Workplace Literacy Skills and Occupational Interests of Dislocated Workers.

Robert Francis Doyle
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Workplace literacy skills and occupational interests of dislocated workers

Doyle, Robert Francis, Ph.D.
The Louisiana State University and Agricultural and Mechanical Col., 1994
WORKPLACE LITERACY SKILLS AND OCCUPATIONAL INTERESTS OF DISLOICTED WORKERS

A Dissertation
Submitted to the Graduate Faculty of the Louisiana State University and Agricultural and Mechanical College in partial fulfillment of the requirements for the degree of Doctor of Philosophy

in

The School of Vocational Education

by
Robert Francis Doyle
B.S., McNeese State University, 1987
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## TABLE OF CONTENTS

ACKNOWLEDGMENTS ................................................................. ii

LIST OF TABLES ................................................................................ vi

ABSTRACT .......................................................................................... viii

INTRODUCTION .................................................................................. 1
  Statement of the Problem ......................................................... 6
  Purpose and Objectives of the Study ......................................... 7
  Definition of Terms ................................................................. 8
  Limitations of the Study ......................................................... 9

REVIEW OF LITERATURE .............................................................. 10
  Dislocated Workers ................................................................. 10
    Background ............................................................................... 10
    Demographics ............................................................................ 12
    Reemployment Rate .................................................................. 15
    Advance Notice and WARN Legislation ................................. 15
    Relocation of Dislocated Workers .......................................... 17
    Duration of Unemployment .................................................... 17
    Dislocated Worker Reemployment Earnings ......................... 19
  Basic Literacy Skills in America ............................................... 20
    A Retrospective on Adult Literacy ......................................... 20
    Literacy Defined ....................................................................... 21
    Workplace Literacy Skills ..................................................... 23
    Workplace Literacy in the Laborforce ..................................... 24
  Theories of Career Development and Occupational Choice .... 27
    A Brief Overview ....................................................................... 27
    Trait and Factor Theory .......................................................... 28
    Roe’s Need Theory .................................................................... 31
    Holland’s Personality Theory ................................................. 32
    Bordin’s Psychoanalytic Theory ............................................. 34
    Developmental Theory ......................................................... 35
    Tiedeman and Miller-Tiedeman’s Decision-Making Model .... 36
    Career Development and Assessment in Counseling ............ 37
    Interest Inventories .................................................................... 38
  The Job Training Partnership Act .............................................. 42
    Legislative History ............................................................... 42
    Dislocated Workers and JTPA Programs ................................. 43
    Louisiana Job Link Program at LSU ...................................... 46
<table>
<thead>
<tr>
<th>METHODOLOGY</th>
<th>50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population and Sample</td>
<td>50</td>
</tr>
<tr>
<td>Instruments</td>
<td>50</td>
</tr>
<tr>
<td>Data Recording Instrument</td>
<td>51</td>
</tr>
<tr>
<td>CASAS Reading and Math Skills Assessments</td>
<td>52</td>
</tr>
<tr>
<td>Synopsis</td>
<td>52</td>
</tr>
<tr>
<td>Validity</td>
<td>53</td>
</tr>
<tr>
<td>Reliability</td>
<td>54</td>
</tr>
<tr>
<td>Itemized Response Theory-based Reliability</td>
<td>55</td>
</tr>
<tr>
<td>Test-scoring and Interpretation</td>
<td>55</td>
</tr>
<tr>
<td>APTICOM Occupational Interest Inventory</td>
<td>57</td>
</tr>
<tr>
<td>Developmental History</td>
<td>57</td>
</tr>
<tr>
<td>Reliability</td>
<td>59</td>
</tr>
<tr>
<td>Interpretation of Results</td>
<td>63</td>
</tr>
<tr>
<td>Validity</td>
<td>64</td>
</tr>
<tr>
<td>Data Collection</td>
<td>65</td>
</tr>
<tr>
<td>Data Analysis</td>
<td>65</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FINDINGS</th>
<th>69</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objective One</td>
<td>69</td>
</tr>
<tr>
<td>Objective Two</td>
<td>72</td>
</tr>
<tr>
<td>Objective Three</td>
<td>75</td>
</tr>
<tr>
<td>Objective Four</td>
<td>75</td>
</tr>
<tr>
<td>Objective Five</td>
<td>77</td>
</tr>
<tr>
<td>Objective Six</td>
<td>79</td>
</tr>
<tr>
<td>Objective Seven</td>
<td>83</td>
</tr>
<tr>
<td>Objective Eight</td>
<td>85</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SUMMARY, CONCLUSIONS, RECOMMENDATIONS</th>
<th>89</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summary of Findings</td>
<td>91</td>
</tr>
<tr>
<td>Conclusions</td>
<td>97</td>
</tr>
<tr>
<td>Recommendations for Future Research</td>
<td>107</td>
</tr>
<tr>
<td>Recommendations for Practice</td>
<td>108</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>REFERENCES</th>
<th>111</th>
</tr>
</thead>
<tbody>
<tr>
<td>APPENDIXES</td>
<td>129</td>
</tr>
<tr>
<td>A. DATA RECORDING FORM</td>
<td>130</td>
</tr>
<tr>
<td>B. CASAS COPYRIGHT PROTECTION</td>
<td>131</td>
</tr>
<tr>
<td>C. APTICOM COPYRIGHT PROTECTION</td>
<td>132</td>
</tr>
</tbody>
</table>
D. SELECTED CHARACTERISTICS OF U.S DISLOCATED WORKERS . 133
E. U.S. DISLOCATED WORKERS BY GEOGRAPHIC REGION ............. 134
F. U.S. DISLOCATED WORKERS BY INDUSTRY GROUPS ............. 135
G. REEMPLOYMENT RATES OF U.S. DISLOCATED WORKERS ...... 136
VITA ................................................................. 137
LIST OF TABLES

1. Descriptive Statistics of CASAS '70 Series Tests................................. 54
2. Correspondence between GOE Interest Areas and Holland Typologies .... 60
3. Internal Consistency of APTICOM and USES II Scales (Alpha Coefficients) 61
4. Test-retest Reliability of APTICOM and USES II (Pearson Correlations) 62
5. Concurrent Validity of APTICOM Interest Area Scales ....................... 63
6. Age-groups of Dislocated Workers at LA JLC at LSU, PYs 1989-91 ...... 70
7. Educational Levels of Dislocated Workers at LA JLC at LSU, PYs 1989-91 .... 70
8. DOT Codes of Dislocated Workers at LA JLC at LSU, PYs 1989-91 ........ 71
9. CASAS Reading Scores of Dislocated Workers at LA JLC at LSU, PYs 1989-91 .... 73
10. CASAS Math Scores of Dislocated Workers at LA JLC at LSU, PYs 1989-91 .... 73
11. Occupational Interests of Dislocated Workers at LA JLC at LSU, PYs 1989-91 .... 74
12. Comparison of Dislocated Workers’ Reading Scores by Occupational Interests, LA JLC at LSU, PYs 1989-91 .................. 76
13. Comparison of Dislocated Workers’ Math Scores by Occupational Interests, LA JLC at LSU, PYs 1989-91 .................. 78
14. Comparison of Dislocated Workers’ Reading Scores by DOT Codes, LA JLC at LSU, PYs 1989-91 .................. 80
15. Comparison of Dislocated Workers' Math Scores by DOT Codes, LA JLC at LSU, PYs 1989-91 ........................................ 82

16. Regression Analysis of Dislocated Workers' Reading Scores and Selected Demographic Characteristics, LA JLC at LSU, PYs 1989-91 ........ 84

17. Regression Analysis of Dislocated Workers' Math Scores and Selected Demographic Characteristics, LA JLC at LSU, PYs 1989-91 ........ 87
ABSTRACT

The purpose of this study was to: describe Louisiana dislocated workers who participated in the Louisiana Job Link Center (LA JLC) at LSU by workplace literacy skills (reading, writing, computation), occupational interests, and the demographics of age-group, gender, educational level, and DOT code of last job; compare workplace literacy skills on selected demographics; and determine if workplace literacy skills are independent of occupational interests and selected demographics.

A simple random sample of 232 dislocated workers was drawn from the accessible population. The data used in this study was obtained from a larger data base collected and held by the Director of the LA Job Link Center at LSU. Four instruments were used to collect that data, three of which provided information for this study. A data recording form designed by Harvill (1993) was modified and used to compile data for this study. The data were summarized using: frequencies and percentages for ordinal data; t-test to determine differences in workplace literacy by gender; one-way ANOVA to compare differences in workplace literacy scores by categories of DOT codes and occupational interests; step-wise multiple regression analysis to determine if a model existed which explained a significant portion of the variance in workplace literacy scores from selected demographics.

The findings: 50.6% of the population sample were female; 165 (71%) of the dislocated workers were aged 26-45; about 88% had at least a high school education; 64.33% had been dislocated from jobs categorized by DOT codes Clerical and Sales (41.77%) and Professional/Managerial/Technical (22.66%).
A total of 215 (91%) of the dislocated workers at the LA JLC at LSU scored above the minimum acceptable total (225) on the reading assessment; a total of 172 (73.28%) scored above the minimum acceptable total (225) on the math portion of the workplace literacy tests. Reading skills correlated with educational level but were independent of age-group, gender, DOT code, and occupational interests. Math scores correlated with educational level and DOT code but were also independent of age-group, gender, DOT code, and occupational interests. The best predictor of workplace literacy skills was educational level.
CHAPTER 1

INTRODUCTION

The early 1990's have not been good years for the American labor force thus far. For some American workers the 1990's have begun to look a lot like the 1980's: technological innovation continues apace; American companies have continued to relocate to foreign countries; and mega-mergers between corporate leviathans have created global entities that control assets greater than those of some countries (Blackley, 1992). The repercussions of these changes have become obfuscated by ambiguous terms such as, economic downsizing and reduction in force; by the same semantic legerdemain some American workers have become dislocated workers (Victor, 1990). According to Lordeman (1992), dislocated workers are: "those workers formerly employed full-time for a period of three years or more, who have lost their jobs through no fault of their own" (p. 3). As such, they have become members of a dislocated worker population whose numbers have increased by about 200,000 per year in the period 1987-1992 (Levine, 1992a; Lordeman & Spar, 1992; Podgursky, 1992).

Several events have precipitated the increase in the numbers of dislocated workers. The collapse of the Russian government and subsequent disintegration of the Soviet Union sounded the death knell for the "Cold War" (Smith, 1993). However, it has proved to be a bittersweet event, for even as world leaders celebrated the genesis of a new era in world history, the American military-industrial complex weighed the costs: 440,000 defense industry workers were laid off; 300,000 military
personnel were discharged from duty; and 100,000 Defense Department employees lost their jobs (Levine, 1992a; Lordeman, 1992; Smith, 1993). Moreover, it has been estimated that between 1987 and 1997, some 2.6 million people will be directly affected by these and other defense cuts (Ball, 1986; Smith, 1993).

Campaign promises, pending legislation, and technological innovation have increased, or will increase the numbers of dislocated workers in the American labor force (Keever & Davey, 1991; Lordeman, 1992; Mishel & Berstein, 1992). For example, on September 7, 1993, President Clinton announced his plan to streamline the federal government by eliminating 252,000 jobs and labor analysts have predicted that compliance with the Federal Clean Air Act will cost 16,000 mining jobs (Lordeman & Spar, 1992). Labor union officials, many Congressmen, and others believe adoption of the North American Free Trade Act (NAFTA) may succeed in giving more American companies the impetus to relocate to Mexico, taking American jobs with them (Gooding & Mendez, 1992; Lordeman, 1992). Meanwhile, the National Commission for Employment Policy has estimated 19 million workers (17% of the work force) are in jobs directly threatened by office automation (Golden & Danann, 1989).

The consequences of massive layoffs and plant closures can be measured in lost tax revenue and projected economic impacts (Blackley, 1989; Eves, 1985; Topel, 1990). Economists can calculate the effects of involuntary job loss on unemployment insurance expenditures, welfare enrollments, and human capital (Addison & Portugal, 1989; Baj, 1991; Topel, 1990). The costs in human suffering such as stress, lost self-
esteem, and other social consequences of involuntary job loss are not readily quantifiable in terms of dollars and cents, but the social costs of dislocation are presumed to be more severe for dislocated workers since most have had no prior unemployment experiences (Ashley, 1986; Cooper, 1988; Dean, 1987; Katterman, 1991; Kruse, 1988; Lancaster & Li Ping Tang, 1989; Levine, 1992a; Neinas, 1987).

The federal government established the Job Training and Partnership Act (JTPA) in 1982 (P.L. 100-418); this law included special provisions for the retraining of dislocated workers (Kogan, 1991; Leigh, 1990; Levine, 1992a; Lordeman & Spar, 1992; Spar, 1989). The efficacy of the JTPA in meeting the needs of dislocated workers is questionable, according to the literature (Leigh, 1990). The JTPA has been praised by numerous business representatives and government officials, and JTPA training program managers have pointed to high placement rates for dislocated workers as proof the program is successful (Berkley Planning Associates, 1991; Britsch, 1989; Charbonneau, 1986; Cheverton, 1992; U.S. GAO, 1987). This notwithstanding, several follow-up studies of dislocated workers who participated in JTPA-sponsored training programs have concluded that as many as 60-80% of the dislocated workers served by JTPA programs were employed in jobs unrelated to those for which they had been trained (Anderson, Burkhauser, Raymond, & Clifford, 1991; Elston, 1988; Leigh, 1990; Naylor, 1989). These programs have tended to emphasize a narrow range of technical skills that are designed to meet specific job requirements for specific employers (Anderson et al, 1991; Elston, 1988; Hollenbeck & Bennici, 1988; Leigh, 1990; U.S. GAO, 1991a).
Efforts by many state and local governments have been primarily directed toward developing specific job training programs as an inducement for firms to locate in their area (Ganzglass & Heidkamp, 1987; Hollenbeck & Bennici, 1988). A notable example of this approach was the joint venture of Boeing Aircraft Company and the city of Lake Charles, LA: the city granted large tax concessions to Boeing and donated and remodeled an existing facility for the company; area vo-tech schools provided aircraft maintenance training for some 2,000 Boeing-Louisiana workers; Boeing shut down its Louisiana operation and 2,000 trained Louisiana aircraft maintenance workers immediately became dislocated workers (Lake Charles American Press, October 23, 1989, p. 16A).

These findings seem to indicate that some Federal and State programs do not meet the individual needs of the dislocated worker or the needs of the employers (Anderson et al. 1991; U.S. GAO, 1991a; Victor, 1990). The U.S. House of Representatives Committee on Education and Labor recommended in 1992 that JTPA programs should provide comprehensive career counseling, including assessment of individual needs, interests and abilities, as well as coping and survival skills during the crises of displacement. Several reports have provided corroboration for the Committee's recommendations (Avedon, 1991; Ashley, 1986; Butler & Bailis, 1989; Craig, 1991; Hurst & Shepard, 1985; Leigh, 1990; Naylor, 1989; Steinweg, 1990; Strumpf, 1989; U.S. GAO, 1991a; Wojcicki & Kaufman, 1990).

An even more ominous specter than the growing numbers of dislocated worker has cast a pall over the American labor market--workplace literacy. Some recent
reports have indicated that American workers do not have sufficient workplace literacy skills to perform many of the ordinary tasks related to current and future jobs (Albert, 1990; Berryman, 1990; Carlivati, 1990; Carnevale & Johnston, 1989; Fagan, 1990; Levitan & Gallo, 1991; Losey, 1992; Lund & McGuire, 1990; Rutherford, 1989; U.S. DOL, 1988). The severity of the workplace illiteracy problem apparently depends upon which research source one uses. For example, Lund and McGuire (1990) reported that 10% of the American workforce is deficient in the basic skills, while Losey (1992) estimated as much as one half the workforce are illiterate. The Business Council for Effective Literacy (1992) estimated that 27 million American workers are illiterate; Busse (1992) commented that as much as one-fourth of the American workforce was illiterate. Results from the 1993 Adult Literacy Survey indicated that 40% of the American population scored in the lowest two literacy levels (Kirsch, Jungeblut, Jenkins, & Kolstad, 1993).

The modern workplace requires workers that have high reading, writing, and mathematical skills but they must also possess a broad collection of workplace literacy skills (Anderson, 1993; Carnevale & Johnston, 1989; Carnevale, Gainer, & Meltzer, 1988; Mosenthal & Kirsch, 1989; Wolff, 1990). These basic skills include reading, writing, and mathematics but also incorporate interpersonal skills, problem-solving skills, communication skills, and personal qualities (Albert, 1990; Anderson, 1993; Busse, 1992; Dole, 1989; National Center on Education and the Economy, 1990; U.S. DOL, 1992. The level or degree of such literacy requirements has not been identified but research has shown that the level of literacy in the workplace is not determined
by a grade equivalent, but by the literacy requirements of the workplace, which are different from school-based literacy (Carnevale et al. 1988; Fagan, 1990; Kirsch et al, 1993; Venezky, Kaestle, & Sum, 1987).

Statement of the Problem

The nation's economy could be at risk because a crisis exists in adult education where as many as 50 million women, minorities, immigrants, and older adults may have to be trained or retrained by the year 2000 (Bernstein, 1988). Four-year colleges and technical institutions will be impacted in the following manner: develop strategies for teaching critical literacy skills will require changes in curriculum; teachers will have to be in tune with adult learners; higher education must be prepared to serve diverse ethnic and cultural entities; the faculties will need the support of university administrators to change curriculum; colleges will have to improve the connections between higher education and business and industry (Anderson, 1993; Askov & Van Horn, 1993; Busse, 1992; Cataldo, 1987; Fields, 1986; Maxson & Hair, 1990).

Additionally, for the past several years employers, government agencies, and leading educators have pressed for sweeping reforms in contemporary education and workforce training practices because they are disturbed by changes in the workplace and a growing body of evidence that has indicated American workers lack the skills to adapt to their changing work environment (Barton, 1986; Dickey, 1992; Kirsch et al. 1993; Losey, 1992; . However, Hull (1990), Kirsch et al. (1993), Mosenthal and Kirsch (1989), and Venezky et al. (1987) have proclaimed that there is a scarcity of reliable information about literacy in general, and workplace literacy in particular.
Apparently, the number of workers who are deficient in skills, who they are, and the severity of their problems have not been documented by reliable evidence, according to Kirsch et al. (1993). "We need more than localized reports or anecdotal information from employers, public leaders, or the press; accurate and detailed information about our current status is essential" (Kirsch et al. 1993, p. xi). Academic education and vocational education research efforts should be directed toward filling this void in the literature (Askov & Van Horn, 1993; Fields, 1986; Kirsch et al. 1993; State Higher Education Executive Officers Association, 1992).

Purpose and Objectives of the Study

The purpose of this study was to ascertain the workplace literacy skills, occupational interests, and selected demographic characteristics of dislocated workers. The following specific objectives were formulated to guide the researcher.

1. Describe dislocated workers who were served by the JTPA-sponsored programs at the Louisiana Job Link Center (JLC) at LSU on the following personal demographic variables: age-group; educational level; gender; and DOT code of previous job as indicated by the Dictionary of Occupational Titles.

2. Describe dislocated workers on workplace literacy skills as measured by the CASAS (Comprehensive Adult Student Assessment System) Reading for Employability Tests and CASAS (Comprehensive Adult Student Assessment System) Mathematics for Employability Tests; and on categories of occupational interest as indicated by the APTICOM A5 Occupational Interest Inventory.
3. Compare the dislocated workers' reading scale score by categories of occupational interest as measured by the APTICOM A5 Occupational Interest Inventory.

4. Compare the dislocated workers' math scale scores by categories of occupational interest as measured by the APTICOM A5 Occupational Interest Inventory.

5. Compare the dislocated workers' reading scale scores by the demographics: age-group, gender, educational level, and DOT code of last job.

