\_\_\_  
PRINTED NAME

\_\_\_\_\_  
Social Security Number

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

## APPENDIX C

FIRST SIX DIGITS OF YOUR SOCIAL SECURITY NUMBER

PARTICIPANT QUESTIONNAIRE FOR KELLER'S STUDY

\*\*\*\*\*

PLEASE TAKE A MOMENT TO COMPLETE THE TOP PORTION OF THIS FORM ONLY:

Today's Date: \_\_\_\_\_ Your AGE: \_\_\_\_\_ Gender: M\_\_\_\_ F\_\_\_\_

1. Have you been identified as having a LEARNING DISABILITY: yes\_\_\_ no\_\_\_

IF YOU ANSWERED YES TO # 1, ANSWER ALL THE QUESTIONS BELOW (Including questions 2, 3 and 4).

IF YOU ANSWERED NO TO QUESTION # 1, SKIP DOWN TO AND COMPLETE QUESTION # 4.

2. Diagnosed as learning disabled as a: child \_\_\_ teen \_\_\_ adult \_\_\_??? \_\_\_

3. Check any of the following areas which relate to your learning disability:

\_\_\_ reading

\_\_\_ listening

\_\_\_ writing

\_\_\_ memory

\_\_\_ spelling

\_\_\_ organizational skills

\_\_\_ math

\_\_\_ time management

\_\_\_ attention

\_\_\_ thinking

\_\_\_ OTHER (describe): \_\_\_\_\_

4. What is your CAREER GOAL when you complete college:

\_\_\_\_\_

\*\*\*\*\*

BOTTOM PORTION --- DO NOT COMPLETE THIS PORTION

GPA: CCC: \_\_\_\_\_ Other: \_\_\_\_\_ Combined: \_\_\_\_\_

Credit hours completed: CCC: \_\_\_\_\_ Other: \_\_\_\_\_