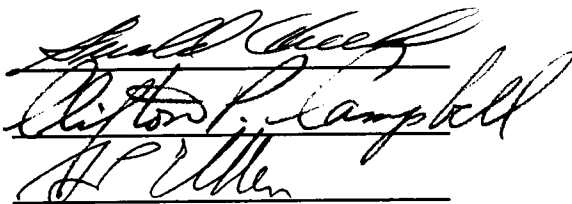


To the Graduate Council:

I am submitting herewith a dissertation written by Timothy Gary Hatcher entitled "The Work Ethic of Apprentices and Instructors in a Trade Union Apprenticeship Training Program." I have examined the final copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Education, with a major in Technological and Adult Education.


Gregory C. Petty, Major Professor

We have read this dissertation
and recommend its acceptance:



Accepted for the Council:


Associate Vice Chancellor
and Dean of the Graduate School

**THE WORK ETHIC OF APPRENTICES AND INSTRUCTORS IN A
TRADE UNION APPRENTICESHIP TRAINING PROGRAM**

A Dissertation

Presented for the

Doctor of Education

Degree

The University of Tennessee, Knoxville

Timothy Gary Hatcher

December, 1993

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Goethe is credited with saying that “Thinking is easy, acting is difficult, and to put one’s thoughts into action is the most difficult thing in the world”. The task of achieving a terminal degree through the creation of a dissertation may not be the most difficult thing I have thus far endured, but it (by any account) certainly ranks in the top one or two percent. There are a vast number of people responsible for contributing to my personal and professional life, but only a few deserve acknowledgement of special recognition in light of this recent endeavor.

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ABSTRACT

The purpose of this study was to determine if there were significant differences in the work ethic of apprentices and instructors in the International Brotherhood of Electrical Workers and National Electrical Contractors Association (IBEW-NECA) apprenticeship training program categorized by occupation (job title), job specialization, year participating in the program or year instructing in the apprenticeship program, and years of full-time work experience. Data for the study was collected using the Occupational Work Ethic Inventory (OWEI). For those variables where significant differences in work ethic were discovered, analyses were completed to determine how the variables differed for the four subscales of the work ethic identified as Dependable, Ambitious, Considerate, and Cooperative.

The design of the study was survey research. The population for this study consisted of apprentices and instructors in the International Brotherhood of Electrical Workers and National Electrical Contractors Association (IBEW-NECA) national apprenticeship training program. Data for the study were collected from a sample of 4489 apprentices and instructors. From the 308 total local unions in the Continental U.S., 39 local unions were randomly selected using a stratified random sampling technique. Participation by apprentices and instructors was requested through conference announcements and by letters to IBEW-NECA training directors. Each sampled local union received a packet with OWEI instruments, instructions for administration of OWEI, and return envelopes. A total of 4046 completed instruments were returned for a response rate of 90.1 percent.

After OWEI instruments were returned, data were compiled and verified. Data were analyzed using multivariate analyses of variance to determine differences and tests

of correlation to determine relationships. Significant differences in work ethic were found for six of the seven null hypotheses. The findings of the study revealed that there was a significant difference in the perceived work ethic between apprentices and instructors. Instructors scored significantly higher than apprentices for the subscales of Dependable and Ambitious. Apprentices scored significantly higher than instructors for the subscale dimension of Cooperative. Follow-up tests using Fisher's LSD indicated no significant differences in work ethic mean scores between apprentices and instructors for the subscale Considerate.

There was a significant difference among apprentices and instructors categorized by different job specializations on their work ethic scores. Respondents categorized their job specialization as either construction electrician, residential electrician, or wireman. The category of construction electrician was the predominate choice of job specialization for apprentices and instructors. The mean subscale scores for respondents reporting wireman as their job specialization were significantly higher for the subscale dimensions of Dependable and Ambitious than respondents reporting their job specialization as construction electrician. Fisher's LSD did not detect significant differences in mean scores for respondents categorized by job specialization for the subscales of Considerate and Cooperative. No significant differences were noted for the job specialization of residential electrician.

There was a significant relationship between respondents' years of full-time work experience and their perceived work ethic. Apprentices' and instructors' mean scores on all four subscales of Dependable, Ambitious, Considerate, and Cooperative indicated weak but significant correlations with the variable of years of full-time work experience.

Respondents with five or less years of full-time work experience scored significantly higher than all other respondents with full-time work experience for the

dimensions of Dependable, Considerate, and Cooperative. Those with over 21 years of full-time work experience scored significantly higher than respondents with ten or less years of full-time work experience for the dimensions of Dependable and Ambitious. Apprentices and instructors with over 21 years of full-time work experience scored significantly higher than respondents with 16 to 20 years of full-time work experience for the dimension of Dependable. Respondents with 16 to 20 years of full-time work experience scored significantly higher than those with five or less years of full-time work experience for the dimension of Ambitious.

There was a significant difference in respondents' work ethic when they were categorized by the year participating in the program or year teaching in the apprenticeship program. Respondents who participated or taught in the first year of the program scored significantly higher than those in years two, three, four, or five on the work ethic dimensions of Dependable, Ambitious, Considerate, and Cooperative. For the work ethic dimension of Considerate, respondents participating or teaching in year two scored significantly higher than those respondents participating or instructing in years one, three, four, and five. For the work ethic dimension of Cooperative, respondents participating or teaching in year two scored significantly higher than those respondents participating or instructing in years three, four, and five. Respondents participating or teaching in year three scored significantly higher on the work ethic dimension of Cooperative than those respondents participating or instructing in the fifth year of the training program.

The multivariate analyses of variance revealed no interaction among the independent variables of occupation, job specialization, years participating or teaching in the apprenticeship program, and years of full-time work experience.

There was a significant difference in the work ethic of respondents participating or teaching in years one and two (early years) as compared with those participating or

teaching in years three, four, and five (later years) of the apprenticeship training program. Those apprentices and instructors participating or teaching in the early years scored significantly higher on the work ethic dimensions of Dependable, Ambitious, Considerate, and Cooperative than respondents in the later years.

The analyses of data collected from respondents in this study suggested differing profiles of apprenticeship program participants. Apprentices are primarily characterized as cooperative, adaptable, orderly, perceptive, careful, and following directions and regulations. Apprentices' secondary characteristics are considerate, appreciative, cheerful, courteous, friendly, helpful, likeable, modest, pleasant, and well-groomed. Instructor profiles include the primary characteristics of ambitious, conscientious, enthusiastic, independent, initiating, responsible, persevering, persistent, resourceful, and hard-working. Secondary instructor work ethic characteristics are dependable, accurate, careful, dedicated, devoted, effective, efficient, honest, loyal, patient, reliable, productive, punctual, and emotionally stable.

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CHAPTER I

INTRODUCTION

Global competition, continual technological improvements, and the paucity of a well trained and highly motivated work force are issues causing uncertainty and change for all U.S. business and industry. In the midst of this uncertainty, there appears little doubt that the work attitudes of the American worker are being affected (Boyett & Conn, 1991; Cherrington, 1980; Yankelovich & Immerwahr, 1984).

The development of work values that contribute to positive work behaviors depend largely upon the quality of training and the social and cultural influences of parents, friends, teachers, and supervisors. "Work values are learned values, employees will learn the values they are taught in their environment" (Cherrington, 1980, p. 16).

Instructors and training programs need to espouse and transfer positive work values to trainees. Work-based training such as apprenticeship training programs have the capability to teach work values to trainees seeking work-related skills. More information is needed on the work ethic of participants in apprenticeship programs within the U.S. in order to establish baseline data for future training efforts.

This chapter provides an introduction to the problem, the theoretical framework, and constructs upon which this study is based. In addition, a statement of the problem, a purpose statement, research questions, null hypotheses based upon the research questions, and a rationale for the study are presented. Study limitations and assumptions are given as well as definitions of related terms.

Introduction to the Problem

Preparing people with the skills needed for the workplace of the future requires effective and results-oriented training and development. The demands of flexible high-tech manufacturing and competitive service companies "... require an agile new breed of skilled worker" (Dentzer, 1992, p. 73). Although the number of American firms investing in upgrading worker skills through training has increased, they do not seem sufficient to overcome the legacy of long neglect (Wilson, 1992, p. 33). Because of the reluctance on the part of firms to reorganize the workplace in ways that promote skill development and continuous learning, new initiatives to implement work-based learning are needed (U.S. Department of Labor, 1989b, p. 5).

Training is a planned effort by an organization to facilitate the learning of job-related skills, knowledge, and attitudes by workers (Fisher, Schoenfeldt, & Shaw, 1990, p. 314). Increasing demands for worker training are an outgrowth of the changes occurring in all sectors of American business and industry. Rapid technological advances, organizational changes, and cultural shifts in the workplace (Wallace, 1989; Reich, 1992; Boyett & Conn, 1991) call for training programs designed to produce workers with high levels of technical skills (Carnevale, 1990; Yankelovich, 1981). But technical and basic skills are not enough.

Positive attitudes toward the job are required to fulfill the demands of organizational, technical, and cultural change on the job. More people fail or lose their jobs because of personal qualities or general attitudes than due to insufficient knowledge or skills (Wilson, 1973, p. 51).