6. Compare the dislocated workers' math scale scores by the demographics: age-group, gender, educational level, and DOT code of last job.

7. Determine if a model exists which explains a significant portion of the variance in the dislocated workers' reading scale scores from categories of occupational interest, age-group, gender, educational level, and categories of DOT codes of last job.

8. Determine if a model exists which explains a significant portion of the variance in the dislocated workers' math scale scores from categories of occupational interest, age-group, gender, educational level, and DOT code of last job.

Definition of Terms

**Literacy** is defined as:

an individual's ability to read, write, and speak English and compute and solve problems at levels of proficiency necessary to function on the job and in society, to achieve one's goals, and to develop one's knowledge and potential. (Kirsch et al. 1993, p. 3)

**Functional literacy** is "the ability to use printed information to function in society, achieve goals, and develop knowledge and potential" (Carlivati, 1990, p. 20).
Workplace literacy is defined as a combination of: (1) the basic academic skills; thinking skills; personal qualities, such as dependability, punctuality, etc.; and (2) the workplace competencies: planning resources; acquiring interpersonal skills; using information; understanding systems; applying technology. (Dole, 1989).

Limitations of the Study

This study was limited to those dislocated workers who participated in the JTPA-sponsored Louisiana Job Link Center at LSU during Program Years (PYs) 1989-91. Therefore, the findings and conclusions of this study are restricted to this population. The CASAS workplace literacy tests and the APTICOM A5 Occupational Interest Inventory were administered by the staff of the Louisiana Job Link Center at LSU during the period 1989-91. Individual test results were committed to coded computer files administered by the LA JLC Director.
CHAPTER 2
REVIEW OF LITERATURE

The purpose of this chapter is to provide a synopsis of current research related to dislocated workers, adult literacy and basic literacy skills, and occupational interest inventories.

Dislocated Workers

Background

Dislocated workers first came under the scrutiny of labor market researchers and analysts during the early 1980's when numerous firms launched massive, permanent layoffs as part of restructuring efforts designed to enhance their competitiveness (Hamermesh, 1989; Kletzer, 1991; Lordeman & Spar, 1992; Podgursky, 1992). Cyclical economic factors and foreign competition had produced substantial reorganization and downsizing in the steel and automobile industries (Levine, 1992b; Lordeman, 1992). Thus, most early investigations focused on the automobile and steel industries; their geographic concentration (Michigan and Pennsylvania) meant that layoffs and plant shutdowns created drastic, localized economic effects (Podgursky, 1992; U.S. GAO, 1991b).

The 1991 U.S. Bureau of Labor Statistics data indicated the number of dislocated workers has oscillated with the phases of the business cycle. For example, U.S. Bureau of Labor Statistics (1991) analysts reported that between 1979 and 1986, 5.1 million workers were dislocated; two recessions occurred during this same time span. During the extended economic expansion of the mid- and late 1980's U.S. Bureau of
Labor Statistics (1991) sources indicated slightly over four million workers were displaced from their jobs. Levine (1992a) pointed out that the continuation of adverse economic conditions related to the 1990-1991 economic downturn and a prolonged recovery thereafter corresponded with a pronounced increase in the number of dislocated workers (5.6 million workers terminated between 1987 and 1992).

The correlation between the stage of the economic cycle and the number of dislocated workers has made the task of distinguishing structural from cyclical unemployment complex. Levine (1992a) made the following distinction:

Structural unemployment is the joblessness associated with long-term economic change, such as the shift from an industrial to a service economy, the introduction of new technologies, or changes in consumer preferences. The idea underlying structural employment is that a mismatch exists between the skills of workers and the skill requirements of jobs. Displaced workers are considered to be structurally unemployed. In contrast, cyclical unemployment is the joblessness caused by a contraction in the rate of economic growth. It typically is a short-term phenomenon that subsides once economic growth resumes (p. 3).

The differentiation between the two types of unemployment is vital when attempting to develop relevant public policy responses. For example, unemployment compensation was designed to help those workers who lost jobs due to cyclical economic factors while worker adjustment measures, such as training and education, were intended to help the structurally unemployed (Baj, 1991; Levine, 1992a; Lordeman & Spar, 1992). Economic growth makes it easier for the structurally unemployed to find new jobs, but it does not address the fundamental problem of the skills mismatch (Levine, 1992a).
Albeit true that business closures and layoffs are not unique events on the labor scene, the onus for the contemporary dislocated worker lies in the fact that most of the jobs they formerly occupied are permanently lost (Lordeman, 1992; Petrini, 1989; U.S. Bureau of labor Statistics, 1991). Technological change, restructuring, and other factors have rendered millions of jobs obsolete, thus effective worker retraining and education have become even more crucial (Baldwin, 1987; Britsch, 1989; Lordeman, 1992; Noyelle, 1990; Petrini, 1991; Rose, Fink, & Robinson, 1992; Silvestri & Lukasiewicz, 1989; Wolff, 1992). In addition, unprecedented economic shifts, such as the increasing use of robotics, rising energy costs, changes in consumer demand, technology, government policies, and skill requirements, have amplified unemployment (Eisen, 1993; Levine, 1992a; Rabin, 1992; Rose, et al. 1992; Wolansky, 1989; Wolff, 1992). Other factors which have contributed to problems in unemployment are: a lethargic economy, a growing population of older workers, women, and minorities in the workplace, and international competition (Baldwin, 1987; Britsch, 1989; Mishel & Berstein, 1992; Moore, 1992; Podgursky and Swaim, 1986; Podgursky, 1992; U.S. DOL, 1992).

Demographics

About 42% of the dislocated workers who permanently lost jobs between January, 1987 and January, 1992 were 25-54 year-old white males (Podgursky, 1992; U.S. GAO, 1991b). Levine (1992a) disclosed that women typically have accounted for 30-40% of the total number of dislocated workers. Similar findings were reported by Kletzer (1991), Podgursky (1992), Smith & Price (1988), and the U.S. GAO.
(1991b). Some researchers have hypothesized that men have a greater risk of displacement than do women due to their concentration in the traditionally more unstable goods-producing jobs such as mining, construction, and manufacturing (Levine, 1992a; Lordemann, 1992; Podgursky, 1992).

Slightly more than one-tenth of the total dislocated worker population has been black, and a little less than 10 percent have been of Hispanic origin (Kletzer, 1991; Levine, 1992; Moore, 1992; U.S. GAO, 1991a). These findings were supported by Lordemann (1992), Podgursky (1992), and Levine (1992a), among others (see Appendix D). Older workers (those aged 55-64) were no more likely to become dislocated than young workers, but the consequences of dislocation were deemed to be more severe for the older workers because few are willing to participate in retraining (Bowman, 1990; Bureau of National Affairs, 1987; Dayhoff, 1988; Levine, 1992a; Rife & First, 1989; Ruhm, 1990; U.S. GAO, 1990). Dean (1987), Merriam (1987), and Miskovic (1987) alleged that older dislocated workers resist retraining because: they felt that retraining is of little benefit; the risk of failure often outweighed ephemeral future benefits; the loss of self-esteem and resultant apathy was greater for older adults; and the older workers were more persistent in holding out for a job with a salary commensurate with that of their former job.

The Dislocated Worker Survey data indicated that blue-collar workers in manufacturing jobs have accounted for a disproportionate share of all dislocated workers between 1979-1992 (Levine, 1992b; Lordemann, 1992; Podgursky, 1992). However, this trend has apparently reversed itself; in the period 1979-1983, blue-
collar workers made up 57% of all dislocated workers while white-collar workers accounted for 37% of the total (Levine, 1992b; Lordeman & Spar, 1992; U.S. GAO, 1991b). By comparison, during the period 1987-1992, white-collar workers accounted for 50% of all dislocated workers, and the proportion of blue-collar worker dislocated workers had decreased to 42 percent (Levine, 1992b; Podgursky, 1992; U.S. GAO, 1991b).

Podgursky's 1992 analysis of Dislocated Worker Survey data revealed steel and auto industry employees made up about one-fifth of all dislocated workers in the 1979-1984 period, but account for only one-tenth of the total dislocated worker population today—primarily in the auto industries (see Appendix F). However, General Motors has disclosed plans to close plants and reduce its workforce by approximately 54,000 blue-collar jobs and 20,000 white-collar positions in the next few years; this means number of displaced auto workers will probably increase (Levine, 1992a).

Coincident to the decline in the number of dislocated workers in manufacturing industries, there has been an increase in dislocated workers from the service-producing sectors— wholesale/retail, professional/business services, and finance, insurance, real estate (Blackley, 1992; Levine 1992b; Silvestri & Lukasiewicz, 1989). 1991 U.S. Bureau of Labor Statistics data have indicated that from January, 1979 to January, 1983, these three industry clusters made up only 26% of the total dislocated worker population; however, by January 1992, these sectors accounted for 41% of the dislocated workers (Blackley, 1992; Levine, 1992b; Podgursky, 1992). It is likely that the instability demonstrated by these industry groups was related to restructuring
in the service sector as exemplified by bank closures and mergers, bankruptcies, and downsizing among retailers and professional services firms after the October, 1987 stock market downturn (Blackley, 1992; Golden & Danann, 1989; Keever & Davey, 1991; Levine, 1992b).

**Reemployment Rate**

The reemployment rate of dislocated workers improved during the economic expansion of 1984-1990, but the July, 1990 recession and the ensuing economic slowdown have lowered the reemployment rate from its zenith of 72.3% in 1990 to its nadir of 64.9% in 1992 (Addison & Portugal, 1992; Levine, 1992a; Ruhm, 1992). Levine (1992a), Podgursky (1992), and U.S. Bureau of Labor Statistics (1991) suggested that in general, the reemployment rate has been higher among male dislocated workers than among female dislocated workers and higher among white than minority dislocated workers (see Appendix E).

**Advance Notice and WARN Legislation**

In the early stages of the dislocated worker phenomenon plant managers often announced closures or layoffs without warning and assuaged their collective conscience by handing out severance paychecks (Bernstein, 1992; Ehrenburg & Jakubson, 1990; Eves, 1985; Love & Torrance, 1989; Ruhm, 1992). Such actions led to passage of the Worker Adjustment and Retraining Notification Act (WARN) of 1988; this law required businesses to give 60 days advance notice to workers who were to lose their jobs due to plant closing or massive layoffs (Ehrenburg & Jakubson, 1990; Love & Torrance, 1989; Ruhm, 1992; Spar, 1989).
Some businesses merely complied with the letter of the law, but others responded to societal and political pressure by creating training programs to assist dislocated workers (Addison & Portugal, 1989; Herz, 1990; House Committee on Education and Labor, 1992). Some of the larger employers such as Ford Motor Company, Warner-Lambert, IBM, and AT&T worker retraining programs have been hailed as exemplary by the U.S. DOL (Hennebach, 1992; Keever & Davey, 1991; McDonald, 1988; Morris, 1992; Overmann, 1992; Petersen, 1987). However, Bernstein (1992), Mangelsdorf (1993), and the Business Council for Effective Literacy (1992) have warned that companies with less than 500 workers employ 57% of the labor force but only 2-3% of these companies have invested in retraining workers.

Nord and Yuan (1991) reported results that support the benefits of the 1988 WARN Act; they determined that workers who receive at least 60 days advance notice of plant closures or layoffs appear to have improved chances for reemployment. By contrast, Ruhm (1992) found a paucity of support for the concept that early notification substantially reduces the duration of joblessness after a worker has been laid off. Some reports have indicated that early notification of impending job loss appears to reduce the frequency of joblessness by promoting job search among workers before layoffs begin. Paradoxically, the question as to whether prenotification reduced the duration of unemployment after displacement has produced equivocal findings (Addison & Portugal, 1992; Love & Torrance, 1989; Ruhm, 1992). Others have speculated that advance warning of layoffs may not be beneficial to unskilled workers, conceivably because they are deficient in job search skills;
likewise, it might be argued that the notice period is not sufficiently long enough for unskilled workers (Addison & Portugal, 1992; Levine, 1992a; Love & Torrance, 1989).

Relocation of Dislocated Workers

Zippay (1991) disclosed that only 15% of dislocated workers are willing to relocate even though relocation appears to increase the chance of reemployment. Levine (1992a) noted that of those workers surveyed during 1987-1992, seventy-eight percent of those who moved were reemployed compared to 63% reemployment of those who did not relocate. The reluctance of workers to relocate has been linked to family and community ties and it is inversely related to the worker's age, i.e. the longer an individual has lived in the community and the older he/she is, the less likely he/she is to move (Cataldo, 1987; Dayhoff, 1988; Dean, 1987; Katterman, 1991; Merriam, 1987; Miskovic, 1987; Turman, 1987). Other considerations which inhibit mobility among dislocated workers are: a lack of information about job opportunities in other areas; the expense of relocation; and financial obligations such as home loans (Levine, 1992b; 1988; Hamermesh, 1989; Podgursky, 1992).

Duration of Unemployment

About 18% of reemployed workers had experienced joblessness of six months duration or longer (Levine, 1992b; Lordeman, 1992; Podgursky 1992). In fact, the median period of joblessness for workers displaced between 1987-1992 was about two months according to 1992 Bureau of Labor Statistics reports. Comparably more black than white workers experience long-term unemployment following displacement
(Kletzer, 1991; Moore, 1992). The duration of joblessness appears to be inversely related to the education level of the dislocated worker, i.e., those workers with the most education experienced less time of unemployment (Levine, 1992a; Podgursky, 1992; Swaim, 1989). Levine (1992a) reported that whether workers were the heads of a household seemed to be linked to shorter duration of unemployment, perhaps because they were more aggressive in seeking new employment. The older dislocated workers experienced longer durations of joblessness, apparently because they felt retraining at their age would be futile, or believed that they would find jobs similar to their previous employment (Bowman, 1990; Gleich, 1988; Miskovic, 1987, Rife & First, 1989; Rones & Herz, 1989; Rothstein & Ratte, 1990; Turman, 1987; U.S. GAO, 1990; Weiss, 1988).

Some researchers have proposed that job tenure significantly increased the duration of unemployment, particularly for long-tenured men, because these men hold out for wages comparable to those of their previous job (Kletzer, 1989; Levine, 1992a; Valletta, 1991). The firm-specific training and experience accrued on their previous job is not readily transferable, thus their salary expectations may have been unrealistic (Valletta, 1991). Addison and Portugal (1991) reviewed several reports that linked job tenure to prolonged unemployment and reported findings that were diametrically opposite (job tenure decreased the duration of unemployment). Workers who were formerly employed in manufacturing jobs and those who lived in areas of high unemployment may experience longer unemployment (Kruse, 1988; Levine, 1992a; Moore, 1992). Moore (1992) postulated that long-term joblessness itself
caused longer durations of unemployment: "A long period of joblessness itself might reduce the employability of dislocated workers by lessening their self-esteem and self-confidence, sometimes prompting alcoholism and mental illness, or stigmatizing them in the eyes of potential employers" (p. 12).

**Dislocated Worker Reemployment Earnings**

Analysis of data from the *Dislocated Worker Survey* (January, 1987 through January, 1992) indicated slightly more than 1.25 million (52%) dislocated workers who were reemployed full-time earned at least as much as they had in their predisplacement jobs (Levine, 1992b; Podgursky, 1992). Conversely, 1.17 million dislocated workers (48%) who were reemployed full-time earned less than prior to displacement (Levine, 1992b). The U.S. Bureau of Labor Statistics (1991) revealed that income losses among full-time workers have varied according to the industry from which the worker was dislocated. For example, 51% of manufacturing workers were reemployed in jobs that paid at least as much as before. However, Levine (1992b) noted that there is no available information regarding the discrepancies in gross compensation (salary plus other benefits). In addition, actual losses have depreciated because workers who earn the same amount of dollars today as they did prior to displacement have lost purchasing power due to inflation (Levine, 1992b; Podgursky, 1992; Vandenheuvel, 1989; Weiss, 1988).

Older men (51-65 years old) experienced larger wage losses than younger men, and those who changed industry or occupation earned less than in their previous job (Bowman, 1990; Rones & Herz, 1989; Ruhm, 1990; U.S. GAO, 1990). White-collar
workers experienced less earnings loss after reemployment than blue-collar workers, perhaps because their skills are more general (Lordeman, 1992; Podgursky, 1992). Dislocated workers with less education, those who have been unemployed longer, and long-tenured workers earned less than predisplacement wages (Addison & Portugal, 1992; Kletzer, 1989; Podgursky, 1992; Valletta, 1991). Among families in which the husband has been dislocated, the evidence indicated that the wife’s earnings alleviated the economic stress of dislocation but may have increased the duration of unemployment; Unemployment Compensation provided short-term benefits and food stamps were of little help because the wife’s income made them ineligible (Baj, 1991; Seitchik, 1991).

Basic Literacy Skills in America

A Retrospective on Adult Literacy

Apprehension about the erudition of American citizens is not a modern phenomenon because our history has displayed several eras when the learning skills of the population were deemed insufficient by one expert or another (Barton, 1986; Hull, 1991; Kirsch et al. 1993; Venezky et al. 1987). The contrast between past and present concerns about literacy stem from the way in which Americans perceive the problem. Kirsch et al. (1993), Rabin (1992) and Passmore (1991) concurred that the traditional perception of literacy skills, or the lack thereof, has been that it was a personal problem which could affect an individual’s job opportunities, educational achievement, and societal activities. Today, literacy is viewed as a national problem with ramifications that extend beyond individual concerns. Indeed, the human costs
of illiteracy have been relegated to secondary importance behind the economical and social costs (Berryman, 1990; Eisen, 1993; Johnston & Packer, 1987; Kirsch et al. 1993; Mosenthal & Kirsch, 1991; Rabin, 1992).

If anyone doubted that adult literacy was a national priority that doubt was dispelled in 1990 when the National Governors’ Association and then-President Bush launched the "Education 2000 Initiative." One of the goals of this plan was stated thusly: "By the year 2000, every adult American will be literate and will possess the knowledge and skills necessary to compete in a global economy and exercise the rights and responsibilities of citizenship" (Kirsch et al. 1993, p. xi).

In 1991 Congress passed the National Literacy Act (NLA) which purported "to enhance the literacy and basic skills of adults, to ensure that all adults in the United States acquire the basic skills necessary to function effectively...." (Kirsch et al 1993, p. 12). This was at best a Utopian solution to an enigmatic problem whose solution will require more than political posturing (Kirsch et al. 1993). In the past, when pundits and critics have called for educational reform, the educational system was commonly targeted; most often reform efforts have focused on revisions in curriculum (Chisman, 1989; Hull, 1990; Venezky et al. 1988). Kirsch et al. (1993) warned that educational reform might appear to be the solution to the problem of workplace illiteracy; however, given that almost 80% of the workforce for the year 2000 is already employed, it would appear to be an exercise in futility.
Literacy Defined

Although most people agree on the merits of literacy, there has been a divergence of opinion about how it should be defined and how it should be assessed (Hull, 1991; Kirsch et al. 1993; Kirsch, Jungeblut, & Campbell, 1992; Metz, 1989; Venezky et al. 1988). Federal efforts to define literacy began in 1985 when the U.S. Department of Education sponsored a study to determine the literacy proficiency of young adults (21-25 years old). Herein literacy was broadly defined as: "Using printed and written information to function in society, to achieve one's goals, and to develop one's knowledge and potential" (Kirsch et al. 1993, p. 2).

