CAREER MATURITY AND LEARNING DISABILITIES AT THE SECONDARY LEVEL

by

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(ABSTRACT)

The purpose of this study was to produce a portrait of career maturity in an LD secondary population described along multiple dimentions. The Career Development Inventory-Part I (CDI) was administered to the 7 females and 68 males who formed the LD population in grades 8, 10 and 12 of a Southwestern Virginia school system who had IQs of 85 or above and no serious emotional or behavioral problems.

Research questions considered the reliability and item appropriateness of the CDI for this population, the contribution of variables related to career maturity and/or learning disabilities to the variance on five CDI scales and the CDI profiles for the total population and 11 subsets of the population. Internal consistency reliabilities of .88, .65, .58 and .71 respectively were found for Career Planning (CP), Decision Making (DM), World of Work (WW) and Career Development-Knowledge and Skills (CDK). A minimum of six items on the latter three cognitive scales were deemed inappropriate in terms of item-scale correlations. Grade, WISC-R Verbal and Performance IQs, WRAT Arithmetic and Reading scores, ACD profile and father's occupational level were found to contribute descriptively to explaining 19% of the variance for CP, 26% for

CDA (Career Development-Attitudes), 43% for WW, 55% for CDK and 45% for COT (Career Orientation Total). Beyond Grade which made the highest contribution to all five scales ($p<.01$), the intelligence variables contributed significantly to the attitudinal scales ($p<.05$) and the achievement variables to the cognitive scales ($p<.05$ or .01). Father's occupational level and the ACD profile contributed insignificantly.

This LD population at all grade levels scored higher than the norm group of students in grades 9-12. Although very small subgroups made any inference to even similar populations tenuous, scores increased as degree of disability went down, when students had less than two years of vocational training or parents in low occupational levels or their greatest dysfunction in Spelling. Discrepancies between attitudinal and cognitive scale scores existed in some subgroups. Scores decreased with primary dysfunction in Arithmetic.

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Chapter 1

INTRODUCTION

The concepts of specific learning disabilities and vocational maturity are relatively new in the history of education. While the roots of the learning disability movement go much deeper into history, work was not begun with a population labeled "learning disabled" (LD) until the 1960's. Kirk introduced the term in 1962 to the parent group which organized the Association for Children with Learning Disabilities (ACLD). "Learning disabilities" was used to cover varied subgroups of children who shared a problem in academic learning without an apparent cause. "LD" has been used to describe individuals diagnosed as having minimal brain damage, dyslexia, central processing dysfunction, aphasia, minimal cerebral dysfunction, hyperkinetic syndrome, psychoneurological dysfunction, etc. The learning disabled were children who had often been ignored, misdiagnosed and mistreated (Ross, 1976). Under the pressure of parent groups, the movement to establish LD as a special category rapidly gained momentum. Varied professionals - neurologists, teachers, clinical and school psychologists, pediatricians, opthamologists, optometrists and physical therapists - have been involved with learning disabilities over the years.

The perspective of career development arrived in the 1950's when Eli Ginzberg and Donald E. Super came forth with their developmental

theories (Ginzberg, 1972; Ginzberg, Axelrad & Herma, 1951; Super, 1953, 1957). The concept of vocational maturity as such was a direct outgrowth of the Career Pattern Study (CPS) started by Super and his associates at Columbia in 1951-52 and still continuing (Jordaan & Heyde, 1979; Super, Note 4, 1974; Super, Crites, Hummel, Overstreet, and Warnath, 1957; Super and Overstreet, 1960). Career maturity or vocational maturity, which Super considered the same, was found to be "a complex, multidimensional construct" (Super, 1974). It consists of an individual's ability to cope with career development tasks as compared with a peer group. Measurement of vocational maturity should indicate the rate and level of an individual's or a group's career development.

The best known models of career maturity are those by Super and by John O. Crites, a student of Super's who later pursued his own research. Models covering a broader spectrum of behavior, such as Rotter's locus of control, have more rarely been used in conjunction with career related development (McIntire, Drummond & Ryan, 1978). None of the theories nor the resulting instrumentation aimed at measuring the components of career maturity have addressed atypical and handicapped populations as such. Yet, for students with varying kinds of developmental deficits and skewed functioning, it seems only logical to question if a deficit in career development exists and/or if there is a different pattern or patterns of career development.

Rationale

LD programing at the secondary level, both academic and vocational, is typically inadequate (Kokoszlea & Drye, 1981; Mori, 1979, 1980). Research needs are many in the fields of both career development, especially for handicapped populations, and of learning disabilities, particularly at ages beyond the elementary level.

LD Program Needs

Career education aimed at influencing career development in a positive way was made a top priority for education in the early 1970's by federal policy makers, but it has been slow to reach handicapped populations (Brolin, 1978). This condition exists in spite of federal legislation: Vocational Education Amendment of 1968, P.L. 90-576; Amendment to the Vocational Education Act, P.L. 94-482; Vocational Rehabilitation Act of 1973, P.L. 93-112; and the Education for all Handicapped Children Act, P.L. 94-142, mandating the availability of career and vocational education programs for handicapped students who might benefit. While there is a fairly significant body of information regarding career development, vocational education, and career counseling for the handicapped as a single population, there has been a dearth of information for a specific LD population.

Special educators have seldom been involved or knowledgeable regarding career education (Mori, 1979, 1980). Too often the format of special services is that of traditional elementary LD programs translated to the secondary level. The minimal changes which are made typically fail to take into account the significantly different needs

of secondary students and the differing set of requirements by the academic structure at the secondary level (Kokoszlea & Drye, 1981). For many LD students time is running out to obtain a systematic education that will prepare them for independence when they leave school.

Research Needs

In the literature, less than 15 references to LD career development were reported in 1978 (Irvin, Goodman & Mann, cited in Mori, 1979). Two years later an ERIC search (Nazzaro, 1980) covering both vocational education and career education for learning disabled adolescents obtained only 12 titles. Although additional titles in the fields of vocational education, career education, career development, and learning disabilities have since been located, few have involved research. Cruickshank (1977) noted specifically the inadequacy of the research base in the whole field of learning disabilities. Further, the majority of existent research has clearly been with young children at the elementary level (De Brosse, 1977).

Two researchers (Bingham, 1974, 1978, 1980; Kendall, 1980, 1981) have looked specifically at the concept of vocational maturity in an LD population. Both found significant differences in career maturity to the extent it is measured by the Attitude Scale of the Career Maturity Inventory (CMI) by Crites (1973). Bingham found differences between LD's and normal control groups of adolescents and preadolescents on the Attitude Scale, but in a second study found no difference between LD 9th graders and a norm group on the CMI Competence Scale. Kendall found differences between LD groups in different placements.

Research suggests that the CMI Attitude Scale is in fact a measure of cognitive competence (Forrest, cited in Jordaan & Heyde, 1979; Westbrook, 1976). If this is the case, it would appear that LD students may function differently on varied cognitive components of career maturity but that conative or attitudinal measures have yet to be measured. Since many adolescent LD students are thought to have failed to adequately develop "that aspect of personality characterized by a conscious, willing, strong, and purposive action" (Wolman, 1973), which defines conation, it would be an important factor to consider.

One of the primary needs in the field of learning disabilities is to establish the identity of learning disabled populations, especially at the secondary level. The lack of a commonly agreed upon operational definition is reflected extensively in the literature and has tended to confound research which tries to compare varied populations. A specific definition of individual LD population characteristics is particularly important. A breakdown into discrete subgroups is needed to account for the heterogenous nature of the disability. Here again, because of the lack of agreement, multiple ways of subgrouping must be addressed.

An argument has been made for using an epidemiological approach to study LD populations, especially those with the unique problems associated with adolescence (Schumaker, Alley, Warner & Deshler, Note 1). This approach which is used by the University of Kansas Institute

for Research in Learning Disabilities involves looking at individual characteristics and behaviors descriptively and within the environment where it occurs. The current study emphasizes the descriptive components.

LD Incidence and Placements

How numerous are the learning disabled and where are they? According to the Statistical Abstracts in the U.S. (1980), an LD population of 1,136,000 was served by special education programs in 1978-79. The President's Committee on Employment of the Handicapped (Hippolitus, Stevens, Meers & Schwartz, Note 2) showed that the handicapped constitute approximately 2% of the total number of students enrolled in vocational education programs, but 10-12% of all students in elementary and secondary schools. There was no breakdown to show the percent of LD students in vocational areas.

Initial studies of the President's Committee indicate that disabled students drop out of high school five or six times as frequently as the average. The question of readiness to make career decisions and to cope effectively with career demands, which become increasingly critical at upper grade levels for all students (Super, 1977), becomes even more critical for special populations. Even if they graduate, the majority of LD students do not appear to continue in the educational system.

At the post-secondary level, the total handicapped student population constitute 2% of those at four year colleges, 3% of community

college students, and 3% or less of CETA clients (Hippolitus et al., Note 2). The same study reported that of the approximately 625,000 handicapped who annually end their school careers, 26% would be unemployed, or on welfare, while 40% would be underemployed and at the poverty level.

Young adults classified as LD during their school years have been found significantly less satisfied with their employment than non-LD young adults (White, Schumaker, Warner, Alley & Deshler, Note 3). There are indications of decreasing numbers of unskilled jobs. Many existing jobs require more and better reading skills than held by normal high school students (Mikulecky, 1981). Teenagers with minimal academic skills and possible ongoing handicaps seem especially unlikely to be hired or retained in a tight job market.

The magnitude of the problem is significant and has important implications for society as well as the involved individuals. Further research is required to provide the data base for efficient and effective intervention where it is needed.

Statement of the Problem

There is a serious lack of research based data in the field of learning disabilities, especially at the secondary level. Information is specifically needed to determine if there are general or specific deficits in the career development of LD students. If weaknesses exist, they should be defined while time and resources for intensive remediation are possible within an already organized educational framework. No one really knows what career maturity of adolescent

learning disabled individuals is like, whether it differs in range, degree, or pattern from that of their non-disabled peers or within varied LD subgroups.

Purpose of the Study

The primary purpose of the study is to determine the contribution of multiple variables considered important in the field of learning disabilities and/or career maturity to vocational maturity of secondary LD students.

A secondary purpose is to determine how alike or different LD subjects, according to multiple LD subcategories, are from each other and from the norm group of the Career Development Inventory (CDI). Of interest will be the extent these LD students are found to have the defined Achievement profiles and the frequently reported ACD/ACID profile.

The third purpose is to gather information regarding the appropriateness of using the CDI with an LD population. Are CDI scores of LD students unreliable or biased either because of the test itself or because of unstandardized procedures of administration? Specifically, do individual inventory items correlate appropriately with the subtest totals?

Limitations

The basic definition of career maturity is that provided by the CDI and the extent to which it adequately and accurately accomplishes its goal is critical to any worthwhile contribution the current study might make in the field of career development. As a self report

instrument the CDI obviously provides feedback which may or may not conform to "reality" as perceived by onlookers. Fakability may threaten its validity on items not requiring objective knowledge (Page, 1974).

The norms provided by the CDI are not based on a stratified, nationally representative sample nor are local norms available. For use with an LD population it would be desirable, as recommended by Schumaker et al. (Note 1), to obtain local norms to allow for an epidemiological comparison with average achievers and with low achievers not receiving special education services. Further, there are no CDI norms provided for 8th graders so that they must be assessed and compared only with the use of total norms based on grades 9-12 or on 9th grade percentiles.

The CDI was neither created for nor standardized with LD students. It may or may not be an adequate measure of career maturity for this group. The exact effect of changes in administration and scoring procedures made to adapt the CDI to the potential limitations of an LD population is unknown. Further, there is no known way to compensate or to make the CDI non-discriminatory for those whose disability involves both visual and auditory reception and/or processing deficits.

Much of the career maturity research has been done using the Attitude Scale of the Career Maturity Inventory (CMI-A) by Crites (1973). Such research findings are not specifically comparable to results obtained using the CDI.

Within the research population, there was an under representation of 10th and 12th grade students, minority groups and female subjects. Some of the other subgroups were very small. Further, the very fact that this was primarily a descriptive study made any inferences to other populations possible only on the basis of logic.

Definition of Terms

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

1. Vocational maturity/career maturity: The degree to which students at the same grade level cope with age appropriate career development tasks, generally as measured by the CDI.

2. Learning disabled subjects: Those 8th, 10th and 12th grade students currently placed in the LD program of a southwest Virginia school system in accord with federal and state regulations, whose full scale intelligence quotient on the Wechsler Intelligence Scale for Children - Revised (WISC-R FS IQ) or its equivalent is not below 85, who are not dually placed in a Behavior Adjustment program (for those emotionally/behaviorally disturbed), and for whom permission to participate in the study has been obtained. They were located within nine individual schools, four high schools and five junior highs, and with 18 of the 21 secondary LD teachers.

3. Types of placement: LD resource placement is less than three hours daily; Self-contained placement is more than three hours daily; Trial exit involves monitored adjustment in regular classes.

4. Grade placed: placed in an LD program and received service from (1) grade 8 and up; (2) grade 6 or 7; (3) grade 4 or 5; (4) grade K through 3.

5. Vocational programing: Pre-vocational placement for one-half day at the pre-vocational school and/or vocational placement at the vocational-technical high school for vocational classes and/or vocational training via the home high school.

6. Father's occupational level: Student-reported job held by father, stepfather or adult male in home, coded by the researcher using Roe's (1956) six classification levels in reversed sequence (ie., her level 6 = Level 1 in this study). A "0" category if not in the home, a "7" category if unknown or unemployed, an "8" category for homemakers and a "9" category for retired or disabled were recorded but not considered levels. Where there was no employed adult male in the home, the adult female's occupation was substituted for all statistical purposes except the initial frequencies count.

7. Mother's occupational level: Student-reported job held by mother, stepmother or adult female in home, coded according to Roe's six classification levels in reversed sequence. A "0" category, if not in the home, and an "8" category for homemakers were recorded but not considered levels.

8. Occupational aspiration level: Job that it is student's ambition to enter on leaving school with automatic coding according to Roe's six levels in reversed sequence. A "0" category represented unemployed or unknown status, and an "8" category, homemakers.

9. Occupational expectation level: Job student actually expects to enter on leaving school with automatic coding according to Roe's six levels in reversed sequence. A "0" category represented unemployed or unknown status. An "8" category represented homemakers.

10. ACD/ACID profile: Students having low scores on WISC-R subtests: Arithmetic (A), Coding (C), Digit Span (D). "Low" is defined as two of the three subtests, A, C, and D, having a scale score three or more points below the appropriate individual mean - that is, the mean of the Verbal Comprehension factor (Information + Similarities + Vocabulaty + Comprehension) for A and D, or of the Perceptual Organization factor (Picture Completion + Picture Arrangement + Block Design + Object Assembly + Mazes, if given) for C. In addition, Information (I) score may be a low point in the individual profile.

11. Achievement subtypes: Subtype 1 consists of LD subjects uniformly deficit with Reading, Spelling and Arithmetic grade equivalent scores on the 1978 edition of the Wide Range Achievement Test (WRAT) at least 2.6 years below their expected grade placement and standard scores not exceeding 89; Subtype 2 are those LD subjects whose WRAT Reading and Spelling standard scores do not exceed 86 and are at least 10 standard score points below their WRAT Arithmetic standard score; Subtype 3 was composed of LD subjects whose WRAT Reading and Spelling standard scores were at least 108 and exceed their WRAT Arithmetic standard scores by at least 12 points.

12. Achievement discrepancy groups: Comparing all WRAT standard scores with Full-Scale IQ, (1) Reading discrepancy included those students having their largest discrepancy with Reading scores; (2) Spelling discrepancy consisted of those students having their largest discrepancy on Spelling scores; (3) Arithmetic discrepancy equals those students having their largest discrepancy on Arithmetic scores.

Summary

There is need for change in secondary LD programs. Unfortunately, little research data on career development or career maturity is available for learning disabled populations. The lack of consistency in defining learning disabilities and the inadequacy of the research base for the field, especially at the secondary level, is a source of confusion. Too many LD students are unprepared to obtain satisfying careers; they appear less able to cope "with tasks appropriate to (their) life stage in ways which are likely to produce desired outcomes" (Super, 1977, p. 294), ie., to be vocationally mature. This study will seek to describe career maturity, primarily as reflected by the CDI, as it actually exists in a specific learning disabled high school population defined in multiple ways.

Chapter 2

REVIEW OF LITERATURE

This chapter contains a review of relevant literature. It begins with an overview of career development and career education. Next, the evaluation of career maturity, its primary instrumentation and determinants are surveyed. The following section samples the literature in the field of learning disabilities with its multiple perspectives. The balance of the chapter looks at adolescent and career development as related to learning disabilities. Special consideration is given to studies which define learning disabilities in ways particularly pertinent for this study.

Career Development and Career Education

In scientific usage, "career" refers to "the sequence of positions occupied by a person during the course of a lifetime" (Super & Hall, 1978, p. 334). It is a development concept, not just the way one earns a living. Super's (1980a) notion of careers includes careers as child, student, spouse, parent, leisurite and citizen as well as worker. When school systems and individuals consider "preparation" for adult life, emphasis is given to the developmental task of making appropriate career choices and preparing for careers, especially occupational ones.

In the early 1970's, the United States Office of Education considered career education a way of facilitating career development

to accomplish the societal and political goal of "productive and rewarding" lives for American citizens (Marland, 1972; Prince, 1978). Federal legislation has made clear society's intent that career education be available to all students "regardless of potential for occupational employment" (Brolin, 1978, p. 4). Career education for handicapped individuals, as for other students, aims at helping them to look at their individual maturity, aspiration and potential, to develop a sense of worth and direction, and to become contributing members of society in varied life roles (Beane & Zachmanoglou, 1979). Ideally, career education in the public schools consists of a program at all grade levels, K-12, which provides developmentally appropriate experiences.

Career Development

A developmental conceptualization of careers was first published in 1951 by Eli Ginzberg, an economist, in conjunction with a psychiatrist, a sociologist, and a psychologist (Osipow, 1973). Ginzberg's theory of career choice hypothesized three major periods: Fantasy, Tentative and Realistic. Most youth of ages 12 to 17 or 18 were thought to be in the Tentative period which was subdivided into four stages: Interest, Capacity, Value, and Transition. Most of the data underlying the theory was based on white, upper middle class boys who were assumed to go through a turbulent adolescence. Later, Ginzberg revised his theory to reflect research with disadvantaged youth (Ginzberg, 1972). At this time he dropped his hypothesis of irreversibility of early educational influences and career choices and

accepted the concept of a life-long process. He drew extremely negative conclusions regarding the effects of schools which were believed not only to have failed to free students from restrictive home environments but to have further entrapped them.

The second developmental theory (and the most important for this study) to emerge to date is that of Donald E. Super, who, reacting to the perceived inadequacies of Ginzberg's model, proposed his own theoretical propositions (Super, 1953, 1957). Emphasizing the difference between a one-time trait factor matching of individuals to an occupation, he proposed a psychology of careers resting on the assumption that all human development basically evolves with different vocational tasks at different times of life (Osipow, 1973). Using Bueler's life stage concept, Super proposed that the way an individual adjusts at one point in life likely predicts future coping techniques. Along with development, he emphasized self concept, including a vocational self concept developed from identifying with adult models and subsequently implemented in an occupational role (Osipow, 1973).

Super's theory of career development has continued to evolve and to stimulate research in the United States and abroad (Super, 1977, 1980 a , 1980 b ; Super & Kidd, 1979). He posits six stages of development for each of nine roles or sets of societal expectations in his most recently published "descriptive" model of career development (Super 1980 a , 1980 b). For a typical adolescent, the roles of child, student, and leisurite are primary. Some adolescents, however, may have taken on roles of worker, parent, and citizen. For each

individual, the amount of time and life space given to each role will vary.

Youth approaching the age of 14 would generally be ending Super's Growth stage. They would have gone through the overlapping substages of: Fantasy (ages 4-10) where needs are primary and Interest (ages 11 and 12) where likes are dominant determinants, and would be in the Capacity substage (ages 13 and 14) where personal abilities and job requirements are given more consideration. The Exploration stage is hypothesized to cover the next nine years with three substages: Tentative (roughly ages 15 to 17, or grade 10 in this study) where tentative career choices are made; Transition (ages 18-20 or grade 12 for current purposes) where the reality of what is possible is given increasing weight; and Trial (ages 22-24) where a seemingly appropriate occupational field is located and tried.

For many students, especially handicapped and disadvantaged ones, the developmental process may seem to be either ignored or truncated out of the necessity to provide self-support when school days are ended. The literature is suggesting that exploration as demonstrated by frequent job changes may be developmentally appropriate whether society or the individual who struggles to deal with its consequences likes it or not. Further, immature individuals may never adequately resolve the developmental task of exploration. Levinson (1978) indicates that developmental tasks unresolved at the usual time come back up at each point of transition throughout adult years. Follow up

interviews in the Career Pattern Study (Super, Note 4; Super & Bowlesby, 1979) showed that some subjects were still drifting without objectives at age 25 and at age 35.

Career theorists have addressed normal populations. Career development theories for atypical populations have yet to come.

Career Education

Career education has also started with regular student programs and only very recently has there been an "explosion" of interest in career education for the learning disabled (Bingham, 1981). Career education programs were started with little empirical knowledge or research data. No one knew what caused children or adolescents or adults to explore, nor did anyone understand the developmental process of exploration (Super & Hall, 1978). If a student needs to "be ready" to learn, some of what is being done may not contribute much. Giving information which has little internal relevance and lacks an individual time perspective is of little use (Super, Note 4). This would seem a point of particular concern for learning disabled students.

In the widely used Comprehensive Career Education model, exploration seemingly stopped after the ninth grade (Jordaan & Heyde, 1979). Super's model would indicate an ongoing need. Either way, exploration is a central component in career education. Jordaan's pioneer work (cited by Super & Hall, 1978) is noteworthy, since curiosity or exploratory behavior has been studied primarily in animals, and occasionally in infants. Jordaan defined exploration as "activities,

mental or physical, undertaken with the avowed or unconscious purpose of eliciting information about oneself or one's environment, or of verifying or arriving at a basis for a decision, conclusion, solution, or hypothesis, or of being entertained, challenged, or stimulated" (Super & Hall, 1978, p. 337).