Work is changing for the American worker. Meanings of work and work values are influenced by technological, social, cultural, and organizational changes. Shifts in

demographic characteristics such as more women and minority workers, more workers with higher levels of education, and older workers are changing the face and the culture of the workforce. More highly educated workers are seeking jobs with intrinsic rewards. "Intrinsic motivation and the intrinsic rewards required to satisfy it will become more important in the changing workplace" (Boyett & Conn, 1991, p. 113).

Given these changes in culture and work values, there appears to be considerable speculation regarding the work ethic of American workers. Many believe today's worker does not possess the same work ethic as those of the past (Skinner, 1986; Kalleberg, 1982; Buchholz, 1976; Cherrington, 1980; Pascarella, 1984; Sheehy, 1990; Yankelovich, 1985).

For the worker, or for a more or less homogeneous group of workers, work ethic is a value or belief (or a system of values or beliefs) concerning the place of work in a worker's life that either serves as a guide toward one's conduct or is implied in manifested attitudes and behavior (Siegel, 1983, p. 29). Behaviors which relate to work as (a) valued and desirable activities and (b) behaviors considered desirable because of their positive consequences assist in operationally defining work ethic.

Workers with feelings of commitment and loyalty to their profession, their company, and their work group display the work ethic. Aldag and Brief (1975) reported that the work ethic is an important work commitment construct and has a key role in influencing a worker's affective responses in the workplace.

The total effect of work ethic on productivity is unclear. A lack of commitment among workers was found to be of great importance to productivity in a study by Yankelovich and Immewahr (1983), while Cherrington (1980) found that the relationship between work values and productivity was not particularly strong.

Eisenberger (1989) indicated that the deterioration of the work ethic is a major

cause of America's lessened ability to compete economically with other countries. The awareness of this decline is not isolated to the U.S. Said one Japanese executive: "...the U.S. is no longer turning out mousetraps which are better than ours. Sadly, there's been an erosion of the Puritan work ethic in America, a country which taught us so much" (Hillenbrand, 1992, p. 22).

Many believed the traditional American work ethic had declined (Cherrington, 1980; Yankelovich, 1981; Yankelovich & Immewahr, 1983; O'Toole, 1981). Surveys have indicated that a large majority of the general public believes that in recent years people's willingness to work hard and their pride in work have deteriorated (Spence, 1985, p. 1288). Cherrington (1980) maintained that today's worker does not have the same work ethic or values as previous generations. Differences occurring as a result of a two- generational value system, the old and new, were becoming a significant problem of our time (Dunn, 1979; Herrick & Sheppard, 1972).

The "old" traditional work ethic of conservatism, diligence, thrift, and pride in work was prevalent in a more egalitarian society. The nature of the work ethic was reflected in the composition of work. Spirituality was an integral part of work and was evident in many religious traditions concerning work. Work was important for physical as well as moral survival.

Fundamental to the traditional work ethic were concepts of individual effort, pride in work, and reward for achievement (Zuboff, 1983, p. 158). But as work changed, so did the work ethic. The results of a survey by Yankelovich (1981) showed that the number of Americans who believe hard work pays off dramatically decreased in the decade from the mid-1960s to the mid-1970s. Contemporary research by Schor (1991) indicated that workers believed that the importance of the job to the worker is more important to success than the amount of effort expended.

Presently, work ethic is a social and cultural norm which is changing with the nature of work. Many jobs are becoming more service-oriented and require increased discretion and fewer technical skills (Yankelovich, 1981; Carnevale, 1990). Jobs which required few skills in the past are being replaced by jobs that require independent judgement as well as analytical and interpersonal skills (U.S. Department of Labor, 1989a, p. 8).

Worker's attitudes toward work are changing. They are now demanding psychological rewards as well as financial ones (Yankelovich, 1981). As workers demand more challenging and self-fulfilling positions, a new, contemporary work ethic will emerge. Many believe the work values required for changing occupations are different from the work ethic of a generation ago (Spence, 1985; Hill, 1992). The effect that general attitudes have on the work ethic has been questioned. Stencel (1981) noted that because attitudes are influenced by changing environmental issues and because ethics tend to remain stable over time, changing attitudes and the death of the work ethic should not be equated.

A strong work ethic is needed in today's ever-changing and high stress work place more than ever before. Though business and industry have historically emphasized the necessity of a positive work ethic, the concern with the work ethic is becoming increasingly more pronounced (Gregson, 1990, p. 60). Work values of a 1940s assembly-line worker are very different from the attitudes needed by today's worker. "Economic restructuring will change the very nature of work, forcing workers to redefine the work ethic" (Reynolds, 1992, p. 22).

There are inconsistencies in the literature in substantiating a decline in the American work ethic. Based on observed behaviors of earlier retirements, preferences for shorter work hours, absenteeism, alcohol and drug abuse, and an increasing reliance

on unemployment compensation and welfare assistance, Schartz and Neikirk (1983) suggested it was hard to find workers with a strong work ethic. Sheehy (1990) reported that young workers in service positions displayed a negative work ethic that will "... have a more profound effect on this country's ability to compete than people may realize" (p. 28). Rozek (1990) described work, rather than leisure, as an outlet for self-expression as well as material rewards. Lipset (1990) reported that the overwhelming majority of Americans believed that hard work was rewarded. "These beliefs are stronger in America than they have ever been" (Lipset, 1990, p. 62).

Conclusions about the state of the American work ethic of the late twentieth century were hard to make considering the reported observed inconsistencies. Social, economic, educational, and cultural shifts that are facilitating changes to the nature of work, the workplace, and the American worker were making identification of a current status of the work ethic difficult.

The work of Cherrington (1980) suggested that occupational work values and work ethics were values learned through the educational process and through influences of initial work experiences. This orientation toward industrial (occupational) work ethic, what Cherrington (1980) called the "values-training hypothesis", and the influence of socialization on work values provided a conceptual framework to align differing work ethic concepts (p. 76).

The concept of work values as an attitude toward work had been organized into a theoretical model by Fishbein and Ajzen (1975). Since the purpose of the present study was to assess the work attitudes of apprentices and instructors, it was important to develop a conceptual link between attitudes and work values. The Fishbein and Ajzen (1975) model provided a conceptual framework for the relationship between beliefs (values) and attitudes, and provided a rationale for measurement of work values.

Components of education and training systems responsible for vocational education and industrial training are influenced by the same social, economic, and cultural forces as those of society at large. Technical education and the skills and knowledge of technical educators have required frequent updating. Attitudinal adjustments of students, instructors, and instructional content are also needed.

Transmitting American work ethics to workers or trainees required an examination of the attitudes and perceptions of the educators and workers representing the organization (Welborn, 1983, p. 18). Training programs which prepare individuals for industrial and business occupations must provide them with the skills, knowledge, and attitudes necessary for success on the job. Curry (1976) proposed that educational institutions had an "... obligation to assert positive leadership in directing the evolution of new work attitudes" (p. 225).

Educational institutions and vocational educators are not solely responsible for lack of high quality job training. With few exceptions, corporate America had not contributed to the continuing education of the workforce, nor have corporate trainers succeeded in teaching positive job values and attitudes required on the job. One exception was trade apprenticeship training programs. Change has taken place so rapidly that different and innovative approaches to training are needed to assure on the job performance and work values clarification. The formal apprenticeship system was an approach to training that provided a trainee with classroom theory training coupled with on the job experiences and socialization with a journeyman (Fullagar, McCoy, & Shull, 1992, p. 14).

Much had been written recently about apprenticeship programs and their place in preparing people for work (Hamilton, 1990, p. 3). The best possible method for developing employee skills and strong work attitudes is the formalized apprenticeship

system of training that is proven to be cost effective, goal oriented, and designed to meet the specific skill needs of the employer (U.S. Department of Labor, 1989b, p. 4).

Formal apprenticeship programs provided workers with on-the-job and classroom training for many trades and occupations. The current impetus toward changing workers' attitudes toward jobs will affect both the quantity and quality of job training needed. Job-related skills training must be improved or re-designed to enhance workers' attitudes. Work ethic should be an integral part of industrial and work-related training and vocational instruction (Gregson, 1990, 9. 55). Information concerning the place of work ethic in America's workforce was needed for instructors and educators to model and encourage a strong work ethic in trainees.

The review of literature revealed no research on measurement of baseline data on work ethics of trainees and instructors in an industrial training program. The large majority of previous studies examined Protestant and non-occupationally oriented work values (Wayne, 1984; Furnham, 1984a). Previous studies focused on specific populations such as engineers, managers, and clerical workers (Shapira & Griffith, 1990), college students (Wayne, 1984), and instructors and students in a particular field (Crosby & Petrosko, 1988). Varied demographics such as occupation, work experiences, age, gender, and socio-economic status were identified in related studies. No study was found which examined the occupational work ethic of trainees and instructors participating in a United States trade union apprenticeship training program. Research into potential differences, relationships, and interactions, based on the perceived work ethic of participants in an apprenticeship training program was needed to provide baseline data on the work ethic within the context of a unionized training environment and a workplace which included occupation, a range of training experiences in the apprenticeship program, and a diverse range of work experiences.