In 1991, the National Adult Literacy Survey (NALS) asserted that literacy is more than just academic intelligence; adults must use a wide array of skills to execute the many dissimilar tasks identified with work, household, and community. Therefore, the NALS applied a functional context to the meaning of literacy, stating, "An individual's ability to read, write, and speak English and compute and solve problems at levels of proficiency necessary to function on the job and in society, to achieve one's goals, and to develop one's knowledge and potential" (Kirsch et al. The 1993, p. 3). The NALS Literacy Definition Committee generally accepted this definition but cautioned that there is no universally accepted definition of adult literacy nor is there agreement on how best to measure adult literacy. The NALS declared that using standardized high school tests to measure adult literacy and using grade-levels terminology to characterize adult scholarship was inappropriate (Kirsch et al. 1993; Mikulecky, 1990). In a further corollary the committee sanctioned the idea that
literacy is neither a lone skill, applicable to all forms of subject content, nor an interminable array of competencies, individually associated with a particular type of content or material (Kirsch et al. 1993). The NALS committee allowed this philosophy to guide the development of the adult literacy instrument used in the comprehensive National Adult Literacy Survey (Kirsch et al. 1993) and adopted the following tripartite literacy scale:

**Prose literacy**—the knowledge and skills needed to understand and use information from texts that include editorials, news stories, poems, and fiction;

**Document literacy**—the knowledge and skills required to locate and use printed information contained in materials that include job applications, payroll forms, transportation schedules, maps, tables, and graphs;

**Quantitative literacy**—the knowledge and skills required to apply arithmetic operations, either alone or sequentially, using numbers embedded in printed materials. (p. 3)

**Workplace Literacy Skills**

Workplace literacy has been defined in a variety of ways in the literature but definitions have embraced the essential components of reading and mathematical or computational proficiencies (Delker, 1990; Logan & Byers, 1991; Packer, 1992; Schultz, 1992; Scribner & Stevens, 1989). Contemporary Americans are better educated and more learned than any who have preceded them, yet many employers have attested that most American workers have insufficient reading, writing, computation, and reasoning skills to execute job tasks efficiently (Eisen, 1993; Hull, 1990; Levitan & Gallo, 1991; National Center on Education and the Economy; U.S. DOL, 1992). Within the work environment, these skills are primarily utilized as a means of finishing other assignments (Kirsch et al. 1993; National Alliance for
Business, 1992). However, most jobs demand a combination of these competencies in order to resolve workplace problems, e.g., "hands-on" skills as opposed to the traditional "academic skills" of the archetypal school environment (Busse, 1992; National Alliance for Business, 1992; Office of Vocational and Adult Education, 1991).

Rutherford (1989) and Carlivati (1990) characterized functional or workplace literacy as reading, writing, speaking, listening, and mathematical skills. The U.S. Department of Labor Secretary's Commission on Achieving Necessary Skills (SCANS) in 1992 offered the following dichotomy of workplace skills:

**Foundation skills:**
1. Basic academic skills of reading, writing, math, listening, speaking;
2. Thinking skills, such as problem-solving;
3. Personal qualities—responsibility, integrity, self-esteem;

**Workplace competencies:**
1. Planning resources—budgeting, allocation of staff and space;
2. Acquiring interpersonal skills;
3. Using information—using computers, communicating orally and in written form;
4. Understanding systems—application of total quality management;
5. Applying technology—using, selecting, maintaining equipment;

Workplace literacy in the laborforce

As previously iterated, adult illiteracy in the United States is perceived to be a national problem with critical implications that transcend the personal and societal implications (Delker, 1990; Dole, 1989; Kirsch et al. 1993; Rabin, 1992). Workplace illiteracy has also achieved global prominence. Workers with basic skills deficiencies have been reported in Australia (Baldwin, 1987), Canada (Fagan 1990; Walker,
1992), Denmark (Hansen, 1989), Germany (Johnston & Packer, 1987), and England and Scotland (Further Education Unit, 1991; Manpower Services Commission, 1987).

Some have estimated that American workers' basic skills deficiencies cost the United States between $20-$225 billion dollars annually in lost productivity despite the fact that business and industrial firms spend an estimated 60-100 billion dollars each year on worker retraining programs (Carlivati, 1990; Carnevale et al. 1988; Eisen, 1993; Froiland, 1993; Geber, 1993). Business and industry executives have commented that the advantage to employees who successfully complete retraining programs can be significant in terms of salary, promotions, and other benefits (Delker, 1990; Eisen, 1993; Eurich, 1990; Zemke, 1989). However, many workers do not qualify for training programs simply because they lack the basic skills necessary to gain entrance to the program (Busse, 1992; Eisen, 1993; Froiland, 1993; House Committee on Education and Labor, 1992; Levitan & Gallo, 1991; Pilenzo, 1990; Sarmiento, 1991).

Skilled employees are essential to meet the demands of the modern workplace and the potential demands of the future, but their numbers have rapidly decreased (Carlivati, 1990; Carnevale et al. 1988; Jurmo, Wiggenhorn, Packer, & Zeigler, 1989; National Alliance for Business, 1992; Rutherford, 1989). All too often technological change has forced American business and industry to install expensive new equipment and machinery only to discover that many of their employees lacked the skills needed to operate it (Barton, 1986; Cyert & Mowery, 1987; Losey, 1992; Noyelle, 1990; Pilenzo, 1990; Stein, 1991). Perhaps this can be attributed to
estimates that 27 million U.S. adults are functionally illiterate (Losey, 1992). The functionally illiterate individual cannot read and understand operations manuals and computer displays or safety warnings (Breuning, 1989; Carlivati, 1990; Eurich, 1990; Losey, 1992; Passmore, 1991; Rabin, 1992; Szabo, 1992). In a similar vein, the Business Council for Effective Literacy reported that 85% of the material read on the job is written at the 9th-grade level, but one out of every eight employees in the U.S. reads at only the 4th-grade level. Losey (1992) contended these functionally illiterate Americans are the products of a 30% high school dropout rate and schools which promote and graduate students who fail courses.

Some analysts have predicted that fluctuating economic, demographic, and labor-market factors will widen the schism between the nation’s literacy needs and its educational resources (Busse, 1992; Logan & Byers, 1991; Noyelle, 1990; Overman, 1992; Silvestri & Lukasiewicz, 1989; U.S. DOL, 1988). Packer (1992), Losey (1992), and the National Center on Education and the Economy (1990) are among those who have predicted that by the year 2000 most jobs will require post-secondary education, and even entry-level jobs will require basic mathematical and technical skills beyond high school. The dilemma for U.S. business and industry lies in the fact that 56% of U.S. workers have no postsecondary education (Carnevale et al. 1988; Losey, 1992; Office of Vocational and Adult Education, 1991; Pilenzo, 1990; Washburn & McClure, 1992).

The reader should be apprised that each individual acquires a discrete array of literacy proficiencies depending on a variety of intangibles such as, family and cultural
environment, educational achievement, economic resources, interests, aspirations, and employment experiences (Kirsch & Jungeblut, 1986). Literacy assessments, no matter how comprehensive, can consider only some of these factors (Kirsch et al. 1993). Literacy survey results can disclose particular attributes that are related to literacy but it is not possible to determine the direction of relationships; the extent to which literacy affects certain facets of our lives, or is affected by these facets, is not known (Kirsch et al. 1993).

Theories of Career Development and Occupational Choice

A Brief Overview

An in-depth historical account of the origins of career development and occupational choice theory is beyond the scope of this paper, but a brief look at the history is relevant in order to demonstrate the connections to occupational interest inventories. Current theories of career development originated in 1909 when F. Parsons, director of the first vocational guidance center in the U.S. recommended a scientific approach to vocational counseling that was distinguished by an emphasis on measurable personal traits as predictors of educational and vocational achievement (Brown & Brooks, 1984; Walsh, 1990). Thus, the psychology of individual differences became one of the basic tenets of vocational psychology—the study of occupations. In its inception, the psychology of individual variation was utilized to develop the cognitive tests to determine students' general level of intelligence for academic guidance purposes (Sharf, 1992; Walsh, 1990).
The U.S. Army provided the catalyst for intelligence assessment research when it adapted the Army Alpha Intelligence Test and used it to place soldiers into military job classifications during World War I (Brown & Brooks, 1984; Walsh, 1990). Studies spawned by the Army’s Alpha tests sought to relate intelligence levels to occupational classifications, and prompted subsequent efforts by vocational counselors to create occupational-intelligence standards to aid in vocational counseling and personnel selection (Brown & Brooks, 1984; Phillips, 1992). One such effort illustrated by Brown and Brooks (1984) was Fryer’s theory wherein he organized occupations into five levels (professional, technical, skilled, semiskilled, and unskilled); Fryer listed 96 occupational intelligence classifications which he based on the average intelligence scores of a few hundred subjects.

Research conducted by the Minnesota Employment Stabilization Research Institute (MESRI) during the 1920s produced new information about the relevance of standard intelligence measures, mechanical, clerical, and dexterity aptitudes, occupational interests, and personality (Brown & Brooks, 1984; Walsh, 1990). MESRI investigations lead to the development of the first occupational ability profile, which became the precursor the job families later developed by the U.S. Employment Service (Brown & Brooks, 1984; Walsh, 1990). These events preceded all the contemporary career development theories summarized in the following section.

Trait and Factor Theory

The progenitor of all contemporary theories of occupational choice was the trait and factor method originated by Parson’s three-stage process: self-knowledge;
knowledge of various occupational requirements and conditions; and the individual’s ability to analyze both sets of information in order to determine which occupation best matches his or her proficiencies (Brown & Brooks, 1984; Sharf, 1992). Walsh (1990) asserted that the nomenclature of trait and factor approximates the two integral components of the theory: a person can be categorized by distinctive patterns of aptitude and capabilities (traits); occupations can be characterized by uniform attributes (factors).

All structural models of occupational decision-making maintain these collective assumptions: (1) each human being possesses definite rather constant psychological characteristics that are suppressed or allowed to evolve as a consequence of person-environment interaction; (2) certain jobs require more or less of these characteristics for acceptable performance; (3) acceptable performance results in affirmative feedback and need fulfillment; and, (4) the role of occupational decision-making is to fit persons to occupations so that personal needs will be satisfied and acceptable job performance will follow (Brown & Brooks, 1984; Phillips, 1992; Sharf, 1992). Dawis and Lofquist (1976) provided empirical evidence for a further assumption: that job change occurs when either the individual’s needs are not being met or the job is being performed unsatisfactorily.

Trait and factor theorists have provided sound definitions of traits, occupational choice, and occupational change, but they have failed to appraise and define succinctly the macrocosm of variables that affect the occupational decision-making process (Brown & Brooks, 1984). Also left unresolved were the interrelationships that exist
among traits such as values, needs, aptitudes, and interests as they behave in concert to bias career decision-making (Sharf, 1992; Walsh, 1990).

The trait and factor theory undergirds much of the career counseling practice that takes place in this country, and the basic model has been utilized for personnel selection and placement in industry and educational environments (Walsh, 1990). The model is comprehensive in that the premises apply evenly to men and women, minorities and nonminorities although some of the measurement instruments have been shown to be biased against women and minorities (Miller, 1992; Walsh, 1990; Westbrook, 1988).

Excessive reliance on trait and factor methodology has provided a narrow view of individual occupations and led to the utilization of a profusion of aptitude, intelligence, interest, and personality tests to speculate about occupational success (Walsh, 1990; Westbrook, 1988). With that risk in mind, career counselors have been admonished that, under certain circumstances, tests may provide worthwhile information for the qualified counselor, but the prediction of one's future occupational endeavors should not be based solely upon test results (Spitzer & Levinson, 1988; Walsh, 1990).

The trait and factor model has stimulated hundreds of research inquiries regarding characteristics, provided the basis for job analysis, served as the basis for works such as The Dictionary of Occupational Titles, and produced the foundation for much predictive work on job performance (Magee & Pumfrey, 1986; Miller, 1992). Additionally, it has resulted in the creation of a plethora of scales, inventories, and
assessments that have been used and which continue to be used by career counselors (Brown & Brooks, 1984; Lunneborg & Lunneborg, 1968; Walsh, 1990; Westbrook, 1988). Though the trait and factor theory alone cannot explain occupational choice, there is abundant empirical evidence that bolsters the notion of a connection between traits and job success and performance (Walsh, 1990).

Roe’s Need Theory

Roe’s concept of occupational choice supposed a link between “certain early childhood environments, need development, personality, and job choice” (Roe, 1957, p. 319). Roe’s theory was grounded in psychology because she endeavored to rationalize the psychological processes that influence career selection (Roe, 1957). Like Holland, Roe believed that each individual is born with certain psychological predilections and an array of physiological and physical skills and deficiencies that combine with particular environmental circumstances (primarily child rearing procedures) to develop hierarchies of needs that individuals strive to satisfy in a specific job environment (Holland, 1985; Roe, 1957). Roe’s principal endowment to occupational psychology was a hypothetical system to categorize occupations; its major drawback has been that it has been perplexing to research (Roe, 1976). Consequently, investigators who have attempted to inquire into formulated correlations between child rearing environment and personality have relied on retrospective methodology that has frequently failed to support Roe’s ideas (Brown & Brooks, 1984). Critics of Roe have asserted that she recognized the significance of socio-
demographic factors in career choice but failed to develop an acceptable premise about the way in which this occurs (Brown & Brooks, 1984; Walsh, 1990).

**Holland’s Personality Theory**

John Holland is considered to be the "father" of occupational interest theory; his *Vocational Preference Inventory* and *Self Directed Search* (SDS) are the most widely used interest assessment instruments in the world (Miller, 1992). Holland's *Vocational Preference Inventory* was based on work by Darley (1938) and Guilford's 1954 comprehensive factor analysis of human interests. Guilford developed six major factors to account for the diverse interests and personality traits of people: mechanical, scientific, social welfare, clerical, business, and esthetics (Guilford, Christensen, Bond, & Sutton, 1954).

Holland (1985) has averred that his current personality types are similar to types proposed earlier by Jung (1933) and others in the field of psychological research. This led Holland to theorize that vocational preferences are expressions of personality, and it is this rationale that guided Holland's development of the *Vocational Preference Inventory*:

The choice of an occupation is an expressive act which reflects the person's motivation, knowledge, personality, and ability. Occupations represent a way of life, an environment rather than a set of isolated work functions or skills. To work as a carpenter means not only to use tools but also to have a certain status, community role, and special pattern of living. In this sense, the choice of an occupational title represents several kinds of information: the S's motivation, his knowledge of the occupation in question, his insight and understanding of himself, and his abilities. In short, item responses may be thought of as limited but useful expressive or projective protocols. (1985, p. 8)
Holland’s instrument used raw scores instead of normatively derived scores, therefore, women are more often grouped into the social and artistic classifications (historically regarded as the feminine typologies) than into the traditionally male conventional or realistic categories, (Gottfredson, 1976; Holland, 1985). Had Holland used normative scores, a woman’s raw score would be compared on a scale derived from the scores of women who with similarly characteristics (Walsh, 1990). Consequently, critics have charged that The Self Directed Search is sex-biased and that the personality constructs lacked validity (Brown & Brooks, 1984; Spitzer & Levinson, 1988). Holland’s theoretical anomaly has provided the impetus for a surfeit of investigations, criticism, and replies to that criticism, all of which have served to expand the literature base. Meanwhile, Holland has steadfastly asserted that the scale results are merely indicative of the social structure of our society, i.e. women are socialized differently from men.

John Holland’s personality topologies model contained carefully interpreted constructs and well developed instruments for assessing personality types; his model also specified the relationships among types, the consequence of incongruence between personality types and environment, and the effects of differentiation and inconsistency in the personality (Holland, 1985, p. 18). Numerous books have been based on Holland’s work, and several interest inventories (including a computerized version of the SDS) have been developed based on Holland’s hypotheses, most notably the Strong Vocational Interest Inventory (Miller, 1992).
Holland (1985) grouped career guidance, counseling, and assessment under the general term career assistance in order to encompass the broad range of activities extended to help people of all ages cope with vocational decisions and problems (p. 139). Holland felt career assistance included "the goals and professional functions of vocational guidance, career development, career counseling, selection, placement, career courses and workshops, and portions of retirement planning and special programs for minorities and women" (1985, p. 135).

**Bordin’s Psychoanalytic Theory**

Bordin, Nachmann, and Segal (1963) applied psychoanalytic theory to delineate the facets of work which fulfill diverse individual needs. Bordin et al. (1963) postulated a connection between biological requirements or needs and the familial environment, which creates specific personality types. The child’s identification with both parents is the principal determinant of personality formation, and the quality of the identification is dependent on the relationship or mutuality between the parents and the child (Bordin et al. 1963). According to Bordin et al. (1963) high mutuality existed when external demands are melded with the aspiration to achieve satisfaction through play, thus work can become a playful experience; by contrast, when mutuality is low, work may become a quotidian activity. Bordin et al. (1963) further alleged that needs which arise from biological demands and identification dictate life choices--as personality changes, different needs arise, and therefore, careers may change (career indecision). On the other hand, self-doubt, ill-defined needs, and conflict
between work and impetuosity may create negative career impacts (Bordin et al. 1963).

Developmental Theory

The hallmark of developmental theories is the acknowledgment that decision-making actions commence in childhood and continue throughout adulthood (Super, 1980). Super (1980) credited Europeans Buehler and Lazarsfield for the original conceptualization of occupational choice as a developmental process but designated Havighurst and Carter for the concepts of developmental tasks and the formation of interests. Developmental theories generally have involved stages or periods in which are depicted typical behavior patterns and the factors correlated with those behaviors.

Ginzberg (1976) suggested a model of career development that espoused the idea that occupational selection required an array of concurrent decisions rather than a single choice. Ginzberg (1976) admitted that the model was primarily oriented toward male, white middle-class Americans therefore, it did not have the same application to women, minorities and the indigent. Because Ginzburg is an economist, his model lacked many of the psychological factors common to other theories, but he did concentrate on the importance of the economy in career development, an element that is absent in most psychological theories (Blustein & Phillips, 1988; Walsh, 1990). His 1976 publication revised earlier statements in which he promoted the idea that career choice was irreversible but Ginzberg’s (1976) theory was deficient in that it lacked comprehensiveness, clarity and elaboration of explanatory constructs, and synthesis of propositions.
Super incorporated the theories of Buehler and Ginzberg, the principles of differential psychology, phenomenological psychology, and the writings of sociologists Miller and Form into the structure of his theory (Super, 1980). The dominance of self-concept, its maturation and differentiation formed one part of Super’s model; evolutionary tasks, intervals, and normative concepts such as career maturity constitute a second portion of the model (Super, 1980). Facets of trait theory, such as values, make up the third part of Super’s (1980) theory. This compartmentalization is the weakest element of Super’s theory because he has not fully incorporated the differential, developmental, and phenomenological features into a cohesive hypothesis (Blustein & Phillips, 1988; Brown & Brooks, 1984). Super acknowledged gender, ethnic origins, and status as prominent factors in career development in his early research but he did not account for the variation in career plans that result from these socio-demographic variables (Walsh, 1990).

Super (1980) defined his constructs succinctly (he even developed measures of these constructs) and his eclectic research studies have generated many investigations that generally have supported his ideas. Super’s contributions to career development programs have been felt at all levels of education, as well as in business and industry. Super’s model and John Holland’s ideas currently occupy the preeminent position in career development theory (Brown & Brooks, 1984; Sharf, 1992).

Tiedeman and Miller-Tiedeman’s Decision-Making Model

The Tiedeman and Miller-Tiedeman model reflected the authors’ efforts to supply a paradigm for individual decision-making centered on the role of the individual and
his or her ability to use personal and common knowledge in the decision-making procedure (Tiedeman & Miller-Tiedeman, 1976, 1979). The resultant was a model of the decision-making process formulated about differentiation of the ego. Ego differentiation can result from either internal or external forces, and it leads to decision making, implementation, and reintegration (Tiedeman & Miller-Tiedeman, 1979). Accordingly, Tiedeman and Miller-Tiedeman (1979) felt the individual was capable of considering many decisions at once, and since the process is dynamic, persons may move back and forth through the decision-making intervals. Without question the model has many ill-defined terms and ideas that beg clarification but the emphasis on the individual has resulted in the creation of a number of instruments that have found utility in career counseling (Miller, 1992; Sharf, 1992).