Bingham (1981) suggested that LD students may have difficulty in processing and interpreting career information; they may miss the point because of distorted perception or cognition. Jordaan noted that educational decision points (in the exploratory period) produce ambiguity, stress and, at times, boredom. If the stress does not produce withdrawal, curiosity is likely to result in exploration (Graham, Super & Bowlesby, Note 5). Reflecting this, Super has offered a tentative model of career development in the upper grades (4-8) as shown in Figure 1. Its interrelationships are generally self explanatory. It should be noted that both curiosity and conflict may initiate exploration. Conflict, however, is not usually a constructive basis for exploration leading to new information. Bingham (1981) suggested that LD's lesser ability to tolerate ambiguity may result in impulsive behavior or early closure. A history of school related failures may make them less able to cope with stress.

Career Maturity

Career maturity is a construct developing logically from theories of career development in adolescence. Both originated in the ongoing Career Pattern Study (Jordaan & Heyde, 1979; Super, Crites, Hummel, Overstreet & Warnath, 1957; Super & Overstreet, 1960).

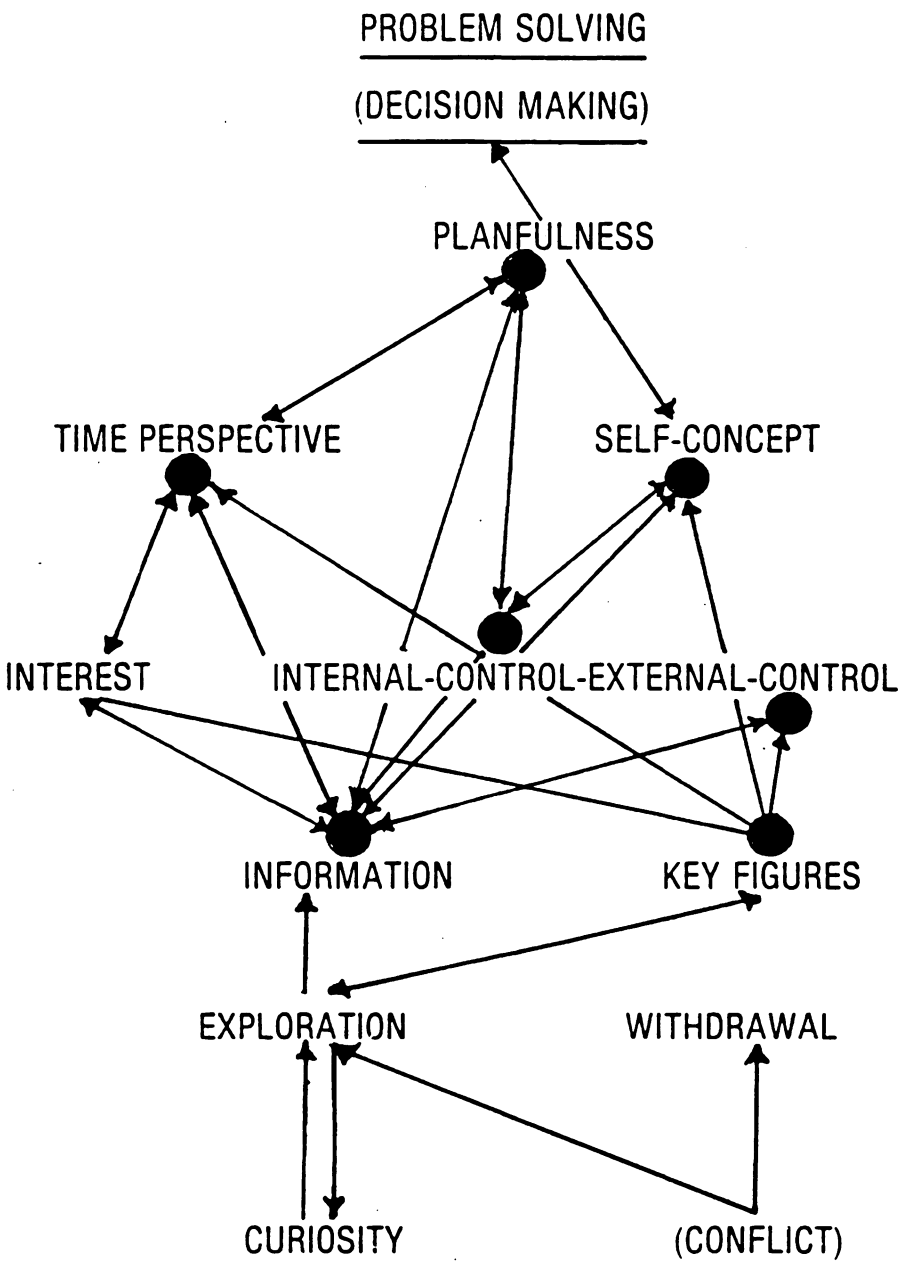

Figure 1. A TENTATIVE MODEL OF CAREER DEVELOPMENT IN THE UPPER GRADES

Donald E. Super
1981

Career Maturity: Evolution and Theories

When Super and his colleagues started the Career Pattern Study (CPS), with 105 9th grade boys, they set out to address certain questions. Are students entering the ninth grade ready to make the vital pre-career choices required of them by the school curriculum? Do they know themselves, their interest and aptitudes, their personal characteristics and vocational aspirations, and the separate worlds of work and education well enough to make decisions with such long range influence (Super & Overstreet, 1960)? The general conclusion was that they were not. The study of related questions by the CPS has continued over a widening age span, as the same 9th graders were followed as planned at the 12th grade, at age 25, and at age 35; they may be seen, yet again, at age 45 (Super, Note 4).

For 25 years Gribbons and Lohnes (1968) studied 57 boys and 54 girls in the 8th and 10th grades. Using an abbreviated and shortened version of the Vocational Maturity Indices discovered in the CPS, they developed the Readiness for Vocational Planning Scale (RVP) for their parallel Career Development Study (CDS). The CDS basically corroborated Super's early theory of career development; however, their trait-statistical method emphasized individual differences. Although not predicted by the RVP scores, the developmental sequence beyond high school supported the existence of four patterns: (1) Constant maturity: a lasting, realistic pursuit of the original goal; (2) Emerging Maturity: moving through Super's model; (3) Degeneration: "progressive deterioration of aspirations and achievement,

accompanied by frustration and loss of status" (p. 104); (4) Constant Immaturity: lasting fantasy level objectives. No further work seems to have been done with these patterns, which may be especially relevant for handicapped populations.

Super (1974), using theory and data available at that time, hypothesized 19 first order vocational maturity variables and five primary ones: Planfulness or time perspective in regard to awareness of life stages and tasks (distant future, intermediate future and present); Exploration; Information (educational and occupational); Decision Making; and the late maturing Reality Orientation. Later, in an evaluation of CPS subjects at the 12th grade level, Jordaan & Heyde (1979) reported realism no more advanced than at the 9th grade, but the other vocational maturity factors did emerge as hypothesized.

The second theorist of adolescent career maturity was John Crites, one of the researchers involved in the early years of the CDS. Crites (1974) had developed a model of career development with four factors of career choice: Consistency, Realism, Competencies and Attitudes. He froze his model in the early 1960's and primarily addressed his research in the Vocational Development Project to the last two factors (Super & Hall, 1978). Fortunately, many of his ideas were sound.

In the early 1970's, Crites (1973) was able to complete the Attitude Scale of the CMI (CMI-A) which provided a single score covering five dimensions. As the first "ready-made" instrument to be published, it was received eagerly by researchers and evaluators. The CMI Competence Scale (CMI-C) was added later with five subtests reflecting

five career factors: Knowing About Yourself, Knowing About Jobs, Choosing a Job, Looking Ahead, and What Should They Do (Bingham, 1980; Crites, 1974)? Much of the research in the field of career maturity has utilized just the CMI-A. The continued infrequency of use for the total CMI after the publication of the CMI-C is unfortunate although not surprising since it requires over two hours to take.

Correlates of Career Maturity

Research has been done on varied factors associated with career maturity (see Table 2.1). Intelligence as measured by standard tests, usually of verbal ability, achievement as measured by grades, socio-economic status of father or male guardian (SES), and level of aspiration have frequently been cited as determinants or correlates of vocational behavior. Jordaan & Heyde (1979) summarized their review of the literature and findings regarding these variables. Students with higher verbal reasoning may or may not be more occupationally mature, depending on how the ability is used in coping with school tasks, ie., as demonstrated by gradepoint average. Students who coped well were likely to have more career information and aspirations in line with their tested ability. Nothing is available to suggest whether non-verbal ability such as measured by the WISC-R PIQ is associated with level of career maturity. Possibly, occupational issues might invoke higher interest levels in individuals with high non-verbal abilities, and with greater motivation young people may progress further in their vocationally related development.

Table 2.1

Studies of Career Maturity Variables

Investigator	IQ	SES	Race	Sex	Curricula	Grade Level	Aspiration Level	Grades	Other
Super and Overstreet 1960)	*	*					*	*	*
Gribbons and Lohnes (1968)	*	*		*		*			*
Ansell and Hansen (1971)	*	*	*			*			(Career expectations)
Gurman (1975)									(Locus of control)
Jones, Hansen and Putnam (1976)				*		*			(Occup'l Interests)
Lawrence and Brown (1976)	*	*	*	*					(Self concept)
Jordaan and Heyde (1979)	*	*		*		*		*	*
Dillard and Perrin (1980)		*	*	*		*	*		
Strohmer (1981)									(Self Esteem)
Thompson and Lindeman (1981)				*	*	*			

Some relationship may exist between parental occupational level and vocational maturity level, especially by the 12th grade (Jordaan & Heyde, 1979). Those students whose parents are in the lowest occupational levels, ie., those with the lowest prestige, lowest educational levels and, frequently, the lowest paying jobs, generally represented by Roe's (1956) Level I or unemployed, might fit a culturally deprived category. If so, they might show lower levels of career maturity, especially on its cognitive measures, than would students whose parents are in higher levels, ie., Levels V and VI. Jordaan and Heyde concluded that socio-economic status was an insignificant determinant of career maturity among younger adolescents. Even in later high school years, it seemed to account for only a little of the variance. Lower class, black or white, students, however, do tend to be less vocationally mature than are white, middle class students. Measures of parental status reveal some indication of expectation level, cultural background, access to useful contacts and the kind of education an individual is likely to receive.

The above factors all together account for only a small portion of the variance found in career maturity at the high school level, according to Jordaan & Heyde (1979), although earlier research had been inconsistent (Osipow, 1973). Ethnic membership, sex, age, grade level and self-esteem have also been evaluated as predictors of vocational maturity.

In a study of randomly selected students, Dillard & Perrin (1980) found SES, ethnic membership, and grade level, but not sex to be significantly related to CMI-A scores. In the same study career aspirations differed, with minority males having higher aspirations than white males but with no difference between females. The ethnic difference between males was thought, as in an earlier study by Ansell & Hansen (1971), to be primarily related to SES factors. Earlier studies cited by Jordaan & Heyde (1979), had indicated that when the contribution of intelligence was controlled, differences in SES were no longer significant. Lawrence and Brown (1976) in analyzing results on the CMI scales for twelfth graders found IQ the best overall predictor. For the Attitude Scale, IQ, self concept, and race were significant. SES and self concept had differential effects upon CMI results. The research conclusion was that different prediction equations were needed depending on sex and race.

A different view of SES effects is suggested by the Laboratory of Socio-Economic Studies of the National Institute of Mental Health. Twenty years of research there indicate the reciprocal effects of (1) social class and future occupation and (2) social class and degree of stress and coping ability (McNett, 1981). Kohn, one of the researchers, concluded over a decade ago that the "really critical variable" in class and child rearing values seemed to lie in the degree of self direction experienced. Self direction was found to rise as social class level went up. The difference seemed to come about as the result of the higher class expecting their behavior to

influence results while the lower class believed consequences were beyond their control (McNett, 1981).

The question: Does vocational maturity help individuals make satisfying choices if "choices are limited by external factors?" (Harmon, 1974, p. 83), is worth noting before going on. While Harmon referred to sociocultural factors, might not any type of handicap raise the same question because of a similar limiting impact? Will knowledge of individual and group career maturity levels help educators and counselors better prepare handicapped students for life beyond the school environment? No one knows. Strohmer (1981) did explore the use of the CMI Attitude Scale with two groups of rehabilitation clients with different disabilities. His results point to the potential usefulness of similar instruments and theories for varied special needs populations.

Gurman (1975) in her dissertation study of white, rural 11th graders, found little to support the hypothesis that locus of control correlates with vocational maturity on the experimental CDI. The CDI did have a high correlation with measures of incorporation of self concept into vocational concept and of realism of vocational choice.

Jones, Hansen and Putnam (1976) found self-esteem or self-concept to be a predictor of career maturity as measured by the CMI-A in boys but not in girls in grades 8-12 in a suburban school setting. A significant difference in career maturity attitudes was also found among students whose interests placed them in the six different

vocational categories hypothesized by Holland. The results of the study reinforce the concept that personal characteristics which influence occupational choice also contribute to career maturity and/or suggest that the curriculum emphasized different categories.

As a developmental construct, career maturity logically should be expected to increase with age. In fact, this has been the case overall; but the gains have not been large in high school, and the process tends to be uneven (Jordaan & Heyde, 1979). A 9th grade boy's scores on various measures may be very different at the 12th grade. If this is true, it is very good news, offering the hope that intervention can produce positive change.

Recent research on the reversibility of early cognitive deficits, ie., operational strategies, in adolescents and young adults, cited by Hobbs & Robinson (1972), offers further hope for LD secondary students generally and in so far as cognitive abilities influence career maturity. The authors concluded that "the basic skills necessary to get and keep a job, to negotiate with society's institutions, and to live satisfactory and satisfying lives" may be taught, provided schools respond with "imagination and tenacity" (p. 217). The major source of variance in adolescent learning has been found to tie into the individual character of the schools (Rutter, Maughan, Mortimore & Ouster, cited in Hobbs & Robinson, 1982).

Specific Learning Disabilities

The field of learning disabilities has evolved through different professions. It has been studied from various perspectives with differing points of emphasis. It has landed most squarely in the lap of education, but the confused identity of the learning disabled remains to be resolved.

Theories of Learning Disabilities

Various theories of learning disabilities have suggested perceptual impairment, developmental lags, genetic disorders, nutritional problems, opthamological disturbances, environmental factors, emotional difficulties, neurological dysfunction, psycholinguistic disorders, etc., in an attempt to understand its etiology and treatment. Wong (1979) reviewed current theories considered particularly useful because they overcome some of the conceptual and methodological problems of earlier models. A listing gives some idea of the age and range of these approaches: Adelman's 1971 interactional model; Senf's 1971 information-interaction theory; Setz and Van Nostrand's 1973 perceptual and linguistic model; Ross' 1976 developmental delay in selective attention constructs; Torgenson's 1977 passive learner approach; Vellutino's verbal deficit explanation of reading disability; and Weiner and Cromer's 1976 hierarchial model of reading disabilities.

Learning Disabilities Research

The research literature in the field of learning disabilities reflects concerns from varied perspectives, directed most frequently at reading disabilities with lesser attention to other academic deficits. Increasing recognition is being given to the heterogenous nature of the problem with the need for definition of subgroups to reflect the diversity of the population and ways to operationalize varied characteristics (Rourke & Gates, 1982). It is beyond the scope of this paper to review all of literature on learning disabilities, but a sampling is indicated to get a flavor of its variety. Primary emphasis will be on that portion of the literature defining subgroups based on brain functioning patterns as revealed on the WRAT, the WISC and WISC-R, and on discrepancy models.

What is the state of learning disabilities as it exists in adolescents? Studies at the University of Kansas, based on actual LD placements, indicate: (1) LD is primarily a cognitive/academic handicap wherein the normal distribution of IQ's does not hold. (2) Remediation efforts have had little effect; severe academic deficits continue. (3) Where a youth lives and what a given school demands determines whether or not a student is identified as LD. (4) LD young adults have lower status occupations and less job satisfaction than their peers but were not aspiring further (Clark, Note 6). This is inconsistent with the expectations and hopes of many. What then are more "theoretical" ideas of what learning disability is?

Research at the University of Virginia's Learning Disabilities Research Institute has particularly addressed learning processes which define LD and non-LD children. Varied research has indicated "that LD children are not deficit in attention and memory abilities per se as much as they are lacking in task approach skills" (Hallahan & Kneedler, Note 7, p. 1). Researchers elsewhere have also contributed their efforts in a similar direction (Ceci, Ringstrom & Lea, 1981; Maier, 1980; Wong, 1982).

An important contribution was made by Akerman, Dykeman & Peters (1976) who followed up 62 LD boys and 31 controls at age 14, four years after the initial study. Results showed that the level and hierarchy of WISC verbal reasoning, spatial reasoning, and sequential memory factor scores were related to retarded achievement with the sequential memory factor and the Information subtest most important. Underachieving students with these deficits either could not or would not use memory and problem solving strategies but could learn meaningful life skills which did not require conscious effort or strategies. "The most successful students seemed to use such strategies as chunking, elaboration, rehearsal, and rearrangement" (p. 583) and were able to switch strategies if the first did not succeed.

Characteristic LD approaches to processing information and research evidence were reviewed by Blackman & Goldstein (1982). Their results suggested three overlapping groups, any one or a combination of which was considered LD: (1) underachievers based on intellectual

tests; (2) process deficits with soft neurological signs, perceptual-motor problems, and attentional deficits and (3) hyperactive.

Davis & Schwimner (1981) attempted to explain how individuals process and organize information to give meaning to their perception of the world. They described five thinking styles: transient, digital (step by step), multidigital (complex organization), multi-relational (holistic) and relational (self direction, varied styles).

Taking yet another approach, Kass, Lewis, Havertape, Maddux, Horvath and Swift (1982) used a non-disabled control group and five age-related functions and were able to classify 83-87% of the LD students in one school system. Students 11 to 14 years of age showed functional deficits in synthesis for listening, comprehension, temporal orientation, monitoring and sensory intergration. The deficits in communication function for those over the age of 14 involved reading and arithmetic comprehension and writing skills.

Kaufman, who has published extensively on the factorial analysis and interpretation of the WISC-R (1979 a , 1979 b) did a "state of the art" evaluation of the WISC-R and learning disabilities in 1981. Wechsler (1974) had posited only two factors, represented by the verbal and performance scales. Most researchers, however, have found a third factor labeled Freedom From Distractibility which included the same three subtests (Arithmetic, Digit Span and Coding) as Bannatyne's Sequencing category and the Attention-Concentration category proposed by Witkin, Dyk, Faterson, Goodenough & Karp (cited in Kaufman, 1981). The ACID profile was reported to be consistently

found in diverse LD populations. Since it in large part is derived from the Freedom From Distractibility factor, Kaufman concluded, "It is evident that the third factor may hold the key to competent LD assessment" (p. 521). Discussing the relevance of this factor for adolescents, Clampit (1981) called the ACD triad the "messenger boys" in low level functions that can cause declining class rank even for those with high verbal scores.

On the other hand, scatter analyses were not considered helpful by Kaufman (1981), except for discretely defined groups such as the gifted LD, described by Schiff, Kaufman and Kaufman (1981). At the same point in time, Ryckman (1981) strongly stated his conclusion that "there are no common characteristics across all LD children, at least as defined by various WISC-R subtests" (p. 510). Sattler (1982) reported a definite trend for inadequate readers in 30 different studies where the subtests represented by the ACID profile were the most difficult subtests. He also noted less clear trends to the effect that LD children with PIQ > VIQ tended to perform more poorly on reading tasks and tasks requiring language expression "and those with VIQ > PIQ tend to be more impaired neurologically" (p. 403).

Some researchers have looked specifically at perceptual skill development. A meta-analysis of 161 studies relating visual perceptual skills and reading achievement by Kavale (1982) produced the following conclusions: Visual perception is an important correlate of visual and reading variables, but a portion of the variance depends

on the specific combination of visual and reading variables considered. It is less important at the intermediate grade levels, and most predictive for normal readers, although useful for LD students in determining general reading ability.

A classic study by Doehring (1968) suggested that the term "specific" was inappropriate because of the range of skill impairment in non-reading areas found in those with a "specific reading disability." He found that reading disability correlated "most highly with visual and verbal tasks that require the sequential processing of related material" (p. 147). Further, all reading disabled had significant deficits in verbal subtests and on the Coding subtest of the Wechsler-Bellview which might be associated with dysfunction in the left posterior portion of the cerebral cortex.

Although each approach seems to make a contribution, the logic of considering neurological factors, arising in the brain and the central nervous system, which mediate all behaviors, LD or not, is difficult to refute (Fabian & Jacobs, 1981; Golden & Anderson, 1979; Hartledge, 1982). Gaddes (1980) paraphrased Skinner to the effect that neuropsychological information is irrelevant for normal behavior but "required for understanding and treating impaired behavior" (p. 5).

A problem tends to arise out of the difficulty educational personnel have in coping with medically based terminology, definitions, and research. Much new knowledge in the field of neuropsychology, which has increased with new technology, has application in the field

of education. Efforts are being made to bridge the gap with information increasingly made available. For example, the ACLD Scientific Studies Committee (1982) has provided a "Research Update" emphasizing neurophysiological causes of learning disabilities. Of particular interest is the report that maturing in some areas of the brain continues until the age of 15 or 16. Another piece of information came from a minute autopsy of a well documented dyslexic's brain which showed abnormalities only in the left hemisphere. A brain tissue bank has been established and is alerting ACLD and others regarding this type of research.

The psychoneurological investigations by Rourke and his associates are particularly exciting (Rourke, 1975, 1976; Rourke & Finlayson, 1978; Rourke & Gates, 1981; Rourke & Orr, 1977). Stimulated by Doehring's work, Rourke has worked with over 4,000 LD boys and girls, 7 to 14 years old, over the last 14 years. He has used a definition of LD that is in conformity with the U.S. federal definition, plus a WISC IQ range of 80 to 120 (Rourke, 1975). Data was collected on all subjects with a large assortment of sensory-perceptual, motor, psychomotor, linguistic and concept-formation tests (Rourke & Gates, 1981).

Using a pattern analysis approach, Rourke and Finlayson (1978) grouped LD children, ages 9-14, on the basis of WRAT performance as follows: Group 1 had grade equivalent scores on the Reading, Spelling and Arithmetic subtests at least two years below expected grade

level with centile scores no higher than 18. Group 2 had Reading and Spelling grade equivalent scores at least 1.8 years below Arithmetic with centile scores no higher than 14. Group 3 had Reading and Spelling grade equivalent scores which exceeded Arithmetic by at least two years. Groups were matched for age and FS IQ. Separate Reading and Spelling groups were not used because of the high correlation between the scores although some earlier data indicated that poor spellers who spelled phonetically read better than non-phonetic spellers.