Rationale

The gap between current and future skills needed by workers in U.S. organizations will widen without a proactive approach to training and workforce development. The question of whether workforce training is important will be replaced by what skills will be needed, who gets trained, and how much training will be needed for the future (Wilson, 1992, p. 140). But with no national system of workforce planning or skill development, U.S. companies must rely on proven training methods. The formal apprenticeship system provides a method of training that prepared workers with the skills required to perform their duties on the job. Yet the conditions most conducive to learning skills on the job remained all but unstudied.

More research in workforce training development was needed. Training and development resources had been focused on management and instructional development. Workforce training had received almost none of corporate America's limited training resources. A disproportionate number of managers, professionals, and other white-collar workers received greater amounts of training when compared to their blue-collar counterparts (Wilson, 1992; Lakewood Research, 1992).

Employment and training strategies cannot afford to concentrate exclusively on white-collar occupations and ignore blue-collar occupations using the rationale that blue-collar jobs were not in demand. "Blue-collar jobs will continue to represent a large proportion of jobs available to individuals without their B.A. [Bachelor of Arts] degree" (U.S. Department of Labor, 1989a, p. 8). A shift from management and supervisory applied research to workforce training research should enhance the theoretical base while helping to solve the skills gap problem.

The meteoric rise in computer use in training and human resource development

had dramatically improved instructional technologies such as computer-based training and interactive video. The primary applications of these technologies had been in the format of highly generalized, packaged, and mass-marketed products. A re-emphasis on trainee skills, knowledge, and especially attitudes required on the job is needed in order to fully utilize this and other instructional technology. Attitudes toward work affect the transferability of training to the job (Campbell & Cheek, 1989). Without positive attitudes toward instruction and training programs, few skills had been transferred to the job (Hatcher & Schriver, 1991, p. 12).

Future research must be directed toward an investigation of worker's attitudes toward work-based training and how attitudes influence subsequent performance on the job. Kalleberg (1982) noted that work's pervasive influence makes its understanding essential for "... understanding important changes, past and future, that affect people and the social structures they create and maintain" (p. 78).

Training was an organizational planned effort to facilitate the learning of job-related skills, knowledge, and attitudes by workers. Training was designed to develop skills, knowledge, and attitudes required on the job. Methods of training application such as classroom instruction, computer-based instruction, and on-the-job training provided varying levels of success in building positive work attitudes. Hamilton (1990) wrote that apprenticeship training was one method of training that provided socialization and pride in workmanship through actual work experiences .

Instructors in apprenticeship programs were responsible for the development of trainees' skills, knowledge, and attitudes. Affective skills were just as important to success on the job as cognitive and psychomotor skills (Gregson, 1990; Petty, Kazanas, & Eastman, 1981). Instructors and trainers provided the means for transfer of cultural norms and occupational work ethic which enhanced trainees' work attitudes on the job.

Identification and transfer of the work ethics which are conducive to success on the job were important tasks that instructors performed. If the goal of transmitting work ethics to workers and apprentices was to be met, an examination of the perceived work ethics of instructors and apprentices was required. To understand the patterns of work attitudes of apprentices and instructors, research to determine the work ethics conducive to job success was worthwhile.

Work ethic research has focused primarily on the perceived contemporary work values of white-collar workers in office settings that enhance contentment and/or success on the job. Research has also been done on the work values of students in formal educational institutions such as high schools, colleges, and universities. Few studies had identified occupational work ethics of blue-collar trainees which enhance job success in a work environment.

As shifts in technology and work environments change the workplace, educational, vocational, and trade union training organizations providing workers to the new workplace must assure that they possess the skills and attitudes necessary to succeed. By providing real-life work experiences, socialization through group training, working one-on-one with a journeyman, and building a sense of pride through craftsmanship, the apprenticeship system provided the means to enhance and transfer work ethics.

The work of Cherrington (1980) suggested that work ethics can be taught and are significantly influenced by work experiences, induction, and socialization. Based on Cherrington's theories, data from a sample of participants in a five-year apprenticeship program should indicate significantly higher levels of work ethic for apprentices participating in years three, four, and five (later years) and instructors teaching primarily in years three, four and five (later years) as compared with apprentices and instructors

participating or teaching in the first two years (early years) of the program. If participants in different years of instruction have differing profiles of work ethic perceptions, an understanding of these patterns would assist instructors and human resource professionals in informing trainees and instructors of the work ethics associated with the trade occupation and provide information on attitudinal competencies required for instruction.

Work ethics played a pivotal role in the formation of job attitudes and the determination of work satisfaction. From a worker's point of view, it was important to understand work-related ethics and values in order to choose appropriate career paths and employers. For the instructor, it was important to understand work ethics in order to identify personal strengths and weaknesses, and how they related to instruction of different levels of trainees; to assist individual trainees in choosing appropriate jobs, career paths, and employers; and, to establish baseline data to develop and/or revise curricula.

Statement of the Problem

A review of the relevant literature revealed a systematic examination of the work ethic of apprentices and instructors in an industrial apprenticeship training program in a union environment and the relationship and/or differences between the work ethic of apprentices and instructors had not been investigated. No baseline data existed on the perceived work ethic of apprentices and instructors in a union-sponsored apprenticeship training program.

An investigation of perceived work ethics of participants in an industrial, trade union apprenticeship training program as determined by occupation (job title) and job

specialization (construction electrician, residential electrician, and wireman), year participating in or year teaching in the five-year apprenticeship training program, and years of full-time work experience was needed. These data were required in order to provide industrial trainers, human resource professionals, instructors, and vocational and technical educators with the following: (a) an accurate description of the workplace, (b) baseline data for use in advising trainees regarding non-technical job skills needed, (c) baseline data for apprentice instructors on non-technical skills needed to improve the quality of their roles as instructor, coach, journeyman, and mentor for apprentices, and (d) baseline data to develop affective work competencies, and/or revise technical training curricula.

Information on the work ethic of apprenticeship participants may also be useful to instructors, trainers, human resource development (HRD) personnel, and researchers in evaluating apprenticeship programs. Evidence of changes in the work ethics and the continuation of traditional work ethics in the American workforce is available in recent literature.

Purpose of the Study

The purpose of the study was to provide baseline data and information on the levels of work ethic, as measured by the Occupational Work Ethic Inventory (OWEI), with participants in an industrial trade union apprenticeship training program from a national stratified block random sample of union locals consisting of electrical trade apprentices and their instructors.

Data were analyzed to determine if there are relationships between variables and differences and interactions in the level of work ethic of apprentices and instructors in the

apprenticeship program sponsored by the International Brotherhood of Electrical Workers (IBEW) and the National Electrical Contractors Association (NECA) with differing occupations (job titles of apprentice or instructor) and job specialization (construction electrician, residential electrician, or wireman), different years participating in the program or year in which the instructor primarily taught in the five-year apprenticeship program, and differing years of full-time work experience.

In the present study, occupation was used to denote job titles of apprentice or instructor within the occupation of electrician, and job specialization was used to denote construction electrician, residential electrician, or wireman. Significant differences discovered required further statistical tests to ascertain how groups differed on the OWEI survey instrument total score and on each of the dimensions of the work ethic measured by the instrument's subscales or factors. The subscale factor dimensions are Dependable, Ambitious, Considerate, and Cooperative based on previous semantic and factor analytic procedures.

Theoretical Framework

According to many researchers a major reason for studying the work ethic is to better comprehend the relationship between beliefs, values, and attitudes toward work (Buchholz, 1974; Kalleberg, 1982; Maccoby, 1988; Super, 1969, 1973). Since the primary purpose of the current study was to measure the work ethic of apprentices in an industrial training program, it was important for the study's theoretical framework to be based on concepts of occupational work ethic and attitudes toward actual work. The theoretical framework which provides the basis for this research follows the work ethic studies of Cherrington (1980), and the theoretical model of attitudes, beliefs, behavioral

intentions, and behaviors developed by Fishbein and Ajzen (1975).

Cherrington's (1980) often cited treatise on work ethic and work values was chosen as a framework for the present study because of its orientation toward (a) industrial (occupational) work ethic, (b) the "values-training hypothesis" (Cherrington, 1980, p. 77), and (c) the influence of initial work experiences on work values (socialization).

The research and development of a work ethic construct by Cherrington was based in part on research of worker attitudes of over 3,000 workers in 53 predominately industrial firms. The results of this study and related studies cited by the author (Cherrington, 1976, 1977; Cherrington, Condie, & England, 1979) enabled Cherrington (1980) to develop the "values-training hypothesis" construct. This construct stated that "... work values are learned values" (p. 16) and, that individuals who have a powerful influence on learners "... can teach the character [work] ethic" (Cherrington, 1980, p. 77).

Based upon earlier research, Cherrington (1976) stated that the work ethic was acquired through a developmental process that involved learning and teaching work values. Concerning the acquisition of work values, Cherrington (1980) described several instructional schemes.

This teaching includes such activities as telling learners what is expected of them, emphasizing the importance of work and the dignity of labor, helping and encouraging people as they perform a task, providing feedback and reinforcement for performance, and explaining and reinforcing ideas about the importance of pride, craftsmanship, and task accomplishment. (p. 78)

The early experiences a worker has when introduced to a new work environment are critical in transferring organizational values and building a positive work ethic.