**Career Development and Assessment in Counseling**

Though there is no single theory of career development or interest inventory that everyone agrees on, the career counselor can employ theory and assessments to illuminate and clarify vocational information and vocational behavior (Craig, 1991; Holland, Magoon, & Spokane, 1981). Individual assessments of aptitudes, interests, and abilities are of little benefit to the client who does not understand them: "People want to know what tests mean, and what their personal values and competencies mean occupationally" (Holland, 1985, p. 136).

Holland et al (1990) avowed that assessment instruments offer some explanatory prospects for managing routine intervention problems in the career guidance practice. They can be used to interpret interest inventories, to elucidate the diverse occupational
preferences of clients in conflict, to explain work histories, to approximate the consequences of suggested person-environment combinations, and to clarify conformative and nonconformative vocational development (Holland, 1985).

Holland submitted that interest inventories, personal demographic data and aptitude scores enable the career counselor to:

(1) interpret individual scores according to formulations, (2) predict the categories of occupations that appear compatible for a person, (3) identify some probable sources of job dissatisfaction, (4) locate potentially compatible jobs for people facing job loss, and (5) identify clients whose characteristics indicate more need for assistance. (1985, p. 136)

According to Holland (1985) job satisfaction, security, and accomplishment depend on the congruence between one’s personality and work environment. In general, just as one is more comfortable among friends whose values, talents, and penchants are comparable to one’s own, so too are we more apt to perform well at an occupation in which we are psychologically compatible (Holland, 1985).

**Interest Inventories**

The examination of interests has been predominately the domain of educational and career counseling researchers; to a somewhat lesser extent, the generation of occupational interests assessments has been catalyzed by questions about individual occupational selection and job classification (Rounds, 1990; Miller, 1992). Without question the appraisal of individual career interests has pragmatic significance for both the employer and employee (Blustein, 1992; Greenwood, 1987; Holland, 1985; Hurst & Shepard, 1985; Miller, 1992; Steinweg, 1990).
Most interest inventories were devised to measure personal interests in disparate fields of employment (Cole & Hanson, 1975; Rounds, 1990; Westbrook, 1988). However, contemporary theorists have shown an increasing cognizance of the personal and environmental catalysts which influence occupational selection, job changes, and vocational expertise (Blustein, 1992; Holland et al. 1981; Neimeyer et al. 1991; Miller, 1992; Sharf, 1992). Likewise, modern interest inventories reflect an increased concentration on self-exploration because they enable individuals to examine comprehensive test results in relation to personal job qualifications and experience (Miller, 1992; Sharf, 1992; Walsh, 1990; Zarella & Scheurger, 1987). A further refinement of interest inventories has focused on the expansion of individual career alternatives, in particular the requirement of sexual impartiality in interest inventories (Miller, 1992; Sharf, 1992).

Generally speaking, interest inventories contrast a person’s declared interests with those of representative individuals employed in different occupations (Fassinger, 1990; Miller, 1992; Walsh, 1990). This procedure may involve the tabulation of individual item responses, the translation of scores in broad interest areas, or a combination of the two (Holland, Gottfredson, & Baker, 1990; Rounds, 1990; Walsh, 1990). Brown and Brooks (1984) offered the cautionary note that this approach was predisposed to sustain existing group differences among jobs. For example, some jobs, such as engineering and nursing, generally have great discrepancies in the ratio of men to women; this would tend to influence the interpretation of results obtained by males and females on interest inventories (Brown & Brooks, 1984).
The literature is replete with studies about occupational interest inventories but much of this research has focused on specific inventories, the developers of these inventories, or issues related to their reliability and validity (Holland et al. 1990; Miller, 1992; Rounds, 1990; Walsh, 1990). The purpose of this portion of the review of literature was not to document every research effort, but to acquaint the reader with some of the more trenchant investigations.

Occupational preferences have been shown to be stable over time (Baird, 1970; Bartling & Hood, 1981; Campbell, 1966; Swanson & Hansen, 1988). The relationships between the occupational choices of children and the attitudes of their parents have been explored by Medvene (1969) and Steimel and Suziedelis (1963), but the findings have been ambiguous. Bryant (1987) examined the role of birth order as a factor in the development of vocational preferences; his findings indicated that first-born children were likely to have wide occupational interests and excel at teaching and other professional jobs whereas last-born children generally expressed few interests and excelled in athletic jobs. The connection between self ratings of ability and personality in occupational choice has been investigated by Baird (1970), Hogan, DeSoto, & Solano (1977), Holland et al. (1990), Kassera and Russo (1987), Miller (1992), and Trimmer (1983) among others.

Some researchers have sought to explore the relationship between assessed interests and occupational choice (Sjoberg, 1984; Trimmer, 1983). Generally, the findings have indicated that occupational preferences and interests as measured by inventories have been shown to be independent of one another; for example, a person
who is a welder by choice may express an interest in flying (Borgen & Seling, 1978; Butler & Bailis, 1989; Cole & Hansen, 1975; Holland et al. 1990). Holland, Magoon, and Spokane (1981) found that by simply exposing clients to interest inventory results will prompt career exploratory activity.

With regard to the use of interest inventories in the career counseling process, Blustein and Phillips (1988) disclosed that college students revealed a marked tendency to engage in distorted career hypothesis testing. That is, when students were asked to consider suitability or unsuitability of a given occupation, they generally rated as suitable only those factors pertaining to occupations that they were interested in pursuing. By contrast, students presented with occupations that they were not interested in pursuing tended to consider those factors that were disconfirmatory. Because of this eccentricity Blustein and Phillips (1988) posited that too much reliance on interest inventories could lead to significant problems in one's vocational functioning. Blustein exemplified this scenario by commenting that individuals who seem clear about their interest in a given occupation would be unlikely to consider potentially disconfirming evidence, and therefore, might not respond to information suggesting such a career choice may not be optimal.

Holland (1985) opined that a more cosmopolitan view would seem to suggest that individuals engage in career exploration as a means of illustrating their own curiosity, self-determination, and volition with respect to career. Occupational interest inventories are just one more tool for the career counselor to use in the counseling and guidance process (Holland et al. 1990).
The Job Training Partnership Act

Legislative History

The federal Manpower Development and Training Act of 1962 was designed to assist skilled workers (primarily white males) who had lost jobs because of automation (Lordeman, 1992; Podgursky, 1992). To address the occupational and training requirements of minorities, juveniles, less educated, and the economically impaired, federal legislators created the Economic Opportunity Act of 1964 and the 1973 Comprehensive Employment and Training Act (CETA). The Job Training Partnership Act replaced CETA in 1982; under Title III of the act, Congress created a new program authorizing training and related services for dislocated workers (Lordeman, 1992).

The federal legislation was completely rewritten in 1988 by amendments referred to as the Economic Dislocation and Worker Adjustment Assistance Act of 1989 (PL 100-418). Title III of the Job Training Partnership Act (JTPA) authorized employment and training services for dislocated workers without regard to reason for dislocation (Lordeman, 1992). Title III incorporated four programs which provide similar services but differ in respect to the groups of dislocated workers who are eligible to receive assistance (Levine, 1992b; Lordeman, 1992). In addition to the program originally targeted at dislocated workers in general, three other programs were created for specific groups of workers who might become dislocated as a result of changes in federal policies: the Defense Conversion Adjustment Program; the Clean Air Employment Transition Assistance Program; and the Defense
Diversification Program (Levine, 1992b; Lordeman, 1992). These programs all offer job counseling, occupational and remedial training, and job search and placement assistance (Levine, 1992b; Lordeman, 1992).

As defined by the Economic Dislocation and Worker Adjustment Act of 1989 (P.L. 100-418), eligible dislocated workers are individuals who:

- have been terminated or laid off or who have received a notice of termination or layoff from employment, are eligible for or have exhausted their entitlement to unemployment compensation, and are unlikely to return to their previous industry or job;
- have been terminated or have received a notice of termination of employment, as a result of any permanent closure of, or any substantial layoff at a plant, facility, or enterprise;
- are long-term unemployed and have limited opportunities for employment or reemployment in the same or similar occupation in the area in which such individuals reside, including older individuals who may have substantial barriers to employment by reason of age, or,
- were self-employed (including farmers and ranchers) and are unemployed as a result of general economic conditions in the community in which they reside or because of natural disasters. (Lordeman, 1992, p. 4)

Dislocated Workers and JTPA Programs

The JTPA program was divided into 600 Service Delivery Areas (SDAs) which are operated by Private Industry Councils (PICs) whose members (the majority of whom are private businesses) are chosen by local officials (Berkley Planning Associates, 1991; Nuckols, 1990; Victor, 1990). The PICs approve proposals for the job training programs, decide what services will be provided and enter into contracts with training providers (Garland, 1992; Nuckols, 1990).
Several studies have commended the JTPA for its success in meeting or exceeding performance standards; other reports have documented the high placement rates of participants as an indication that JTPA training programs for dislocated workers have been effective (Hotchkiss & Smythe, 1988; Johnston, 1987; Keever & Davey, 1991; McDonald, 1988). Similarly, numerous government officials as well as business and industry representatives have touted the JTPA dislocated worker program (McDonald, 1988; National Association of Counties, 1990; SMG Research, 1987). However, a meticulous evaluation of JTPA programs has revealed large discrepancies between actual performance success and the claims made by administration officials and many program managers (Kogan, 1991; Strumpf, 1989; U.S. GAO, 1991a; Victor, 1990).

Other reports have described the JTPA program as fundamentally flawed, poorly managed, lacking leadership, and susceptible to fraud and misuse (Carnevale & Johnston, 1989; Victor, 1990). In particular, the tendency of JTPA entities to focus on outcomes has meant that private contractors were compensated based upon their performance in placing participants in jobs as well as training and other related costs (Garland, 1992; Victor, 1990). Victor (1990) described instances in which companies used the wage subsidies to hire workers they would have had to hire anyway and also noted that weak procurement practices have enabled contractors to set prices without regard to actual training costs. Investigators have targeted problems of abuse and fraud in many states, including Indiana, Wisconsin, Illinois, and Texas. In fact, after government auditors took over the Dallas JTPA program, investigators termed the
program "nothing more or less than a sophisticated check writing system (Victor, 1990, p. 902). Some JTPA detractors claim local administrators and training contractors tend to select a more qualified clientele, a process they call "creaming," and exclude those dislocated workers most in need of services—the least educated and older workers (Rife & First 1989; Victor, 1990). Anthony P. Carnevale, vice president of the American Society for Training and Development noted "the legislative language encourages you to skew the funding towards the relatively advantaged because you get your money based upon your successes in transitioning workers into jobs" (Victor, 1990, p. 901). To test this hypothesis, Anderson et al. (1987) surveyed a sample of Tennessee dislocated workers from the 1987 Current Population Survey and reported the JTPA programs met their racial and welfare targets, but the most disadvantaged groups were less likely to receive the most successful type of training (OJT). Similar results were documented by investigators who evaluated JTPA training programs for migrant farm workers and Native Americans (Cyert & Mowery, 1987; Rife & First, 1989; U.S. GAO, 1990).

Supporters have stressed that the JTPA program was created during a deep economic recession, hence the emphasis on rapid job placement (Victor, 1990). Robert T. Jones, Assistant Labor Secretary and head of JTPA for nine years, averred that the JTPA is a quality program and noted that 90% of its trainees had found jobs (Victor, 1990). Jones cited figures compiled from annual JTPA reports which do not conduct follow-up surveys beyond 13 weeks after the participant left the program. In a two-year follow-up survey of JTPA participants, Vandheuvel (1989) reported
a high percentage of dislocated workers (80%) had found jobs but most of these were entry-level, low-wage positions that were not related to their training received under Title III programs. Similar results have been documented by Cataldo (1987), Elston (1988), Lordeman (1992), and U. S. GAO (1991).

In a 1986 survey of employers in Alameda County, CA, Smith identified three major barriers to successful implementation of Title III: JTPA lacked influence on job market, and program participants were not sufficiently skilled to induce employers to hire them; employers feared that participation would create heavy demands on their time and did not view programs as reliable sources of labor; the options available through Title III were not attractive to the typical Alameda County dislocated worker (relatively uneducated older adults with family lifestyles).

The reader should remember that the JTPA program was set up to provide services directed toward getting the dislocated workers back to work as quickly as possible (Levine, 1992a). Obviously, there have been problems with the program but the government has taken steps to resolve these issues by adding amendments and creating new legislation (Lordeman, 1992). One must not overlook the fact that for many dislocated workers the JTPA program has proven to be a godsend (Harrison, personal communication, April, 1993).

**Louisiana Job Link Program at LSU**

The Louisiana Job Link Center (JLC) at Louisiana State University, Baton Rouge, was one of eight centers located on college and university campuses throughout the state. The Job Link Centers were JTPA programs that were federally
funded through the Louisiana Department of Employment and Training and designed to serve Louisiana dislocated workers B. C. Harrison (personal communication, April, 1993). The Louisiana Job Link Center (JLC) at LSU was operated under a philosophy that emphasized individually tailored programs designed "... for that person to re-enter employment as quickly as possible with enhanced knowledge and skills for today's marketplace" B. C. Harrison (personal communication, April, 1993). Harrison, Director of the LA JLC at LSU and a designer of the program, described the Louisiana JLC staff as "analogous to a career counseling chain—each of the eight members a single link, professionally strong in their expertise, united in their desire to 'lift' the JLC participants up the career ladder through an comprehensive individualized program." B. C. Harrison (personal communication, April, 1993) noted that from the application process to the successful re-entry into the workforce, each dislocated worker was individually recognized according to the personal needs and abilities—not as a number on a list.

Anyone who met the qualifications as set forth in PL 400-318 was accepted into the program. Then the process began with individual assessments of the participant's aptitude, basic math and English skills, occupational interest, and learning style preferences. Once the assessment and evaluation process was concluded, the vocational counselor met individually with each dislocated worker to address personal and occupational needs. The entire team collaborated in the design of individual programs based upon personal goals directed toward retraining the participant or enhancing that person's workplace literacy and job skills. Those dislocated workers
who demonstrated a need for workplace literacy skills training received this training through individualized programs of study. Those in need of new or additional technical skills training were linked with other existing programs in order to avoid duplication of services B. C. Harrison (personal communication, April, 1993). The JLC also offered workshops and seminars which featured a variety of career enhancement topics, including resume writing, interviewing tips, work ethics, motivation, promoting self, and self-esteem. The LA JLC at LSU staff used a team concept that provided support, caring and sharing for the individual dislocated worker.

B. C. Harrison (personal communication, April, 1993) noted that the JLC participants ran the gamut from high school dropouts to PhD's and all levels between; from long-term employed professionals to part-time store clerks; from those workers married with children to unwed mothers. Therefore, no two counseling interventions were alike. As early as 1985, Hurst and Sheperd had recommended that dislocated workers be given individualized career counseling and assessments before being assigned to training but even though all JTPA programs offered these services, most programs emphasized training and rapid job placement (House Committee on Education and Labor, 1992). As noted previously, this strategy was in keeping with the original intent of the JTPA dislocated worker program (Nuckols, 1990). However, research later indicated that many dislocated workers who were thrust into job training without regard for their individual abilities or deficiencies experienced difficulty in training and tended not to remain in the jobs for which they were trained (Elston, 1988; Craig, 1991; House Committee on Education and Labor, 1992). B.
C. Harrison commented that the LA JLC at LSU initiated the individualized career counseling concept before it was widely used in JTPA programs (personal communication, April, 1993).

The LSU Job Link Center achieved a 94% placement rate with one of the lowest costs per individual participant (about $900) in the nation. The program was designated as "an exemplary program by the U.S. Bureau of Labor Statistics" B. C. Harrison (personal communication, April, 1993).
CHAPTER 3
METHODOLOGY

The purpose of this study was to describe dislocated workers on workplace literacy skills, occupational interests, and the following selected demographics: age-group, gender, educational level, and DOT code. This chapter describes the methodology used in this study.

Population and Sample

The target population of this study consisted of Louisiana dislocated workers. The accessible population consisted of those Louisiana dislocated workers who participated in the JTPA-sponsored Louisiana Job Link Center (LA JLC) at Louisiana State University during Program Years 1989-91 (PYs 1989-91). All JTPA programs are operated by program year instead of fiscal year. Based on annual reports (PYs 1989-91) submitted by the LA JLC at LSU, the accessible population of this investigation consisted of 570 dislocated workers who met the JTPA requirements for eligibility and participated in the LA JLC at LSU. Based on Cochran’s (1985) formula for determining minimum sample size, a simple random sample of 232 former LA JLC at LSU participants was drawn from the accessible population (N = 570).

Instruments

The data was collected from participants at the LA Job Link Center at LSU and committed to coded computer files in a data bank administered by the Director of the Center. This study used selected data from that file. The CASAS Reading Tests for Employability, CASAS Math Tests for Employability, and the APTICOM A5
Occupational Interest Inventory were administered by the staff of the LA JLC during the 1989-91 period. This researcher recorded individual test scores and demographic data on a modified recording instrument that was originally developed by Harvill (1993). (see Appendix A) The following section provides relevant information about these instruments.

Data Recording Instrument

The specific data for each Louisiana JLC participant was transcribed to a simple data recording instrument based on a design by Harvill (1993). Harvill’s instrument was modified by eliminating the section for recording "Learning Style" and adding a double column for the 12 Occupational Interest Areas. (see Appendix A) Individual age-groups were listed in the following ranges of years: 25 years or less; 26-35; 36-45; 46-55, and 56 or older. The educational level achieved by the individual dislocated worker was identified as follows: 4th grade or less, 5th through 8th grade, 9th through 12th grade (all these categories were grouped into the category dropout for this study); high school graduate/GED; post high school; and college graduate. The DOT code of the last job held by each dislocated worker was identified as one of following nine occupational codes listed in the Dictionary of Occupational Titles: 01 Professional\Technical\Managerial; 02 Clerical and Sales; 03 Service; 04 Agricultural\Fishery\Forestry; 05 Processing; 06 Machine Trades; 07 Benchwork; 08 Structural Work; and 09 Miscellaneous. The reading scale scores, math scale scores, and categories of occupational interests were transcribed from coded reports in the data bank held by the Director of the LA JLC at LSU.
CASAS Reading and Math Skills Assessments

Synopsis

The Comprehensive Adult Student Assessment System (CASAS) was organized in 1980 under guidelines established by the Foundation for Educational Achievement in conjunction with the California State Department of Education, Youth, Adult, and Alternative Education Services Division (CASAS, 1993). The CASAS acronym identifies all assessment instruments created by the consortium of agencies that supply educational assistance to adult and alternative education programs nationwide. (see Appendix B) Included within the CASAS consortium are representatives from adult education agencies; community colleges; community-based organizations; correctional institutions; special education programs; JTPA and alternative education programs. The CASAS philosophy of adult literacy assessment has assimilated competency-based and outcome-based education principles that facilitate the acquisition of the basic literacy skills delineated by the 1992 DOL, Secretary’s Commission on Acquiring Necessary Skills (SCANS).

CASAS assessment instruments have been used in over 200 programs in 49 states; CASAS curriculum materials have been used extensively in California to assess and improve basic skills among migrant workers, adults with special learning needs, and persons in correctional institutions (Alamprese, 1987; California Human Development Corporation, 1991; California State Department of Education, 1991; CASAS, 1991; Kissam & Assoc., 1991; Oregon State Department of Education, 1989; Rickard & Stiles, 1985).
Validity

According to information supplied by the CASAS consortium (1993), the U.S. Department of Education Program Effectiveness Panel has honored the CASAS system as an exemplary program for national distribution through the U.S. Department of Education National Diffusion Network. This accolade is significant because CASAS is the only adult education assessment system to achieve this distinction (CASAS, 1993).