The results of the study by Rourke and Finlayson clearly indicated that Groups 1 and 2 were significantly inferior to Group 3 in linguistic skills and superior in visual spatial abilities. The reflected abilities are those thought related to left and right cerebral hemispheric dysfunction respectively. Further studies have supported the findings of hemispheric differences; later studies of subgroups using Q factor analysis have also shown increasing accuracy of subgroup definition as age increased (Rourke & Gates, 1981).

Two roughly similar LD groups were defined using WRAT Reading and Arithmetic scores by Pieper and Deshler in 1980 for two studies (Notes 8, 9), with no reference made to any knowledge of Rourke's work. They were: (1) a specific learning disabled group in arithmetic (SLD-A) whose WRAT Arithmetic achievement grade level was two or more grades lower than WRAT Reading and (2) a specific learning disabled group (SLD-R) whose WRAT Reading achievement level was one and a half or more grades lower than their WRAT Arithmetic level.

SLD-A and SLD-R students were identified in 43 junior high schools on the basis of existing test scores; the WRAT was administered and the 30 in each group with the lowest scores were used as subjects. Thirty average achieving students, as defined by their teachers, were randomly picked for a third group. Six cognitive tests were administered to all students.

The first study (Pieper & Deshler, Note 8) found significant differences when all three groups were compared, when the two SLD groups were compared with the AVE group, and when the two SLD groups were compared with each other. Highly significant differences were found in the varied comparisons for the Visual-Matching, Spatial-Relations and Analysis-Synthesis subtests of the Woodcock-Johnson Psycho-Educational Battery. The SLD-A represented the low end of the continuum, AVE the high end and SLD-R the middle. But regardless of deficit area, SLD students exhibited cognitive problems.

The second study (Pieper & Deshler, Note 9) found no difference between the two SLD groups on WISC Verbal scores but the SLD-A group had statistically significant, lower WISC Performance scores (means of 93.7 versus 101.6). A comparison of previously administered reading and arithmetic achievement tests and the WRAT Arithmetic and Reading tests showed notable inconsistencies in scores across tests. Further, students with an arithmetic disability seemed to exist as a function of program size, that is, they existed in larger groups.

In another study, five discrepancy criteria for determining LD were applied to two groups of students in grades 7-12: 300 LD students

receiving special education services and 320 low achievers (below 33%) not receiving special education services (Warner, Note 10). Myklebust's formula identified practically all as LD while Wiederholt's criteria was ultra conservative. Good-Mann's model was not very helpful because too few of the subjects had the required IQ of 90 or over. The two most consistent and effective criteria were the proposed federal formula (achievement level lower than SLD - CA x IQ / 300 + (.17 - 2.5) and the Half criteria (grade equivalent lower than one-half actual school placement). Even so, a significant number of low achievers met these two criteria but were not being served by special education. Thus, using discrepancy models of identification in accord with federal regulations and within a relatively small geographic area, the question of appropriate identification remained.

Adolescent and Career Development in the Learning Disabled

Childhood provides the foundation for all development which occurs as the result of both learning and maturation (Hurlock, 1975). Although all individuals are different, development does tend to follow a predictable pattern with certain traits associated with each phase. "Developmental change though related to age, is not closely tied to age" (Harris, 1979, p. 90). Each period or stage involves new hazards. Career development is only one of many aspects of development, but it cannot be neatly segregated from other aspects.

Clinical perceptions and adolescent development. Cruickshank, Morse and Johns (1980) state that "the best preparation for adolescence is a successful pre-adolescence" (p. 14) but note that childhood is

not typically less strenuous than adolescence for the learning disabled child. Oldham (1980) has challenged the traditional view of adolescence (obviously held by Cruickshank et al.) as a time of storm and stress. He reviewed various studies indicating that symptoms beyond mild depression and anxiety or mild disagreement with authority figures are not normal. Yet, most families and individuals working with boys and girls at this stage of life recognize it, if not as a time of normal psychosis, at least as a time of significant change and development.

Goldberg (1981) stated that the "problem of separation, independence, body-image, sexual identity, aggression and depression must be resolved before a vocational decision can be made. Amid all the turmoil of adolescence, the ablebodied/disabled youth cannot be expected to make a realistic choice without a great deal of help" (p. 69). For those learning disabled individuals whose disability results in "serious functional limitations" constituting a substantial handicap to employment and the likelihood of benefiting from rehabilitative services, state departments of vocational rehabilitation can now offer their services (Thomas, 1980).

Although there is no "psychology of disability" (Livingston, Kom & McAlees, 1982), Goldberg (1981) pointed out that too frequently disabled youth reach the age of employment, are referred to state rehabilitation agencies, and are then found ineligible for services because of their "lack of previous social preparation" (p. 6). That

is, they were still functioning at pre-adolescent levels which precluded job training. Hurlock (1975) suggested the most important handicaps to mastery of developmental tasks are lack of motivation and lack of opportunity to learn; the most important aids are high intelligence and either normal or accelerated development. While the problems of an LD youth are less severe than those of many handicapping conditions, problems in development exist. The LD youth may have high intelligence, but development and performance is skewed. While some are highly motivated and have adequate opportunities for learning, for others this is not the case.

Those LD students fortunate enough to have parents with balanced expectations still have to appraise themselves and their disability and to accept themselves as worthwhile and competent (Cruickshank et al., 1980). Unfortunately, families and schools too frequently and repeatedly send the covert, if not open, message that academic achievement is fundamental to success as a human being. One experienced LD middle school teacher was heard to state her conclusion that lack of motivation may be the single largest component in LD students' continued failure even with special services.

Goldberg (1981) stated that the aggressive drive during adolescence is reinforced by endocrine changes and quickened physical development. For students lacking impulse control and experienced in failure and frustration, physiological changes of adolescence may trigger an increased incidence of acting out behaviors. Partly

it seems an attempt to gain recognition and a separate identity (Cruickshank et al., 1980), as well as a bit of solace from a fellow group of "academic losers."

Achieving independence from parents and becoming autonomus individuals able to manage their own affairs tends to be more difficult for disabled adolescents. Some have been handicapped by over protective adults (Livingston et al., 1982). For example, parents sometimes claim that they want their child to be independent, but their behavior indicates that they want the independence only in some aspects of life (Cruickshank et al., 1980). "Learned helplessness" and the "low expectation" syndrome can result in failure to take advantage of new opportunities for learning which carry over throughout life. Failure to meet the developmental challenges, career or otherwise, that are appropriate for an age "will reverberate through all successive stages" (Harris, 1974, p. 91).

Research findings and perspectives. A study by Adelman and Chaney (1982) supported the clinical notion that students with problems perform below their potential because of motivational deficits which can be improved. Sabatino and Miller (1980) have proposed achievement motivation as one of two most promising areas for future research in the field of learning disabilities.

Investigating Atkinson's proposal that "people with an unusually strong motive to avoid failure will frequently set defensively high or low goals for themselves" (Osipow, 1973, p. 185), Mahone (1960) determined that fearful college students were unlikely to have an

accurate perception of aptitude or a realistic basis for making a vocational choice. Studies with younger LD students have indicated the likelihood of their attributing success or failure to external sources of control (Grimes, 1981). In a study of junior high school students, those who were LD had unrealistic expectations of success, seemingly being unable or unwilling to use their knowledge of task difficulty and previous experience (Tollefson, Tracy, Johnsen, Borgers, Buenning, Farmer & Barke, Note 11). The same group of LD students while attributing success to effort, felt their personal success or failure was due to other factors. In another study of junior high LD students, 30% showed "patterns of behavior that defended against failure in ways which precluded academic success" (Tollefson, Tracy & Johnsen, Note 12, p. 24)--and future career success? Although LD subjects could be taught strategies to set goals, they did not generalize the strategies to regular school work.

One of the major tasks of adolescence is to organize cognitive strengths toward establishing a self identity, yet little research is available regarding how LD youth accomplish this. Grossman (1982) in reference to work by Stone, noted the increasing ability to control problem solving variables which is a distinguishing characteristic of an adolescent's style. Stone (cited in Grossman, 1982) studied the cognitive styles of 36 LD teenagers, dividing them by area of disability to compare their problem solving characteristics.

He found that "spontaneous" problem solvers strongly tended to be those with reading and writing disabilities; as time passed their problem solving capacity increased. Some of the students could adopt problem solving strategies when encouraged but others could not even with support. Failure to display such strategies was associated with failure to progress over time and with deficits in oral language or in math and non-verbal skills. This group was felt to differ qualitatively from their younger peers who achieved normally but lacked the capacity to deal with problems involving multiple variables. The difference was posited to be related to the potential for bringing together both verbal and non-verbal processes.

More optimistic information comes from observational studies of the classroom performance of 47 high school students along with 47 "model" non-LD peers (Schumaker, Sheldon-Wildgen & Sherman, Note 13). Although the LD students did exhibit more rule violations, few quantitative differences were found but many similarities. In other studies LD students have been found able to learn social skills, but there were varying degrees of transfer of knowledge to different settings (Clark, Note 6).

Career development as such has obviously been little addressed in LD populations. A 1978 Scandinavian study (cited by Goldberg, 1981) compared handicapped with ablebodied students in grades 6-12. The handicapped were found to be significantly lower than their non-disabled peers on all measures of vocational development. Learning

disabled adolescents were likewise found lower on social and non-social vocational skills in the U.S. by Mathews, Whang, and Fawcett (1982). The Scandinavian handicapped students did not always go through successive phases of development, but when they did, they tended to score two years below their grade and age peers. Anderson, Richards and Hallahan (1980) also found LD boys two years delayed on Piagetian tasks, and Grimes (1981), among others, has found similarly skewed functioning.

Rourke had noted the difficulty in determining how to rule out emotional disturbance as an etiological factor in LD children since even in cases of unequivocally defined cerebral dysfunction "at least mild socioemotional disturbance" will develop if learning needs go unmet (Rourke, 1975). Therefore, a study of career maturity in emotionally maladjusted high school students is relevant. Karayanni (1981) evaluated 89 high school students defined as maladjusted by the Minnesota Counseling Inventory and 92 adjusted students. He found highly significant differences on the CMI-A between groups. His overall conclusion was, "Maturity seems to be related to family and family wishes, socio-economic and cultural factors, and attitudes and values" (p. 218). Note, however, that there was no control for IQ. Generally his study supported the belief that personality development must be understood in order to help students in career development.

Kendall (1980, 1981) explored differences between groups of LD secondary students in three different types of school placement: regular secondary classes, vocational education classes, and regular

classes with Learning Resource Center services. Students in both studies were selected randomly from five inner city schools with a cross section of males and females, black and white. Mean IQs across groups ranged from 78 to 86 in the first study and 88 to 92 in the second, where differences in IQ were investigated but not found significant. Significant differences in CMI-A scores were found between LD vocational students and both LD regular and resource youth ($p < .01$ in the first study and $p < .05$ in the second); however, the vocational students scored lowest in the first study but highest on the second. The difference between regular and resource students was not beyond a chance level in either study. In the second study, Kendall also administered the Vineland Social Maturity Scale. He found significant differences in social quotients between LD regular students and higher scoring vocational students, but not between regular and resource LD youth. Although IQs and age were reported, they were not used as covariants in either study. The mean age of vocational students was consistently higher than that of the other two groups, by three years in the first study but by six months or less in the second. The conflicting results in career attitude scores strongly suggest the need to control for multiple relevant variables.

The most intensive work reported on career development and maturity in LD secondary students is that of Bingham (1974, 1978, 1980, 1981). Initially she investigated the difference between LD and non-LD, pre-adolescent (grade 6) and adolescent (grades 9 and

10) boys on career maturity attitudes and self esteem (Bingham, 1974, 1978). Socio-economic status in Bingham's 1974 study, based on the father's occupation, was lower for the LD pre-adolescents and, because of them, for the entire group. Parental attitudes were thought the most likely of the uncontrolled variables to contribute to the differences actually observed in career attitude maturity, especially if there are class related differences in attitudes toward LD children--an unknown factor. A later study by Miller (1978) found positive parental attitudes and behavior seemed to encourage career maturity while negative ones impeded it, at least as they were viewed in retrospect by community college students. This may tie in to the suggestion that the reason certain low achieving students have been labeled LD while others with similar characteristics have not, is due partly, to the fact that parents of LD students have been better advocates for their children (Schumaker, Deshler, Alley & Warner, Note 14).

Bingham (1974, 1978) did find significantly lower scores ($p < .01$) on the CMI-A for both pre-adolescent and adolescent LD groups, even when SES and intelligence were controlled. Her LD groups consisted of 60 boys, 30 at each level, "Perceptually Impaired" (that is, without medical definition of neurological impairment) who received supplemental instruction but were mainstreamed in the public schools of four New Jersey communities. All had intelligence scores within one standard deviation of the norm as did her subsequent group of 26 male and 6 female "Brain Damaged" students in a New Jersey private school (1980). The second sample was in an age group

comparable to that of 9th graders. None had any known behavior problems and all were from middle income suburban communities. Both the CMI-A and the CMI-C were administered to this group orally, and separate answer sheets used for the CMI-A and each of the five CMI-C subtests to minimize perceptual and motor problems. Again, the LD boys were significantly lower than both the original control group and the test norm group on the CMI-A. Data from the girls was not included in the CMI-A analysis to facilitate comparison with the earlier study. Differences on the CMI-C subtests, where data from the girls was included, were insignificant. While LD students were lower on four of the five scales, especially problem solving, they were slightly higher on foresight in planning. The mean scores for the girls on the CMI-A and CMI-C were not available in the reports, and there was no discussion of the possible sex differences.

Bingham (1980) referred to evidence in LD students of less accurate social perception and interpretation of non-verbal behaviors as well as clinical impressions of secondary emotional effects. She tended to attribute the favorable cognitive findings versus low scores on the attitudinal ones as reflecting the influence of vocational education programs in comparison with inadequate guidance to aid its application. Certainly, whatever is measured by the CMI-A was lower functioning in one 6th grade LD group and in two subtypes of learning disabled boys at 9-10th grade levels. The adolescents were functioning close to Crites' 7th grade mean while the New Jersey adolescent control group functioned close to the grade appropriate test norm group.

Warner, Alley, Deshler and Schumaker (Note 15) have pointed out three unique problems of adolescents with learning disabilities: (1) Secondary schools and job situations have requirements that are significantly different from those of elementary schools which may result in changes in manifestations of the learning disabilities, (2) the complexity and interaction of the many LD variables increase as social groupings become more numerous and varied and when the student leaves the school environment, (3) there is very little known about LD youth in non-school settings.

Only a beginning had been made in addressing these concerns nationwide. Work in Kansas is indicating that at the secondary level achievement differences and qualitative differences are primary. LD's are more like than unlike their peers (Clark, Note 6; Warner et al., Note 15).

Instrumentation

Results from three standardized instruments will be used in this study: the WRAT, the WISC-R, and the CDI. Each will be described and discussed since they come from varied fields of professional knowledge.

The Wide Range Achievement Test (1978 Revised Edition)

The latest revision of the WRAT (Jastak and Jastak, 1978), while not normed on a representative national sample, includes all ethnic groups and both sexes from varied geographical regions. The norm groups for the ages used in this study numbered 600 for each age range span. When matched for general ability, females scored higher

than males in Reading and Spelling at all age levels. In Arithmetic, there was no significant difference between sexes for high school aged subjects.

Correlation coefficients for the WRAT, Level II ranged from .94 for Arithmetic to .98 for Reading and Spelling for ages 12-24. The standard error of measurement ranged ±1.13 to 1.70. Jastak and Jastak (1978) warn that "repeat results must be expressed in standard scores to show improvement or decline" (p. 48). Logically, it would seem wise to use standard scores to compare groups across time and editions of the WRAT.

Comparing scores across different editions of the WRAT results in special problems when trying to replicate LD subgroups using WRAT score patterns as the criteria. Rourke and his colleagues doubtlessly used the 1965 edition of the WRAT in their decade long research, in particular Rourke and Finlayson (1978) who most precisely defined the LD subtype grouping procedure used in this study. Unfortunately, the raw scores on the 1965 edition that would indicate a two year lag in achievement by grade equivalents for a student, for example, whose expected grade level is 8.7-8.8 and whose chronological age (CA) is in the 13-6 to 13-11 span, would yield grade equivalents (ge) of between 6.3 and 6.4 for Reading, 6.4 for Spelling and 6.2 for Arithmetic on the 1978 norms. At higher grade levels the norm change results in even greater discrepancies. By grade 12, raw scores with grade equivalents of 10.8 in 1965 have become 9.2, 9.9, and 9.4 respectively for Reading, Spelling and Arithmetic on 1978

norms. If standard scores are used, however, differences are less dramatic.

In the learning disabilities literature, concern has been expressed regarding the general use of grade equivalent scores for research rather than standard scores (Elliott, 1981). Of particular relevance for the current study, comparison of the 1976 and 1978 WRAT showed significant differences on Reading and Spelling grade equivalent scores (Breen and Prasse, 1982). The 1978 grade equivalent scores in Level II were lower on all three subtests, but differences on standard scores were not significant.

The WRAT age span, 13-6 to 13-11, is considered the range of ages most expected of students in the second semester of the 8th grade, specifically 8.7-8.8, and the age range within the current research population most like Rourke's 7 to 14 year old populations. The standard scores of 89 to 91 are those which represent a two year lag in grade equivalent scores (6.7-6.8) for this age group on the 1965 edition of the WRAT. Using the 1978 norms, an 89 (or 90, if no ge = 89) standard score represents grade equivalents of 6.2 at the grade level of 8.7 and of 6.6 to 6.8ge at grade levels 10.7 and 12.7. The use of standard scores appears a more stringent criterion than the original grade equivalents would be with the use of current norms.

The WRAT is not a comprehensive measure of achievement. Scores for Reading reflect word recognition, for Arithmetic written computation and for Spelling ability to write single dictated words.

Wechsler Intelligence Scale for Children-Revised

The 1949 WISC was revised and renormed in 1978. The WISC-R is based on a stratified national sample representing various classes of children. Age, sex, race, geographical region, occupation of head of household, and urban-rural residence were the variables stratified (Wechsler, 1974).

The WISC-R is highly reliable across the ages (6-0 to 16-11) it measures. Reliability coefficients for the various subtests range from .72 to .86. Five subtests totaled provided a Verbal IQ (VIQ), r = .94; five other subtests yield a Performance IQ (PIQ), r = .90; and the ten subtests together provide a Full Scale IQ (FSIQ), r = .96. The standard error of measurement (SEM) for the twelve possible individual subtests (two are optional), using scale scores, ranges from 1.15 to 1.70. SEM in standard scores for VIQ is $\pm$ 3.60, for PIQ $\pm$ 4.66 and for the FS-IQ $\pm$ 3.19.

Various studies of career maturity tended to use intelligence as a variable measured by tests such as the Otis Mental Ability Test, SRA Verbal, California Test of Mental Ability, the Army General Classification Test, and the DAT Verbal Reasoning Test (Gribbons & Lohnes, 1968; Jordaan & Heyde, 1979; Super & Overstreet, 1960).

The WISC-R covers a much broader range of general ability than do the instruments listed above. With its multiple measures of general intelligence and the Freedom From Distractibility factor which has special significance for LD children, the individually administered WISC-R is considered the measure of intelligence most adequate for the purposes of this study.

Professional literature indicates that it is the most widely used intelligence test in diagnosing and evaluating learning disabilities.

The unrevised WISC, the Wechsler Adult Intelligence Scale (WAIS) and its revised version (WAIS-R) for ages 16-0 and up, provide information approximately equivalent to that of the WISC-R. The Stanford-Binet for ages 2 and up is also a more adequate measure of general intelligence than the instruments typically used in prior studies of career development. If IQ scores other than those obtained by the WISC-R are utilized along with WISC-R IQs, scores may require adjustment to be more specifically equivalent.

Numerous studies comparing the WISC and WISC-R have consistently found WISC-R FS IQs to be lower by about five points, VIQs by four points and PIQs by six points (Sattler, 1982). A comparative study of a representative sample of 40 16-year-olds found WAIS mean IQs to be higher than those on the WISC-R by about five points for both Verbal and Performance scales and six points for the full scale (Wechsler, 1974). For retarded adolescents over age 16 who were retested on the WAIS after prior testing on the WISC-R, Sattler reported evidence of significantly higher WAIS IQs. Regarding the Stanford-Binet, Wechsler (1974) found that for a representative sample the WISC-R FS IQ was about two points higher for 16 1/2 year olds and about two points lower at ages 6, 9 1/2 and 12 1/2. Sattler (1982) concluded that for group purposes, the Binet IQ was "generally similar" to the WISC-R.

The Career Development Inventory

The CDI, used in this study, is based on years of ongoing research, involving field trials and several revisions. It was developed by Donald E. Super, Albert S. Thompson, Richard H. Lindeman, Jean P. Jordaan and Roger A. Meyers of Columbia University, Teachers College (Thompson & Lindeman, 1981).

Twenty indices of vocational development grouped into six dimensions were derived in the CPS from interviews, questionnaires and tests. Five of the 20 indices were considered especially pertinent for grades 9-12: "concern with choice . . . acceptance of responsibility for choice and planning. . .specificity of information about the preferred occupations. . .specificity and extent of planning. . . (and) use of resources in orientation" (Thompson & Lindeman, Note 16, p. 1). These indices were used in the original instrument which evolved via a six scale Student Questionnaire and a 13 scale Career Questionnaire into the 1972 CDI Form I. Form I had 91 items and three scales, two of which were primarily attitudinal and one cognitive (Thompson & Lindeman, Note 16; Prince, 1978).

Further research indicated the need for better measures of the cognitive components of career maturity. This need led to Form II and then in the mid-70's, to the 191 item, six part, Form III which was developed based on the current model of career maturity (Super & Thompson, 1979). It covered the dimensions of planfulness, exploration, information, decision making and reality orientation. The six scales of Form III were used in research in the United States

and Canada and with language adaptations for countries worldwide (Thompson & Lindeman, Note 16).

The School Form of the CDI was copyrighted in 1979, but the Users Manual by Thompson and Lindeman was not published until 1981. The School Form consists of the 120 items from Form III which had the strongest inter-item and inter-scale correlations. Table 2.2 provides Super's definition of each scale. Scores for each scale may be used individually or profiled for diagnostic purposes.

The first four CDI scales consisting of 20 items each are considered suitable for grades 8-12. These four: Career Planning (CP), Career Exploration (CE), Decision Making (DM), and World of Work (WW) provide seven scores. There is one for each scale individually, one for CP plus CE constituting a conative Career Development-Attitude Scale (CDA), one for the cognitive Career Development-Knowledge and Skills (CDK) scale which combines DM and WW, and a Career Orientation Total (COT) combining the four individual scales.