Socialization experiences at the outset of organizational membership influence attitudes toward work (Stagner, 1956, p. 54). Cherrington (1980) identified this "induction" as "... perhaps the most significant process by which work becomes an intrinsic reward... and...contributes to the internalization of moral standards" (p. 140). The work values of workers could be significantly influenced by carefully designed socialization and induction environments (Cherrington, 1980; Fullagar & Barling, 1989; Fullagar, McCoy, & Shull, 1992).

The Fishbein and Ajzen (1975) model stated that beliefs (values) lead to attitudes, which in turn, result in overt behaviors. This model was appropriate for use in this study because of its orientation toward explaining and predicting future performance based on measurement of attitudes as a set of beliefs (values). The primary conceptualizations of Fishbein and Ajzen's model are hierarchical and included: (a) beliefs, as the basis for gathering and processing information on an object of interest [Beliefs are the "fundamental building block" in the conceptual structure (Fishbein & Ajzen, 1975, p. 14)]; (b) attitudes, as the result of a set of beliefs or affect toward some object (Thurstone, 1931); (c) behavioral intentions, or the susceptibility of an individual's behavior based upon attitudes and beliefs; and (d) behaviors, or actions based upon an individual's behavioral intentions, attitudes, and beliefs (Fishbein & Ajzen, 1975, p. 13).

The Fishbein and Ajzen (1975) model was developed as a closed loop model. That is, an attitude may influence the formation of new beliefs, while the performance of "... a particular behavior may lead to new beliefs about the object, which may in turn influence the attitude" (Fishbein & Ajzen, 1975, p. 15). This closed loop concept theoretically allows an individual's attitudes and behaviors to continually formulate and influence beliefs.

In the present study, the research and conceptual models of Cherrington (1980)

and Fishbein and Ajzen (1975) were synthesized into a theoretical framework. The theoretical framework suggested that work ethic is a belief or set of beliefs manifested as attitudes toward some object, and behavior is action based upon those attitudes and beliefs. Furthermore, work ethic can be learned, taught, or otherwise transferred or acquired through an induction or socialization process.

Research Questions

Research questions help to guide the gathering and analysis of data. The following research questions were developed to narrow and focus the present study:

1. Does the work ethic differ among apprentices and instructors categorized by job titles (occupation) as measured by the OWEI survey instrument?
2. Does the work ethic differ among apprentices and instructors categorized by job specialization as measured by the OWEI survey instrument?
3. Are years of full-time work experience independent of apprentices and instructors perceived work ethic?
4. Does the work ethic differ among apprentices and instructors categorized by years of full-time work experience as measured by the OWEI instrument?
5. Does the work ethic differ among apprentices and instructors categorized by year participating in or teaching in the apprenticeship program?
6. Is there an interaction between the independent variables of occupation (job titles), job specialization, years participating in or teaching in the apprenticeship training program, and years of full-time work experience as measured by the OWEI?
7. Are there significant differences in perceived work ethic for respondents participating in years three, four, and five (later years) of the apprenticeship training

program as compared with the work ethic of those respondents participating or teaching in the first two years (early years) of the apprenticeship training program?

Hypotheses

From previously listed research questions one through seven, the following null hypotheses were formulated and were tested as two-tailed tests at the .05 level of significance. According to Gay (1987) research hypotheses are directional when the nature of the relationship or difference is known:

Ho₁: There will be no significant differences in the work ethic, as measured by the OWEI survey instrument, among apprentices and instructors with different occupations (job titles).

Ho₂: There will be no significant difference in the work ethic, as measured by the OWEI, among apprentices and instructors with different job specializations.

Ho₃: The years of full-time work experience are independent of respondent's perceived work ethic.

Ho₄: There will be no significant differences in the work ethic, as measured by the OWEI, among apprentices and instructors when categorized by years of full-time work experience.

Ho₅: There will be no significant differences in the work ethic, as measured by the OWEI survey instrument, among apprentices and instructors categorized by year participating or teaching in the apprenticeship program.

Ho₆: There will be no interaction among the independent variables of occupation (job titles) and job specialization, years participating in or teaching in the apprenticeship program, and years of full-time work experience as measured by the OWEI.

H₀₇: There will be no significant difference in the work ethic of respondents participating in years three, four and five (later years) of the apprenticeship training program compared with the work ethic of those respondents participating or teaching in the first two years (early years) of the apprenticeship training program as measured by the OWEL.

Assumptions

1. The industrial work setting is different from the educational (school house) work setting. Therefore, research conclusions from industry should not be applied to the educational work environment.

2. The present study assumes that the respondents are aware of their work ethic values and are able to report them honestly and accurately. The associations between self-assessment and objective measures of beliefs and attitudes are assumed to be relatively accurate in this study.

3. There are a number of different belief systems that exist in the workplace and these belief systems are adopted and can be revised by workers.

4. It is assumed that certain demographic variables like socio-economics and ethnicity may influence perceived work ethics of workers; however, these variables will not be controlled in this study.

Delimitations

1. The population under study is limited to IBEW-NECA workers employed as apprentices or instructors.

2. The evaluation of work ethic is limited to occupational work ethic as opposed to Protestant work ethic, leisure ethic, consumer ethic or other work and personal ethic measurements.

3. The characteristics of occupational work ethic reported by respondents are limited to those 50 items and four subscales included in the Occupational Work Ethic Inventory (OWEI).

4. The population for this study is a relatively homogeneous group of apprentices and instructors who are members of the International Brotherhood of Electrical Workers (IBEW), an international electrical trade union with headquarters in the United States.

5. Each apprentice in the IBEW must complete the IBEW-NECA apprenticeship training program prior to achieving journeyman status and all apprenticeship program instructors are journeymen.

6. Recommended minimum standards for admission into the IBEW apprenticeship program tend to limit the variability of possible study demographics.

Based on an extensive review of related literature on work ethic studies, the present study initially focused on the following demographic variables: (a) age, (b) gender, (c) level of apprenticeship, (d) education/training experience, (e) years of full-time work experience, (f) geographic location, (g) religious affiliation, (h) religious beliefs, and (i) occupation.

Due to the suspected population-related demographic limitations, the study demographic variables were limited to occupation (job title) and job specialization, years of full-time work experience, and training experience (year participating in or year teaching in the apprenticeship training program).

Definitions

American work ethic: A cultural norm based on Protestant and Puritan work ethics that claims work is a necessity; there is dignity in work; workers should feel pride in work; and hard work is the key to success (Yankelovich, 1981; Cherrington, 1980; Welborn, 1983).

Apprentice: A person being taught a craft or trade. Usually a high school graduate, of legal working age, "with manual dexterity and other characteristics directly related to the apprenticeable occupation to be learned" (U.S. Department of Labor, 1982, p. 3).

Apprenticeship: A formal agreement between an apprentice, a company, and a trade union. Designed to provide comprehensive training to entry level workers by exposing them to practical and theoretical aspects of the work required. It involves structured on-the-job training by a journey level worker, combined with related technical instruction (U.S. Department of Labor, 1987, p. 6).

Apprenticeship Training Program: Practical, on-the-job training under the supervision and guidance of a journeyman, and related technical instruction. Both training and related instruction are structured and performance-based.

Attitude(s): Learned predispositions, affective, unobserved positive or negative responses to certain objects, situations, institutions, concepts, or persons. An organization of beliefs. "Interrelated predispositions to action organized around an object or situation" (Rokeach, 1973, p. 56).

Baseline data: Data to support a measurement or observation over a time period or across different samples or other demographic variables until such data appears to stabilize. The baseline data then becomes the basis for comparison(s) (Huck, Cormier, &

Bounds, 1974, p. 337).

Belief: A relatively consistent state of mind in which trust or confidence is internalized and placed on a person, thing, or phenomenon. Beliefs have cognitive, affective, and behavioral components. Any proposition inferred from what a person does or says (Rokeach, 1973, p. 61).

Behavior: "An observable act used as inference for beliefs and attitudes. Behaviors can be used to infer attitudes, beliefs or behaviors" (Fishbein & Ajzen, 1975, p. 14).

Construction electrician: A highly skilled electrician working in heavy versus light or residential construction generally regarded as "new work". Most construction electricians are considered inside wiremen; high voltage, outside distribution construction work is generally performed by linemen.

Dimensions of the work ethic: Four composite work ethic characteristics of a worker based on the four subscales of the Occupational Work Ethic Inventory (OWEI), developed from an analysis by Petty (1991a).

Factor: In factor analysis, a factor is a new variable created by the clustering of large numbers of variables into smaller numbers of homogeneous sets (Nunnally, 1967, p. 291).

Instructor: An individual who presents classroom, laboratory, or simulation instruction or monitors and directs on-the-job training, and/or evaluates trainees.

Job: Means by which a worker meets basic needs to survive. A specific portion of a larger occupation. The basic unit used in carrying out the human resource activities of selection, training, classification, and assignment (Campbell, 1986).