The CASAS workplace literacy skills assessments are based on individually calibrated test items which measure a particular competency from a broad competency list; each item is targeted for a specific level of difficulty based on Rasch's Item Response Theory (IRT) Model (CASAS, 1993, p. 9). Construct validity is a product of the combination of IRT theory and rigorous field testing. Each of the more than 5000 items in the test bank has been field tested in high schools, English as Second Language programs (ESL), Adult Basic Education programs (ABE), and prison education programs (CASAS, 1992). The content validity of CASAS tests has been based on those specified performance indicators adopted by the CASAS consortium as valid evidence of demonstrated mastery in each competency area (CASAS, 1993, p. 8). CASAS' criterion-related validity was established on the basis of the results of seven national studies that established individual performance levels matched to CASAS achievement scores (CASAS, 1993, p. 25).
Reliability

According to the CASAS, "Reliability, as defined by the Standards for Educational and Psychological Testing (1985), refers to the degree to which test scores are free from errors of measurement" (1993, p. 25). The errors of measurement for CASAS tests have been established through traditional statistical methods applied to each test as a whole, and to the examinee's ability level based on item response theory.

The KR-20 coefficients of reliability were primarily above 0.80 (see Table 1). CASAS (1993) sources noted that a computer program was used to calibrate items and screen scores (scores above 95% and scores below 20% are disregarded so as to analyze response patterns of subjects who were adequately assessed by the test).

Table 1
Descriptive Statistics of CASAS 70 Series Tests

<table>
<thead>
<tr>
<th>Test#</th>
<th>N</th>
<th># of Items</th>
<th>Raw Score Mean</th>
<th>SD</th>
<th>KR-20</th>
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<tbody>
<tr>
<td>1</td>
<td>1000</td>
<td>41</td>
<td>31.0</td>
<td>6.8</td>
<td>0.88</td>
</tr>
<tr>
<td>72</td>
<td>564</td>
<td>41</td>
<td>28.7</td>
<td>7.4</td>
<td>0.88</td>
</tr>
<tr>
<td>74</td>
<td>834</td>
<td>31</td>
<td>23.7</td>
<td>4.9</td>
<td>0.81</td>
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<td>837</td>
<td>44</td>
<td>29.4</td>
<td>8.1</td>
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</tr>
<tr>
<td>77</td>
<td>199</td>
<td>44</td>
<td>29.0</td>
<td>6.7</td>
<td>0.84</td>
</tr>
</tbody>
</table>

Itemized Response Theory-based Reliability

Tests constructed under classical test theory have defined test reliability in terms of parallel forms; this concept is hard to accomplish in any practical testing situation because test takers differ by some unknown degree (extraneous variables) between the first and second administration of the test (Rickard & Stiles, 1985). The concept of parallel forms reliability has been replaced by statistical examination and associated errors:

Using IRT, there exists for each ability estimate, obtained from a sample of items, a corresponding standard error of measurement which is neither group dependent nor averaged over ability levels as is done in classical test theory. Unique standard errors of measurement associated with each ability estimate provide much more information regarding the precision and comparability of scores on two sets of items than do correlations between only the number correct. (CASAS, 1993, p. 26)

In the IRT framework, the standard error of estimation serves the same purpose as the standard error of measurement in classical measurement theory with the exception that the value of the standard error of estimation varies with individual ability level. The Standards for Educational and Psychological Testing (1985) recommended that standard errors of measurement be reported at critical score levels; CASAS (1993) sources have affirmed that an IRT measurement evaluation provides standard errors for every possible test score along the variable.

Test-scoring and Interpretation

The CASAS Reading Tests for Employability and CASAS Mathematics Tests for Employability were designed to measure the examinee’s reading and mathematics competencies in each of the following six general subject content areas: (1) Consumer

The CASAS test-scoring and interpretation methodologies have not been based on grade-level formulas "because grade levels do not correspond to the typical vocabulary, reading materials, language skills, and mathematical problems encountered in everyday life" (CASAS, 1993, p. 12). This strategy is in agreement with the recommendations of the 1992 U.S. Department of Labor Secretary's Commission on Acquiring Needed Skills (SCANS) report that recommended practitioners use competency-based assessments rather than criterion-referenced tests to evaluate adult learning. All CASAS tests utilized item-response theory wherein individual item difficulty is calculated by the Rasch Model; each individual test item was ranked on a scale of difficulty in relation to every other item in the Item Bank (CASAS, 1993). The IRT scale is an interval scale that is "analogous to a yardstick, whereby any combination of items can be placed in relation to each other according to degree of difficulty" (CASAS, 1993, p. 9). The number of correct answers on any CASAS test provides the raw score which must be converted into scale scores by using a "Scale Score Conversion Chart" supplied by CASAS (CASAS, 1993). Since CASAS test forms differ in length and difficulty, the raw score alone does not provide information about the student's achievement (CASAS, 1993, p. 9).

The following is an interpretation of the CASAS reading and math scores:

**Currently functioning below 200 in math and/or reading.**
Participants functioning below 200 have difficulty with basic literacy and computational skills necessary to function in employment and in the community. These participants have difficulty providing basic personal
identification in written form (e.g. job applications), are not able to compute wages and deductions on paychecks and cannot follow simple basic written directions and safety procedures.

Currently functioning between 200-214 in math and/or reading. Participants functioning between 200-214 have low literacy skills and have difficulty pursuing other than entry-level programs requiring minimal literacy skills. They can fill out simple job application forms and demonstrate basic computations only. These participants are functioning below a 7th-grade level.

Currently functioning between 215-224 in math and/or reading. Participants functioning between 215-224 are functioning above a basic literacy level, and are able to handle basic literacy and basic computational skills in a functional setting related to employment. They have difficulty following more complex sets of directions and are functioning below a high school level.

Currently functioning above 225 [sic] in both reading and math. Participants functioning at or above 225 can function at a high school entry level in basic reading and math and if they do not have a high school diploma can profit from instruction at the high school level. They can usually perform some work that involves following oral and written directions in familiar and some unfamiliar situations. Those participants 18 years of age and above can profit from instruction in General Education Development (GED) preparation and, in a short time, have a high probability of passing the GED test. (CASAS, 1993, p. 7)

APRICOM Occupational Interest Inventory

Developmental History

The APTICOM A5 Occupational Interest Inventory is a computer-based assessment instrument designed and marketed by the Vocational Research Institute (VRI), a Division of the Jewish Employment and Vocational Service (JEVS), Philadelphia, Pennsylvania. The inventory was developed to provide "fast, accurate and meaningful information about the occupational interests of students, clients in vocational counseling, and rehabilitation and job training program participants'
The computerized version of the APTICOM A5 Occupational Interest Inventory was designed to be non-threatening, and provide immediate feedback to the adult learner (Botterbusch, 1987).

The U.S. Department of Labor (DOL) procedure for career assessment and occupational exploration is the most inclusive and thoroughly researched system in existence to date (Vocational Research Institute, 1993). The DOL initiated studies in the early 1970’s to classify occupational interest factors that could be used to describe occupations and individuals in a reliable and measurable way (Vocational Research Institute, 1993). The DOL inquiries eventually led to the development of two of the paramount information sources in career counseling—the 1979 Guide for Occupational Exploration (GOE) that classified all DOL job titles into the twelve interest areas obtained from the research, and the 1981 United States Employment Service Interest Inventory that assessed the individual’s interests as they corresponded to these 12 GOE interest areas (Vocational Research Institute, 1993).

The twelve interest areas identified by Vocational Research Institute (1993) were defined as follows:

01 Artistic—Interest in creative expression of ideas
02 Scientific—Interest in discovering, collecting, and analyzing information about the natural world and in applying scientific research findings to problems in medicine, life sciences, and natural sciences
03 Plants and Animals—Interest in activities involving plants and animals, usually in an outdoor setting
04 Protective—Interest in use of authority to protect people and property
05 Mechanical—Interest in applying mechanical principles to practical situations, using machines, hand tools, or techniques
06 Industrial—Interest in repetitive, concrete, organized activities in a factory setting
Every job title identified in the Dictionary of Occupational Titles is represented in the Guide to Occupational Exploration (GOE) under one of these twelve interest areas. In addition, the twelve GOE interest areas have been shown to exhibit a very high correlation with Holland’s (1985) classifications of vocational interest: Realistic (R), Investigative (I), Artistic (A), Social (S), Enterprising (E), and Conventional (C). Jones (cited in Vocational Research Institute, 1993, p. 23) applied Holland’s tables to all jobs within the twelve GOE areas to ascertain the congruency between interest areas and Holland’s factors. This study indicated a one-to-one correspondence between all GOE areas and Holland’s factors with the exception of Accommodating, Leading-Influencing, and Physical Performing each of which were related to several of Holland’s factors (cited in Vocational Research Institute, 1993, p. 24). Vocational Research Institute sources (1993) contend these findings further strengthened the construct validity of the twelve interest areas. (see Table 2)

Reliability

According to Vocational Research Institute sources, "a reliability coefficient reflects how consistently, accurately, and precisely a psychometric instrument
Table 2
Correspondence between GOE Interest Areas and Holland Occupational Typologies

<table>
<thead>
<tr>
<th>GOE Categories</th>
<th>Holland Categories</th>
</tr>
</thead>
<tbody>
<tr>
<td>01 Artistic</td>
<td>Artistic</td>
</tr>
<tr>
<td>02 Scientific</td>
<td>Investigative</td>
</tr>
<tr>
<td>03 Plants and Animals</td>
<td>Realistic</td>
</tr>
<tr>
<td>04 Protective</td>
<td>Realistic</td>
</tr>
<tr>
<td>05 Mechanical</td>
<td>Realistic</td>
</tr>
<tr>
<td>06 Industrial</td>
<td>Realistic</td>
</tr>
<tr>
<td>07 Business Detail</td>
<td>Conventional</td>
</tr>
<tr>
<td>08 Selling</td>
<td>Enterprising</td>
</tr>
<tr>
<td>09 Accommodating</td>
<td>Social/Realistic</td>
</tr>
<tr>
<td>10 Humanitarian</td>
<td>Social</td>
</tr>
<tr>
<td>11 Leading/Influencing</td>
<td>Social/Enterprising/Investigative</td>
</tr>
<tr>
<td>12 Physical/Performing</td>
<td>Social/Artistic</td>
</tr>
</tbody>
</table>

Note. From The APTICOM A5 Technical Manual by Vocational Research Institute, 1993, p. 27. Copyright 1993 by JEVS. Reprinted by permission.

measures a particular characteristic" (1993, p. 28). Furthermore, should all items within a scale measure the same attribute perfectly (internal consistency) or if the scale as a whole measures the attribute with perfect consistency in a test-retest, a reliability coefficient of 1.0 would be achieved (Vocational Research Institute, 1993, p.28). A total of 573 subjects were tested with both the APTICOM Interest Inventory and the United States Employment Services Interest Inventory (USES II) for comparison purposes (Vocational Research Institute, 1993). Eighty-two of the subjects were then
selected at random for retesting. The alpha coefficient was applied to the research data to measure internal consistency for the APTICOM inventory (Vocational Research Institute, 1993).

A summary of the internal consistency reliability of the APTICOM and USES II is presented in Table 3. The mean alpha coefficient for the APTICOM scales was calculated to be $r = .86$; the mean alpha coefficient for the USES was $r = .85$.

Table 3

<table>
<thead>
<tr>
<th>Interest Area</th>
<th>APTICOM</th>
<th>USES II</th>
</tr>
</thead>
<tbody>
<tr>
<td>01 Artistic</td>
<td>0.86</td>
<td>0.85</td>
</tr>
<tr>
<td>02 Scientific</td>
<td>0.87</td>
<td>0.88</td>
</tr>
<tr>
<td>03 Plants/Animals</td>
<td>0.82</td>
<td>0.87</td>
</tr>
<tr>
<td>04 Protective</td>
<td>0.87</td>
<td>0.87</td>
</tr>
<tr>
<td>05 Mechanical</td>
<td>0.88</td>
<td>0.89</td>
</tr>
<tr>
<td>06 Industrial</td>
<td>0.83</td>
<td>0.81</td>
</tr>
<tr>
<td>07 Business Detail</td>
<td>0.90</td>
<td>0.90</td>
</tr>
<tr>
<td>08 Selling</td>
<td>0.83</td>
<td>0.81</td>
</tr>
<tr>
<td>09 Accommodating</td>
<td>0.80</td>
<td>0.83</td>
</tr>
<tr>
<td>10 Humanitarian</td>
<td>0.91</td>
<td>0.91</td>
</tr>
<tr>
<td>11 Leading/Influencing</td>
<td>0.87</td>
<td>0.84</td>
</tr>
<tr>
<td>12 Physical Performing</td>
<td>0.84</td>
<td>0.83</td>
</tr>
</tbody>
</table>

Note. From The APTICOM A5 Technical Manual by Vocational Research Institute, 1993, p. 27. Copyright 1993 by JEVS. Reprinted by permission.
The mean test-retest (Pearson product-moment correlations) reliability coefficient for the APTICOM A5 Interest Inventory scales was \( r = .83 \); the mean test-retest reliability coefficient for the USES II was \( r = .84 \). (see Table 4) Test-retest correlations between the USES II and APTICOM were greater than \( r = .75 \) for ten of the twelve correlations. The two remaining test-retest correlations

Table 4

Test-Re test Reliability of APTICOM and USES II (Pearson Product Moment Correlations)

<table>
<thead>
<tr>
<th>Interest Area</th>
<th>APTICOM</th>
<th>USES II</th>
</tr>
</thead>
<tbody>
<tr>
<td>01 Artistic</td>
<td>0.84</td>
<td>0.89</td>
</tr>
<tr>
<td>02 Scientific</td>
<td>0.81</td>
<td>0.88</td>
</tr>
<tr>
<td>03 Plants/Animals</td>
<td>0.85</td>
<td>0.85</td>
</tr>
<tr>
<td>04 Protective</td>
<td>0.86</td>
<td>0.83</td>
</tr>
<tr>
<td>05 Mechanical</td>
<td>0.85</td>
<td>0.88</td>
</tr>
<tr>
<td>06 Industrial</td>
<td>0.74</td>
<td>0.77</td>
</tr>
<tr>
<td>07 Business Detail</td>
<td>0.86</td>
<td>0.85</td>
</tr>
<tr>
<td>08 Selling</td>
<td>0.77</td>
<td>0.84</td>
</tr>
<tr>
<td>09 Accommodating</td>
<td>0.79</td>
<td>0.79</td>
</tr>
<tr>
<td>10 Humanitarian</td>
<td>0.85</td>
<td>0.84</td>
</tr>
<tr>
<td>11 Leading/Influencing</td>
<td>0.85</td>
<td>0.77</td>
</tr>
<tr>
<td>12 Physical/Performing</td>
<td>0.83</td>
<td>0.83</td>
</tr>
</tbody>
</table>

correlations (Industrial, $r = .70$ and Selling, $r = .72$) were still deemed quite acceptable by the Vocational Research Institute (1993). (see Table 5)

Table 5
Concurrent Validity of APTICOM Interest Area Scales

<table>
<thead>
<tr>
<th>Interest Area</th>
<th>Validity Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>01 Artistic</td>
<td>0.82</td>
</tr>
<tr>
<td>02 Scientific</td>
<td>0.82</td>
</tr>
<tr>
<td>03 Plants/Animals</td>
<td>0.78</td>
</tr>
<tr>
<td>04 Protective</td>
<td>0.80</td>
</tr>
<tr>
<td>05 Mechanical</td>
<td>0.79</td>
</tr>
<tr>
<td>06 Industrial</td>
<td>0.70</td>
</tr>
<tr>
<td>07 Business Detail</td>
<td>0.84</td>
</tr>
<tr>
<td>08 Selling</td>
<td>0.72</td>
</tr>
<tr>
<td>09 Accommodating</td>
<td>0.76</td>
</tr>
<tr>
<td>10 Humanitarian</td>
<td>0.85</td>
</tr>
<tr>
<td>11 Leading/Influencing</td>
<td>0.78</td>
</tr>
<tr>
<td>12 Physical/Performing</td>
<td>0.79</td>
</tr>
</tbody>
</table>


Interpretation of Results

The APTICOM Occupational Interest Inventory uses a three-choice format ("Like" "Dislike" "? Neither"); the raw scores used to determine high interest areas are the number of Like responses within each scale (Vocational Research Institute, 1993). In terms of statistical explication no discrimination is made between "? Neither" and "Dislike" responses because only the number of Like
responses are used to determine the respondent’s interests; they are compared on a scale that is normed on individuals with representative interests who are employed at different occupations (Vocational Research Institute, 1993). The raw scores for each interest area must be converted to percentiles and standard scores that have been based on a comparison with either of the two normative groups (prevocational secondary students, and adult vocational students) (Vocational Research Institute, 1993). The mean score for a particular interest area is the average number of Like responses to items included in that scale within the total research sample (Vocational Research Institute, 1993).

**Validity**

The principal issues raised by an investigation of the validity of a psychometric instrument are: what inferences can be made about what is being measured, and what inferences can be made about other behavior based on this measurement? (American Psychological Association, 1990). The Vocational Research Institute (1993) selected the USES Interest Inventory (USES II) to establish the criterion of validity for the APTICOM Interest Inventory because:

- the USES II has been pilot-tested for five years with more than 10,000 subjects;
- it has a stable and demographically unbiased empirical foundation;
- it has an inherent relationship with the GOE interest design;
- and its construct validity has been demonstrated. Both the USES II and the APTICOM Occupational Interest Inventory measure the individual’s strength of interest in doing certain kinds of
activities; these measurements are construed as indicators of how people will respond to actual occupational situations (Vocational Research Institute, 1993).

Data Collection

Data were collected from individual participant records which had been assigned coded identification numbers to protect the confidentiality of participants' records and the integrity of this investigation. The demographic characteristics of age-group, gender, educational level, and DOT code of each participant's last job were originally obtained from the U.S. DOL Participant Intake Form (LDOL-JTPA 702). All LA JLC at LSU participant files were assigned random identification numbers and all the individual data for this study was compiled in a data base by a third party. The requested data for each dislocated worker was verbally communicated to this researcher. As a precaution against coding errors, this researcher and the third party verified each datum as it was communicated to this researcher. A verification was made after the data were committed to the computer file and a third verification was made by checking the printout before the data file was transferred to the computer for statistical analysis.

Data Analysis

The data was statistically tested using the SPSS computer program and analyzed by the researcher according to the individual objectives. An alpha level of 0.05 was determined a priori. The following section documents the procedures and statistical tests used for each of the study objectives.
**Objective One** - The first objective of this study was to describe Louisiana Job Link Center (LA JLC) dislocated workers on the following personal demographic characteristics: age-group, educational level, gender, and DOT code of previous job as indicated by the Dictionary of Occupational Titles. The variable educational level and age-group were measured on an ordinal scale and summarized by frequencies and percentages. The variables gender and DOT code of last employment were measured on a nominal scale and summarized using frequencies and percentages.

**Objective Two** - Describe dislocated workers on workplace literacy skills as measured by the CASAS Reading for Employability Tests and CASAS Math for Employability Tests; and on categories of occupational interest as indicated by the APTICOM A5 Occupational Interest Inventory. The variables reading scale score and math scale score are continuous variables and were summarized using means and standard deviations. The variable occupational interest area was measured on a nominal scale and summarized using frequencies and percentages.

**Objective Three** - The third objective of the study was to compare the dislocated workers’ reading scale scores by categories of occupational interest as measured by the APTICOM A5 Occupational Interest Inventory. This objective was accomplished by using the one-way ANOVA procedure; the Tukey post-hoc analysis procedure was used to determine differences between groups if the ANOVA detected a significant difference.
Objective Four - The fourth objective of the study was to compare the dislocated workers’ math scale scores by categories of occupational interest as measured by the APTICOM A5 Occupational Interest Inventory. This objective was accomplished by using the one-way ANOVA procedure; the Tukey post-hoc analysis procedure was used to distinguish differences between groups if the ANOVA detected a significant difference.