The fifth scale, Knowledge of Preferred Occupations (PO), is another measure of information which has 40 items. It is considered most appropriate and useful with those who score at least average on the first four subscales. Because of its 11th grade vocabulary, its low reliability (alpha coefficient .60), the predicted probability that the LD students will score less than average and the extra time it would require, it will not be utilized in this study.

Table 2.2

The Career Development Inventory Scales

Scale CP, Career Planning, seeks to measure a planning orientation to careers.

Scale CE, Career Exploration, seeks to assess willingness to use, and to use effectively, the resources available for learning about educational and occupational opportunities.

Scale DM, Decision Making, tests ability to apply principles of career decision making to career problems.

Scale WW, World of Work, tests knowledge of the developmental tasks encountered during adolescence and young adulthood, of the occupational structure, of typical occupations, and of the mores of the world of work such as job finding and job adjustment.

Scale PO, Knowledge of the Preferred Occupational Group, tests knowledge of any one of twenty comprehensive groups of occupations, with questions concerning their requirements, activities, life styles, etc. The test is applicable to any occupation, and is scored according to the Group chosen by the respondent.

Scale CDA, combines the two conative scales, CP and CE, as justified by factor analytic studies.

Scale CDK, does the same with the first two cognitive scales, for the same reason: DM and WW.

Scale COT, combines the two attitudinal or conative and the two combinable cognitive scales, CP, CE, DM, and WW. Scale PO is not combined because of its twenty variations and its use primarily with students in 10th grade and above.

Donald E. Super
April, 1981

It should be noted that realism, the fifth dimension of career development, is not assessed by the CDI. While it might be measured, e.g., by comparing the results of an intelligence test with self estimates of intelligence, studies have shown that realism must "be defined and assessed in a number of ways, most of which involve problems of conceptual adequacy" (Super & Thompson, 1979, p. 11).

The CDI provides standard scores with a mean of 100 and a standard deviation of 20. These, as well as percentiles for girls and boys, grades 9-12, are based on the total norm group. That is, a standard score of 100, would represent the average of the total norm group of 5039 students over grades 9-12. There are no norms for the 8th grade. The norm group included groups from different regions and types of environments, ie., urban-suburban-rural and innercity but was not a representative national sample. Specifically there were 10 samples from Alabama, New York, New Jersey, Maryland, Ohio, Oregon, and Alaska, but 3284 subjects were from New Jersey alone.

A study by Hesser (1981) provides separate CDI data for 262 high school seniors from one urban, one suburban, and one rural school, all in southwestern Virginia. Females comprised 60% of the sample. Comparing total mean scores of seniors in his sample with those of the norm group, Hesser reported means of 105.9 vs. 107.4 for CP, 107.4 vs. 104.4 for CE, 111.3 vs. 101.7 for DM, and 110.9 vs. 100.9 for WW. The Virginia students had significantly higher scores ($p < .01$ or $< .001$) on three of the four scales. Forty six of the students, 80% female, were from a school represented in the current

research population. Their mean scores were 107.0 for CP, 112.7 for CE, 117.3 for DM, and 117.1 for WW. The difference in mean scores of the norm group and Hesser's sample was conjectured to be due to the higher number of females and to the influence of career education programs within the schools sampled.

The Technical Manual is still in press (1982), but general information is provided in the Users Manual (Thompson & Lindeman, 1981). The data there are undergirded by the earlier, unpublished Manual for Research and Field Trial (Thompson & Lindeman, Note 16). The internal consistency on the combination scales for males and females separately in the total norm population ranged from .78 to .89 with a median of .86. For the total male population, the range was .82 to .88. CP and WW have median total reliabilities of .89 and .84. Males had a range of .85 to .89. CE, DM, and PO have less acceptable reliability estimates of .78, .67, and .60 with the range for males .75 to .80, .58 to .71, and .55 to .71 respectively. For some Virginia seniors, reliabilities of .82, .78, .67, and .80 were reported for CP, CE, DM, and WW respectively (Hesser, 1981).

The evidence suggests that CDI scores are highly stable over a span of up to six months. A two year period is deemed advisable to obtain a clear indication of developmental changes.

Content and construct validity appear adequate. The CDI is based on Super's well developed theoretical model (Gribbons and Lohnes, 1968; Jordaan & Heyde, 1979; Super, 1957, 1974; Super & Overstreet, 1960). The items for the scales appear to conform to the dimensions

of planfulness, exploration, decision making and information posited by the theory. They thus offer evidence of reasonable content validity.

Construct validity is reflected by performance differences predicted by theory and by factor analyses which clearly indicate the presence of two factors. Tables in the manual show that performance increased with grade level with CP means showing the greatest increase over time. Girls, especially by the 11th and 12th grades, tended to have higher mean scores, most specifically on DM, WW and CDK. These scales are most highly correlated with academic achievement tests where such sex differences have often been found to occur (Jastak & Jastak, 1978; Thompson & Lindeman, 1981). In general, sex differences were few and mild as theory would predict. The CDI questions were constructed to be free of sex bias, but no specific reliability data is provided in the Users Manual (Thompson & Lindeman, 1981). Gribbons and Lohnes (1968) felt that developmental theory stressed sex differences, but they did not find statistically significant differences in the CDS. They did note the need to separate sexes for analysis with large samples.

The differences in the means of students in varied curricula provided further support for construct validity although this had not been specifically predicted (Thompson & Lindeman, 1981). Students in grades 10-12 who were in business and college preparatory programs generally had higher means than did those in vocational and general programs, especially on cognitive scales. Vocational students scored high on the attitude scales as might be expected since they were

planning to enter the work force sooner than some of the others. The honors students had the highest means of all, especially on the cognitive scales.

It should be noted that the CP, CE and CDA scales of the CDI are not expected to measure "attitude" as defined by the CMI-A. If the CMI-A taps cognitive factors, as seems likely (Dean, 1981; Jordaan & Heyde, 1979; Westbrook, 1976), it would be expected to correlate with DM, WW, and CDK. Dean, using Form III of the CDI, found the CMI-A had correlation coefficient values of .23 ($p < .05$) with Scale 1, Extent of Planning, and of -.16 with Scale 2, Use and Evaluation of Resources. Bingham, who used the CMI-A in research with LD adolescents and pre-adolescents, stated the opinion that the Crites' measure was more "a measure of predisposition toward an attitude than a measure of attitude as affect" (Note 17). The CDI attitude measures have had zero or low correlations with cognitive tests of achievement and aptitude, while the cognitive measures of the CDI correlate significantly (Jordaan & Heyde, 1979; Thompson & Lindeman, 1981).

Concurrent validity is to be reported in the Technical Manual when it is published. As a recently published instrument the predictive validity of the School Form of the CDI remains to be established.

Summary

This chapter surveyed the most pertinent literature in the fields of career development, career education, career maturity and learning disabilities. Primary attention was given to Super's theories of career development and career maturity as they related to LD

adolescents. Theories of learning disabilities and the confusion regarding operational definitions of LD were reflected. Clinical opinions and research findings were reviewed with emphasis given to those of particular relevance for the current study. Adolescent and career development were considered as they apply to secondary LD students. Finally, the standardized instruments to be used were reviewed, the WRAT and the WISC-R briefly, the new CDI (School Form) in some detail.

Chapter 3

METHODOLOGY

The methodology was designed to produce a portrait of career maturity-development associated with an LD secondary population and to assist in the development of an epidemiological data base for this population. It sought answers to the questions: What is career maturity like in adolescent students with specific learning disabilities? What influences it and to what extent? In what pattern or patterns does it develop? The study further sought some clarification of the possible sequence and rate of development over the high school years in this population. Given the lack of consensus regarding what constitutes an LD condition and who is included in such a population in varied regions of the United States, the career development of multiple LD categories and subgroups called for exploration.

The instruments available as measures of career maturity have not been developed for or used specifically with LD populations. Further, the CDI School Form has been in general use only a short time. Some estimate of its reliability and potential usefulness was needed.

Each of five scores for the CDI were utilized as a dependent variable with nine independent variables explored for use in multiple

regression procedures. Because of inherent problems when variables are too highly intercorrelated, an intercorrelation matrix of all variables was considered necessary prior to a final selection of independent variables. Information about other potentially important variables related to both learning disabilities and career development were gathered and analyzed with descriptive statistics.

Research Questions

The specific questions addressed by this study were as follows:

1. What are the estimated reliabilities for four CDI Scales: Career Planning, Decision Making, World of Work and Career Development-Knowledge and Skills?

2. Is there evidence that some scale items are not effective?

3. What do: Grade level; WISC-R FS IQ, VIQ and PIQ; WRAT Reading and Arithmetic; occupational level of father; achievement subtype; and presence or absence of ACD/ACID profile contribute to the variance of career maturity as measured by each of five CDI scales: Career Planning, Career Development-Attitudes, World of Work Career Development-Knowledge and Skills, and Career Orientation Total?

4. What are the CDI-Part I profiles for the total population and for 11 subsets of the population defined by: (1) grade, (2) sex,

(3) family occupational level, (4) years in vocational training, (5) occupational aspiration level, (6) occupational expectation level, (7) the difference between occupational aspiration and expectation levels, (8) grade placed in LD program, (9) type LD placement, (10) achievement subtype, and (11) discrepancy group?

Research Population

The research population consisted of the 8th, 10th, and 12th grade LD students of a large southwestern Virginia public school system who met specified criteria. The area encompasses rural, small town and suburban areas. The system's population is largely Caucasian (5-7% minority ethnic groups), and the majority are middle class. Ability as measured by group tests tends to be slightly higher than national norms.

The school system has had a well developed program of vocational education for regular and mentally retarded students for many years. A prevocational program in a separate school has been available to students in grades 8-10 who had at least average ability but had not met success in the regular academic program. Some special students were allowed to attend before the 8th grade. A vocational high school offers a full day program for grades 11-12; however, LD students usually attend the vocational high school only for vocational classes and have academic classes in the home school where their LD teachers are located. Home high schools offer marketing and a cooperative office program for grades 10-12.

In the early 1970's, the system initiated through its curriculum and its guidance department at both primary and secondary levels a comprehensive career education program which covers the regular K-12 grades. The LD program was begun in 1973-74 in the elementary and junior high schools and in 1977-78 at the high school level. Only in 1980-81 did career education become a specified component of the LD curriculum and then with only minimal requirements, ie., five career related activities to be developed during the year, contents to be determined by individual LD teachers. It was assumed that most LD students would have had some exposure to the regular career education program.

Just prior to and during the time the data was being gathered, three LD teachers in different schools were participating in a system-sponsored class on career development of handicapped students. LD students in these three schools, two junior highs and one senior high, were exposed to various career tests and activities beyond the usual career programing. At the same time students in another senior high were being regularly scheduled into the career lab. Conversations with 10th and 12th grade students suggested that going to the well equipped school career labs was the accepted norm. The overall indications were that current career development activities involved greater depth and frequency than might be expected in a typical school system in the U.S.

All LD students in this population had been evaluated by a psychologist and eligibility for the learning disabilities program determined by a multidisciplinary team of professionals in general accord with federal and Commonwealth of Virginia regulations (see Appendix A). To operationalize the determination of "a severe discrepancy" between achievement and ability for students in grades 4-8, the Virginia Department of Education in 1980 suggested a functioning level of "two or more years below the expected level (e.g., mental age, percentile) in one or more" (p. 45) academic areas. For grades 9-12, a three year discrepancy was suggested for LD placement, with a general caution to use this and other suggestions "flexibly, taking into account the ability of the child as well as the age and the number of years in school" (p. 45).

Local procedure in recent years had been to require a Verbal or Full Scale IQ on the WISC-R or Binet of 85 to 90 or above. Exceptions to this occasionally were made, for example, when there were indications of higher cognitive potential and extensive disability without eligibility for other special education programs.

Instrumentation

Scores from the most recently administered WRAT were obtained from student records. A choice was made to use WRAT standard scores rather than grade equivalents in determining the amount of lag required for the three achievement subtypes. Specifically, an 89 (or 90 if no grade equivalent possible to define an 89) standard score was substituted for a two year deficit.

The most current WISC-R or WISC, WAIS or Binet score was also obtained from the records. Where only WISC and WAIS scores were available, they were adjusted to better approximate equivalent WISC-R scores. For the WISC, four points were subtracted from the Verbal IQ, six points from the Performance IQ and five points from the Full Scale IQ. On the WAIS, five points were subtracted from both Verbal and Performance IQs and six points from the Full Scale IQ. A Binet IQ was unchanged to approximate the Full Scale IQ.

Two instruments were used to gather data not otherwise available from school records. The primary instrument was Part I of the School Form of the Career Development Inventory discussed earlier. The second was a Student Questionnaire (SQ) devised for the purposes of this study (see Appendix C).

The SQ was field tested in one junior high school program with self contained LD students, i.e., "extreme cases" (Patton, 1980), on the assumption that if this population could adequately follow instructions no problem should be experienced by older LD students, some of whom would be less severely disabled. Minor modifications were suggested and incorporated in the final instrument.

Students were asked to fill in name, age, grade, sex, and father's and mother's occupation, either by title or level. The five multiple choice questions had the same vertical arrangement and the same A-B-C listing of answers to be marked as does the CDI. Type of LD placement and approximate grade level of LD placement were reported by the students along with the number of periods of direct

LD service, participation in and years in the varied vocational programs. Two additional questions involved putting a single check in two columns beside a listing of eight job categories to define occupational aspirations and occupational expectations at time of leaving the educational system.

On the SQ, the sample of jobs by levels was based on those provided by Roe (1956). Roe's levels were determined by degrees of responsibility, capacity and skill, in that order of importance. Roe's Level I (Group 6 on SQ) represents the highest level professional and managerial positions. Level II (Group 5 on SQ) represents lesser professional and managerial positions. Level III (Group 4 on SQ) covers semi-professional and small business occupations. Level IV (Group 3 on SQ) indicates skilled jobs. Level V (Group 2 on SQ) represents semi-skilled work and Level VI (Group 1 on SQ) unskilled work. The SQ form specified two additional categories: "unknown, unemployed" and "homemaker" (orally defined as possible for males and females). Regarding parental job levels, students were referred to the listed categories but also advised to write in "retired," "disabled" or "deceased" where appropriate or to draw a line in the blank if the parent was not in the home. Individual assistance was provided when any question occurred after explanation.

Data Collection

Permission to gather data within the school system was requested via the Director of Pupil Personnel Services and plans were discussed

with the LD coordinator. Each of the school principals was contacted prior to data collection at their school. The Investigator also attended a regular monthly meeting of the 21 secondary LD teachers to review the purpose of the study and the process for collecting data. Times and dates for testing were subsequently arranged to provide a minimum of schedule disruption.

Although at the beginning of the school year there had been on roll 57 LD students in grade 8, 30 in grade 10 and 27 in grade 12, some moved and others exited from the program by the time the data were collected in April and May, 1982. Of the initial 116 LD students, 16 were female. Students were not to be considered eligible to participate if they were dually placed in both the learning disabilities program and the behavior adjustment program or if their full scale IQ was less than 85. All participating students were assigned individual code numbers.

The LD teachers agreed to collect signatures giving or denying permission for participation in the study for students they judged eligible by the standards provided. These teachers sent home by the students a letter from the director of pupil personnel explaining the study and soliciting cooperation (see Appendix D). At the bottom of the letter there was a form to be signed and returned, regardless of whether permission was given or denied.

Parents of six 8th grade students and one 10th grade student denied permission for participation in the study. Most eligible seniors were age 18 or over and thus legally signed their own forms.

Five eligible students who repeatedly forgot to bring in their forms were included in the sample after their teacher volunteered to provide the necessary data from the records without any personal identification of the individuals beyond an assigned code number. Only two other students thought to be eligible were not included in the research population, because they were not in attendance during the last weeks of school.

Data were collected from a total of 80 LD students. One was dropped immediately from the study because of a measured IQ of 70, while four others were deleted after initial reliability studies were made because their most recent full scale WISC-R (or its approximate) IQs were below 85.

WISC-R scores were not as available for the total population as had been expected primarily because the Slosson Intelligence Test had been used frequently for re-evaluations. For four seniors, adjusted WISC scores were used. Specific WISC-R IQs were not available for one 8th grade student nor individual scale scores for another, both having been evaluated outside the local school system. For one senior, adjusted WAIS scores were used, and a Binet IQ was substituted for the WISC-R FS IQ for one 8th grader.

The WRAT had been administered, usually by the LD teachers, to 73 of the students during the second semester of the school year. One 8th grade student had been tested the previous fall when he moved into the system. One senior failed to attend academic classes when his LD teachers were administering the test at the end of school so no WRAT scores were available for him.

While the CDI is untimed, 40 minutes is average for most students taking the first four scales. Standard administration of the CDI calls for the use of reusable test booklets with separate, machine scorable answer sheets. Because this procedure may discriminate against many students with specific learning disabilities, modifications were made.

Each student was given an individual copy of the CDI test booklet and of the SQ on which to mark answers. Each was offered a card, approximately 3 by 8 inches, with which to mark their place; however, the cards were seldom used except by the 8th graders. Administration of both the CDI and SQ occurred during school hours and within a familiar school setting.

Initially students were seen by the researcher in groups ranging in size from three to 10. An assistant was available to help with all groups larger than five, although this did not prove to be necessary. The purpose of the study was described to the students, and the importance of their contribution of thoughtful answers emphasized. They were encouraged to ask questions if directions or test items were unclear. All questions and possible answers were read aloud to the small groups by the investigator.

As the data gathering process continued, some students were evaluated individually because of scheduling problems. While the groups had usually required approximately two class periods (allowing for a break between periods) to complete both the CDI and the SQ, individual administration usually was completed in one period. Again

the instruments were read aloud except on a few occasions when individual students asked to read for themselves.

Subjects who were asked for their opinion of the CDI., i.e., "Do the items make sense and seem relevant?", were positive in their comments. Only one student (a 10th grader) seemed to have a significant problem of comprehension and then only on the DM and WW items. Subsequently this section was reviewed with him individually. The individual versus a group situation seemed to be the critical difference for him.

Analysis of Data

Student responses on the CDI and SQ as well as data from the records were transferred to optical scanning sheets. The CE items were initially handscored and the weighted individual items recorded.

Several different scoring procedures provide the raw scores for each CDI scale. Possible answers to CP items are scored one to five. CE items have an initial value of one to four multiplied by weights of one to four based on professional judgments regarding the value and relevance of each source of information (Super, Note 4; Thompson & Lindeman, 1981). WW and DM items have four alternative answers with only one correct answer.

For each of the seven CDI scales, raw score totals were put into individual weighted formulas provided by Super (Note 4) to obtain the standardized scale scores used in other procedures.

Routine instructions call for rounding off scores to the next higher number. It is unclear whether the weighted scale scores actually make a contribution beyond raw scores converted to standard scores. However, the weighted scale scores are those provided by regular machine scoring procedures and as such will probably be most familiar to routine users of the CDI.

The Virginia Tech Learning Resources Center computed the raw scores for the CDI scales and did item scale analyses for CP, DM, WW and DM + WW.* The standardized scores were computed and subsequent analyses were done by the investigator utilizing statistical procedures from the Statistical Package for the Social Sciences (SPSS) (Nie, Hull, Jenkins, Steinbrenner & Bent, 1975).

A correlation matrix of the nine possible independent variables and the five dependent variables was reviewed to define the most productive group of independent variables to include in multiple regression analyses. The multiple regression techniques were used

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*Note: These initial computations were based on data from 75 students, four of whom were subsequently deleted because of IQs between 78 and 83. In later analyses, data from four other students with IQs above 85 were substituted. Also minor changes were made in the data to correct for inadvertent clerical errors.

to determine the contribution and relationship of independent variables chosen from: grade level, WISC-R FS IQ (subsequently deleted because of high intercorrelations with other variables), WISC-R VIQ, WISC-R PIQ, WRAT Reading standard score, WRAT Arithmetic standard score, occupational level of adult male in home (or adult female, if no male), achievement subtype generally as defined by Rourke (subsequently deleted because of high intercorrelations and low N), and presence or absence of the ACD/ACID WISC-R profile (the ACID component was deleted) to each of five CDI scores comprising dependent variables: CP, WW, CDA, CDK and COT.

Mean scores on seven CDI scales for the total population and for the 11 subsets of the populations were calculated. The subpopulations consisted of groups defined by: (1) grade level; (2) sex; (3) low versus high parental occupational level; (4) vocational placement for two years versus less or no experience in vocational programs; (5) low versus high occupational aspiration level; (6) low versus high job expectation level; (7) difference between aspiration and expected job levels; (8) type of LD placement; (9) grade placed in LD; (10) achievement discrepancy; and (11) achievement subtypes.

Summary

A determination of reliability coefficients of three primary CDI scales and one composite scale along with analyses of items on each of the four scales were planned to assist in determining the usefulness of the CDI with the population of LD secondary students.

Multiple regressions of seven out of nine possible independent variables on each of five CDI scales were to be conducted to define the contribution of each to explaining the variances. Descriptive statistics for multiple subpopulations were indicated to round out the picture of career development in a specific LD population.

Chapter 4

RESULTS

The results of the data analysis are presented in three sections. In the first, data regarding the CDI is briefly reported in terms of its reliability and potential usefulness with an LD population. The second section reports the results of multiple regressions of five CDI scores on seven of the nine original independent variables. In the third section, descriptive statistics provide information regarding potentially important variables related to both learning disabilities and career maturity.

The CDI as an Instrument for Use with LD Students

Before trying to interpret the obtained CDI scores, some evaluation of the instrument as administered to an LD population was indicated. An instrument valid for varied samples of a normal population may not be equally valid for atypical students such as those with specific learning disabilities. Multiple weightings on CE made it infeasible in this study to pursue reliability data for this scale and, in turn, on CDK and COT to which it contributes. Evaluation of three of the base scales and one composite scale should, however, present usable information regarding the CDI as an instrument for use with LD students.

The first two research questions were: What are the estimated reliabilities for CDI scales: CP, DM, WW and CDK? Is there evidence that some scale items are not effective? Estimates of scale reliabilities in terms of the internal consistencies of CP, DM, WW and CDK (DM + WW) are reported in Table 4.1 For each of the four scales, item-total correlations from the item analyses are reported along with other available data. Additional data based on a frequency analysis of the CE scale may be found in Appendix E. A sample CDI booklet is available in Appendix B (permission granted by the publishers, Consulting Psychologists Press, Inc.).

Career Planning (CP)

CP had an alpha coefficient of .88 For this scale there were no right or wrong answers, only options scored one to five. A review of the correlation of each of the CP item scores with the total CP raw score showed the lowest correlations, .36 and .32, for items 6 and 8. Questions 9 and 10 had the highest correlations of .70 and .69 respectively. Six items correlated in the .60s, one in the .40s and all others in the .50s.