Occupational Work Ethic Inventory (OWEI): A questionnaire designed to measure a worker's occupational work ethic. Developed by Dr. Gregory Petty, the

instrument was content and factor analyzed into four subscales and one factor measuring the occupational work ethic dimensions of dependable, ambitious, considerate, and cooperative.

Performance-based training: "A systematic approach to training which is based upon observable tasks and the related knowledge, skills, and attitudes required for and related directly to competent job performance" (Hatcher & Schriver, 1991, p. 14).

Protestant work ethic: A set of principles of conduct and values including a preference for hard, physical labor, working because it is an obligation to society, having obedience and respect for authority, and rejecting leisure pursuits. "Conduct and values drawn from a rationalistic and religious philosophy about work and the importance of human activity associated with, or as a consequence of, work" (Wayne, 1984, p. 15).

Residential electrician: An electrician working on single family occupancies or multiple use dwellings. Generally considered an inside wireman.

Training: Instruction or other structured intervention with identified objectives designed to improve the knowledge, skills, and attitudes of trainees for use on the job.

Wireman: A broad-based electrical industry term for any electrician not considered a lineman. Inside and outside wireman are highly skilled, well educated, and well rounded craftspersons (craftsmen).

Work-based learning: Formal, work-based training designed to enhance the work-related skills, knowledge, and attitudes of the workforce (U.S. Department of Labor, 1989a, p. 2).

Work ethic: "A value or belief (or a set of values or beliefs) concerning the place of work in one's life that either (a) serves as a conscious guide to conduct or (b) is simply implied in manifested attitudes and behavior" (Siegel, 1983, p. 29).

CHAPTER II

REVIEW OF RELATED LITERATURE AND RESEARCH

The historical and theoretical development of the work ethic in America and in trade union apprenticeship training programs is provided in this chapter. Definitions of work ethic, the instruments used to measure work ethic, and a description of previous work ethic research are also provided.

Work Ethic in America

Work ethic has been a viable social phenomenon in the American culture and a continuing influence in American history. The notions of "America" and "work ethic" have long been entwined. The working class, venerated in story and song, made up the backbone of the nation's progress and might (Rozek, 1990, p. 65).

Rodgers (1978) wrote that the work ethic in industrial America "... and its economic context were not related as cause and effect, phenomenon and epiphenomenon, but took shape together as values and practice fused and collided, quarreled with and reinforced one another, in an inextricably tangled relationship" (p. xxii).

The work ethic played an important role in the nation's moral life. The "reverential" attitude toward work was an important determinant in America's material success (Quinn, 1983, p. 87). The work ethic was as much a part of American life as hard work and the dedication to succeed. "America would not have been remotely the same without it" (Rodgers, 1978, p. xiii).

Work Ethic in Early America

The work ethic has been an integral part of American life from the very beginning of the new country. Mills (1951) wrote that "... the gospel of work has been central to the historical tradition of America, to its image, and to the image the rest of the world has of America" (p. 9). The work ethic had evolved from Protestant and Puritan work ethics espoused by Max Weber, Martin Luther, John Wesley, John Calvin, and Cotton Mather as brought to the New World by European immigrants. Early settlers felt that moral life was one of hard work, determination, and toil. The settlers of Puritan New England and Quaker Pennsylvania were "... laborers for their Lord, straighteners of crooked places, engaged in a task with hardship, deprivation, and toil" (Rodgers, 1978, p. 4).

In early America, hard work was a necessary and socially acceptable part of life. Work bestowed dignity, honor, and value on the worker. "Work in its humble sense is a calling, and successful achievement is to the glory of God" (Spence, 1985, p. 1288). Virtues such as hard work could be expected to result in material gain (Weber, 1958). According to the Calvinist doctrine of predestination, material rewards were accepted as a sign of God's grace as long as they were humble and not excessive. Early New England work values were dominated by the ideals of Puritans who traced their practices and teachings to Protestant reformers (Bjorkquist, 1988, p. 138). The work ethic of the time was a fundamental part of religious life. The "gospel of work" was indoctrinated and advocated by "apostles of the work ethic" such as William Penn and Cotton Mather (Cherrington, 1980, p. 35). From their viewpoint, God rewarded those engaged in industrious work.

Weber, the German scholar who was most noted for his work with Protestant work ethic and capitalism, felt the most influential proponent of American work ethic was Benjamin Franklin. Franklin provided an ideology for an American craft work ethic in

his writings of ideal virtues known as Poor Richard's Almanac. Unlike the Puritans, Franklin's craftsman no longer labored strictly for the glory of God, but for himself (Maccoby, 1983, p. 189). According to Cherrington (1980) and Maccoby and Terzi (1981), Franklin's influence secularized and changed the work ethic from a direct form of worshipping God to an indirect way of serving God through character and moral development on the job.

After 1820, millions of newcomers to America embraced the Puritan work ethic, but they also brought with them a more diverse perspective. This re-focus was a result of Catholicism of eastern and southern European immigrants and the influence of more practical justifications for work ethic. Gradually the moralists and reformers preached instead the importance of the social usefulness of work (Zuboff, 1983, p. 160). Rodgers (1978) reported that the old ideas of Protestant ethic never completely died out.

During the 1800s, development of moral values and good character were taught in public school. Rodgers (1978) reported that there were "... campaigns to inculcate the values of industriousness in schoolchildren" (p.16). Although limited, publication of children's books such as McGuffey's Eclectic Readers, by William Holmes McGuffey, further secularized the teaching of ethics and values. These books "... taught children to do the right things and develop the proper attributes of character, regardless of peer pressure" (Cherrington, 1980, p. 36). Writers such as Harriet Beecher Stowe, Carl Sandburg, and Jack London created children's stories with themes of work and duty (Rodgers, 1978, p. 28). More importantly, the general tone of secondary and post-secondary education of the time, was set by small, sectarian colleges with curricula unrelated to practical application (Venn, 1964, p. 11). Marshall and Tucker (1992) added that "secondary schools were unmistakably elite institutions that followed a classical curriculum" (p. 14). Rodgers (1978) found that from the early years of the

nineteenth century, the narrow focus of schools “... overstocked the nation with clerks, traveling salesmen, office-seekers, and ladies of fashion at the expense of conscientious workmen ...not ashamed at dirtying their hands at hard labor” (p. 19).

In the early nineteenth century and during the American civil war, the economy shifted from agricultural to commercial. As late as 1850, most goods were still being produced in homes and small workshops (Rodgers, 1978). Beginning with the Northern cotton and textile mills, self-employment was gradually replaced by a nation of wage-earners. “The rate at which industrial work organization replaced self-employment was astonishing” (Zuboff, 1983, p. 161). Rorabaugh (1986) reported that although the mills initially increased the demand for skilled weavers, the power loom soon reversed the craft’s prospects, and “... what had been an elite occupation was by the mid-1800s in the doldrums” (p. 61). The social critic’s fear that a nation of wage earners would create workers less likely to work hard than self-employed, independent workers of the past was unfounded.

Within the larger industrial enterprises, such as steel and textile mills, craft processes remained intact through the late nineteenth century (Zuboff, 1983, p. 180). Patterns of employment initiated in the mills were soon adopted by other industries, and by the later half of the century, home and workshop trades were essentially replaced by factories and mass production (Rodgers, 1978, p. 38). With the acceleration of the industrial revolution, “... exploitation of technology and resources favored the rise of a new social character, new ideals, and a new version of the work ethic” (Maccoby, 1983, p. 188).

Work Ethic and the Industrial Revolution

Until the late nineteenth century, the work ethic in America remained relatively unchanged. With the advent of the industrial revolution came different work methods and changing working conditions. Cherrington (1980) suggested that between 1850 and 1920, the work ethic "... collided with the industrial revolution in America" (p. 36).

The factory system of production used large work sites with many machines tended by skilled and unskilled workers. In the machine age, workers with little or no training could be substituted for skilled craftsmen because skill was designed into the machines (Ritzer & Walczak, 1986, p. 46). Rorabaugh (1986) reported that individual control over the methods of work and the quality of production began to disappear. The factory soon replaced crop fields and craft workshops as the habitat for labor. The factory system of work and division of labor de-humanized and degraded work. It removed individual worker freedom and "... idealized the work ethic as a social value" (Cherrington, 1980, p. 37).

The factory system of high output productivity supplied more products than were needed. Unlike the system of home and workshop, where production output was controlled by demand, factories produced an excess of goods exceeding that which the economy could absorb. Economic prosperity, a key component of the work ethic, could no longer be assured by hard work and productivity. The work ethic was threatened. Rodgers (1978) wrote that as more goods found their way into the homes of the middle class, the "ascetic legacies" of the work ethic eroded, conceding to a seemingly effortless existence (p. 29). A more materialistic economy soon made enjoyment of leisure and other fruits of labor more important than working hard.

During World War I, the conflict between the social concept of individual freedom and burgeoning factory bureaucracies came to a climax with the industrial democracy

crusade. Rodgers (1978) noted that the war effort and postwar reconstruction fueled democratization of industrial work. Politicians and religious leaders alike endorsed the idea of an industrial democracy . Yet the crusade ended almost as quickly as it had begun. Worker strikes, a postwar depression, anti-union drives, and the menace of communism combined to overwhelm industrial democracy efforts.