Objective Five - The fifth objective of this study was to compare the dislocated workers’ reading scale scores by age-group, gender, educational level, and DOT code of last job. The variables age-group and educational level are ordinal data with many tied ranks, therefore, the nonparametric procedure Kendall’s Tau was used to summarize the data. The t-test was used to determine if significant differences existed in reading scale scores by gender. The one-way ANOVA procedure was used to determine if differences existed in math scale scores by categories of DOT codes; the Tukey post-hoc analysis was used if the ANOVA detected a significant difference between groups.

Objective Six - The sixth objective of this study was to compare the dislocated workers’ math scale scores by age-group, gender, educational level, and DOT code of last job. The variables age-group and educational level are ordinal data with many tied ranks, therefore, the nonparametric procedure Kendall’s Tau procedure was used to summarize the data. The t-test was used to determine if significant differences existed in math scores by gender. The one-way ANOVA procedure was used to determine if there were differences in math scale scores by
categories of DOT codes; the Tukey post-hoc analysis procedure was used if the ANOVA detected a significant difference between groups.

**Objective Seven** - The seventh objective of the study was to determine if a model existed which explained a significant portion of the variance in dislocated workers' reading scale scores from categories of occupational interest, categories of DOT codes of last job, age-groups, gender, and educational levels. This objective was accomplished by using a stepwise multiple regression analysis.

**Objective Eight** - The eighth objective of the study was to determine if a model existed that explained a significant portion of the variance in dislocated workers' math scale scores from categories of occupational interest, categories of DOT codes of last job, age-group, gender, and educational level. This objective was accomplished by using a stepwise multiple regression analysis.
CHAPTER 4

FINDINGS

The purpose of this study was to describe dislocated workers on workplace literacy skills, occupational interests, and the selected demographic characteristics of age-group, gender, educational level, and DOT code of last employment. The data were tested at the predetermined alpha level of 0.05 using the SPSS computer program and analyzed by the researcher by individual objective. The purpose of this chapter is to present the findings from this analysis.

Objective One

The first objective of the study was to describe dislocated workers assisted by the JTPA-sponsored Louisiana Job Link Center (LA JLC) at LSU on the following demographic characteristics: age-group, gender, educational level, and DOT code of last employment. The variables educational level and age-group were measured on an ordinal scale and summarized using frequencies and percentages. The variables gender and DOT code of last employment were measured on a nominal scale and summarized using frequencies and percentages.

Regarding the age of the sample of dislocated workers, the largest group was in the 26-35-year age-group (n = 93 or 40.10%). More than two-thirds (n = 165 or 71.13%) of the sample were between the ages of 26 and 45 years. Those dislocated workers aged 56 years and above made up the smallest number of sample members (n = 14 or 6.03%). (see Table 6)
Table 6

Age-groups of Dislocated Workers at LA JLC at LSU, PYs 1989-91.

<table>
<thead>
<tr>
<th>Age-group</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 25 years</td>
<td>17</td>
<td>7.33</td>
</tr>
<tr>
<td>26-35 years</td>
<td>93</td>
<td>40.10</td>
</tr>
<tr>
<td>36-45 years</td>
<td>72</td>
<td>31.03</td>
</tr>
<tr>
<td>46-55 years</td>
<td>36</td>
<td>15.51</td>
</tr>
<tr>
<td>≥ 56 years</td>
<td>14</td>
<td>6.03</td>
</tr>
<tr>
<td>Total</td>
<td>232</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Males (n = 115 or 49.6%) made up slightly less than half the total number of dislocated workers; females (n = 117 or 50.4%) represented a little more than half of the sample.

As shown in Table 7, about nine out of ten dislocated workers in the sample had at least a high school education. Almost two-fifths (n = 92 or 39.65%) of the

Table 7

Educational Levels of Dislocated Workers at LA JLC at LSU, PYs 89-91

<table>
<thead>
<tr>
<th>Educational Level</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drop-out</td>
<td>27</td>
<td>11.64</td>
</tr>
<tr>
<td>HS Grad/GED</td>
<td>71</td>
<td>30.60</td>
</tr>
<tr>
<td>Post HS</td>
<td>92</td>
<td>39.65</td>
</tr>
<tr>
<td>College Grad</td>
<td>42</td>
<td>18.11</td>
</tr>
<tr>
<td>Total</td>
<td>232</td>
<td>100.00</td>
</tr>
</tbody>
</table>
sample members had some education beyond the high school level; more than ten percent (n = 27 or 11.64%) of the dislocated workers were dropouts.

Of those La JLC at LSU participants who identified their former job by DOT code, the largest group (n = 94 or 41.77%) were formerly employed in jobs categorized by the DOT code Clerical & Sales. The next largest group of dislocated workers (n = 51 or 22.66%) of the LSU Job Link participants had last worked in jobs categorized by the DOT code Professional/Technical/Managerial. Dislocated workers who were formerly employed in jobs identified by the DOT code Service accounted for about 17% (n=39) of the 232 dislocated workers in the sample. (see Table 8)

Table 8

DOT Codes of Dislocated Workers at LA JLC at LSU, PYs 1989-91

<table>
<thead>
<tr>
<th>DOT Code</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>02 Clerical &amp; Sales</td>
<td>94</td>
<td>41.77</td>
</tr>
<tr>
<td>01 Prof/Manag/Tech</td>
<td>51</td>
<td>22.66</td>
</tr>
<tr>
<td>03 Service</td>
<td>39</td>
<td>17.35</td>
</tr>
<tr>
<td>08 Structural work</td>
<td>20</td>
<td>8.88</td>
</tr>
<tr>
<td>05 Processing</td>
<td>11</td>
<td>4.88</td>
</tr>
<tr>
<td>09 Miscellaneous</td>
<td>5</td>
<td>2.23</td>
</tr>
<tr>
<td>07 Benchwork</td>
<td>4</td>
<td>1.78</td>
</tr>
<tr>
<td>06 Machine trades</td>
<td>1</td>
<td>0.45</td>
</tr>
<tr>
<td>Total</td>
<td>225</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Note. Data on DOT codes was missing for 7 participants.
Objective Two

The second objective was to describe dislocated workers' workplace literacy skills as measured by the CASAS Reading for Employability Tests and the CASAS Math for Employability Tests and on categories of occupational interest as indicated by the APTICOM A5 Occupational Interest Inventory. The variables reading scale score and math scale score are continuous variables and were summarized using means and standard deviations. The variable occupational interest area was measured on a nominal scale and summarized using frequencies and percentages.

The reading scale scores of the 232 dislocated workers ranged from the maximum possible score of 245 to a low of 205 (mean = 236.42). Most of the dislocated workers in the sample scored above 225. This indicates that they function at a high school entry level in basic reading and math. The largest group (n = 101 or 43.5%) scored in the highest range (241-245); only 21 (9.10%) scored less than 224. (see Table 9)

Over one-fourth (n = 62 or 26.7%) of the 232 dislocated workers in the sample scored below 225 on the CASAS Math for Employability Tests. This indicates they cannot function at high school entry level in basic reading and math. The test scores ranged from a low of 196 to the maximum high of 245 (mean = 233.15). Ninety-seven (41.8%) of the 232 dislocated workers in the sample scored 241 or higher.
Table 9

CASAS Reading Scale Scores of Dislocated Workers at LA JLC at LSU, PYs 1989-91

<table>
<thead>
<tr>
<th>Read Score</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 200</td>
<td>0</td>
<td>0.00</td>
</tr>
<tr>
<td>200-214</td>
<td>7</td>
<td>1.30</td>
</tr>
<tr>
<td>215-224</td>
<td>14</td>
<td>7.80</td>
</tr>
<tr>
<td>225-230</td>
<td>23</td>
<td>9.90</td>
</tr>
<tr>
<td>231-235</td>
<td>29</td>
<td>12.50</td>
</tr>
<tr>
<td>236-240</td>
<td>58</td>
<td>25.00</td>
</tr>
<tr>
<td>241-245</td>
<td>101</td>
<td>43.50</td>
</tr>
<tr>
<td>Total</td>
<td>232</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Note. mean = 236.42, S.D. = 9.19

Table 10

CASAS Math Scale Scores of Dislocated Workers at LA JLC at LSU, PYs 1989-91

<table>
<thead>
<tr>
<th>Math Score</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 200</td>
<td>3</td>
<td>1.20</td>
</tr>
<tr>
<td>200-214</td>
<td>19</td>
<td>8.20</td>
</tr>
<tr>
<td>215-224</td>
<td>40</td>
<td>17.22</td>
</tr>
<tr>
<td>225-230</td>
<td>14</td>
<td>6.00</td>
</tr>
<tr>
<td>231-235</td>
<td>26</td>
<td>11.10</td>
</tr>
<tr>
<td>236-240</td>
<td>35</td>
<td>15.00</td>
</tr>
<tr>
<td>241-245</td>
<td>97</td>
<td>41.31</td>
</tr>
<tr>
<td>Total</td>
<td>232</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Note. mean = 233.15, S.D. = 12.91
As regards the occupational interests of dislocated workers, the largest group of the sample of 232 dislocated workers ($n = 31$ or 13.47%) indicated the category Mechanical as their highest occupational interest area. (See Table 11)

Table 11

**Occupational Interests of Dislocated Workers at LA JLC at LSU PYs 1989-91.**

<table>
<thead>
<tr>
<th>Occupational Interest Area</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>05 Mechanical</td>
<td>31</td>
<td>13.47</td>
</tr>
<tr>
<td>02 Scientific</td>
<td>29</td>
<td>12.60</td>
</tr>
<tr>
<td>08 Selling</td>
<td>29</td>
<td>12.60</td>
</tr>
<tr>
<td>11 Leading/Influencing</td>
<td>22</td>
<td>9.56</td>
</tr>
<tr>
<td>06 Industrial</td>
<td>18</td>
<td>7.82</td>
</tr>
<tr>
<td>07 Business Detail</td>
<td>18</td>
<td>7.82</td>
</tr>
<tr>
<td>12 Physical Performing</td>
<td>17</td>
<td>7.39</td>
</tr>
<tr>
<td>01 Artistic</td>
<td>16</td>
<td>6.95</td>
</tr>
<tr>
<td>04 Protective</td>
<td>16</td>
<td>6.95</td>
</tr>
<tr>
<td>09 Accommodating</td>
<td>14</td>
<td>6.15</td>
</tr>
<tr>
<td>03 Plants/Animals</td>
<td>11</td>
<td>4.78</td>
</tr>
<tr>
<td>10 Humanitarian</td>
<td>9</td>
<td>3.91</td>
</tr>
<tr>
<td>Total</td>
<td>230</td>
<td>100.00</td>
</tr>
</tbody>
</table>

*Note.* missing occupational interests data for 2 subjects.
The occupational interest categories Scientific and Selling were selected equally by the next two largest groups of dislocated workers (n = 29 or 12.60%). The occupational interest categories Plants/Animals and Humanitarian were selected by less than 10% of the sample group.

Objective Three

The third objective of the study was to compare the dislocated workers' reading scale score by categories of occupational interest as measured by the APTICOM A5 Occupational Interest Inventory. This objective was accomplished by using the one-way ANOVA procedure; the Tukey post-hoc analysis procedure was used to determine differences between groups when the ANOVA detected a significant difference.

The results of the ANOVA procedure (see Table 12) indicated no significant difference ($F_{(218)} = .91, p = .52$) in dislocated workers' reading scale scores by categories of occupational interests.

Objective Four

The fourth objective of the study was to compare the dislocated workers' math scale scores by categories of occupational interest area as measured by the APTICOM A5 Occupational Interest Inventory. This objective was accomplished by using the one-way ANOVA procedure to determine if significant differences existed and the Tukey post-hoc analysis procedure to identify which groups were different.
### Table 12

Comparison of Dislocated Workers' Reading Scores by Occupational Interests, LA JLC at LSU, PYs 1989-91

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F-ratio</th>
<th>F-prob</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between</td>
<td>11</td>
<td>775.81</td>
<td>70.52</td>
<td>.91</td>
<td>0.52</td>
</tr>
<tr>
<td>Within</td>
<td>218</td>
<td>16843.76</td>
<td>77.26</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>229</td>
<td>17619.58</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Group</th>
<th>n</th>
<th>Mean</th>
<th>S.D.</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>01 Artistic</td>
<td>16</td>
<td>239.43</td>
<td>6.54</td>
<td>1.63</td>
</tr>
<tr>
<td>02 Scientific</td>
<td>29</td>
<td>238.13</td>
<td>7.57</td>
<td>1.40</td>
</tr>
<tr>
<td>03 Plant/Animal</td>
<td>11</td>
<td>237.81</td>
<td>7.25</td>
<td>2.18</td>
</tr>
<tr>
<td>04 Protective</td>
<td>16</td>
<td>233.56</td>
<td>8.54</td>
<td>2.13</td>
</tr>
<tr>
<td>05 Mechanical</td>
<td>31</td>
<td>237.74</td>
<td>9.46</td>
<td>1.70</td>
</tr>
<tr>
<td>06 Industrial</td>
<td>18</td>
<td>233.66</td>
<td>8.69</td>
<td>2.05</td>
</tr>
<tr>
<td>07 Business</td>
<td>18</td>
<td>233.77</td>
<td>8.59</td>
<td>2.02</td>
</tr>
<tr>
<td>08 Selling</td>
<td>29</td>
<td>236.51</td>
<td>9.66</td>
<td>1.79</td>
</tr>
<tr>
<td>09 Accommodat</td>
<td>14</td>
<td>235.71</td>
<td>9.77</td>
<td>2.61</td>
</tr>
<tr>
<td>10 Humanitarian</td>
<td>9</td>
<td>235.11</td>
<td>12.63</td>
<td>4.21</td>
</tr>
<tr>
<td>11 Leadng/Infl</td>
<td>22</td>
<td>237.31</td>
<td>6.19</td>
<td>1.31</td>
</tr>
<tr>
<td>12 Physical/Perf</td>
<td>17</td>
<td>238.00</td>
<td>10.62</td>
<td>2.57</td>
</tr>
<tr>
<td>Total</td>
<td>230</td>
<td>236.59a</td>
<td>8.77b</td>
<td>.57c</td>
</tr>
</tbody>
</table>

Note. missing occupational interest data for 2 subjects.

a overall mean; b overall standard deviation; c overall standard error
The results of the analysis of variance procedure (see Table 13) indicated no significant difference ($F_{(1,218)} = 1.71, p = .07$) in dislocated workers' math scale scores by categories of occupational interest.

Objective Five

The fifth objective of this study was to compare the dislocated workers' reading scale scores by age-group, gender, educational level, and DOT code of last job. The variables age-group and educational level are ordinal data with many tied ranks, therefore the nonparametric correlations procedure Kendall's Tau was used to summarize this data. The $t$-test was used to determine if differences existed between the mean reading scale score of male dislocated workers and the mean reading scale score of female dislocated workers. The one-way ANOVA procedure was used to determine if there were differences in dislocated workers' reading scale scores by categories of DOT codes; the Tukey post-hoc analysis procedure was used to detect differences between groups if the ANOVA found a significant difference.

The following are the findings by individual variables:

**Age-group** - The results of the Kendall's Tau procedure indicated no significant relationship between reading scale scores and age-groups ($r = -.01, p = .46$). The Kendall's coefficient of $r = -0.01$ indicates the strength of the relationship between reading scores and age-group is negligible, according to the scale of Hinkle, Wiersma, and Jurs (1988).
Table 13

Comparison of Dislocated Workers’ Math Scores by Occupational Interests. LA JLC at LSU, PYs 1989-91

Analysis of Variance

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F-ratio</th>
<th>F-prob</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between</td>
<td>11</td>
<td>2688.06</td>
<td>244.36</td>
<td>1.71</td>
<td>0.07</td>
</tr>
<tr>
<td>Within</td>
<td>218</td>
<td>31013.02</td>
<td>142.26</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>229</td>
<td>33701.08</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Group</th>
<th>n</th>
<th>Mean</th>
<th>S.D.</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>01 Artistic</td>
<td>16</td>
<td>232.37</td>
<td>11.05</td>
<td>2.76</td>
</tr>
<tr>
<td>02 Scientific</td>
<td>29</td>
<td>234.80</td>
<td>11.07</td>
<td>1.75</td>
</tr>
<tr>
<td>03 Plant/Animal</td>
<td>11</td>
<td>235.54</td>
<td>10.24</td>
<td>3.08</td>
</tr>
<tr>
<td>04 Protective</td>
<td>16</td>
<td>224.68</td>
<td>11.80</td>
<td>2.95</td>
</tr>
<tr>
<td>05 Mechanical</td>
<td>31</td>
<td>237.06</td>
<td>12.26</td>
<td>2.20</td>
</tr>
<tr>
<td>06 Industrial</td>
<td>18</td>
<td>229.33</td>
<td>14.03</td>
<td>3.30</td>
</tr>
<tr>
<td>07 Business</td>
<td>18</td>
<td>231.61</td>
<td>11.61</td>
<td>2.73</td>
</tr>
<tr>
<td>08 Selling</td>
<td>29</td>
<td>231.72</td>
<td>12.58</td>
<td>2.33</td>
</tr>
<tr>
<td>09 Accommodat</td>
<td>14</td>
<td>237.35</td>
<td>11.13</td>
<td>2.97</td>
</tr>
<tr>
<td>10 Humanitarian</td>
<td>9</td>
<td>230.33</td>
<td>16.43</td>
<td>5.47</td>
</tr>
<tr>
<td>11 Leadng/Infl</td>
<td>22</td>
<td>235.86</td>
<td>9.73</td>
<td>2.07</td>
</tr>
<tr>
<td>12 Physical/Perf</td>
<td>17</td>
<td>235.58</td>
<td>11.08</td>
<td>2.68</td>
</tr>
<tr>
<td>Total</td>
<td>230</td>
<td>233.30</td>
<td>12.13</td>
<td>0.79</td>
</tr>
</tbody>
</table>

Note. missing occupational interest data for 2 subjects.

*overall mean;  
^overall standard deviation;  
°overall standard error
Educational level - The results of the Kendall's Tau procedure indicated a significant relationship ($r = .30, p < .01$) between dislocated workers' reading scale scores and educational level. The statistical significance, $p = < .01$, indicates that higher education levels tended to be associated with higher reading scores more than would be expected by chance alone. According to the scale of Hinkle et al. (1988), the Kendall's coefficient, $r = .30$, indicates the strength of the correlation between reading scale scores and educational level is low.

Gender - The results of the t-test ($t_{230} = 1.02, p = .93$) indicated there was no significant difference between the mean reading scale scores of male dislocated workers (236.51) and the mean reading scale scores of female dislocated workers (236.33).