Decision Making (DM)

Scale DM had a KR 20 of approximately .65 for the research population (see Table 4.1). Answers on this scale were either right or wrong. Item-scale correlation coefficients for correct answers ranged from as low as .10 (item 44) and .18 (item 58) to a high of .65 (item 54). Four items had correlations in the .20s, four in the .30s, six in the .40s and three in the .50s. There were positive

Table 4.1

Descriptive Data on Four CDI Scales

Based on Raw Scores

($\underline{N}$ = 75)

Scale	Range	$\underline{X}$	SD	KR-20	SEM
CP	20-100	66.53	12.789	0.878	4.460
DM	0-20	10.99	3.435	0.646	2.043
WW	0-20	13.07	2.986	0.584	1.926
CDK	0-40	24.05	5.552	0.742	2.821

Note. Abbreviations: CDI = Career Development Inventory; CP = Career Planning; DM = Decision Making; WW = World of Work; CDK = Career Development-Knowledge and Skills

correlations of .05 and .02 for wrong answers to items 44 and 45. The lowest percent of LD students selecting the correct answer was 31% for item 48 while the highest percent selecting the correct answer was 76% for items 41 and 47.

World of Work (WW)

The internal consistency of WW had the lowest reliability coefficient of the scales for which KR 20s were analyzed (see Table 4.1). Its estimated reliability was approximately .58. Item-total correlations for correct answers varied from lows of .07 to .18 (items 73, 66, 76 and 77) to highs of .51 to .60 on four items. All other correlations for correct answers ranged between .22 and .45. There were four positive correlations of .02 to .13 for wrong answers on items 66, 69, 73 and 75. The correct answer was chosen from four possible answers by 32% to 95% of the students.

Career Development-Knowledge (CDK or DM + WW)

When raw scores for DM were added to those of WW and then analyzed, the reliability estimate for the combined CDK scale was approximately .74 (see Table 4.1). Item-scale correlations for correct answers ranged from .00 (item 44), .03 (item 66), and .11 (items 73 and 76) to a high of .61 (item 79). Correlations for seven other items were in the teens (items 45, 58, 60-62, 71 and 77), 10 in the .20s, five in the .30s, 10 in the .40s, and three in the .50s. Items 44, 45, 69, 73 and 75 continued to have positive correlations for wrong answers, in this case with the CDK raw score total. In addition, items 48 and 61 had positive correlations for incorrect answers with CDK total score.

Multiple Regression Analyses

The third research question was: What do: grade level; WISC-R FS IQ, VIQ, and PIQ; WRAT Reading and Arithmetic; occupational level of father; achievement subtype; and presence or absence of ACD/ACID profile contribute to the variance of career maturity as measured by each of five CDI scales: CP, CDA, WW, CDK, and COT?

The achievement subtype variable was found to have a Pearson correlation coefficient of .658 with WISC-R VIQ, .517 for WRAT Reading and .635 for WRAT Arithmetic, plus only 31 students had one of the designated subtypes as originally defined. For these reasons, achievement subtype was not included in the regressions. Full scale IQ, in terms of information, added only a summary of VIQ and PIQ, and since it correlated with each respectively at .653 and .580, it was dropped in favor of the more specific data provided by the other two IQ variables. Because only one student had a low "I" score in addition to the ACD profile, the ACID component was deleted. The remaining seven independent variables were used in each regression. A forward (stepwise) inclusion approach was used to enter the independent variables one by one. Listwise procedures were used to delete students for whom any variable data was missing. Data from four students with IQs above 85 replaced that for the four deleted after the initial reliability analyses. This resulted in a final N of 71 for each of the regressions. A direct examination of plots of the residuals (or errors in prediction) for each regression compared with predicted value revealed no pattern of concern.

Career Planning (CP)

In a descriptive sense, each of the seven independent variables added to the approximate 19% of the explained variance for CP scaled scores in this population (see Table 4.2). A comparison of the standardized partial regression correlation coefficients (the weighted Beta scores) revealed the comparative contribution of each of the seven independent variables with adjustments made for all other independent variables. Note that father's occupation level (FAOCC), the achievement measures (WRAT-R and WRAT-A) and the presence of the distractibility factor (ACD) were negatively related, although to a negligible degree, to career planning as measured by CP when other variables were controlled. In contrast, the simple bivariate correlation coefficients were positive except for FAOCC.

While the present population was not a defined sample of a larger LD population, to the extent it represents other LD students, it can be inferred that the contributions of Grade and VIQ had probabilities of less than .01 for Grade and .05 for VIQ of occurring on a chance basis when the contributions of the other independent variables were held constant. Inferentially, the contributions of the other five variables had probabilities greater than .05 of occurring by chance alone. A review of the six previous steps in the regression showed that the F value for the total equation for all variables actually entered at each step was greatest on Step 2 when only Grade and VIQ were entered ($F = 5.499$; $p < .01$). However, each of the first six equations had F values with probabilities of less than .05 and the seventh

Table 4.2

Summary of Multiple Regression Analysis of Career Planning Scale on Grade, Verbal and Performance IQ's, Father's Occupational Level, WRAT Reading, WRAT Arithmetic and ACD Profile

(N = 71)

		D.F.	F
Multiple R	.438		
R Squared	.192	7	2.13679
Adjusted R Square	.102		
Standard Error	16.370		

Variable	Simple R	Multiple R	R^2	R^2 Change	B	Beta	F
Grade	.252	.252	.063	.064	8.459	.405	9.724**
VIQ	.154	.373	.139	.076	.579	.383	4.242*
PIQ	.202	.401	.160	.021	.214	.141	1.263
FAOCC	-.087	.425	.180	.020	- 1.992	-.146	1.591
WRAT-R	.024	.435	.189	.008	- .128	-.107	.622
WRAT-A	.130	.437	.191	.002	- .119	-.057	.170
ACD	.010	.438	.192	.001	- 1.429	-.040	.098
(Constant)					38.579		

** p .01

* p .05

(whose results are reported in Table 4.2) approached it. The addition of VIQ to the equation along with Grade at Step 2 greatly increased the relative contribution of Grade; the Beta value for Grade jumped from .252 to .370. Each of the other variables with the one exception of ACD gradually increased the Beta value for Grade to a maximum of .417 on Step 6.

Career Development-Attitudes (CDA)

For the summary conative scale CDA which includes the contribution of CE, 26% of the variance was explained for this population (see Table 4.3). With other variables held constant, Grade level made the single largest unique contribution with a Beta of .417 followed by VIQ and PIQ with Betas of .344 and .248, respectively. WRAT-R, ACD and FAOCC had small negative Betas, of -.192, -.117 and -.045, respectively while WRAT-A did not reach the required level of significance (F = .01) to even enter the equation.

In an inferential sense, all six equations had F values with a probability of less than .01 of occurring at a zero level. The highest F value (F = 8.485) occurred on the second step when Grade was entered along with PIQ, and the F value decreased as each additional variable was added. The contributions of PIQ, Grade and VIQ each had a probability of less than .01 with the other variables controlled.

World of Work (WW)

The seven independent variables explained almost 43% of the variance for WW in this group of LD students (see Table 4.4). The

Table 4.3

Summary of Multiple Regression Analysis of Career Development-Attitude Scale on Performance IQ, Grade, Verbal IQ, WRAT Reading, ACD Profile and Father's Occupational Level

(N = 71)

		D.F.	F
Multiple R	.509		
R Squared	.259	6	3.73684**
Adjusted R Square	.190	64	
Standard Error	15.462		

Variable	Simple R	Multiple R	R^2	R^2 Change	B	Beta	F
PIQ	.296	.296	.088	.088	.344	.248	4.381*
Grade	.293	.447	.200	.112	8.667	.417	12.173**
VIQ	.122	.469	.220	.021	.517	.344	4.725*
WRAT-R	-.065	.497	.247	.026	- .229	- .192	2.243
ACD	-.081	.507	.257	.011	-4.129	- .117	.953
FAOCC	.005	.509	.259	.002	- .614	- .045	.169
(Constant)					22.051		

Note: WRAT Arithmetic did not have the minimal F ratio of .01 required to enter the regression equation.

* p .05

** p .01

Table 4.4

Summary of Multiple Regression Analysis of World of Work Scale on WRAT Arithmetic, Grade, WRAT Reading, Father's Occupational Level, Performance IQ, ACD Profile and Verbal IQ

(N = 71)

		D.F.	F
Multiple R	.653		
R Squared	.427	7	6.707*
Adjusted R Squared	.363	63	
Standard Error	9.147		

Variable	Simple R	Multiple R	R^2	R^2 Change	B	Beta	F
WRAT-A	.468	.468	.219	.219	.501	.360	9.590**
Grade	.332	.567	.322	.103	5.150	.372	11.543**
WRAT-R	.389	.637	.406	.084	.204	.257	5.094**
FAOCC	.169	.645	.416	.011	.878	.097	.989
PIQ	.008	.649	.421	.005	- .094	- .094	.792
ACD	.051	.652	.425	.004	1.279	.054	.252
VIQ	.234	.653	.427	.002	.071	.071	.206
(Constant)					28.024		

** p .01

individual contributions of FAOCC, PIQ, ACD and VIQ, however, were negligible. Grade had the highest Beta of .372 followed by WRAT-A with a Beta of .360 and WRAT-R with a Beta of .257.

Inferentially, only the first three variables entered in the equation (WRAT-A, Grade and WRAT-R) had a probability of less than .01 or of .05 of occurring with other variables held constant. The F for the total equation was highest at step one when only WRAT-A was entered (F = 19.346) and came down with the addition of each additional variable. The standard error for each equation did continue to become smaller through Step 3 with WRAT-A, Grade and WRAT-R entered (Standard error = 9.034) and then increased as each of the last four variables were entered.

Career Development-Knowledge and Skills (CDK)

Descriptively, the seven variables each contributed to the approximate 55% of the explained variance for CDK, the cognitive summary scale (see Table 4.5). Grade contributed most heavily with a Beta of .548 followed by WRAT-A and VIQ with Betas of .372 and .193, respectively. The other variables contributed little.

In an inferential sense the contributions of all variables except WRAT-A and Grade had a probability greater than .05 or .01 of occurring at a zero level with the other variables controlled. The seven prediction equations each had F values significant at the .01 level, but the F value was highest on Step 2 (F = 27.390) and decreased with the addition of each variable in subsequent steps.

Table 4.5

Summary of Multiple Regression Analysis of Career Development-Knowledge and Skills on WRAT Arithmetic, Grade, Verbal IQ, WRAT Reading, ACD Profile, Performance IQ and Father's Occupational Level

(N = 71)

		D.F.	F
Multiple R	.740		10.889**
R Squared	.547	7	
Adjusted R Squared	.497	63	
Standard Error	9.364		

Variable	Simple R	Multiple R	R^2	R^2 Change	B	Beta	F
WRAT-A	.503	.503	.253	.253	.597	.372	12.953**
Grade	.452	.668	.446	.193	8.747	.548	31.775**
VIQ	.253	.710	.504	.058	.223	.193	1.926
WRAT-R	.320	.720	.519	.015	.112	.122	1.453
ACD	.110	.730	.533	.014	3.683	.135	1.991
PIQ	.032	.736	.541	.009	- .117	- .101	1.157
FAOCC	.166	.740	.547	.006	.831	.079	0.846
(Constant)							

** p .01

Career Orientation Total (COT)

In a descriptive sense each of the variables except ACD contributed to the 44.5% of the explained variance for the total summary scale, COT (see Table 4.6). Grade and VIQ contributed the most individually to the explained variance with Betas of .591 and .341, respectively followed by WRAT-A with a Beta of .208, and PIQ with a Beta of .112. WRAT-R added very little, and FAOCC even less. ACD did not reach the level needed to enter the final equation.

Inferentially to the extent the present population is representative of other LD populations, the contribution of Grade had a highly significant F value (F = 30.723; p .01) followed by VIQ (F = 5.634; p .05). The probability for the other F values was greater than .05 with one and 64 degrees of freedom. For total equations, the F ratio was again highest (F = 22.329) at the second step with only Grade and VIQ entered and decreased at each step thereafter.

Descriptive Data

The fourth research question was: What are the CDI-Part I profiles for the total population and for 11 subsets of the population defined by: (1) grade, (2) sex, (3) family occupational level, (4) years in vocational training, (5) occupational aspiration level, (6) occupational expectation level, (7) difference between occupational aspiration and expectation levels, (8) grade placed in LD program, (9) type of LD placement, (10) achievement subtype, and (11) discrepancy group? The data in Section 3 provide further descriptors of this LD population. They suggest the influence of individual variables on CDI performance

Table 4.6

Summary of Multiple Regression Analysis of Career Orientation Total Scale on WRAT Arithmetic, Grade, Verbal IQ, WRAT Reading, Performance IQ, and Father's Occupational Level

(N = 71)

Multiple R		D.F.	F
R Squared		6	8.565**
Adjusted R Squared		64	
Standard Error			

Variable	Simple R	Multiple R	R^2	R^2 Change	B	Beta	F
Grade	.452	.452	.204	.204	11.031	.591	30.723**
VIQ	.225	.630	.396	.192	.461	.341	5.634*
WRAT-A	.402	.656	.430	.033	.391	.208	3.497
PIQ	.219	.665	.442	.013	.152	.112	1.182
WRAT-R	.135	.667	.445	.003	.066	-.062	.313
FAOCC	.097	.667	.445	.000	.170	.014	.022
(Constant)					-7.576		

Note: ACD did not have the minimal F ratio of .01 required to enter the regression equation.

* p .05

** p .01

without controlling for the effect(s) of any other variable(s) or their interactions. In some incidences, figures are rounded off to the closest number.

The final research population consisted of the 75 students who had Full Scale IQs of 85 or higher and who were not seriously emotionally or behaviorally disabled. With the exception of two black males, all students were Caucasian. For a few students (described in Chapter 3, Data Collection) some of the data were not available. Eighteen LD teachers were involved in nine schools, four senior highs and five junior highs. (There were no eligible students in the other junior high school in the system.) Ages of students ranged from 13 to 19 with a mean slightly over 14.

Grade

Of the 75 students, 52% were in the 8th grade, 24% in the 10th and 24% in the 12th grade. When CDI results were reviewed by grade level (see Table 4.7), they increased with the combination of age and experience represented by grade. There were three exceptions. CP means did not increase between grades 8 and 10, whereas the greatest change in the other basic means occurred between these two grades. WW actually decreased slightly between grades 10 and 12, and because of this, the composite CDK scale did not show an increase between these two levels.

Sex

The eight females made up 11% of the total LD population. They were unevenly distributed across grades: two in grade 8, five in grade 10 and one in grade 12, forming approximately 5%, 28% and 6% of their respective grade level groups. As shown on Table 4.7, females had

Table 4.7

CDI Mean Scores for Total LD Population and by Grade, Sex, Family Occupational Level and Years in Vocational Training

Group	N	CP	CE	CDA	DM	WW	CDK	COT
Total	75	103.81	100.38	102.57	100.48	99.99	100.47	101.44
Grade:								
8	39	100.70	95.82	98.09	93.26	95.66	94.18	94.59
10	18	100.67	103.71	102.67	107.74	105.35	107.32	106.00
12	18	113.70	106.91	112.15	108.86	104.03	107.22	111.72
Sex:								
Male	67	104.04	100.70	102.89	99.79	98.85	99.47	100.98
Female	8	101.92	97.39	99.72	106.19	109.61	108.80	105.16
Family Occ'l Level:								
Low	4	111.81	106.17	110.62	107.46	104.69	106.81	110.52
High	20	102.12	101.74	102.37	106.95	97.61	102.69	102.78
Years in Vocat'l Trng.:								
One Yr. or less	60	103.58	101.31	102.97	101.39	100.82	101.41	102.30
Two Yrs. or more	15	104.76	96.51	100.86	96.84	96.69	96.69	97.92

Note: CDI = Career Development Inventory; CP = Career Planning; CE = Career Exploration; CDA = Career Development-Attitude; DM = Decision Making; WW = World of Work; CDK = Career Development-Knowledge and Skills; COT = Career Orientation Total.

lower mean scores than males on the three conative scales, males had lower means than females on the three cognitive scales.

Parental Occupation Levels

The mean occupational level for fathers was 3.53 and for mothers 3.22 with similar medians. Only one father was specified as unemployed, but three others were disabled or retired. Four students had no adult male in the home. Three students had no adult female present, and for one of those the father was disabled. Only 18 mothers (24%) were full time homemakers.

A comparison of CDI mean scores was made based on extremes of high or low parental occupational level, defined after a review of the data. Specifically, if either father's or mother's occupational level was 5 or 6 (professional and managerial), the family's occupational level was deemed high. If father's level was 1 (unskilled) or if there was no employed adult in the home, the family's occupational level was considered low. In the two cases where mothers were in occupational Level 1, the fathers were in Levels 4 and 5. In these cases the mother's occupational level was thought unlikely to lower the family socioeconomic level, whereas a high maternal occupational level might well increase the level for the family.

The CDI scores for these two groups reported in Table 4.7 were the reverse of what might be expected. The four students classified as having a low family occupational level had mean scores which were .51 to 9.69 points higher than the 20 students whose parents had a high occupational level.

Vocational Training

Of all the LD students, 47% had some vocational training. Twenty students (27% of the total group) either were in the pre-vocational program or had attended at some time; 15 had attended for more than one year. Eight (44%) of the seniors (the only ones eligible) had attended the vocational-technical high school, seven (39%) for more than one year. Of the 36 eligible 10th and 12th graders, seven (19%) had participated in the marketing or office services program at the home high schools. Three seniors (17%) had been involved for more than one year.

A comparison of the students who had spent two or more years in vocational programs, with those who had one or less years in such programs is included in Table 4.7. While those with more vocational training scored slightly higher on CP, they were definitely lower on all other scales.

Occupational Aspiration Level

The mean expressed occupational ambition level was 3.77 with 26 students (35%) at the mode of Level 3 (skilled) and 18 (24%) at Level 4 (semi-professional and small business). Only nine (12%) aspired to semi-skilled Level 2 and none to unskilled Level 1. Levels 5 and 6 which generally require advanced education were aspired to by 22 students (29%).

When divided into low and high aspiration groups by grouping those aspiring to Levels 2 and 3, and those aspiring to Levels 5 and 6, mean scores differed, especially on the cognitive scales (see Table 4.8). Low aspiration students scored lower on all but one

Table 4.8

CDI Mean Scores by Occupational Aspiration Levels, Occupational Expectation Level, and the Difference Between Them

Group	N	CP	CE	CDA	DM	WW	CDK	COT
Aspiration Level:								
LE 3	35	103.14	100.30	102.12	93.95	98.67	96.20	98.37
GE 5	22	104.37	100.16	102.76	104.47	100.40	102.85	103.12
Expectation Level:								
LE 3	35	104.11	100.98	103.09	97.99	100.47	99.37	101.04
GE 5	20	102.40	98.71	100.76	97.09	97.41	97.22	98.21
Difference:								
Negative	9	92.48	97.06	94.01	85.26	91.35	87.49	87.71
Zero	48	106.10	101.66	104.65	101.03	101.08	101.36	103.29
Positive	15	100.12	96.96	98.41	104.59	100.89	103.19	100.69

Note: CDI = Career Development Inventory; CP = Career Planning; CE = Career Exploration; DM = Decision Making; WW = World of Work; CDK = Career Development-Knowledge and Skills; COT = Career Orientation Total; LE = Less than or equal to; GE = Greater than or equal to.

scale (CE), however, the differences on all the attitude scales were small.

Occupational Expectation Level

Actual expectations regarding job level for entering employment after leaving school appear similar to aspiration levels with a mean of 3.65. Twenty-four students (32%) were at the mode of Level 3. Eleven students (15%) expected to start work at Levels 1 and 2, 17 (23%) at Level 4, 20 (27%) at Levels 5 and 6. Two individuals (3%) did not know what to expect; one girl expected to be a homemaker although no one aspired to this career.

Those students who reported that they expected to enter highly skilled occupations (Levels 5 and 6) had mean CDI scores on all scales that were slightly lower than those who expected to enter occupations at Levels 1, 2, or 3, or who did not know what to expect (see Table 4.8).

Difference Between Occupational Aspirations and Expectations

When mean differences between student occupational ambition level and expectancy level were reviewed, there was no difference for 48 (60%) students and a positive difference of one to three levels for 15 (20%) students. Nine students (12%), all 8th graders, said they expected to enter an occupational level one to three levels higher than their aspirations.

As indicated in Table 4.8, the nine students who expected to enter an occupation above their aspiration level (Negative group) had the lowest mean scores with only one minimal exception. On the CE scale, those 15 students who aspired higher than their expectation level

(Positive group) scored lowest. On the other six scales they scored higher than the Negative group but lower than the 48 students for whom there was no difference (Zero group). Those students whose aspirations and expectations were the same, consistently had the highest level of career maturity as measured by CDI mean scores.

Type Placement

Resource LD programs served 89% of the students while self contained classes served 4%. Trial exits were in process for 7% of the LD population. CDI results were consistent, although the number in the first and last groups was small. As shown on Table 4.9, mean scores rose as degree of disability, represented by type of placement, decreased.

Grade Placed

Grade level for initial LD placement varied with 29% placed in grades one to three, 28% placed in grades four or five, 38% in grades six and seven, and 15% in the eighth grade or later. As Table 4.9 indicates, CDI results divided according to time of initial LD placement, were less consistent than for the previous subgroups. The students whose placement was in the 8th grade or later consistently had the highest CDI mean scores followed by those placed in grades 4 or 5. Those first placed while in the 6th or 7th grade tended to have the lowest mean scores, but their scores were generally close to those of students placed for LD help in the primary grades. Less difference between the subgroups existed on the attitude scales than on the cognitive scales. The greatest range of difference across groups occurred on the DM and COT scales.