As factories grew in size, and as production was converted into a system of piecework, work became more divided and dependent upon machines and systems. Because of this complexity, labor discipline became an issue (Zuboff, 1983, p. 177). Workers began to resist the impersonality and regimentation of the factory system. Industrial workers' quit rates, the number of workers quitting work, and turnover were excessively high. Rodgers (1978) reported that between 1905 and 1917, the majority of industrial workers changed jobs at least once every 3 years.

The sheer size of factories now employing as many as one thousand workers required more efficient management control over the increasing complexity of piecework and fair wages. To achieve efficiency, labor experts felt it was necessary to dissect the labor process and systematize the performance of the simplest of tasks. As a result, the scientific management concept was developed. Based on the work of Frederick W. Taylor, scientific management sought to raise the level of productivity by standardizing minute aspects of work behavior. This forced a new and deeper level of control of work (Zuboff, 1983, p. 182). Taylor soon concluded that the problems of setting piece rates, wages, and worker attitudes were solved. The question of a fair day's work and a fair piece rate (work ethic) was settled "... at the impartial hands of science" (Rodgers, 1978, p. 56). For all practical purposes an employee was literally "owned" by management. A worker's individual initiative almost completely disappeared. Many large firms and manufacturers with mass production technologies implemented the

scientific management techniques responsible for worker isolationism.

Nelson (1991) suggested that scientific management was not as wide spread as some "pioneering consultants" and "radical social scientists" had written (p. 75). He reported that in "... the biggest and best managed American factories, ...scientific management had little to do with the number or functions of skilled workers" (p. 81). Taylorism had a comparatively modest effect on workers and the workplace in the ten years after Taylor's death (Nelson, 1991, p. 85).

As scientific management slowly spread throughout industrial America, it became apparent that workers were motivated by more than the extrinsic factor of pay. The dysfunction between intrinsic satisfaction in work and extrinsic rewards became an issue with management (Zuboff, 1983, p. 180). By the middle of the twentieth century, several new schools of thought emerged that focused on intrinsic work factors and attempted to change the relationship between workers and management.

From 1924 to 1933, a series of studies of human behavior was conducted at the Western Electric Company's Hawthorne facility by Elton Mayo and his associates from Harvard University. From these studies, human relations on the job became important issues. To Mayo, the concept of "social man," motivated by social needs on the job, had replaced the old concept of the "rational man" who was motivated strictly by economic needs (Stoner & Wankel, 1986, p. 39). Although more attention was placed on social aspects of work environment, the underlying adversarial relationship between management and worker remained unchanged.

In the 1950s and 1960s, published researchers such as Herzberg, Mausner, and Snyderman (1959), Milton R. Blood (1969), and Douglas McGregor (1960) identified the problems extreme work simplification was causing workers. They concluded that workers who adhered to a positive work ethic would become dissatisfied in jobs that

were too specialized. These types of jobs did not satisfy the workers' basic needs and they had lost intrinsic controls for motivating them to work hard.

The advent of employee participation and employee involvement programs in the 1960s and 1970s, based partly on McGregor's (1960) theory "X" and theory "Y", introduced one of the first opportunities for employer-employee relations to improve. Worker involvement in making decisions and solving work problems theoretically enhanced satisfaction and improved morale. According to Kochan, Katz, and Mower (1985), models of worker participation led to corporate-controlled efforts to improve productivity.

Productivity was enhanced through increased motivation and development of new patterns of involvement with individual workers and with small groups of employees acting autonomously. Cherrington (1980) indicated that productivity was affected by a declining work ethic. Pinder (1984) supported Cherrington by stating that human factors such as ability, motivation, and values were critical components of involvement programs and had an effect on productivity. Additionally, the values that women brought to the work place affected productivity and participation programs. Throughout the 1950s, women entrants into the labor force exceeded males, so that "... by 1960 nearly twice as many women were working as in 1940" (Levitan & Johnson, 1983, p. 6).

Participatory management was a system which would have enabled the work ethic to become a tool of management and a resource in the workplace (Yankelovich & Immerwahr, 1984, p. 44). American management failed to recognize early participative management programs as a method of providing worker autonomy and supporting the work ethic. Greenberg (1975) noted that worker participation programs were found to serve utilitarian goals for workers and companies, and also fostered personal development of the workers involved, creating a more responsible, confident, and civic-

mindful workforce . Some critics of employee participation programs asserted that they were a “ ... subterfuge intended to divert attention from American workers' lack of genuine autonomy and power ”(Grenier & Hogler, 1991, p. 314). The underlying power of participation programs was “ ... complex, ambiguous, and manipulable, and far from bestowing meaningful authority on workers” (Grenier & Hogler, 1991, p. 314). These programs helped to maintain management domination and control over the work force.

Contemporary Work Ethic

Shifts in contemporary American culture and the economy of the late twentieth century had placed great pressures on workers, thus causing changes in the work ethic. Cherrington (1980) believed that “ ... the work ethic was not consistent with the changes occurring in other social values” (p. 88).

The counterculture of the 1960s and early 1970s brought about a radical change in workers attitudes and the value they placed on work. O'Toole (1981) suggested that the U.S. experienced a “historical dysfunction” between the years of 1968 and 1975 (p. 12). Young people, raised in relative security and prosperity, turned to more idealistic careers than the previous generation. Many turned their backs on materialism and the traditional work ethics of their parents and substituted self-actualization as a goal (Spence, 1985, p. 1290).

Women and minorities entering the workforce brought with them new and divergent attitudes toward work. Vanderkolk and Young (1991) reported that the impact of the number of women entering the workforce during this period provoked a disparity between workers' ethics and the company's values. Women became more activist about their rights, including their economic and work-related rights, during this era. “Goals and timetables for women in apprenticeships and construction were set by the Department

of Labor, as a result of women-initiated litigation" (U.S. Department of Labor, 1989b, p. 20). Up until now the work ethic had generally been a blue-collar, middle-class invention, and the middle class again exerted its values and beliefs. Through "postwar existential philosophy" and popular psychology, the values and beliefs of the "sacredness of the self" and self-fulfillment were taught (Zuboff, 1983, p.167).

Work ethic research and publication was sparse during the 1960s. Cherrington (1980) reported that the Reader's Guide to Periodical Literature indicated that there were only three articles about the work ethic in the latter half of the decade and nothing published from 1963 to 1967. It is unclear whether this paucity of publication was due to a lack of interest specifically in the work ethic or a general apathy toward values and ethics.

During the 1970s, a resurgence of interest in the work ethic brought with it hundreds of articles, books, and television specials discussing the work ethic (Cherrington, 1980, p. 161). There was little agreement among the many published opinions on the status of the work ethic during this period of American history. Cherrington (1980) suggested that the following three "distinct themes" emerged: (a) the work ethic was "alive and well" and workers were committed to values such as pride and craftsmanship, (b) the work ethic was "dead or dying" and was a belief no longer adhered to by workers, and (c) the value or worth of work was dependent upon the nature of the job. "More variety, responsibility, and autonomy enriched the job and made it more meaningful to the worker" (Cherrington, 1980, p. 10).

American workers were increasingly dissatisfied with the quality of their work lives. Dull and meaningless jobs caused discontent among workers regardless of occupation. Dissatisfaction with work and management was evidenced by automobile workers in a strike that became the symbol for "... absorption of counter-culture values

by the working class" (Zuboff, 1983, p. 169). Workers at the General Motors plant in Lordstown, Ohio, went on strike for the first time over dehumanizing assembly-line work.

In the late 1970s and into the 1980s, the need for self-fulfillment in what many have termed the "me generation" became the basis for personal success. Corporate profits without conscience and hedonistic life styles of workers were the ethics of the time. Work ethics and values took a back seat to profits and self-gratification. Many studies in the 1970s found strong feelings of discontent and dissatisfaction in various segments of the workforce (U.S. Department of Health, Education, and Welfare, 1973). Buchholz (1978) wrote " ... some kind of basic change had taken place regarding traditional beliefs about work" (p. 8). A new breed of Americans born out of the social movements of the 60s held a set of values so different from the traditional outlook that they promised to transform the character of work in the 1980s (Yankelovich, 1978, p. 49). The new workforce " ... merely shaved their beards, traded in their ragged jeans and baggy dresses for three-piece suits, and marched off into the workplace toting their revolutionary new view of the world" (Colson & Eckerd, 1991, p. 52).

Since the 1980s, there has been a shift toward conservatism and more conventional careers. A maturing and motivated workforce with higher levels of education than any previous workforce had requirements for stimulating and meaningful occupations. Workers sought control over their work and demanded autonomy and responsibility. The findings of Cherrington's (1980) survey of worker attitudes revealed that although work did not possess the moral imperative of early America, pride in craftsmanship and doing a good job were still highly valued (p. 48). As a result, the work ethic was transformed to a state of relevance not found in many industrial age occupations (Hill, 1992, p. 32). Yankelovich (1981) added that what had remained from

the work ethic of the 1960s was that work should be defined as meaningful, offering workers self-development, and creativity opportunities .