DOT code - The analysis of variance procedure indicated there was no significant difference ($F_{11,217} = 3.06, p = 0.06$) in the dislocated workers reading scale scores by categories of DOT codes. (see Table 14)

Objective Six

The sixth objective of this study was to compare dislocated workers' math scale scores by the demographic characteristics of age-group, gender, educational level, and categories of DOT codes of last job. The variables age-group and educational level are ordinal data with many tied ranks, therefore, the nonparametric Kendall’s Tau procedure was used to summarize the data. The t-test was used to determine if differences existed between the mean reading scale scores of male dislocated workers and the mean
Table 14
Comparison of Dislocated Workers' Reading Scores by DOT Code, LA JLC at LSU, PYs 1989-91

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F-ratio</th>
<th>F-prob</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between</td>
<td>7</td>
<td>1630.05</td>
<td>232.86</td>
<td>3.06</td>
<td>.06</td>
</tr>
<tr>
<td>Within</td>
<td>217</td>
<td>16474.01</td>
<td>75.91</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>224</td>
<td>18104.06</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Group</th>
<th>n</th>
<th>Mean</th>
<th>S.D.</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>01 Prof/Man/Tech</td>
<td>51</td>
<td>238.29</td>
<td>7.92</td>
<td>1.10</td>
</tr>
<tr>
<td>02 Clerical/Sale</td>
<td>94</td>
<td>236.69</td>
<td>8.75</td>
<td>.90</td>
</tr>
<tr>
<td>03 Service</td>
<td>39</td>
<td>233.53</td>
<td>9.17</td>
<td>1.46</td>
</tr>
<tr>
<td>05 Process</td>
<td>11</td>
<td>235.45</td>
<td>9.04</td>
<td>2.72</td>
</tr>
<tr>
<td>06 Machine Trade</td>
<td>1</td>
<td>212.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>07 Benchwork</td>
<td>4</td>
<td>226.25</td>
<td>16.23</td>
<td>8.11</td>
</tr>
<tr>
<td>08 Selling</td>
<td>20</td>
<td>236.70</td>
<td>8.29</td>
<td>1.85</td>
</tr>
<tr>
<td>09 Misc</td>
<td>5</td>
<td>241.00</td>
<td>4.58</td>
<td>2.04</td>
</tr>
<tr>
<td>Total</td>
<td>225</td>
<td>236.24</td>
<td>8.99</td>
<td>0.59</td>
</tr>
</tbody>
</table>

Note. data for 7 DOT codes missing.
\(^{a}\)overall mean; \(^{b}\)overall S.D.; \(^{c}\)overall S.E.

reading scale score of female dislocated workers. The one-way ANOVA procedure was used to determine if there were differences between math scale scores of dislocated workers by categories of DOT codes; the Tukey post-hoc analysis
procedure was used to detect differences between groups if the ANOVA found a significant difference.

**Age-group** - The results of the Kendall's Tau procedure indicated a significant relationship (r = .14, p = .04) between dislocated workers' math scale scores and age-group. The statistical significance of the correlation, p = .04, indicates that higher education levels tended to be associated with higher math scale scores more so than would be expected by chance alone. The Kendall's coefficient, r = 0.14, indicates the strength of the relationship between dislocated workers' math scale scores and age-group is negligible.

**Educational level** - The results of Kendall's Tau procedure revealed a significant correlation between dislocated workers' math scale scores and educational level (r = .30, p < .01). The statistical significance, p < .01, indicates that dislocated workers with more education tended to have higher math scale scores. According to the scale developed by Hinkle et al. (1988), the Kendall's coefficient, r = .30, indicates the strength of the relationship between dislocated workers' math scores and educational level is low.

**Gender** - The t-test results (t(230) = 1.09, p = .63) indicated no significant difference between the mean math scale scores of male dislocated workers (232.90) and the mean math scale score of female dislocated workers (233.40) at the predetermined alpha level of 0.05.

**DOT codes** - As shown in Table 15, the ANOVA procedure indicated a significant difference (F(7, 217) = 2.13, p = .04) in the dislocated workers' math scale scores by
Table 15

Comparison of Dislocated Workers' Math Scores by DOT Codes, LA JLC at LSU, PYs 1989-91

<table>
<thead>
<tr>
<th>Analysis of Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Source</strong></td>
</tr>
<tr>
<td>Between</td>
</tr>
<tr>
<td>Within</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Group</th>
<th><strong>n</strong></th>
<th><strong>Mean</strong></th>
<th><strong>S.D.</strong></th>
<th><strong>S.E.</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>01 Prof/Man/Tech</td>
<td>51</td>
<td>237.72</td>
<td>8.92</td>
<td>1.25</td>
</tr>
<tr>
<td>02 Clerical/Sales</td>
<td>94</td>
<td>232.91</td>
<td>11.82</td>
<td>1.21</td>
</tr>
<tr>
<td>03 Service</td>
<td>39</td>
<td>229.46</td>
<td>13.54</td>
<td>2.16</td>
</tr>
<tr>
<td>05 Process</td>
<td>11</td>
<td>228.36</td>
<td>15.55</td>
<td>4.69</td>
</tr>
<tr>
<td>06 Machine Trade</td>
<td>1</td>
<td>219.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>07 Benchwork</td>
<td>4</td>
<td>230.50</td>
<td>12.79</td>
<td>6.39</td>
</tr>
<tr>
<td>08 Selling</td>
<td>20</td>
<td>231.05</td>
<td>14.21</td>
<td>3.17</td>
</tr>
<tr>
<td>09 Misc</td>
<td>5</td>
<td>233.40</td>
<td>13.18</td>
<td>3.01</td>
</tr>
<tr>
<td>Total</td>
<td>225</td>
<td>232.92&lt;sup&gt;a&lt;/sup&gt;</td>
<td>2.24&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.81&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

Note: data for 7 DOT codes missing.
<sup>a</sup>overall mean; <sup>b</sup>overall standard deviation; <sup>c</sup>overall standard error

categories of DOT codes. Tukey's post hoc analysis procedure indicated that the mean math scale scores of dislocated workers who were formerly employed in jobs listed under the DOT category Professional/Managerial/Technical (237.72) was
significantly higher than the mean math scale score of dislocated workers who were formerly employed in jobs listed under the DOT category Service (229.46).

Objective Seven

The seventh objective of this study was to determine if a model existed which explained a significant portion of the variance in dislocated workers' reading scale score from categories of occupational interest, categories of DOT codes, and the demographic characteristics of age-group, gender, and educational level. This objective was analyzed by using a stepwise multiple regression analysis with reading scale score as the dependent variable. The other variables were treated as independent variables and a stepwise entry of the variables was used because this was an exploratory study. In this regression model variables were entered that increased the explained variance by at least one percent provided the model remained significant. The variables occupational interest area and DOT code were dummy coded for regression analysis.

Table 16 presents the results of the multiple regression analysis. The only variable which entered the model was educational level of the dislocated worker which explained 11.19% of the variance in dislocated workers reading scores.
Table 16

Regression Analysis of Dislocated Workers’ Reading Scores on Selected Demographic Characteristics, LA JLC at LSU, PYs 1989-91

<table>
<thead>
<tr>
<th>Source of Var&lt;sup&gt;a&lt;/sup&gt;</th>
<th>df</th>
<th>SS</th>
<th>F</th>
<th>F-prob</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>2</td>
<td>2189.12</td>
<td>27.09</td>
<td>&lt;.01</td>
</tr>
<tr>
<td>Residual</td>
<td>230</td>
<td>16241.47</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>232</td>
<td>18430.59</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Variables in the Equation

<table>
<thead>
<tr>
<th>Variable</th>
<th>MulR&lt;sup&gt;b&lt;/sup&gt;</th>
<th>R&lt;sup&gt;c&lt;/sup&gt;</th>
<th>R&lt;sup&gt;c&lt;/sup&gt;D</th>
<th>F&lt;sup&gt;e&lt;/sup&gt;</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education</td>
<td>.3345</td>
<td>.1119</td>
<td>.1119</td>
<td>28.90</td>
<td>&lt;.01</td>
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</tbody>
</table>

Variables not in the Equation

<table>
<thead>
<tr>
<th>Variables</th>
<th>t</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age&lt;sup&gt;f&lt;/sup&gt;</td>
<td>-1.09</td>
<td>.27</td>
</tr>
<tr>
<td>Gender&lt;sup&gt;e&lt;/sup&gt;</td>
<td>-0.51</td>
<td>.60</td>
</tr>
<tr>
<td>Professional&lt;sup&gt;h&lt;/sup&gt;</td>
<td>0.05</td>
<td>.95</td>
</tr>
<tr>
<td>Structural&lt;sup&gt;i&lt;/sup&gt;</td>
<td>0.75</td>
<td>.45</td>
</tr>
<tr>
<td>Miscellaneous&lt;sup&gt;j&lt;/sup&gt;</td>
<td>-1.17</td>
<td>.23</td>
</tr>
<tr>
<td>Artistic&lt;sup&gt;k&lt;/sup&gt;</td>
<td>1.15</td>
<td>.24</td>
</tr>
<tr>
<td>Scientific&lt;sup&gt;l&lt;/sup&gt;</td>
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</tr>
<tr>
<td>Protective&lt;sup&gt;m&lt;/sup&gt;</td>
<td>-0.84</td>
<td>.40</td>
</tr>
</tbody>
</table>

(table continues)
<table>
<thead>
<tr>
<th>Variables</th>
<th>t</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industrial&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.78</td>
<td>.43</td>
</tr>
<tr>
<td>Selling&lt;sup&gt;b&lt;/sup&gt;</td>
<td>-0.92</td>
<td>.35</td>
</tr>
<tr>
<td>Leading/Influencing&lt;sup&gt;c&lt;/sup&gt;</td>
<td>0.07</td>
<td>.94</td>
</tr>
<tr>
<td>Physical/Performing&lt;sup&gt;d&lt;/sup&gt;</td>
<td>0.52</td>
<td>.60</td>
</tr>
</tbody>
</table>

<sup>a</sup>Source of variation  
<sup>b</sup>Multiple R<sup>2</sup>, total variance  
<sup>c</sup>R<sup>2</sup>, The coefficient of determination  
<sup>d</sup>The amount of added explanatory power  
<sup>e</sup>F-ratio for R<sup>2</sup> change  
<sup>f</sup>Age-group of dislocated worker  
<sup>g</sup>Gender of dislocated worker  
<sup>h</sup>DOT code for jobs in the Professional, Managerial, Technical category  
<sup>i</sup>DOT code for Structural occupations  
<sup>j</sup>DOT code for Miscellaneous occupations  
<sup>k</sup>Occupational interest area 01  
<sup>l</sup>Occupational interest area 02  
<sup>m</sup>Occupational interest area 04  
<sup>n</sup>Occupational interest area 06  
<sup>o</sup>Occupational interest area 08  
<sup>p</sup>Occupational interest area 11 Leading/Influencing  
<sup>q</sup>Occupational interest area 12 Physical/Performing

**Objective Eight**

The eighth objective of this study was to determine if a model existed which explained a significant portion of the variance in dislocated workers' math scale scores.
from categories of occupational interest, categories of DOT codes, age-group, gender, and educational level. This objective was analyzed by using a stepwise multiple regression analysis with math scale score as the dependent variable. The other variables were treated as independent variables and a stepwise entry of the variables was used because this was an exploratory study. In this regression model variables were entered that increased the explained variance by at least one percent provided the model remained significant. The variables occupational interest area and DOT code were dummy coded for use in the regression analysis.

The results of the stepwise multiple regression analysis are presented in Table 17. The variable educational level entered the model first. This variable explained 12.9% of the total variance in dislocated workers' math scale scores. The variables age-group and the Mechanical occupational interest area also entered the model and explained an additional 2.6% of the total variance in dislocated workers' math scale scores. These three variables explained a total of 15.6% of the variance in dislocated workers' math scale scores. No other variables entered the model.
Table 17
Regression Analysis of Dislocated Workers’ Math Scores on Selected Demographics, LA JLC at LSU, PYs 1989-91

<table>
<thead>
<tr>
<th>Source of Var</th>
<th>df</th>
<th>SS</th>
<th>F</th>
<th>F-prob</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>3</td>
<td>5387.88</td>
<td>27.67</td>
<td>&lt; .01</td>
</tr>
<tr>
<td>Residual</td>
<td>229</td>
<td>28966.52</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>232</td>
<td>34354.40</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Variables in the Equation

<table>
<thead>
<tr>
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$^a$Source of variation  
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$^c$R$^2$, The coefficient of determination  
$^d$The amount of added explanatory power  
$^e$F-ratio for $R^2$change  
$^f$Age-group of dislocated worker  
$^g$Gender of dislocated worker  
$^h$DOT code for jobs in the Professional, Managerial, Technical category  
$^i$DOT code for Structural occupations  
$^j$DOT code for Miscellaneous occupations  
$^k$Occupational interest area 01  
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$^p$Occupational interest area 11 Leading/Influencing  
$^q$Occupational interest area 12 Physical/Performing
CHAPTER 5
SUMMARY, CONCLUSIONS, RECOMMENDATIONS

The purpose of this study was to describe dislocated workers on workplace literacy skills, occupational interests, and selected demographic characteristics; a corollary objective was to determine whether workplace literacy skills are independent of these variables. The methodology used in this investigation was a quantitative analysis of the results of dislocated workers' assessments of workplace literacy, occupational interests, and selected demographic characteristics.

The target population consisted of all Louisiana dislocated workers; the accessible population was comprised of those Louisiana dislocated workers who participated in the Louisiana Job Link Center (LA JLC) at LSU during Program Years (PYs) 1989-91. Based on Cochran's (1988) formula for determining minimum sample size, a simple random sample of 232 dislocated workers was drawn from the accessible population of 570 participants.

The data was collected during the period 1989-91 and stored in a data bank controlled by the Director of the Louisiana JLC at LSU. The data was made available for research through the Federal JTPA guidelines for program evaluation. All Federal mandates regarding the confidentiality of individual participant records were followed. The data for this study was compiled by this researcher using a modified version of the recording form designed by Harvill (1993). The CASAS Reading for Employability Test, CASAS Math for Employability Test, and the APTICOM A5 Occupational Interest Inventory had been previously administered by the staff of the
Louisiana Job Link Center at LSU. Selected demographic data and the results of these assessments were recorded on the data recording form by this researcher.

The specific objectives of this study were to:

1. Describe LA JLC dislocated workers on the following personal demographic characteristics: age-group; educational level; gender; and, DOT code of previous job.

2. Describe dislocated workers on workplace literacy skills as measured by the CASAS Reading for Employability Test and the CASAS Math for Employability Test and on categories of occupational interest as indicated by the APTICOM A5 Occupational Interest Inventory.

3. Compare the LA JLC dislocated workers’ reading scale scores by categories of occupational interests.

4. Compare the LA JLC dislocated workers’ math scale scores by categories of occupational interest.

5. Compare the LA JLC dislocated workers’ reading scale scores by age-group, gender, educational level, and categories of DOT codes.

6. Compare the LA JLC dislocated workers’ math scale scores by age-group, gender, educational level, and categories of DOT codes.

7. Determine if a model existed which explained a significant portion of the variance in the LA JLC dislocated workers’ reading scale scores from categories of occupational interest, categories of DOT codes, age-groups, gender, and educational level.
8. Determine if a model existed which explained a significant portion of the variance in the LA JLC dislocated workers' math scale scores from categories of occupational interest, categories of DOT codes, age-groups, gender, and educational level.

The data was organized by individual objective and statistical tests were calculated using the SPSS computer program. The nominal data and the ordinal data for objectives one and two were reported using frequencies and percentages and means and standard deviations. The one-way ANOVA procedure was used for objectives three and four; the Tukey's post hoc analysis procedure was used if the ANOVA detected a significant difference. Kendall's correlation procedure was used to determine nonparametric correlations for the ordinal data of objectives five and six; the t-test was used to determine if differences existed by gender. The multiple regression analysis was used for objectives seven and eight.

**Summary of Findings**

The following section summarizes the findings of this study by individual objective.

1. Findings related to Objective 1 (demographics) included the following:

   **Age-group** - The largest group of dislocated workers in the sample were in the 26-35 year age-group (n = 93 or 40.10%); those dislocated workers aged 56 years or older made up the smallest group in the sample (n = 14 or 6.03%). More than two-thirds (n = 165 or 71%) of the dislocated workers in the sample were between the ages of 26-45 years.
Gender - Males (n = 115 or 49.6%) comprised slightly less than one-half of the
dislocated workers in the sample; females (n = 117 or 50.4%) accounted for a
little more than half of the total number of dislocated workers in the sample.

Educational level - A total of 205 (88%) of the LA JLC dislocated workers had
at least a high school education. Seventy-one (30.6%) had graduated high school
or obtained the GED; 92 (39.6%) had some post secondary education; and 42
(18%) had earned a college degree.

DOT code of last employment - Ninety-four (41.7%) of the LA JLC at LSU
participants were formerly employed in jobs categorized by the DOT code
Clerical & Sales; 51 (22.6%) had last worked at jobs categorized by the DOT
code Professional\Managerial\Technical. The categories Processing, Benchwork,
Machine trades, and Miscellaneous accounted for less than ten percent (n = 21
or 9.34%) of the total sample.

2. Findings related to Objective 2 (reading scale scores, math scale scores,
occupational interests) included the following:

Reading scale scores - The reading scale scores of LA JLC dislocated workers
ranged from the maximum attainable score of 245 to a low of 205; the mean was
236.42 and the standard deviation was 9.12. Most (n = 188 or 90.9%) of the
dislocated workers in the sample scored 225 or higher on the reading test.

Math scale scores - The math scale scores of LA JLC dislocated workers ranged
from a low of 196 to the maximum attainable score of 245; the mean for the
sample was 233.15 and the standard deviation was 12.19. Over one-fourth (n =
62 or 26.7%) of the LA JLC participants scored less than 225 on the math test. This indicates they would not be able to function at high school entry level in basic math and reading. More than two-thirds (n = 170 or 73.3%) scored 225 or higher.

**Occupational interests** - The occupational interest area Mechanical was selected by the largest group of LA JLC dislocated workers (n = 31 or 13.4%), followed by the interest areas Scientific (n = 29 or 12.6%) and Selling (n = 29 or 12.6%). Less than five percent of the sample group (n = 11 or 4.78%) indicated an interest in jobs under the category Plants/Animals and the smallest group of dislocated workers showed high interest in jobs in the category Humanitarian (n = 9 or 3.91%).

3. **Findings related to Objective 3 (compare reading scale scores by occupational interests):**

The results of the analysis of variance indicated there was no significant difference ($F_{(11, 218)} = .91, p = .52$) in dislocated workers’ reading scale scores by categories of occupational interests.

4. **Findings related to Objective 4 (compare math scale scores by categories of occupational interests):**

The results of the analysis of variance procedure did not indicate a significant difference ($F_{(11, 218)} = 1.71, p = .07$) in math scale scores by categories of occupational interests.
5. Findings related to Objective 5 (compare reading scale scores and demographics) included the following:

**Reading scale score by Age-group** - The results of the Kendall’s correlation procedure indicated no significant relationship exists ($r = -0.01, p = .40$) between reading scale scores by age-groups. According to Hinkle et al. (1988) the Kendall’s coefficient $r = -0.01$, indicates that the strength of the relationship between reading score and age-group is negligible.

**Reading scale score by Educational level** - The results of the Kendall’s correlation analysis procedure indicated a significant relationship between educational level and reading scale scores ($r = .30, p < .01$). The Kendall’s tau was $r = .30$; according to the scale developed by Hinkle et al. (1988) this finding indicated the strength of the relationship between dislocated workers’ reading score and educational level is low. However, the statistical significance indicates higher reading scores tended to be associated with higher educational levels, therefore the relationship is more than would be expected by chance alone.

**Reading scale score by Gender** - The results of the t-test ($t_{230} = 1.02, p = .93$) indicated there was no significant difference in the mean reading scale score of male dislocated workers (236.51) and the mean reading scale score of female dislocated workers (236.33).
Reading scale score by DOT code - The results of the analysis of variance procedure indicated no significant difference ($F_{1, 218} = 3.06, p = .09$) in the reading scale scores of dislocated workers by categories of DOT codes.

6. Findings related to Objective 6 (compare math scale scores and demographics) included the following:

Math scale score by Age-group - The results of the Kendall’s correlation procedure indicated no significant relationship ($r = -.01, p = .07$) exists between dislocated workers’ math scores and age-group. According to the scale developed by Hinkle et al. (1988), a Kendall’s coefficient of $r = -.01$ indicates the strength of the relationship between math scale scores and age-groups is negligible.

Math scale score by Educational level - The results of the Kendall’s correlation procedure indicated a significant correlation ($r = .30, p < .01$) between dislocated workers’ math scale scores by educational level. According to the Hinkle et al. (1988) scale the Kendall’s tau ($r = .30$) indicated the strength of the correlation between math scale scores and educational level is low. The statistical significance indicates the relationship is more than would be expected by chance alone. Therefore, the more educated LA JLC dislocated workers tended to score higher on the math assessment.