Table 4.9

CDI Mean Scores for LD Subpopulations According to Grade Placed,

Type Placement, Discrepancy Group and Achievement Subtype

Group	N	CP	CE	CDA	DM	WW	CDK	COT
Type Placement:								
Self Contained	3	102.49	82.76	91.51	76.27	94.85	84.50	84.23
Resource	67	102.80	100.50	102.04	101.00	99.73	100.61	101.21
Trial Exit	5	118.22	109.28	116.17	107.96	106.66	108.16	114.79
Grade Placed:								
Grade 1-3	22	103.06	100.19	102.02	97.57	97.53	97.55	99.19
Grade 4-5	21	104.05	98.46	101.58	105.65	101.41	104.05	103.19
Grade 6-7	21	101.32	100.61	101.24	94.81	97.66	96.12	97.78
Grade 8 and up	11	109.64	103.96	108.05	107.23	106.66	107.76	109.57
Discrepancy Group:								
Reading	7	100.02	110.51	106.26	97.70	88.67	92.80	98.69
Spelling	42	107.10	102.27	105.58	102.52	101.79	102.55	104.65
Arithmetic	25	98.14	93.47	95.21	97.65	99.57	98.70	95.79
Achievement Subtype:								
Subtype 1	25	101.69	101.44	101.94	92.39	95.64	93.70	96.62
Subtype 2	6	103.85	104.94	105.25	109.98	102.07	106.76	107.21
Subtype 3	2	98.85	88.43	92.69	99.87	118.46	110.18	101.78
Subtype 8	13	103.89	99.35	102.01	101.43	101.81	101.97	102.08
Others	28	104.94	98.97	102.40	105.11	100.75	103.40	103.26

Note: CDI = Career Development Inventory; CP = Career Planning; CE = Career Exploration; CDA = Career Development Attitudes; DM = Decision Making; WW = World of Work; CDK = Career Development-Knowledge and Skills; COT = Career Orientation Total.

IQ and Achievement

Frequency data regarding the varied IQ measures and WRAT scores are reported in Table 4.10. Mean IQs were: FS IQ 101, VIQ 100, and PIQ 102. All WRAT scores were below the test mean of 100. The lowest mean score was for Spelling (82) followed by Arithmetic (86). The Reading mean of 91 for the total group was highest, which was surprising in view of the longtime focus on reading disability as the most prevalent and highly addressed LD condition.

Discrepancy Groups

Nine percent of the students had their greatest achievement discrepancy in reading, while 57% were lowest on spelling. Arithmetic was the most discrepant achievement area for 34% of the research population.

When CDI mean scores were compared by discrepancy group (see Table 4.9), the 47 students who were in the Spelling discrepancy group had the highest mean scores on five of the seven scales. The means scores of the 25 whose achievement was weakest on WRAT Arithmetic were lowest on all attitudinal measures of career maturity and for the total COT. The seven subjects with the highest deficit on WRAT Reading had the lowest means on the cognitive WW and CDK scales, were about the same as the Arithmetic discrepancy group on DM, but had the highest CE and CDA means.

ACD Profile

Looking at other factors related to learning disabilities, 31 or 43% had an ACD profile out of the 72 for whom data was available. Only

Table 4.10

Range, Means and Standard Deviations for IQs and WRAT Scores

Variable	Range	Mean	SD
IQ			
FS IQ	85-135	101	10.48
VIQ	80-134	100	11.79
PIQ	77-128	102	11.50
WRAT			
Reading	65-133	91	14.32
Spelling	64-121	82	11.15
Arithmetic	68-106	86	8.27

one student also had the low "I" necessary for an ACID profile. Thus the majority of students were not found low on the Freedom from Distractibility factor. CDI mean scores were not computed for this group.

Achievement Subtypes

The three LD subtypes based on neurological functioning reflected in WRAT profiles (Rourke & Finlayson, 1978) also accounted for less than half of this LD population (see Table 4.9). Meeting the criteria for Subtype 1 with standard scores of 89 or below in all three achievement areas were 34% of the students. Subtype 2 accounted for 8% of the population with Reading and Spelling scores of 86 or below. Only 3% were in Subtype 3 with Reading and Spelling scores of at least 108 and exceeding Arithmetic scores by at least 12 points. Eighteen percent of the students were found to have both Arithmetic and Spelling scores at least 10 points below the Reading score (labeled Subtype 8), while 38% did not meet the criteria for inclusion in any group.

Subtype 1 had the lowest mean scores on the cognitive scales (DM, WW, CDK) and on the COT summary scale (see Table 4.9). With an N of only 2, Subtype 3's performance is suspect for inferential purposes, but descriptively, its mean scores were definitely lowest on the conative scales (CP, CE and CDA) but highest for WW and CDK. Those students with no designated subtype had the highest mean for CP while Subtype 2 had the highest means for CE, CDA, DM and COT.

Summary of Results

Internal consistency reliabilities of .88, .65, .58, and .74, respectively, were found for CP, DM, WW, and CDK scales of the CDI.

Grade level was the best predictor of scores on five CDI scales: CP, WW, CDA, CDK, and COT. Beyond Grade, the variance was best explained for attitudinal scales (CP and CDA) by Verbal and Performance IQs, for cognitive scales (WW and CDK) by WRAT Arithmetic and Reading scores, and for the total measure of career maturity (COT) by Verbal IQ. The other two independent variables in the multiple regressions, ACD profile and father's occupational level, generally made minimal and insignificant contributions to the variance of the five CDI scales.

Descriptively, LD students in the following subgroups were most likely to consistently lag behind in general development of career maturity as compared with other relevant subgroups:

- Eighth grade
- Self contained placement
- Parents in high occupational levels
- Arithmetic discrepancy
- Negative difference between occupational aspiration and expectation
- Two or more years of vocational training.

Subgroups characterized by differences in attitudinal and cognitive scores with low functioning: (a) on cognitive scales were male, achievement subtype 1, Reading discrepancy, low aspiration level, and those first placed in an LD program in grades six and seven, or one through three, and (b) on attitudinal scales were female and achievement subtype 3.

The highest total levels of career maturity (COT) were obtained by those in the following subgroups:

- Senior
- Female
- Trial exit placement
- Fathers with low occupational level
- High aspiration level
- No difference between aspiration and expectation levels
- Spelling discrepancy subgroup
- Achievement subtype 2
- LD placement in the eighth grade or later.

Chapter 5

CONCLUSIONS, DISCUSSION AND IMPLICATIONS

The major thrust of this research was to describe career maturity in a specific LD population. The results reported in Chapter 4 spoke directly to this goal. Inferentially, the results should be applied to other groups, even to other apparently similar groups, with utmost caution. Subgroups within the 11 subsets of the population were often quite small. Descriptively, results often take on more meaning when used in relation to the performance of others so comparisons are made, usually to performance by the CDI national norm reference group. Major conclusions are listed, followed by discussion and other conclusions.

Major Findings and Conclusions

1. Of the three individual CDI scales analyzed, only CP had adequate internal consistency reliability for group interpretation and, possibly, for individual interpretation. DM and, especially, WW were not sufficiently reliable although scores might be useful if interpreted only in terms of bottom and top quartiles. The internal consistency reliability of WW was most different from that of the norm population. Of the cognitive scales, only CDK had sufficient reliability for group interpretation.

2. The six items listed below are not effective within the designated scales with this population because of correlation coefficients for right answers of less than .20 with scale totals plus positive correlations for wrong answers: 44 (DM and CDK), 66 (WW), 73 (WW and CDK), 45, 61, and 76 (CDK). Further, some items either had coefficients for right answers of less than .20 or positive correlations for wrong answers: 45 (DM); 58 (DM and CDK); 76 (WW); 69, 75, and 77 (WW and CDK); 48, 60, 62, 66, and 71 (CDK). Such items are highly questionable in terms of effectiveness. Using less stringent requirements, many of the other cognitive items are questionable.

3. Many factors combined to produce the results found in this study, but the overarching conclusion is that LD students as a group are more like than unlike their non-handicapped peers in career maturity. Only some individuals in specified subgroups may have a greater probability of slower development of vocational maturity.

4. Insofar as can be inferred from a cross sectional analysis, results supported the developmental premise that career maturity in LD students increases with grade level.

5. All seven independent variables (Grade, VIQ, PIQ, WRAT-R, WRAT-A, ACD and FAOCC) made some contribution to explained variance on five CDI scales (CP, CDA, WW, CDK and COT) but varied in terms of which independent variables best explained different CDI scales. This finding supports the premise that the scales measure different attributes of career maturity.

6. Beyond the expected importance of Grade for the five CDI scales, the two intelligence measures were particularly significant in this population for explaining the variance of the attitudinal scales. For the cognitive scales the achievement variables were more explanatory.

7. In spite of the emphasis in LD literature on reading disabilities, the results suggest that at the secondary level WRAT Arithmetic and Spelling deficiencies are primary and important determinants of outcomes.

Discussion

CDI Reliability

Cognitive measures generally tend to be more internally consistent than attitudinal measures (Anastasi, 1976). According to Super (Note 4), the reverse has been found true with the CDI. The Users Manual (Thompson & Lindeman, 1981) would indicate this to be true primarily in relation to the DM and PO scales. The reasons for this occurrence are unknown.

The reliabilities computed on CDI scales for the LD population strongly follow the pattern of lower cognitive reliabilities. Super (Note 4) commented that results for less sophisticated individuals tend to be more reliable except for those students with "spotty" knowledge This results in low internal consistency. He considered test-retest measures of reliability critical in this regard, but such reports have yet to be made available. LD students often meet the criteria of "spotty" knowledge and tend to function inconsistently.

The absolute minimum level of reliability required for test acceptance is difficult to determine. Thorndike and Hagan (1977) indicate that a test must be reliable enough to measure something or

it cannot be valid to measure what we want measured. Nunnally (1978) indicated that a reliability of .70 during early stages of test research would be encouraging, while Thompson and Lindeman (1981) considered a reliability of .70 minimal for use in group or program assessment.

The reliability level of CP is consistently the highest of the CDI scales across populations. Alpha coefficients for the norm group ranged from .85 to .89 (Thompson & Lindeman, 1981) and .92 to .93 for further populations (Dean, 1981; Hesser, 1981). The current .88 coefficient indicated that individual interpretation of LD scores on this attitudinal scale has a reasonable reliability basis. The reliability of the second conative scale, CE, for the current population is unknown. Reliabilities of .76 to .81 were reported by Thompson and Lindeman and of .78 by Hesser and by Dean (who used Form III).

The reliabilities of .65 and .58 for the individual cognitive scales, DM and WW respectively, did not meet the .70 criteria defined earlier. For DM, the .65 was within the reliability range of .58 to .71 reported by Thompson and Lindeman (1981) and close to the .67 found by Hesser. Dean (1981) reported a .51 coefficient on Form III. While DM provided an approximation of maturity in this area, its reliability was inadequate. For WW, the .58 reliability coefficient was much lower for the LD students than the .77 to .87 range reported for the norm group and the .88 noted by Hesser. It was in the lower range reported by Dean: .51 for the World of Work Information scale from which 10 of the WW items were taken and .38 for the Career Development Information scale from which the other 10 WW items were derived.

WW scores provided an inadequate measure. Little confidence can be placed in specific scores for some populations. The CDK scale had a current reliability coefficient of .74 which was below the .82 to .87 range for the norm group. Regardless, it was the most dependable indicator of cognitive career maturity level, and primary reliance for cognitive data is best placed on the single composite scale.

In evaluating internal consistency, item-scale correlations in the .50s are desirable (Asche, Note 19). While CP had only three items failing to meet this criteria, DM and WW each had 16 out of 20 items with correlations of less than .50. Even using very low correlations of .20 or less, 30% of the cognitive items were suspect. These 12 items would appear to add little to the value of the test in terms of predicting results. Their interaction value in combination with other items was not defined, but in terms of improving reliability for DM, WW, and CDK attention should be directed, at a minimum, toward these items.

In interpreting the reliability data, Frary (Note 20) advised that beyond the item-scale correlations for correct answers, two other factors should be considered. First, positive correlations for wrong answers suggest that the better test takers made incorrect choices on those items. Secondly, if fewer than 25% of the test takers select the correct answer to an item, there is cause for concern regarding the inclusion of the item on the test.

In terms of percentages of students selecting correct answers to individual DM and WW items, not less than 31% of the LD students made the correct choices. Based on this measure of item appropriateness,

the cognitive scale items as administered were within acceptable limits. The positive correlations for specific wrong answers on a total of six items for DM and WW plus eight for CDK were consistently low. They were only for a small percent of the total number of possible answers, yet they raised a question regarding the involved items.

In summary, results support the conclusion that the CP and CDK scales have adequate internal consistency reliability for use with this LD group. Caution is indicated most specifically in relation to individual interpretations of the WW and DM scales.

Contributions to Variance

Since the CDI is based on Super's developmental theory, grade level as a primary determinant or correlate of career maturity might have been expected, even though LD students were not necessarily promoted using the same criteria for competency that may be required for promoting non-handicapped students. The results, nevertheless, supported the conclusion that career maturity as measured by the CDI generally increases with grade level for LD students as well as for non-handicapped high school students.

Intelligence had previously been found to be an important correlate of career maturity (Gribbons and Lohnes, 1968; Jordaan & Heyde, 1979; Lawrence & Brown, 1976; Super & Overstreet, 1960), but it had not specifically been related to attitudinal aspects except by inference in the Lawrence and Brown study which used the CMI-A. In Jordaan and Heyde's summary of varied research findings, they apparently found a greater relationship between the effect of verbal ability and achievement

than did the current study. Performance IQ as a variable reflecting perceptual motor abilities and contributing to career maturity had not been addressed. Bingham (1974, 1978, 1980) did not address IQ beyond defining its parameters for her LD populations. Thompson and Lindeman (1981) reported "very low" correlations of scholastic aptitude measures for CP and CE but high correlations for both aptitude and achievement for DM and WW. The current regression analyses indicated the importance for LD students of VIQ for CP, CDA, and COT. Performance IQ, while less important over all, contributed significantly to the variance of CDA suggesting a significant influence on CE. The tentative conclusion regarding PIQ is that while it contributes minimally to explaining career planning maturity, it probably contributes significantly to explaining the degree of career exploration that is self-perceived, and it contributes meaningfully to overall career attitudinal maturity.

Grades and grades in relation to intelligence as reported by Super and Overstreet (1960) were significantly correlated with total vocational maturity for the ninth grade boys in the Career Pattern Study. Grade point average was found highly related to the career maturity indices for the same boys at the 12th grade level (Jordaan & Heyde, 1979). The fact that students in the honors program consistently had the highest CDI scores in the norm group (Thompson & Lindeman, 1981) was doubtlessly related to the current findings regarding the importance of both intelligence and achievement in career maturity.

Grade point average for LD students may not be equivalent in meaning to those of regular students since the materials studied and grades

received may be based on individual determinants rather than defined in terms of a total group in a given grade level. The WRAT scores which were substituted for grade point average as a measure of achievement made significant contributions in explaining the variance for the CDI cognitive scores, especially WRAT-A.

Father's occupational level made limited and statistically non-significant contributions to explaining the variance on any of the scales. This data supported Jordaan and Heyde's conclusion, based on a review of multiple research findings, that SES which in large part has been determined by parental occupational level was an insignificant determinant among younger adolescents and accounted for little of the variance during any of the high school years.

No prior research existed on the effect of the ACD/ACID profile or the Freedom from Distractibility factor on career maturity. The fact that it has consistently been found in varied LD populations (Kaufman, 1981; Sattler, 1982), and the fact that existent research with LD populations (Bingham, 1974, 1978, 1980; Kendall, 1980, 1981) indicated a lag in career maturity raised a question regarding a connection between the two. A slight relationship was found on CDK and CDA but statistically not above a chance level. The conclusion is that ACD has minimal or no relationship with career maturity.

The differences in the relative importance of the variables (other than grade) in predicting or explaining outcomes on the CDI scales supported the CDI authors' belief that the scales measure different aspects of career maturity (Super, 1974; Super & Thompson, 1979;

Thompson & Lindeman, 1981). The biggest overlap in measurement within the research population would seem to be between the attitudinal CP scale and the cognitive DM scale. The implication of the 5.7% contribution of VIQ to the variance of CDK suggested the probable importance of VIQ in explaining DM results, plus the 13.9% contribution of VIQ in explaining CP results would tend to support this as a tentative conclusion.

The seven independent variables were roughly twice as successful in accounting for cognitive career maturity (43% and 55% for WW and CDK respectively) as in accounting for attitudinal career maturity (19% and 26% for CP and CDA respectively). This is perhaps not surprising considering the cognitive implications of the achievement and ability measures which comprised the majority of the variables.

CDI Performance and Frequencies of Subgroups

Data regarding the frequencies and the performance of 11 subsets of the population on seven CDI scales are discussed below.

Grade level, sex and school program were variables considered sufficiently important in the CDI norm group to justify separate norms (Thompson & Lindeman, 1981). Looking at CDI performances for these subgroups within the LD population, some likenesses and some differences with the national norm group were apparent.

Mean scores increased for LD students as grade level rose with three minor exceptions: on CP between 8th and 10th grades and on WW and CDK between grades 10 and 12. The latter exceptions differed in degree from the drop on all cognitive scales in the 12th grade

norms (Thompson & Lindeman, 1981). Scores for the 8th grade LD students were actually higher than 9th grade norms on CP, CDA, and COT. Mean scores of the LD students in grades 10 and 12 were higher than those of the national norm group by 2.68 to 5.8 points for the 10th graders and 2.51 to 7.10 points for the 12th. Both as a total group and by grade level, these LD subjects were somewhat better prepared to make necessary career decisions than their normal peers in 10 schools across the nation. Overall, scores for the LD seniors were comparable to those of the Virginia male seniors in Hesser's (1981) sample. This was in marked contrast to the significantly lower functioning found on the CMI-A in two other studies (Bingham, 1974 and 1980) and an improvement over the average but lower scores found on the CMI-C in the second study.

When the variable of sex was taken into consideration, LD mean scores in comparison to national norms assumed even more significance because of the predominance of LD males. LD girls constituted only 11% of the research population. In the norm group, females at all grade levels actually scored higher on six of the seven scales, and even on the exception (CP), 12th grade girls made higher scores (Thompson & Lindeman, 1981). This obviously altered the mean upward for the total norm group. In the research population, LD girls scored higher than LD boys only on the three cognitive scales (where the norm females scored highest) and on COT. Sex was not considered as a contributing factor to the differences Bingham (1980) found between LD performance on the CMI-A and the CMI-C. Yet 19% of her CMI-C group was female which might be expected to alter scores upward on cognitive subscales.

Typically LD students were not in academic/college preparatory classes, but in general programs either with or without the addition of vocational training. Those with two or more years of vocational training had higher scores than those with one year or less only for Career Planning and then only by slightly more than one point. This was in contrast to the significantly higher attitudinal scores (14.6 to 17.4 points) obtained by vocational/technical students in the norm group. In Kendall's 1980 study, the vocational LD subjects scores significantly lower on the CMI-A than LD subjects in regular or resource placements, while in his 1981 study the vocational students had the highest scores and with less age difference. (Grade levels were not reported.) Without controlling for other variables the significance of higher or lower scores is not clear.

The finding that students whose parents were unemployed or at the lowest occupational level had consistently higher mean scores than those obtained by students whose father or mother were in a high occupational level was unexpected. While parental occupation was found relatively insignificant by Jordaan and Heyde (1979), they, nor theory, nor Bingham's research (1974) would have predicted a difference in this direction. Differences, however, were less than one-half a standard deviation and the group was very small (N = 4). Descriptively, the 5% of LD students in families lowest on this SES component appeared lower than in Bingham's study where 43% were classified as low, 33% as middle, and 23% as high SES. Even if Level 2 fathers were included in the low group for the current study, only 23% would be categorized as low, while 27% were in Levels 5 and 6, leaving 50% in the middle bracket.

None of the literature reviewed mentioned students aspiring lower than their expectation level. Groups in which there was a difference did, however, demonstrate lower levels of career maturity than did youth for whom there was no difference (Jordaan & Heyde, 1979; Super & Overstreet, 1969) -- as did the current subjects generally. Yet, the LD group with aspirations above expectations still produced average CDI results overall, although within a less consistent CDI profile. The current conclusion might be that LD students who aspire to the same or a higher occupational level than they actually expect to enter are more mature than those whose expectations exceed their aspirations. In fact, since all students in this group were also in the eighth grade, results may primarily relate to the lower grade level.

Kendall's resource students consistently scored lower than LD students in regular classes (1980, 1981). Although in the current study, all self-contained students were in the eighth grade and very small numbers were in self-contained LD placements or on trial exit, the data and logic suggested that career maturity increased as degree of disability decreased. If applicable to other populations, this might explain why Bingham's private school population (1980 study) scored lower on the CMI-A, although not their essentially average Competency scores, nor the low CMI-A scores of the 1974 group.

There were some unexpected findings regarding the composition of the research population. Only one student had a low Information score in relation to the ACD profile, in contrast to implications of frequent occurrence in LD populations (Sattler, 1982). More importantly insofar as can be determined by the WRAT scores, the majority had a primary

disability or discrepancy in spelling, not in reading as LD literature as a whole would imply. While spelling ability has not assumed the major importance that reading skills have, it may have special implications at the secondary level. Moran (Note 21) reported spelling to be the only aspect of written language significantly lower for LD adolescents than for low achieving or achieving peers. Sweeney and Rourke (cited in Rourke & Gates, 1982) concluded that phonetical versus non-phonetical misspelling at the same level in eighth grade students was predictive in terms of psycholinguistic deficiencies for older students.

The current LD population may also differ from the usual in the extent to which math disability was represented. One third of the students were in the Arithmetic discrepancy group. Pieper and Deshler (Note 9) found students disabled in math to be identified primarily in larger sized programs rather than evenly distributed. Further, they found them to be more cognitively disabled (Note 8). Yet, in spite of the skewed CDI functioning and lower COT scores of students with major arithmetic deficits, means for the total research population remained high.

The mean IQs of the subjects were higher than those reported by Schumaker, Warner, Deshler, Alley, and Clark (Note 18) or Pieper and Deshler (Note 8) as typical of LD secondary students in Kansas and for LD students generally (Smith, Coleman, Dokecki & Davis, 1977). Although Bingham (1974, 1980) restricted the IQ range of her populations, no data was available regarding means.

Implications and Recommendations

The data generated by this study have both supported and failed to support some of the prior work on career maturity in adolescents and on secondary LD students. Findings could have some generalizability to theory as well as applicability to future research. Some of the differences between population subgroups were minimal, and some subgroups were quite small. Further, there was no control for other variables in the subgroup analyses. If any inference is made to other populations, these facts must be taken into account.

Implications and Recommendations for Practitioners

The study of CDI reliability raised questions for its use with an LD population. Results with the DM and WW scales suggest they lack adequate reliabilities for separate and specific interpretation except very broadly and for research purposes. Deleting or improving some of the DM and WW items might increase reliability for CDK so that an individually interpretable cognitive scale might be available. No new data was available regarding CE reliability, but other data suggests that the composite scales, CDA and COT, are probably adequate for LD group interpretation. No proof, however, was provided beyond the known reliabilities of CP and of CDK for this population and the knowledge that CP enters the formula for CDA, that CP and CDK (DM+WW) provide the majority of raw score data for the COT formula, and that an increased number of relevant items tends to increase reliability, other things being equal (Anastasi, 1976).