By the mid-1980s almost half (43%) of the highly educated, white-collar workforce found their jobs to be professional and meaningful--what Yankelovich & Immerwahr (1984) called "high-discretion" jobs (p. 63). In the same study nearly a quarter (21%) of the blue-collar workforce perceived their jobs as "low-discretion", with few opportunities for decisionmaking (Yankelovich & Immerwahr, 1984, p. 45). In a 1982 survey by Yankelovich (1983) 84% of workers surveyed indicated that they could be working harder and doing better on the job if they could gain something from it. This philosophy is prevalent in many segments of the workforce of the 1990s.

Sheehy (1990) reported that the basic work ethic of workers in a fast-food restaurant was dominated by " ... getting on with getting mine", a common phrase used to describe a type of "gamesmanship" that revolved around " ... taking the system or milking the place dry" (p. 28). Rozek (1990) described management failure as the cause of a vanishing work ethic. A declining work ethic is "just something management trots out about workers when they need an excuse for their own mistakes" (Rozek, 1990, p. 66). On the other hand, many workers still believe it was important to work hard and to seek fulfilling work. Rather than working less and seeking more leisure time, the average American worker is working harder and longer than ever before. The typical worker is now on the job an estimated fifteen to twenty percent longer per week than in the previous decade (Harris & Trotter, 1989; Schor, 1991).

Reynolds (1992) reported that even with the desire to work harder, American workers are finding it difficult to be productive due to the uncertainty and anxiety of massive layoffs and "short-term profit pressures" (p. 21). The nature of work and the way workers perceive work was changing, forcing both employers and workers to

redefine the work ethic of the future (Reynolds, 1992, p. 21).

Influences on American Work Ethic

There is no doubt that the early American Protestant work ethic, Puritan values, and secular beliefs related to work ethic have influenced generations of Americans. Miller and Form (1964) believed that “... these values live on in the tradition of America today” (p. 548). Survival of these concepts has contributed to today’s moral imperative to “... work hard, to make something of oneself, and to become materially prosperous” (Spence, 1985, p. 1989).

The shift in contemporary work ethic can be examined on a continuum from the global organizational level to a group level to the individual level (Norman, 1987, p. 55). According to Tannenbaum and Davis (1983) organizations were changing or had changed because American workers’ individual values had changed.

The value a worker places on work is a cultural norm based on a belief system that attaches intrinsic value to the concept of work (Cherrington, 1980; Yankelovich & Immerwahr, 1983). The work ethic is a cultural norm that is strongly influenced by a worker’s induction into the work environment as part of a socialization process.

Socialization has been defined as “... an organizationally directed process that prepares and qualifies individuals to occupy organizational positions” (Caplow, 1964, p. 55). Through interaction with others in the organization who possess normative beliefs about the organization and occupation, an individual learns behaviors and values that are expected and rewarded or punished (Feldman, 1976, p. 444). Ubben & Hughes (1992) noted that attitudes and values are an integral part of the organizational socialization process. Thus, cultural expectations are indoctrinated into a worker or trainee by the organization through the socialization process. According to Cherrington (1980) the

induction process also contributes to an individual's "... ability to internalize moral standards" (p. 140). Taggart and Davidson (1978) reported that unfavorable socialization experiences early in an individual's work career can have an adverse effect on work ethic.

Early socialization experiences are consistently and positively correlated with all aspects of commitment to the organization, especially unions (Barling, Fullagar, & Kelloway, 1992). Studies have supported the notion that socialization experiences within organized labor organizations influence an individual's commitment, loyalty, and work values (Barling, Fullagar, & Kelloway, 1992; Fullagar & Barling, 1989; Fullagar, McCoy, & Shull, 1992).

According to Wanous (1980), socialization consists of three strategies: (a) training, (b) education, and (c) apprenticeship. Training, the first type of socialization strategy, had been used to convert workers to an organization's ideologies and values. Through the development of skills and abilities, changes occur in role behaviors and in adjustments to group norms and values. Education, the second type of socialization strategy, refers to an indoctrination of the various policies, procedures, norms, values, and beliefs of the organization (Wanous, 1980, p. 90). Education is considered inclusive to skill training. The third type of socialization strategy was apprenticeship, which contained components of both training and education. Apprenticeship was a formal method of training that incorporated classroom and on-the-job instruction with the influences of a "socialization agent"-- the journeyman [instructor] responsible for training the apprentice (Fullagar, McCoy, & Shull, 1992, p. 16).

Apprenticeship is training that goes beyond being just a part of the socialization process; it becomes synonymous with it (Feldman, 1989, p. 88). According to Caplow (1964), apprenticeship training was "... a preferred mode of socialization in systems in

which the values to be communicated are as important as the accomplishments" (p. 173). Graves (1989) noted that apprenticeship involved two sets of processes: "the socialization and the social control of the apprentice" (p. 52).

Apprenticeship involves a one-to-one relationship between a new member and an organizational insider (Wanous, 1980, p. 31). "The insider, or mentor, has the responsibility to train the newcomer in specific skills and knowledge as well as provide guidance in organizational policy and procedures" (Blau, 1988, p. 179). The functions of mentors or a journeyman included sponsorship, coaching, role modeling, acceptance, counseling, and friendship (Blau, 1988, p. 180). The role of journeyman instructor in apprenticeship was crucial to trainee success on the job. The journeyman was a fundamental player in the socialization process and had an influence over the apprentice's development of positive work attitudes. Specifically, "... the apprentice's attitudes are [were] tempered or refined as a result of interactions with the journeyman" (Fullagar, McCoy, & Shull, 1992, p. 22).

Teachers and instructors played an important role in the development and transfer of work values "... thus there is [was] a need to identify the work values of teachers" (Gnidzeijko, 1976, p. 5). Fullagar, McCoy, & Shull (1992) reported that certain characteristics of the journeyman would encourage greater interaction with apprentices and develop more positive attitudes. Psychological characteristics of instructors identified as excellent were reported by Leach (1991) as caring, sociable, cooperative, practical, and social. These characteristics are similar to the descriptors and subscales of the OWEI survey instrument used in the current study.

Other influences on work values held by today's workers included structural changes and demographic differences. Margolis (1980) suggested that American labor is in a transitional phase characterized by changes such as the age of workers, their

education and training, and shifts in occupations. Other important variables discussed in the present study included the role of work experience and gender in shaping the present work ethic. Research had shown that values, beliefs, and work ethics were formed during different periods of human development (Levinson, 1978; Miller, 1986; Rokeach, 1973). Differences in the work ethic of workers in differing age categories was one demographic variable displaying significant findings in the literature (Hill, 1992; Norman, 1987; Wayne, 1984). Aldag and Brief (1975) and Wayne (1984) reported workers perceived their work values differently based on age, while Hill (1992) found very little difference in the work ethic of workers according to their age. Both old and young workers were still willing to work. What had changed was workers' desires to receive a sense of satisfaction from their jobs (Yankelovich, 1981, p. 45).

Until around 1980, women made up a relatively small percentage of the workforce. By 1980, approximately 43% of the nation's workers were women (Stencel, 1981, p. 1233). In recent years, the steady growth of two-income households has made the working woman the rule rather than the exception (Schor, 1991, p. 32). By 1990, women held roughly half of the jobs in the workforce, including 39% of all executive and management jobs (Naisbitt & Aburdene, 1990, p. 121). Women had a different perspective on work than did men, and the meaning of work was different for women. Generally speaking, studies reported that men tended to be more concerned with the extrinsic aspects of work such as pay, benefits, and work setting than women (Bartol & Manhardt, 1979; Pinder, 1984; Walker, Tausky, & Oliver, 1982). Women tended to seek intrinsic, personal benefits from work (Cherrington, 1980, p. 167).

Research evidence had suggested that there were occupational differences between various values attached to work (Hill, 1992; Lyman, 1967, 1971; Shapira & Griffith, 1990). The work of Yankelovich (1981), Yankelovich and Immerwahr (1984), and

Yankelovich and Harmon (1988) contrasted the low-discretion jobs of the industrial age with the high-discretion positions of the information age. These studies suggested that the transformation of the meaning of work ethic was dependent upon the occupation or the job title of the worker. Hill's (1992) study demonstrated differences in work ethic between workers grouped by occupations and by job titles. The groups that reported higher work value scores "... contained a preponderance of the information age occupations" (p. 103).

More people with higher levels of education were entering the work-force at an exponential rate (Yankelovich, 1983, p. 77). Ray (1982) found that his Protestant Work Ethic (PWE) scale was not related to education. Neither Norman (1987) nor Hill (1992) found significant differences in work ethic based on the variable of education in their respective studies. Poremba (1990) reported observed levels of significance suggesting support for the hypothesis that respondents with more education would be more humanistically oriented and would be less affiliated with Protestant work ethic beliefs. A relationship between a college education and acceptance of traditional beliefs about work was found in a study by Gooding (1972). Although few studies support the hypothesis that there was a relationship between education and perceived work values, the lack of empirical evidence does not mean that apprenticeship and training do not significantly influence the formation of work ethic.