Math scale score by Gender - The results of the t-test indicated there was no significant difference ($t_{230} = 1.09, p = .63$) in the mean math scores of male
dislocated workers (232.90) and the mean math scores of female dislocated workers (233.40).

**Math score by DOT code** - The results of the ANOVA indicated a statistically significant difference ($F_{(1, 218)} = 2.13, p = .04$) in dislocated workers’ math scale scores by categories of DOT codes. The results of the Tukey’s post hoc analysis revealed that the mean math scale score of LA JLC dislocated workers who were formerly employed in jobs categorized by the DOT code Professional/Managerial/Technical (237.72) was significantly higher than the mean math score of those workers who were formerly employed in jobs under the DOT code Service (229.46).

7. Findings related to Objective 7 (model to explain variance in reading score from demographics) were:

The results of the multiple regression analysis disclosed that the educational level attained by LA JLC dislocated workers accounted for all (11.19%) of the total explained variance in LA JLC dislocated workers’ reading scale scores from the demographic characteristics age-group, gender, educational level, DOT code, and occupational interests.

8. Findings related to Objective 8 (model to explain variance in math scale scores from demographics) were:

The results of the regression analysis procedure indicated that the dislocated workers’ educational level (12%) explained most of the total variance in dislocated workers’ math scale scores from the demographic characteristics age-
group, gender, educational level, DOT code, and occupational interests. The variables age-group and Mechanical occupational interest explained 2.6% of the total variance.

Conclusions

Based on the findings of this study, the ensuing conclusions were drawn by this researcher.

1. Males and females are equally represented among the LA JLC dislocated workers. This conclusion is based on the finding that the sample was almost equally divided between males (115 or 49.6%) and females (117 or 50.4%). In a 1993 study of Louisiana dislocated workers, Harvill reported similar findings. However, the U.S. DOL (1989) and the 1991 Bureau of Labor Statistics reported data that were quite different: the U.S. DOL disclosed that white males made up (42%) of the total population of dislocated workers; the U.S. Bureau of Labor Statistics (1991) reported that women made up 30-40% of all dislocated workers.

2. Most (71%) of the LA JLC dislocated workers are between 26 and 45 years of age. Ninety-three (40%) of the subjects were in the 26-35 year age-group and 72 (31%) of the subjects were in the 36-45 year age-group. Harvill (1993) reported 68.5% of Louisiana dislocated workers were 26-45 years old. The U.S. DOL (1989) disclosed that dislocated workers aged 25-54 made up 58.6% of the total dislocated worker population. Levine (1992a) and the U. S. Bureau of Labor Statistics reported that 69% of all dislocated workers were between 25-54
years old. Using similar groupings for this study, LA JLC dislocated workers aged 25-55 made up 94% of the total LA JLC dislocated worker population.

The discrepancy between findings regarding gender and age-groups may be due to the fact that the U.S. DOL and U.S. Bureau of Labor Statistics reports were based on much larger samples of data reported nationally in the Dislocated Worker Survey, whereas this study used data from a small population of dislocated workers in Louisiana. In support of this idea this researcher offers the following studies: (1) a 1991 U.S. GAO report indicated a 58:42 ratio between males and females and reported that 67% of the respondents were 22-44 years old; (2) a 1990 U.S. DOL 1-year survey of JTPA Title III participants reported 57% males and 43% females and 88% of these respondents were 22-54 years of age; and (3) a 1987 U.S. GAO survey of Title III participants reported a 60:40 male to female ratio and 69% of the total were 22-44 years old.

3. Most dislocated workers at the LA JLC have at least a high school education. This conclusion is based on the finding that 30.6% (n=71) had a high school education, 39.7% (n = 92) had some post secondary education, and 18% (n=42) had a college degree. Harvill (1993) reported slightly higher total percentages of dislocated workers with at least a high school education (92.4%). These findings are not dramatically different from those revealed by Lordeman (1992) and the U.S. GAO (1987). In Lordeman’s survey of 107,500 Title III participants, 85% indicated they had more than a high school education.
Similarly, the U.S. GAO investigation of 121,00 Title III subjects disclosed that 78% had at least a high school education (1987).

These findings do appear to contradict Podgursky's 1992 analysis of Dislocated Worker Survey data wherein the typical dislocated worker was described as "less well educated." The incongruity of JTPA Title III participant research findings with the information revealed in studies which used the Dislocated Worker Survey data bank does not impugn the research efforts of either entity. Perhaps this statistical aberration lends weight to the argument that the bulk of JTPA dislocated worker clients have been those least in need of help (Victor, 1990). According to this logic, the well-educated dislocated workers are selected for JTPA programs because they are more likely to finish the program, ergo, higher placement rates (Victor, 1990). Perhaps the more educated dislocated workers are more likely to participate in such programs because they are more likely to have knowledge about such programs (they are more likely to read newspapers, job bulletins, etc.); they have better job-search skills; and they are more knowledgeable about information sources than the less literate workers (Victor, 1990). This argument has been supported by Levine (1992a), Podgursky (1992), Swaim (1989) and others who have reported that those dislocated workers with the most education experienced shorter periods of unemployment.

4. Most of the LA JLC dislocated workers were dislocated from jobs categorized under the DOT codes Clerical & Sales or Professional/Managerial/Technical. This conclusion is based on findings that 94 (40.5%) of the 232 dislocated
workers in the study indicated they were formerly employed in clerical and sales occupations and 51 (22%) came from jobs in the DOT category Professional/Managerial/Technical. The U.S. DOL (1989) reported similar findings for dislocated workers' formerly employed at jobs categorized by the DOT code professional/managerial/technical (23%); but disclosed that Clerical & Sales jobs accounted for only 25% of the total number of dislocated workers.

5. LA JLC dislocated workers were dislocated from white-collar jobs and blue-collar jobs in almost equal numbers. This conclusion is based on the finding that 40.5% of the participants formerly worked at blue-collar jobs in the Clerical & Sales category and 38% were dislocated from jobs in the DOT categories Professional/Managerial/Technical (22%) or Service (16%). Fifty-seven percent (57%) of all workers dislocated in the 5-year period 1979-84 were from manufacturing jobs (DOT code Machine trades and Benchwork) and 37% were from jobs such as those found in the DOT categories of Professional/Managerial/Technical or Service (Levine, 1992b). Similarly, LA JLC dislocated workers formerly employed at jobs in the Service category made up 16.8% of the total, whereas U.S. Bureau of Labor Statistics (1991) data have indicated that the number of dislocated workers in the Service occupations had increased from 26% of the total number of dislocated workers in 1984 to 41% of the total in 1992. By comparison, in the five-year period 1987-92, the percentage of blue-collar workers had decreased to 41% and the percentage of white-collar workers had increased to 50% (Levine, 1992b).
According to Levine (1992b) and Lordeman and Spar (1992), the increase in numbers of white-collar workers in the dislocated worker survey can be attributed to the loss of jobs in the service industries and the cutback in low level managerial positions by some business and industrial concerns.

6. Louisiana JLC dislocated workers have high workplace literacy skills. This conclusion is based on the following findings: 91% of the LA JLC at LSU dislocated workers scored above the acceptable minimum (225); the average reading score for the sample was 236 (245 maximum) and the sample mode 244. Furthermore, 73% of the dislocated workers scored above the acceptable minimum (225) on the math test; the mean math score was 233 (245 maximum) and the sample mode was 245.

7. LA JLC dislocated workers express wide occupational interests. This conclusion is based on the finding that dislocated workers revealed occupational interests in all 12 occupational interest areas, but no single interest area accounted for more than 13.5% of the 232 subjects. These findings are in concordance with the literature that indicated occupational interests may be broadly diverse and are not related to ability or one's chosen career (Holland et al 1990; Kassera & Russo, 1987; Magee & Pumfrey, 1986; Sharf, 1992; Walsh, 1990).

An assiduous scrutiny of applicable literature by this researcher revealed no reports about the workplace literacy skills of dislocated workers. However, the findings of this study contradict the findings reported about the workplace literacy skills of American workers in general. Carnevale et al. (1988),
Cheverton (1992), Chisman (1989), Dickey (1992), Eurich (1990), Jurmo et al. (1989), and Hull (1991) among others, have asserted that American workers are deficient in the workplace literacy skills. There is no consensus of agreement on how to define literacy or how to measure literacy but the U.S. DOL (1992) and Kirsch et al. (1993) are among those who have called for new kinds of adult literacy assessment instruments based on competency levels rather than academic levels. In the recently completed National Adult Literacy Survey, Kirsch et al. 1993 noted that the lack of relevant studies on adult literacy has inhibited the development of assessment instruments and competent workplace literacy programs.

7. LA JLC dislocated workers’ reading skills are not related to categories of occupational interests. This conclusion is based on the results of the one-way ANOVA which indicated that there is a no significant relationship between the reading scores and occupational interests of the dislocated workers served by the LA JLC at LSU. Possibly, the fact that the dislocated workers’ expressed interests were dispersed over the 12 interest areas affected the statistical comparisons. However, it is more likely attributed to the type of assessment (competency-based) used; the limited range of scores rendered effective comparisons impossible.

8. LA JLC dislocated workers’ reading scores are not related to their age-group. This conclusion is based on the results of the Kendall’s correlation procedure
which indicated the strength of the relationship between reading scale scores and age-groups was negligible.

9. LA JLC dislocated workers with more education tend to score higher on the reading test than those with less education. This conclusion is based on the finding that the correlation coefficient, \( r = .30 \), indicates a low magnitude of correlation between the reading scale scores and educational level. Since the results of the Kendall's correlation procedure were highly significant (\( p < .01 \)), there is more variation than one would expect to find by chance alone. The low correlation between the reading scores and educational levels of dislocated workers are not surprising given that almost 90% of the sample had at least a high school education. Furthermore, this type of assessment instrument (competency-based) was developed to assess workplace literacy skills; it was not designed to discriminate by academic reading and math levels.

These findings differ markedly from those reported in the 1993 National Adult Literacy Survey. In that survey, adults with higher levels of education achieved significantly higher average proficiencies than those with less education (Kirsch et al. 1993). Kirsch et al. (1993) warned that the relationship between education and literacy is complicated. Schooling increases individual skills, but it is also evident that people with higher abilities are more likely to continue their education to higher levels (Kirsch et al. 1993).

10. Male and female dislocated workers score about the same on the reading test.
This conclusion is based on the results of the t-test, which indicated no significant differences ($t_{230} = 1.02, p = .93$) between the mean reading scale scores of male dislocated workers (236.51) and the mean reading scale scores of female dislocated workers (236.33). A meticulous perusal of the literature by this researcher disclosed no evidentiary reports on dislocated workers’ reading skills by gender. However, data from the recently published Adult Literacy Survey (Kirsch et al. 1993) has revealed that males scored significantly higher average document and quantitative scores than did females. The reader should be aware that the assessment instruments used in the NALS study and this study are both competency based but the CASAS tests are designed to measure basic workplace literacy skills, whereas the NALS instrument was designed to measure general adult literacy skills.

11. LA JLC at LSU dislocated workers’ reading scale scores are not related to the categories of DOT codes of their last job. This conclusion is based on the results of the analysis of variance procedure which indicated no significant differences ($p = .09$) between reading scores by categories of DOT codes of the last job of dislocated workers.

12. Dislocated workers’ math scale scores are not related to their age-group. This conclusion is based on the results of the Kendall’s correlation analysis procedure which indicated a no statistically significant relationship ($r = .14, p = .07$). According to Hinkle et al. (1988), the Kendall’s coefficient of $r = .14$ indicated
the strength of the relationship between math scale scores and age-group is negligible.

13. LA JLC dislocated workers with more education score higher on the math test. This conclusion is based on the results of the Kendall’s correlation test which indicated a significant relationship ($r = .30, p < .01$) between dislocated workers’ educational level and math scores. According to Hinkle et al. (1988), the coefficient, $r = .30$, indicates the magnitude of the relationship is low. However, the statistical significance is high, which indicates the relationship is more than would be expected by chance alone. Possibly, the fact that this assessment instrument had a score cap of 245 which resulted in many tied scores resulted in the low correlation coefficient. There is an absence of pertinent information in the literature regarding the relationship, or lack thereof, between mathematics ability and educational level or age-groups of dislocated workers. However, Kirsch et al. (1993) reported average literacy scores increased from the teens up to the mid-forties, with the largest increases occurring between 16-to 18-year-olds and 19-to 24-year olds. Average proficiencies then decreased markedly.

13. Male and female dislocated workers at the LA JLC score about the same on the math test. This conclusion is based on results of the t-test, which revealed no significant differences ($t_{230} = 1.09, p = .63$) between the mean math scores of males (232.90) and the mean math score of females (233.40). As previously
noted, the NALS (1993) reported males scored higher than females in document literacy and quantitative literacy on the adult literacy tests.

14. Dislocated workers who were formerly employed in jobs under the DOT category of Professional/Managerial/Technical score higher on the math test than those dislocated workers formerly employed in jobs under the DOT classification service. This conclusion is based on results of the ANOVA and subsequent Tukey post hoc procedure which revealed that the mean math scores of dislocated workers previously employed at jobs under the DOT category Professional/Managerial/Technical (237.72) were significantly higher ($F_{11, 217} = 2.13, p < .04$) than the mean math scores of dislocated workers who were formerly employed in jobs in the DOT category Service jobs (229.46). These findings are not surprising given that the DOT category Professional/Managerial/Technical applies to occupations in architecture, engineering, and mathematical occupations. There is no reported evidence that supports or contradicts this finding for dislocated workers.

15. The best predictor of the LA JLC at LSU dislocated workers’ reading scale score is the educational level of achievement. This conclusion is based on the results of the multiple regression analysis which indicated that the dislocated workers’ educational level (11.16) explained all the total explained variance in reading scale scores.

16. The best predictors of dislocated workers’ math scale score are the educational level achieved by the worker, age-group, and occupational interest category
Mechanical. This conclusion is based on the results of the multiple regression analysis which revealed that education (12.96%), age-group (1.46%), and Mechanical (1.12%) explained 15% of the total explained variance in math scores from selected demographics. The results of the one-way ANOVA and Tukey's analysis indicate that LA JLC dislocated workers in the 25 and under age-group had a lower mean math scale score than dislocated workers in all other age-groups, and significantly lower mean math scale scores than those dislocated workers in the 36-45 year age-group.

Recommendations for Future Research

Some of the findings and conclusions from this study are consistent with those reported in the literature, but some findings and conclusions are exceptionally different. Accordingly, this researcher makes the following recommendations for future research:

1. Compare the findings from this study with data from the other seven LA Job Link Centers in order to get an accurate demographic profile of Louisiana dislocated workers.

2. Compare the demographics and workplace literacy skills of dislocated workers who participated in other JTPA dislocated worker programs, such as those operated by the Louisiana Department of Employment and Training and Job Corps programs.
3. Determine what assessment instruments are used in other dislocated worker programs, Adult Basic Education programs, Adult Literacy programs, and GED programs in Louisiana.

4. Develop and test a career counseling model that would incorporate individual assessments of learning style, aptitude, occupational interests, educational level and other factors to prescribe individual counseling interventions.

5. Develop and test competency-based workplace literacy assessment instruments for measuring the workplace literacy skills of high school students.

6. The new Tech-Prep programs open up a whole new area of research in the form of program assessments, student and teacher evaluations, and cost-benefit analyses.

Recommendations for Practice

The majority of American workers finished high school 10-15 years ago, or longer; consequently, workers have forgotten much of what they learned, or else their academic skills have little application in the work environment (Kirsch et al, 1993). For example, high school math is taught in a sequential, structured fashion; learning is dependent on rote memorization and working problems. In the workplace, applied math skills are needed--making reliable estimates, reading graphs, and rapid solutions to problems (Kirsch et al, 1993). The same is true for reading and writing; high school students are first taught to read letters, then simple words, then simple sentences and gradually they progress to literary classics. The written materials used in the workplace are generally technical in nature and require the reader to be able to
read and comprehend facts and figures immediately—not at some future test date.

High schools teach creative writing and the focus is on essays, short stories, poetry, and the like. Again, the emphasis is on a structured presentation and the students are often allowed days, or even weeks to compose a simple essay or book report. Within the work environment writing is important, but the writing style is necessarily different; here, the focus is on brief, concise, informative sentences (Kirsch et al., 1993). Based on information from the literature and the findings of this study, this researcher offers the following recommendations for practice.

1. The vocational education entities at colleges and universities should implement competency-based instruction and assessments by making it an integral part of teacher preparation.

2. Institutions of higher education should take a more active role in the Tech-Prep programs by offering assistance, encouragement, and support to local community schools. Reciprocally, secondary schools can offer an endless stream of research subjects (students) and provide a forum for timely evaluation.

3. Training and development practitioners in the higher education milieu can be enlisted to design curricula that focus on developing workplace skills which are applicable across a wide spectrum of jobs. These curricula should use competency-based assessments of students’ skills. Further, there is a need for training programs that strengthen workplace literacy skills of those workers.
4. Academic education and Vocational Education at secondary and postsecondary levels should help students make the transition from school to work by focusing on a broad array of skills suitable for many jobs, rather than specialized skills.
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APPENDIXES
A. DATA RECORDING FORM

JOB LINK PARTICIPANT ID# __________

AGE (1) < 25 (2) 26-35 (3) 36-45 (4) 46-55 (5) > 55

GENDER (1) Male  (2) Female

EDUCATIONAL LEVEL (1) School drop-out (2) 4th or less (3) 5th-8th (4) 9th-12th (5) H. S. Grad/GED (6) Post High School (7) College Graduate

DOT CODE OF LAST JOB

(1) Professional, technical, and managerial
(2) Clerical and sales occupations
(3) Service occupations
(4) Agricultural, fishery, forestry, and related occupations
(5) Processing occupations
(6) Machine trades occupations
(7) Benchwork occupations
(8) Structural work occupation
(9) Miscellaneous occupations

CASAS READING SCALE SCORE __________

CASAS MATH SCALE SCORE __________

APTICOM OCCUPATIONAL INTEREST AREA

01 Artistic 07 Business Detail
02 Scientific 08 Selling
03 Plants and Animals 09 Accommodating
04 Protective 10 Humanitarian
05 Mechanical 11 Leading-Influencing
06 Industrial 12 Physical Performing
B. CASAS COPYRIGHT PROTECTION

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### D. SELECTED CHARACTERISTICS OF U.S DISLOCATED WORKERS

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<tr>
<th></th>
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### E. U.S. DISLOCA TED WORKERS BY GEOGRAPHIC REGION

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### F. U.S. DISLOCATED WORKERS BY INDUSTRY GROUPS

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<td>4,629</td>
<td>4,326</td>
<td>5,584</td>
</tr>
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G. REEMPLOYMENT RATES OF U.S. DISLOCATED WORKERS

<table>
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<td>71.0</td>
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<td>78.8</td>
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* n/a = not available. Data not displayed if base is below 75,000.

VITA

Robert Francis Doyle was born in the small central Louisiana town of Pitkin in 1947. He graduated with honors from Oakdale High School, Oakdale, Louisiana in 1965. He earned his B.S. Degree in Wildlife Management at McNeese State University in 1987. He completed all coursework for the M.S. Degree in Wildlife Management at the LSU School of Forestry, Wildlife, and Fisheries in 1991, whereupon he transferred to the LSU School of Vocational Education to begin his doctorate studies. His Doctor of Philosophy Degree in Vocational Education was conferred in the 1994 Summer commencement.
DOCTORAL EXAMINATION AND DISSERTATION REPORT

Candidate: Robert Francis Doyle

Major Field: Vocational Education

Title of Dissertation: Workplace Literacy Skills and Occupational Interests of Dislocated Workers

Approved:

________________________
Majof Professor and Chairman

________________________
Dean of the Graduate School

EXAMINING COMMITTEE:

________________________

________________________

________________________

________________________

Date of Examination:

March 24, 1994