The weighted score formulas are complicated and may take away from the clarity of results. Use of raw scale scores or raw scores converted to simple z scores might give as much information. There is some evidence to this effect (Frary, Note 20). Use of raw scores would make it possible for local evaluators to use the inventory when feedback time or additional costs are a problem.

Further research on the CDI is obviously indicated. Yet, because of the urgency of maximizing career development for students while they are still in school, there is some justification for using less than perfect instruments, such as the CDI, when no better ones exist. The CDI had enough reliability for use for program planning, and using only the top and bottom quartiles, it provided an estimate of whether some individuals were probably either adequately mature or immature in their career development. Primary attention should be focused on CP, CDA, CDK, and COT. For individual students, an analysis of individual response to items might provide clues to specific knowledge or its lack. A review of CE data such as provided in Appendix E could assist counselors in defining where students go for career information and where they have found or not found assistance.

CDI results for the research population are believed sufficiently reliable to state that LD populations do not necessarily lag behind their peers on either of the two major aspects of career maturity. LD individuals in some subgroups with specific characteristics may be more likely to lag in career development, but this was not true for the total research group. Results indicated that these LD students are at least

as competent as their peers in ten school systems across the nation. Some of the data suggested that this population may not be typical of LD populations elsewhere. Also the current LD students may lag behind their local peers who had the probability of even greater exposure to career development activities at school and had higher mean IQs and achievement scores as measured on group instruments. No local CDI norms were available. While it is unknown whether or not the research population functions as well as their local peers, there is no definable deficit in their ability to make necessary career decisions when compared with the norm group. School system administrators might feel satisfied that their current curriculum is adequate in terms of the national average, although it is only one of the possible reasons that might explain the findings. Even if the curriculum is a good one, it does not mean that there are no career development needs, only that the system or some set of circumstances has resulted in a relatively "normal" degree of career development for its LD students.

Students in self-contained LD placements were the only subgroup that a simple review of scores would indicate the possible need for more intensive intervention. A review of other predictors of results, i.e., grade level, IQs, and WRAT scores suggested that when these variables were taken into account these students were maturing about as well as would be predicted. In this subgroup of three, all were eighth graders, two had low VIQs (84 and 87), all had very low WRAT-A scores (75 to 77) and each had a skewed CDI profile of performance. For these students, specifically focused career education with extra

time and attention will logically be required. Given the current state of the art, creative and sensitive special educators and career specialists will have to improvise and try varied and individualized techniques before a knowledge base can be built to develop the most effective and economical approaches for intervention. Whether intervention needs of low scoring LD students differ from other low scoring students is unknown.

School systems seeking to maximize individual development and future opportunities for normal and handicapped populations, most specifically in terms of current data, the learning disabled, can benefit from use of the CDI. CDI scores provide additional data beyond that previously available to evaluate the strengths and weaknesses of the curriculum in terms of its adequacy in helping students develop appropriate levels of vocational maturity. If, as seems likely, "normal" maturity still leaves many students insufficiently developed in their ability to deal with career related problems when they leave school, systems might appropriately develop local norms and then do follow up studies to see what level of maturity is needed both for career success and career satisfaction. Using this information, specific educational objectives could be developed. With the advent of computers within the schools, this may become increasingly feasible.

The current data, in terms of a review of LD literature, indicated that the research population had higher mean IQs, higher parental occupational levels, and a stronger representation of students with arithmetic disabilities than has been found typical in other LD populations (although the latter finding may be related primarily to the WRAT criteria). Only the first factor would be expected to result in higher CDI scores.

Why then were scores so high? No quantifiable or hard evidence is available beyond the little suggested by Hesser (1981). Exposure to knowledgable representatives of multiple school systems, albeit primarily Virginia ones, suggested that the school system attended by the current subjects were progressive in its career development programs as compared with most of the other systems. If true, this might provide the most forthright answer to the question. If accurate, the direct implication is that exposure to a basic, comprehensive career education program works for most LD students. In different school systems other subgroups or the total LD population may lag behind in some or all aspects of career maturity, especially if mean VIQs and PIQs and/or WRAT-A of WRAT-R scores are lower. Research is too limited to really know.

The data for this study suggests that students with primary arithmetic disabilities as defined by the WRAT-A may have a particular tendency to do less well on the CDI, primarily on the attitudinal components. Further analysis of the data would be required to determine if the Arithmetic discrepancy group was especially low on PIQs or had lower FS IQs, the latter having been consistently associated with brain damaged subjects (Klonoff & Low, 1974). Arithmetic dysfunctions at the secondary level may involve subtle but real "global" deficits, and, in areas apart from traditional academics, in comparison with LD disabilities in reading and spelling. If WRAT-A is primarily dependent on visual-spatial skills as indicated by Rourke and Finlayson (1978), i.e., right hemisphere functioning, this potential "global" quality might be more readily explainable. Also,

if Bingham's (1974 and 1980) "neurologically impaired" and "brain damaged" subjects were either primarily impaired or damaged in the right hemisphere, or if mean FS IQs were well below 100, i.e., high 80's, or 90, it would help to explain her findings. Perhaps more simply, it is as Skrtic (Note 21) concluded, "Mathematics performance of LD adolescents may be a generalized deficit in cognitive development and achievement rather than the traditional uneven profile attributed to LD students" (p. 8).

The large percent of students who scored lowest on Spelling may or may not be atypical. The significance of spelling may lie in its relation to total psycholinguistic functioning as suggested earlier by Sweeney and Rourke (cited in Rourke & Gates, 1981) or, more specifically, to written communication skills. Personal experience suggests the latter to be one of the most critical factors in determining how well an LD student survived in a regular class placement at higher secondary levels. Further, it has appeared to be associated with poor organizing ability. School psychologists have informally noted the phenomena of students with comparatively low arithmetic and spelling skills in relation to reading at both the elementary and secondary levels, but the implications were not clear to them--or to the investigator.

The implications of the mildly lower scores for students more experienced in vocational training programs rather than high as in the norm group are probabilistic. Scores may have been influenced by the way current groups were defined. There were opinions, but no hard data, that this group of students represented the most functionally

disabled, academically and socially, i.e., those whose success in the regular program was so limited that vocational programs were tried early and, possibly, repeatedly without real accomplishment anywhere. These students were necessarily older. They had probably either been placed soon after the program was established because of the severity of their disabilities or their disabilities were compounded with multiple side effects because they were not picked up early enough, i.e., they were not placed til the sixth or seventh grade.

Why did youth from families with high occupational status have lower CDI scores than students from the lowest level? Results may be due only to chance factors that existed in this population. Or, possibly, students in families with high standards of achievement have achieved so far below family norms little has been expected of them over time, i.e., they were "disabled" in their families' eyes and in their own. Again, the alternative exists that youth from very low status families placed in LD programs learned they had "normal" intelligence, i.e., they were not "dumb" and so reflected this knowledge by trying harder and learning more in areas where they could learn. This is all hypothetical. Actual self perceptions of general capacity versus incapacity as reflected in actual behavior, not self reports, may be important in determining career maturity outcomes, but it has yet to be proven.

Research Recommendations

1. Further studies regarding the reliability of the CDI are needed along with specific efforts to improve upon it, especially for the cognitive scales.

2. Comparisons should be conducted of the CDI functioning of LD students and their local peers, handicapped and non-handicapped, average and low achievers. At least grade level, aptitude and achievement should be controlled to determine whether LD students generally progress at the same rate with critical factors held constant or whether, for example, they lag behind the non-handicapped or do as well or better than other handicapped groups in the same school system.

3. Studies should include larger numbers of LD secondary students across the United States having each grade and more females represented. Longitudinal as well as cross sectional designs are needed.

4. The comparative career maturity of different subsets of varying LD populations or samples should be analyzed controlling for grade, VIQ, PIQ, WRAT-A and WRAT-R to determine if the differences in development suggested in this study exist across populations, particularly for those with arithmetic disabilities.

5. The prevalence of lowest scores in Spelling and the significance of varied types of spelling errors should be investigated, especially as they may interact with arithmetic disabilities at the secondary level. The seemingly global implications of primary arithmetic dysfunction need further study, particularly as they exist over time.

6. Comprehensive achievement criteria should be used to determine if the achievement/CDI patterns observed in this study are a function of the specific brain behaviors reflected by the WRAT or of more globally defined learning disabilities in the given achievement areas.

This study has provided only beginning data. Many other descriptive studies are needed to establish a data base for more specific hypotheses regarding both learning disabilities and career development in LD adolescents.

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APPENDIX A

Excerpts from Federal and Commonwealth of Virginia Regulations

Appendix A

Federal Register, Dec. 29, 1977

Rules and Regulations for Implementing P.L. 94-142

121a.5 Handicapped Children

(b)

(9) "Specific learning disability" means a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, which may manifest itself in an imperfect ability to listen, think, speak, read, write, spell, or to do mathematical calculations. The term includes such conditions as perceptual handicaps, brain injury, minimal brain disfunction, dyslexia, and developmental aphasia. The term does not include children who have learning problems which are primarily the result of visual, hearing, or motor handicaps, of mental retardation, of emotional disturbance, or of environmental, cultural, or economic disadvantage.

121a.541 Criteria for determining the existence of a specific learning disability.

(a) A team may determine that a child has a specific learning disability if:

(1) The child does not achieve commensurate with his or her age and ability levels in one or more of the areas listed in paragraph (a) (2) of this section, when provided with learning experiences appropriate for the child's age and ability levels; and

(2) The team finds that a child has a severe discrepancy between achievement and intellectual ability in one or more of the following areas.

(i) Oral expression;

(ii) Listening comprehension;

(iii) Written expression;

(iv) Basic reading skill;

(v) Reading comprehension;

(vi) Mathematics calculation; or

(vii) Mathematics reasoning.

(b) The team may not identify a child as having a specific learning disability if the severe discrepancy between ability and achievement is primarily the result of:

(1) A visual, hearing, or motor handicap;

(2) Mental retardation;

(3) Emotional disturbance; or

(4) Environmental, cultural or economic disadvantage.

(20 U.S.C. 1411 note.)

From: Program guidelines for student with specific learning disabilities in Virginia's public schools.

2.3 Eligibility

A. Eligibility Committee:

Membership on this committee, as set forth in federal and State regulations (Chapter 2, Section H), includes, but is not limited to, LEA personnel who provided the assessment components, and the administrator of Special Education or his/her designee.

The function of the committee is to determine if a student has a handicapping condition which requires a special education program, and whether any related services are needed.

B. Criteria:

The following criteria are to be met, for determination that a student has a specific learning disability (P.L. 94-142, 121a.541):

1. The child does not achieve commensurate with his or her age and ability levels in one or more of the areas listed (below) when provided with learning experiences appropriate for the child's age and ability levels; and
2. The team finds that a child has a severe discrepancy between achievement and intellectual ability in one or more of the...areas (listed).

The areas to be considered, as stated in the regulations, are oral expression, listening comprehension, written expression, basic reading skill, reading comprehension, and mathematics calculation or reasoning.

In order for the team to identify the student as LD, the regulations specify that the disability may not be primarily the result of:

1. a visual, hearing or motor handicap;
2. mental retardation;

3. emotional disturbance; or

4. environmental, cultural or economic disadvantage.

The Task Force suggests that, when the criteria shown above have been met, further indication that a student is LD are the following:

--A wide spread between verbal and performance scores (if these are provided by the individually administered test of intelligence used); OR a wide spread among scaled subtest scores on an individually administered test of intelligence;

--Difficulty in interpreting information presented visually and/or auditorily;

--Evidence of reversals in letters, words, or numbers, or in concepts;

--A cluster of the characteristics shown in Appendix L.

C. Severe Discrepancy:

As stated above, a severe discrepancy between expected achievement and actual achievement in one or more areas of learning (see Appendix A), based on age, ability, and years in school, is a key determinant for classifying students as learning disabled.

The Task Force suggests the following as one guide in determining if a severe discrepancy exists:

> IMPORTANT
>
> Students with high average or superior ability who are functioning at or above grade level but lower than would be expected in light of their ability may be identified as learning disabled.

1. For children in kindergarten through third grade: functioning level is 12-18 months below expected level (e.g., mental age, percentile) in one or more areas of learning or achievement.

2. For students in fourth through eighth grades: functioning level is two or more years below expected level (e.g., mental age, percentile) in one or more areas of learning or achievement.
3. For students in ninth through twelfth grades: functioning level is three or more years below expected level (e.g., mental age, percentile) in one or more areas of learning or achievement.

THE TASK FORCE CAUTIONS THAT THE ABOVE SHOULD BE USED FLEXIBLY, TAKING INTO ACCOUNT THE ABILITY OF THE CHILD AS WELL AS THE AGE AND THE NUMBER OF YEARS IN SCHOOL.

Grade Equivalent scores on standardized tests are computed on students of average intelligence; 50% of these students are expected to be below the Grade Equivalent Score for that grade level, and 50% are expected to be above. The fact that a student's test scores are below the Grade Equivalency for his/her age/grade level does not necessarily mean the student is LD. A study of the student's intelligence test may show that, in fact, the student is doing as well as should be expected.

On the other hand, a study of a student's intelligence test may reveal that the student is of high ability; if his/her Grade Equivalent scores are right at or just above the scores expected of an average student, this discrepancy may signal the possibility that the student is LD.

Another means the Eligibility Committee can employ as an indication that a severe discrepancy exists is by comparing the development of the child in question with common child-development norms.

It is also possible to view a severe discrepancy in terms of the number of standard deviations below the mean of standardized tests. However, a decision must be made by the local school division concerning which norms will be used: national, state, or local. For example, a student may be achieving below national norms, but well within expected local norms. Conversely, a student may be achieving within expected national norms yet fall below local norms. The school division must decide which norm to use for comparison with their individual students' achievement levels.

IMPORTANT

The Eligibility Committee is responsible for reviewing all information and deciding whether a student is eligible for special education services and, if so, for recommending the kind and intensity of services the student should be provided. IT IS INAPPROPRIATE FOR AN ELIGIBILITY COMMITTEE TO ADHERE RIGIDLY TO ANY METHOD, SYSTEM, OR FORMULA.

In establishing the existence of a severe discrepancy, the Eligibility Committee has to make a judgment about the significance of any difference that exists between expected and actual achievement. Making this judgment requires more than a simplistic approach such as using merely the guide on pp. 44-45, or child-development norms, or standard deviations, or a formula. Other indications to be considered have been given on page 44.

If a school division uses a formula to establish existence of a severe discrepancy, it should be aware of the problems inherent in such use. Four primary problems were outlined on page 65084 of the federal Regulations for Evaluating Specific Learning Disabilities (December 29, 1977) in the section entitled "Use of Formula." The use of a formula

with a numerical eligibility cut-off criterion can have a serious negative effect on the identification of some learning disabled students. This is particularly true for young children, who have had limited opportunities for academic experience. An Eligibility Committee using professional judgment is much more likely to identify correctly those students with specific learning disabilities.

In the event that the committee is convinced that a student has a specific learning disability, even though the application of the suggestions on pages 44-46 or a formula indicates that the student does not have a severe discrepancy between expected achievement and actual achievement, the team judgment must prevail.

D. Degrees of Learning Disability:

The Eligibility Committee may find it useful to evaluate the degree of learning disability of the student being studied. The Task Force proposes the following as one way of making such an estimation, which could then be used in suggesting to the IEP Committee the model of service to be selected for the student (see pp. 51-52).

Mild Handicap:	All but one basic skill (e.g., math, oral expression, word attack, reading comprehension, written expression) on expected level; but the one skill shows significant discrepancy according to student's potential.
Moderate Handicap:	At least one basic skill (e.g., math or reading, etc.) at expected level; but discrepancy in one or more other major basic skills (e.g., written expression) according to student's potential.

Severe* Handicap: Discrepant in two or more basic skill areas (e.g., reading and math or reading and written expression, etc.) according to student's potential.

The Degree of Learning Disability in a continuum from mild to severe is affected by the extent to which the following factors interfere with performance.

1. Degree of individualization required in any content area;
2. The number of content areas affected by the disabilities;
3. Amount of specialized material and equipment required;
4. Amount of instructional time necessary for effective remediation;
5. Quality of independent work habits;
6. Amount of social/emotional overlay.

E. Other Factors:

Determination of eligibility must always adhere to State and federal regulations. In order to comply with these standards and regardless of the manner of determining eligibility, a student cannot be identified as learning disabled when interference with progress is PRIMARILY the result of mental retardation, sensory or motor deficit, emotional disturbance, environmental, cultural or economic disadvantage.

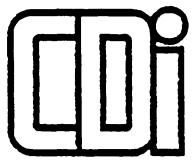
The key is in determining which is the PRIMARY cause of the presenting problems. A student may be determined to be LD only if learning disabilities is the primary cause of the demonstrated deficiencies.

*Note that this refers to a severe learning disability; it is not to be confused with a severe discrepancy.

APPENDIX B

The Career Development Inventory
Part 1

APPENDIX B



Developed at Teacher's College, Columbia University by Drs. Donald E. Super, Albert S. Thompson, Richard H. Lindeman, Jean P. Jordaan and Roger A. Myers.

Career Development Inventory

DIRECTIONS

The Career Development Inventory asks you about school, work, your future career, and some of the plans you may have made. Answers to questions like these can indicate what kind of help may be useful to you in planning and preparing for a job after graduation, for vocational and technical school training, or for going to college before pursuing your occupational career.

The Inventory consists of two parts. The person who administers it will indicate whether you should complete the first part, the second part, or both parts. Part I (Career Orientation) begins on the next page and Part II (Knowledge of Preferred Occupation) begins on Page 11.

All your answers to the CDI go on a special answer sheet which should accompany this booklet. Make no marks of any kind on this booklet. Record your answers by blackening the appropriate lettered boxes on the answer sheet, using a #2 lead pencil. **Do not use a pen.** If you change an answer, please erase thoroughly.

Before opening the test booklet, fill in your name and the other information requested on the upper third of the answer sheet, following any special instructions of the person administering the inventory. Fill in the name boxes carefully.

When directed to do so, open this booklet and begin. Please answer every question. If you are not sure about an answer, guess; the first answer that comes to you is often the best one. Work rapidly, but be careful to make your marks in the right boxes for each question.

Consulting Psychologists Press, Inc., Palo Alto, California

PART I. *Career Orientation*

A. CAREER PLANNING

How much thinking and planning have you done in the following areas? For each question below choose the answer that best tells what you have done so far.

1. Finding out about educational and occupational possibilities by going to the library, sending away for information, or talking to somebody who knows.

   A. I have not yet given any thought to this.
   B. I have given some thought to this, but haven't made any plans yet.
   C. I have some plans, but am still not sure of them.
   D. I have made definite plans, but don't know yet how to carry them out.
   E. I have made definite plans, and know what to do to carry them out.

2. Talking about career plans with an adult who knows something about me.

   A. I have not yet given any thought to this.
   B. I have given some thought to this, but haven't made any plans yet.
   C. I have some plans, but am still not sure of them.
   D. I have made definite plans, but don't know yet how to carry them out.
   E. I have made definite plans, and know what to do to carry them out.

3. Taking classes which will help me decide what line of work to go into when I leave school or college.

   A. I have not yet given any thought to this.
   B. I have given some thought to this, but haven't made any plans yet.
   C. I have some plans, but am still not sure of them.
   D. I have made definite plans, but don't know yet how to carry them out.
   E. I have made definite plans, and know what to do to carry them out.

4. Taking classes which will help me in college, in job training, or on the job.

   A. I have not yet given any thought to this.
   B. I have given some thought to this, but haven't made any plans yet.
   C. I have some plans, but am still not sure of them.
   D. I have made definite plans, but don't know yet how to carry them out.
   E. I have made definite plans, and know what to do to carry them out.

5. Taking part in school or out-of-school activities which will help me in college, in training, or on the job.

   A. I have not yet given any thought to this.
   B. I have given some thought to this, but haven't made any plans yet.
   C. I have some plans, but am still not sure of them.
   D. I have made definite plans, but don't know yet how to carry them out.
   E. I have made definite plans, and know what to do to carry them out.

6. Taking part in school or after-school activities (for example, science club, school newspaper, volunteer nurse's aide) which will help me decide what kind of work to go into when I leave school.

   A. I have not yet given any thought to this.
   B. I have given some thought to this, but haven't made any plans yet.
   C. I have some plans, but am still not sure of them.
   D. I have made definite plans, but don't know yet how to carry them out.
   E. I have made definite plans, and know what to do to carry them out.

Go on to the next page.

7. Getting a part-time or summer job which will help me decide what kind of work I might go into.

   A. I have not yet given any thought to this.
   B. I have given some thought to this, but haven't made any plans yet.
   C. I have some plans, but am still not sure of them.
   D. I have made definite plans, but don't know yet how to carry them out.
   E. I have made definite plans, and know what to do to carry them out.

8. Getting money for college or for job training.

   A. I have not yet given any thought to this.
   B. I have given some thought to this, but haven't made any plans yet.
   C. I have some plans, but am still not sure of them.
   D. I have made definite plans, but don't know yet how to carry them out.
   E. I have made definite plans, and know what to do to carry them out.

9. Working out problems that might make it hard for me to get the kind of training or the kind or work I would like.

   A. I have not yet given any thought to this.
   B. I have given some thought to this, but haven't made any plans yet.
   C. I have some plans, but am still not sure of them.
   D. I have made definite plans, but don't know yet how to carry them out.
   E. I have made definite plans, and know what to do to carry them out.

10. Getting the kind of training, education, or experience I will need to get the kind of work I would like.

    A. I have not yet given any thought to this.
    B. I have given some thought to this, but haven't made any plans yet.
    C. I have some plans, but am still not sure of them.
    D. I have made definite plans, but don't know yet how to carry them out.
    E. I have made definite plans, and know what to do to carry them out.

11. Getting a job once I have finished my education and training.

    A. I have not yet given any thought to this.
    B. I have given some thought to this, but haven't made any plans yet.
    C. I have some plans, but am still not sure of them.
    D. I have made definite plans, but don't know yet how to carry them out.
    E. I have made definite plans, and know what to do to carry them out.

12. Doing things that will help me be a good worker, one who is most likely to be sure of a job.

    A. I have not yet given any thought to this.
    B. I have given some thought to this, but haven't made any plans yet.
    C. I have some plans, but am still not sure of them.
    D. I have made definite plans, but don't know yet how to carry them out.
    E. I have made definite plans, and know what to do to carry them out.

The next questions concern the kind of work you would like to do when you complete your education. At this stage, you probably have not definitely decided on a specific occupation, but you probably can think of a field of work or type of job you would like to work at. *Keeping in mind the type of job you think you might like to be in after you finish your schooling,* choose the one best answer which tells the amount of knowledge you already have about these jobs.

13. What people really do on the job.

    A. *Hardly any* knowledge.
    B. A *little* knowledge.
    C. An *average amount* of knowledge.
    D. A *good deal* of knowledge.
    E. A *great deal* of knowledge.

14. The abilities needed for the occupation.

    A. *Hardly any* knowledge.
    B. A *little* knowledge.
    C. An *average amount* of knowledge.
    D. A *good deal* of knowledge.
    E. A *great deal* of knowledge.

Go on to the next page.

15. The working conditions on such jobs.
    A. *Hardly any* knowledge.
    B. A *little* knowledge.
    C. An *average amount* of knowledge.
    D. A *good deal* of knowledge.
    E. A *great deal* of knowledge.

16. The education or training needed to get such a job.
    A. *Hardly any* knowledge.
    B. A *little* knowledge.
    C. An *average amount* of knowledge.
    D. A *good deal* of knowledge.
    E. A *great deal* of knowledge.

17. The need for people on that kind of job in the future.
    A. *Hardly any* knowledge.
    B. A *little* knowledge.
    C. An *average amount* of knowledge.
    D. A *good deal* of knowledge.
    E. A *great deal* of knowledge.

18. Different ways of getting into that occupation.
    A. *Hardly any* knowledge.
    B. A *little* knowledge.
    C. An *average amount* of knowledge.
    D A *good deal* of knowledge.
    E. A *great deal* of knowledge.

19. The chances of advancing in that kind of job or occupation.
    A. *Hardly any* knowledge.
    B. A *little* knowledge.
    C. An *average amount* of knowledge.
    D. A *good deal* of knowledge.
    E. A *great deal* of knowledge.

20. What sort of working day and work week I might have in the occupation.
    A. *Hardly any* knowledge.
    B. A *little* knowledge.
    C. An *average amount* of knowledge.
    D. A *good deal* of knowledge.
    E. A *great deal* of knowledge.

B. CAREER EXPLORATION

Questions 21 through 30 have four possible answers. Choose the *one best* answer for each question to show whether or not you would go to the following sources for information or help in making your plans for work or further education.

21. Father, mother, uncles, aunts, etc.
    A. Definitely not.
    B. Probably not.
    C. Probably.
    D. Definitely.

22. Brothers, sisters, or cousins.
    A. Definitely not.
    B. Probably not.
    C. Probably.
    D. Definitely.

23. Friends.
    A. Definitely not.
    B. Probably not.
    C. Probably.
    D. Definitely.

24. Coaches of school or other teams.
    A. Definitely not.
    B. Probably not.
    C. Probably.
    D. Definitely.

25. Teachers.
    A. Definitely not.
    B. Probably not.
    C. Probably.
    D. Definitely.

26. School counselors.
    A. Definitely not.
    B. Probably not.
    C. Probably.
    D. Definitely.

27. Other adults who know things and can help people.
    A. Definitely not.
    B. Probably not.
    C. Probably.
    D. Definitely.

28. College catalogues, books, guidance materials, etc.
    A. Definitely not.
    B. Probably not.
    C. Probably.
    D. Definitely.

29. People in the occupation or at the institute or college I am considering.
    A. Definitely not.
    B. Probably not.
    C. Probably.
    D. Definitely.

30. TV shows, movies, or magazines.
    A. Definitely not.
    B. Probably not.
    C. Probably.
    D. Definitely.

Go on to the next page.

Questions 31 through 40 also have four possible answers. This time choose the *one best* answer to show how much useful information the people or sources listed below have already given you or directed you to in making your plans for the future.

31. Father, mother, uncles, aunts, etc.
    A. *No* useful information.
    B. *Some* useful information.
    C. A *good deal* of useful information.
    D. A *great deal* of useful information.

32. Brothers, sisters, or other relatives.
    A. *No* useful information.
    B. *Some* useful information.
    C. A *good deal* of useful information.
    D. A *great deal* of useful information.

33. Friends.
    A. *No* useful information.
    B. *Some* useful information.
    C. A *good deal* of useful information.
    D. A *great deal* of useful information.

34. Coaches of school or other teams.
    A. *No* useful information.
    B. *Some* useful information.
    C. A *good deal* of useful information.
    D. A *great deal* of useful information.

35. Teachers.
    A. *No* useful information.
    B. *Some* useful information.
    C. A *good deal* of useful information.
    D. A *great deal* of useful information.

36. School counselors.
    A. *No* useful information.
    B. *Some* useful information.
    C. A *good deal* of useful information.
    D. A *great deal* of useful information.

37. Other adults who know things and can help people.
    A. *No* useful information.
    B. *Some* useful information.
    C. A *good deal* of useful information.
    D. A *great deal* of useful information.

38. College catalogues, books, guidance materials, etc.
    A. *No* useful information.
    B. *Some* useful information.
    C. A *good deal* of useful information.
    D. A *great deal* of useful information.

39. People in the occupation or at the institute or college I am considering.
    A. *No* useful information.
    B. *Some* useful information.
    C. A *good deal* of useful information.
    D. A *great deal* of useful information.

40. TV shows, movies, or magazines.
    A. *No* useful information.
    B. *Some* useful information.
    C. A *good deal* of useful information.
    D. A *great deal* of useful information.

C. CAREER DECISION-MAKING

What should each of the following students do? Choose the *one best* answer for each case.

41. E.R. took some tests which show some promise for clerical work. This student says, "I just can't see myself sitting behind a desk for the rest of my life. I'm the kind of person who likes variety. I think a traveling job would suit me fine." E.R. should:
    A. disregard the tests and do what he or she wants to do.
    B. do what the tests say since they know best.
    C. look for a job which requires clerical ability but does not pin one to a desk.
    D. ask to be tested with another test since the results of the first one are probably wrong.

42. J.D. might like to become a computer programmer, but knows little about computer programming, and is going to the library to find out more about it. The most important thing for J.D. to know now is:
    A. what the work is, what one does on the job.
    B. what the pay is.
    C. what the hours of work are.
    D. where one can get the right training.

Go on to the next page.

43. A.M. is very good with skilled handiwork and there isn't anybody in the class who has more mechanical aptitude or is better at art. A.M.'s best grades are in math, but A.M. likes all of these things. What should A.M. do?

    A. Look for an occupation which will use as many of these interests and abilities as possible.
    B. Pick an occupation which uses math, since there is a better future in that than in art or in working with one's hands.
    C. Decide now on one of these activities because of ability or interest, and then pick an occupation which uses that kind of asset.
    D. Put off deciding about the future and wait until interest in some of these activities declines.

44. B.R. gets very good science grades but doesn't care too much about this subject. The subject B.R. liked best is art even though grades in it are only average. This student is most likely to do well in a future occupation if he or she:

    A. forgets about interest in art since achievement is so much better in science.
    B. doesn't worry about the achievement in art, because if you like something you can become good at it.
    C. looks for an occupation which uses both art and science, but more science than art.
    D. looks for an occupation which involves both science and art, but more art than science.

45. L.F. seems not to really care what kind of work is available on leaving school as long as it is working with people. If this is all this student cares about, he or she is likely to make a bad choice because:

    A. this kind of work usually requires a college degree.
    B. employers usually hire people with definite interests and objectives.
    C. people look down on those who work with people because such work usually doesn't pay as well as technical work.
    D. occupations in which one works with people can be very different from each other in the abilities and interests which are needed.

46. R.A. has good grades in all high school courses, wants to go to college, has parents' approval for going to college, but has no occupational plans. What is the best next step for R.A.?

    A. Delay college until occupational plans emerge.
    B. Choose a college major that is very difficult.
    C. Choose a college where exploring several majors is encouraged during the first two years.
    D. Find out about graduate and professional school requirements.

47. A.K. can't decide whether to become an air-conditioning and refrigeration technician or an engineer. In making the choice, to which of the following should A.K. pay the most attention?

    A. How much money A.K. wants to earn.
    B. How much education and training A.K. is likely to be able to get.
    C. What A.K.'s parents would prefer.
    D. Which occupation people respect most.

48. P.T. is a high school junior with no education or vocational plans beyond high school. What would you recommend that P.T. do first?

    A. A thorough search of colleges to attend.
    B. An analysis of relevant personal characteristics such as abilities, interests, and values.
    C. An intensive study of information about occupations.
    D. A matching of P.T.'s abilities with job requirements.

49. E.B. is a ninth-grader with excellent school grades and very high scores on all ability tests, but has no educational or vocational plans. What is the best advice to give to E.B.?

    A. Arrive at a definite goal as soon as possible.
    B. Not to be concerned about a goal or a plan because success is almost certain.
    C. Concentrate on selecting the right college.
    D. Find out when important choices will have to be made and get the needed information.

Go on to the next page.

50. An uncle has just told T.H. that his company is always looking for tool and die makers, pays them well and keeps them on the payroll even in bad times. T.H. is interested and wants to learn more about the occupation. What is the most important thing for T.H. to learn?

    A. Where tool and die makers work.
    B. How much training is required.
    C. What is the work tool and die makers do.
    D. What tool and die makers actually are paid.

51. L.M. has good school grades and looks forward to studying engineering in college. What is the best advice to help L.M. plan a tenth-grade course schedule?

    A. Be sure to schedule college preparatory math and science.
    B. Get all of the shop courses it is possible to take.
    C. Take a light load because in college it will be hard work.
    D. Allow time for a part-time job to learn what engineers do.

52. J.M., who has always dreamed of being either a lawyer or a business executive, cannot plan for college because of the cost. J.M.'s grades and test scores show good promise for college. What should be recommended for J.M. after high school?

    A. Find a job in a law office and go to law school at night.
    B. Get a job in a business concern that offers on-the-job training and other educational opportunities.
    C. Forget about law and business and work in a field that requires no education.
    D. Find a rewarding hobby.

53. M.J. is considering becoming either a research chemist or a lawyer. In choosing between the two, which of the following should be given the most weight?

    A. Whether M.J.'s ability in science and grades in science courses are good enough.
    B. Whether M.J. can afford to go to college.
    C. Whether M.J. can get admitted to college.
    D. Whether M.J.'s friends think the choice is a good one.

54. After careful thought, E.K. has decided on business training for a year or two after high school. However, deciding between majors in accounting and sales remains a problem for E.K. In exploring this problem, to what should be given the most weight?

    A. The difference in training time required by the two majors.
    B. The chances of being admitted for training in the major.
    C. Which major requires the most work.
    D. Which major best fits E.K.'s abilities and interests.

55. J.F. is the best all-around artist in the class, winning art competitions consistently. But academic subject matter comes hard to J.F., who will probably graduate in the bottom fifth of the senior class. Which is the most realistic educational plan for J.F.?

    A. Seek admission to a university where one can combine art and regular college subjects to earn a Bachelor of Fine Arts.
    B. Forget about any education beyond high school.
    C. Forget about art and concentrate on college preparatory subjects.
    D. Seek admission to an art school where poor academic grades will not be a handicap.

56. L.D. wants to be a newspaper reporter. Which of the following paths might lead to becoming a qualified newspaper reporter?

    A. Working full-time on a newspaper and continuing education on a part-time basis.
    B. Earning a bachelor's degree in Journalism.
    C. Taking a liberal arts degree first, followed by a graduate degree in Journalism.
    D. Any of the above.

57. B.D.'s interest in and skill at helping others has become the most important part of B.D.'s self-picture. Which occupation should B.D. probably *not* be considering?

    A. Nurse's aide.
    B. Recreation worker.
    C. Sales person.
    D. Teacher's aide.

Go on to the next page.

58. R.R. gets B's in math and science but has failed ninth-grade English twice, and gets D's in social studies courses. Which occupation makes the most sense for R.R.?

A. Engineering technician.
B. Veterinarian.
C. Civil engineer.
D. Science and math teacher.

59. J.R. has high ability, excellent grades and the money to go to college. J.R.'s only clear future goal is to make a great deal of money. What should J.R. do?

A. Pursue a career in medicine because that's where the money is.
B. Arrive at an appropriate vocational goal and the money will take care of itself.
C. Change goals because wanting a lot of money is not a good thing.
D. Find out what wanting to make a lot of money really means.

60. A.S. has good tested ability but has poor high-school grades. The counselor advises that A.S. will not be admitted to any college because of the high school record. A.S. thinks the problems that caused the low grades are now solved and wants to get more education. What is A.S.'s best course of action?

A. Forget about college and seek a satisfying job.
B. Repeat courses in high school in order to improve the grades.
C. Find out about junior colleges and community colleges whose admission standards are less demanding.
D. Get private tutoring in the weak subjects.

D. WORLD-OF-WORK INFORMATION

Choose the *one best* answer to each of the following questions about career development and the world of work.

61. Tenth graders should be expected to know

A. exactly what occupation they want to go into.
B. the kind of work but not necessarily the specific occupation they want.
C. where to get the job they want.
D. the different occupations a person with their interests and abilities could go into.

62. When a teacher or counselor encourages students to explore themselves and the world about them, what he or she wants them to do is to

A. be active in school affairs.
B. go on field trips.
C. try themselves out in a variety of situations and activities.
D. take some aptitude tests.

63. Exploring interests, abilities and opportunities is something which people should be encouraged to engage in

A. throughout their lives.
B. when they become dissatisfied with the way things are.
C. when they lose their jobs.
D. when things start to go wrong.

64. Which of the following will help high school students most in thinking about a career?

A. Making the right contacts.
B. Setting an occupational goal early and sticking to it.
C. Finding out where the best opportunities for employment are.
D. Finding out what activities and courses they like most and are best at.

Go on to the next page.

65. The reason why many young people change jobs frequently between the ages of 18 and 25 is that they

A. don't know when they are well off.
B. received wrong advice from their parents and teachers.
C. are the first to be fired when business is bad.
D. don't know enough about themselves or work to make good choices.

66. Suppose you know what *kind* of work you would like to do and also know about the many different occupations which can be found in that field. What information would you need to be able to pick out those occupations which are at the right *level* for you? (By *field* is meant the kind of work you would like to do, for example, scientific work, social service work, work involving machines and tools; by *level* is meant the amount of education and training you would need to get, and the amount of responsibility you would have to carry on the job.)

A. Information about your abilities.
B. Information about educational and training requirements.
C. Information about what it would cost to get the needed training and education.
D. All of the above.

67. The most important thing about the courses you take at college or the jobs you take after you leave school is

A. what the courses or jobs tell you about your interests and abilities.
B. whether the courses or jobs are easy or difficult.
C. whether your parents approve of the choice of courses or jobs.
D. what your instructors or employers think of you.

68. Being happy in a job is mostly a matter of

A. being paid well.
B. having interesting things to do when your day's work is done.
C. knowing what you want from a job and getting it.
D. receiving promotions and pay increases.

69. Students who want to go to college or to seek a particular kind of job when they leave high school can improve their chances most by

A. being active in school affairs.
B. choosing appropriate high school courses.
C. getting along with their teachers and counselors.
D. choosing courses in which they know they will get good grades.

70. A student who, on leaving high school, takes a semi-skilled factory job at a good wage instead of a learner's job or apprenticeship

A. gives up a better future for a better present.
B. should work his way up to a more skilled job easily enough.
C. is probably following the school counselor's advice.
D. is probably giving in to pressure from parents.

71. Family doctors (physicians) usually learn their jobs in

A. high schools.
B. community colleges or technical schools.
C. four-year colleges or universities.
D. graduate or professional schools.

72. Mail carriers usually learn their jobs in

A. high schools.
B. apprenticeships or on-the-job training.
C. community colleges or technical schools.
D. four-year colleges or universities.

73. Medical laboratory technicians are most likely to use

A. levels.
B. log tables.
C. tongue depressors.
D. microscopes.

Go on to the next page.

74. A stock broker is most likely to use

A. a calculator.
B. calipers.
C. forceps.
D. a micrometer.

75. Bookkeepers are most likely to use

A. lathes.
B. calculators.
C. ledgers.
D. slide rules.

76. Which of the following workers is most likely to be able to forget about work after leaving the workplace?

A. Administrative assistant
B. Secretary
C. Typist
D. Credit clerk

77. Waiters and waitresses are usually paid

A. weekly salaries.
B. hourly wages.
C. wages and tips.
D. tips only.

78. In starting a new job, it is most important to

A. make sure the other workers like you.
B. show that you are your own boss.
C. be aware of how others feel about things.
D. hide your own feelings from others.

79. In dealing with customers, clients, or other outsiders with whom your work brings you in contact, it is most important to

A. show them you know more about your work than they do.
B. understand what they want and see if you can help them get it.
C. make sure that you do only as you are told.
D. do whatever brings in the most money.

80. Which of the following is most important in a job application interview?

A. Telling the interviewer you will do any work so long as the job is a good one.
B. Knowing what salary or pay to ask for.
C. Finding out whether you and the job are right for each other.
D. Being introduced by a mutual friend.

End of Part I.

APPENDIX C

The Student Questionnaire

Appendix C

Student Questionnaire

FILL IN the blanks or CIRCLE the correct answer below.

Name _____ Age ____ Grade ____ Sex (M, F)

1. Approximately what grade were you in when you were first placed (not just tested) for special help in an LD program?

   A. 1st, 2nd or 3rd grade?

   B. 4th or 5th grade?

   C. 6th or 7th grade?

   D. 8th grade or up?

2. Do you now work with an LD teacher

   A. 3, 4, 5, 6, or 7 periods per day?

   B. 1 or 2 periods per day?

   C. None right now: on trial exit?

3. Did you ever or do you now go to Pre-Voc?

   A. Yes

   B. No

4. If yes to 3, how long did you go or have you gone?

   A. Less than 1 year?

   B. 1 to 2 years?

   C. 2 to 3 years?

   D. 3 years?

NOTE: STUDENTS IN THE EIGHTH GRADE MAY SKIP TO QUESTION 9.

5. Do you or have you ever attended the Voc-Tech high school?

   A. Yes

   B. No

6. If yes to 5, have you or did you attend more than 1 year?

   A. Yes

   B. No

7. Have you or did you take "D.E." or the Cooperative Office Program at your home high school?

   A. Yes

   B. No

8. If yes to 7, did you take or are you taking more than 1 year of either one?

   A. Yes

   B. No

READ THE 8 GROUPS OR LEVELS OF JOBS LISTED BELOW.

9. In column 1, check (✓) the group most like the job that is your ambition to enter after you leave school.

10. In column 2, check (✓) the group most like the job that you think you will actually get when you leave school.

	Columns	
	1 Self Ambition	2 Self Expectancy
(1) Jobs such as short order cook, gas station attendant, laborer, watchman, helper, cafeteria worker, dairy worker.		
(2) Jobs such as truck driver, machine operator, waiter, carpenter, typist, file or stock clerk, fireman, plumber.		
(3) Jobs such as general mechanic, race car driver, policeman, sales clerk, technical assistant, electrician, photographer, buyer, chef, law clerk.		
(4) Jobs such as car or insurance salesman, contractor, small business owner, farm owner, reporter, medical technician, computer programmer.		
(5) Jobs such as nurse, social worker, government and business executives, school teacher, certified public accountant, athlete, engineer.		
(6) Jobs such as executive in a very large business, Supreme Court Justice, college teacher, consulting specialist, doctor, chief engineer.		
(7) Job unknown. Unemployed.		
(8) Homemaker		

11. What job is held by your father, stepfather, or the adult male in your home? _____

12. What job is held by your mother, stepmother or the adult female in your home? _____

APPENDIX D

Letter to Parents

APPENDIX D

OFFICE OF DIVISION SUPERINTENDENT
ROANOKE COUNTY SCHOOLS
526 SOUTH COLLEGE AVENUE
SALEM, VIRGINIA 24153

April 16, 1982

Dear Parent:

A school psychologist who was with our system for many years, Lillien S. Brown, is doing research on the career development of high school LD students. This is a part of the requirements for a doctorate in Vocational School Psychology at Virginia Tech. We ask your cooperation in permitting your son or daughter to participate in this study. Only 8, 10, and 12th graders will have this opportunity.

Those students who participate will be asked to fill out questionnaires related to career planning, career exploration and decision making; knowledge of the world of work, relevant school programming, etc. Records will be reviewed to obtain other pertinent data. Questionnaires will be administered during regular school hours with the least disruption of regular classes possible.

All student names will be coded in the study and no individually identifiable information will be used. LD teachers will be given the code numbers for their students so that all data gathered for each student will be available only to those directly concerned.

Very little actual knowledge exists regarding the career maturity and career development of learning disabled students. Not only will this study provide information where none has existed, it will provide knowledge that may enable us in Roanoke County to do a better job in preparing our LD students for careers.

Please sign and return the attached permission as soon as possible. If you have any questions, call Mrs. Brown at 344-0664 or me at 387-6484.

Sincerely,

Eddie L. Kolb, Ed.D.
Director - Pupil Personnel Services
and Special Education

My child, _____, has my permission to participate in the study of career development with Mrs. Lillien S. Brown. I understand that no names or identifying information except code numbers will be used in any part of the study.

_____ _____

Date Signature of parent/guardian

APPENDIX E

Analysis of Frequency of CE Items

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Frequencies for CE Items

(N = 75 LD students)

Item No.	(a) Would consult (b) Received useful information from Students	Weight of Item	% of Students chosing: A or B	% of Students chosing: C or D
21	(a) Parents, uncles, aunts, etc.	3	20%	80%
31	(b) Parents, uncles, aunts, etc.		48	52
22	(a) Brothers, sisters, cousins	2	43	57
32	(b) Brothers, sisters, cousins		79	21
23	(a) Friends	2	40	60
33	(b) Friends		80	20
24	(a) Coaches	2	71	29
34	(b) Coaches		91	9
25	(a) Teachers	4	29	71
35	(b) Teachers		53	47
26	(a) School Counselors	4	32	68
36	(b) School Counselors		60	40
27	(a) "Other" adults	4	8	92
37	(b) "Other" adults		57	43
28	(a) College catalogues, books, guidance materials, etc.	4	23	77
38	(b) College catalogues, books, guidance materials, etc.		60	40
29	(a) People in the considered occupation or educational institution	4	9	91
39	(b) People in the considered occupation or educational institution		45	55
30	(a) TV shows, movies or magazines	1	59	41
40	(b) TV shows, movies or magazines		89	11

Items 21-30: A, B = "Definitely not", "Probably not"
C, D = "Probably", "Definitely"

Items 31-40: A, B = "No" or "Some useful information"
C, D = "A good deal" or "A great deal of information"

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