Apprenticeship Training Programs

Apprenticeship is one specialized form of skill training. It is utilized where there is more to performing a task than reading instructions or simply watching an expert (Coy, 1989, p. 2). An apprenticeship generally involves a novice learning on the job from a

skilled, empathetic, and considerate expert. "Apprenticeships seem to be associated with specializations that contain some elements that cannot be communicated, but can only be experienced" (Coy, 1989, p. 2). Bray (1980) noted apprenticeship was "... preparation for life, and not only as a preparation for the workshop" (p. 1). Hamilton (1990) added that apprenticeship had always done more than teach a specific trade; learning to work meant learning to become a mature adult.

A distinguishing characteristic of apprenticeship is the existence of a contract between the apprentice and the employer, and in the case of organized labor, the applicable union (U.S. Department of Labor, 1992, p. 5). The U.S. Department of Labor (1992) defined apprenticeship as a structured combination of (a) on-the-job training and classroom instruction, (b) agreements between program sponsors and apprentices, and (c) nationally recognized credentials that apprentices gain upon successful program completion.

The Organization for Economic Cooperation and Development (OECD) (1979) offered a definition of apprenticeship that refers to a formal arrangement for initial skill training "... of a systematic long-term character in a recognized occupation where the training must be transferable and all-round" (OECD, 1979, p. 28). Leipmann (1960) noted the duality of apprenticeship: the apprentice is both learning and earning, and the employer is both paying and training him or her for productive work.

Apprenticeship was interwoven in the fabric of early American history from the arrival of skilled craftsmen as some of the earliest settlers to its decline beginning with the industrial revolution. Although the U.S. was able to adapt to this decline, it may also be that the U.S. bore significant social and economic costs because it lacked apprenticeship systems "... that could systematically train skilled manual labor" (Elbaum, 1989, p. 349).

Apprenticeship in America

Most blue collar workers in the U.S. do not possess the types of job skills that will be needed by employers in the future (Carnevale, 1990, p. 18). Many investigators believe that America's current workforce lacks the basic job skills necessary to compete in a constantly changing world economy. Demographic shifts, labor markets which are changing from labor surplus to shortage, increased international mobility of technology, and increasing world trade and competition are issues challenging an American workforce struggling from a skills deficit. The nation's schools and private sector organizations share the blame for a workforce suffering from this lack of job skills. Few of America's unskilled workers possess the basic reading-writing-arithmetic skills or receive the training necessary for jobs of the future ("The Forgotten Half", June, 1989).

The primary problem facing the skills training issue was that the United States had no formal system of workforce planning or skills development. Several countries, notably Germany and Switzerland, rely on national, government subsidized, formal training and apprenticeship systems to provide on-going and high quality training and development of their workers (Hamilton, 1990, p. 41). If the U.S. was to compete on a global scale, upgrading of the workforce must be a priority. One solution to the job skills problem was apprenticeship, a concept currently being resurrected and renovated by some educators, government officials, and some private sector organizations (Filipczak, 1992, p. 26).

The use of apprenticeship training programs had long been a viable and high quality tool in the private sector for training workers for certain blue-collar and skilled craft jobs (Ricucci, 1991; Commission on Education and Labor, 1984; Marshall & Briggs, 1967; Marshall & Tucker, 1992). Apprenticeship combined classroom study of related subjects with anywhere from one to six years of on-the-job training under the

supervision and guidance of an experienced worker (journeyman) so that the apprentice can acquire the skills, knowledge, and attitudes associated with or needed for a particular craft (Ricucci, 1991, p. 186).

Apprenticeship as a contractual agreement between the union, the apprentice, and the employer using a training system that emphasizes learning by doing under the guidance of a journeyman level worker, combined with formal classroom training was identified as the oldest form of job training (U.S. Department of Labor, 1989b, p. 8). There was no other institution of training which embraced and enhanced the concept of a journeyman and master craftsman (Hamilton, 1990; Jirikowic, 1966).

While it is true many resources had been expended toward training in the U.S. (approximately 40 billion dollars annually and 45 billion in 1992; Carnevale, 1990; Lakewood Research, 1992), only a meager percentage was spent for skills development. Lakewood Research, the publishers of Training magazine, reported that only 38% of responding organizations provided training for "production workers" in 1992, while approximately 70% of organizations provided training for "professionals" and "middle managers" (Lakewood Research, 1992, p. 27). With approximately 70% of most jobs requiring no college education (Commission on the Skills of the American Workforce, 1990), and the obvious lack of resources available for training on-the-job, blue-collar production workers needed a work-based system that will carry them and their organizations into the future. Apprenticeship was identified as such a work-based system.

Apprenticeship training was different from traditional classroom education and vocational education as practiced in the U.S. Hamilton (1990) wrote that in apprenticeship a learner observed and assisted a master (journeyman) at work, "... gradually gaining competence by taking increasing responsibility for more challenging

and difficult aspects of the trade” (p. 61). He identified two features that distinguished apprenticeship from other training and learning environments: (a) the apprentice does real work on the job, and (b) the master or journeyman demonstrates, shows, and coaches instead of just telling the apprentice how to perform (Hamilton, 1990).

The concept of journeyman as an expert was important in a society whose technology is changing and advancing at a tremendously fast rate (Jirijowic, 1966, p. 38). Known as the *meister* in German apprenticeships, the expert or master served as teacher, coach, and mentor for the apprentice. Thus, the *meister* as an on-the-job instructor provided a technical, ethical, and social role model to the apprentice. Hamilton (1990) wrote that the primary purpose of apprenticeship in the U.S. “... must be to teach academic subjects and worker virtues, in addition to a single job” (p. 17).

Apprenticeship training had a long history in America. From the earliest colonies, young men apprenticed themselves to master craftsmen in a system that provided a source of labor for the master, training for the apprentice, and economic and social benefits for the new country. For the apprentice, the craft skills learned gave him (her) varying degrees of independence, mobility, and status. Early apprenticeships were educational in nature but also “... involved the intergenerational transfer of culture itself, masters stood in loco parentis to their apprentices...which helped to constitute the extended family” (Quimby, 1984, p. 5)

Craftsmen coming to the New World from England and Europe brought with them the practice of indenturement and the system of master-apprentice relationships (U.S. Department of Labor, 1987). The tradition was transferred from England as indenturement around 1619 (Ricucci, 1991, p. 190). Bridenbaugh (1950) stated that “... among the thousands who went out to the Continental colonies in the seventeenth century was a large proportion of skilled artisans who took with them the medieval

English craft tradition as part of their cultural baggage" (p. 3). Crafts and the artisans who practiced them played an important part in early American life. Next to husbandmen, craftsmen comprised the largest segment of the colonial population, or about 18% (Bridenbaugh, 1950, p. 3).

Since the Middle Ages, indenturement had been a traditional part of British life, and it was widely sanctioned by both custom and law (Rorabaugh, 1986, p. 142). The person who was to be transported to America was induced to bind himself or herself to service for a specified period of years, normally not exceeding seven, as fixed by the Statute of Artificers (Galensen, 1981, p. 76). The legal position of the servant was that of an apprentice who was no longer free to leave the master at will and was obliged to work for the master without receiving a wage (Galensen, 1981, p. 76). "Apprenticeship differed from other forms of indentured service in that it was open only to minors and training for a specific craft was provided" (Morris, 1965, p. 364). The indentures of apprenticeship obligated the master to teach the apprentice the "mysteries of the trade" (Morris, 1965, p. 378).

Both the English Statutes of Artificers and the Poor Law were applied to the early American colonies but they were applied without organizational support. They were quickly disregarded by apprentices, journeymen, and masters alike (Rorabaugh, 1986, p. 122). Morris (1965) added that provisions of transplanted English law were never embodied in the colonial labor codes.

Organizations known as guilds, composed of both masters and journeymen, were designed to protect the interests of all members of the craft. Kursh (1958) reported that the formal organization of apprenticeships as a method of training could be credited to the English guilds. Without the strength of the guilds, apprenticeship was considerably less vigorous in the colonies (Rorabaugh, 1986, p. 64). The medieval guild system,

which was based on restriction of labor supply, could not survive under colonial conditions where labor was at a premium (Bridenbaugh, 1950).

Without protection from the guild, there was no guarantee that the apprentice would be correctly trained in the trade. The apprentice was not required to produce a masterpiece, and the journeyman had no organization to join (Rorabaugh, 1986, p. 88). Additionally, there was no recognized standards of performance. Elbaum (1989) added that as a result of no certification requirements, informal training was a viable alternative to apprenticeship, and young workers had no incentive to honor indenture agreements. Adding to the problems of indenturement, there were high rates of geographic and occupational mobility, especially among youths, and an influx of adult immigrants trained abroad entering the workforce (Elbaum, 1989, p. 338). Runaway apprentices was a significant problem, even during colonial times. Between 1783 and 1799 twelve states passed new apprenticeship laws focusing on the runaway problem (Elbaum, 1989, p. 340). Geographic mobility, the ideology of personal liberty, and the increase in western settlement all made enforcement of the indenture difficult.

Many employers refused to invest in the training of employees. Workers could quit at any time, “... thus walking off with their employers’ investment in training” (Legergott, 1984, p. 372). Legal enforcement of indenturement agreements as well as apprenticeship agreements was generally ineffective. The problems with indenturement and certification did not keep apprenticeship from playing a critical part in the lives of a large number of Americans in the two and a half centuries before the Civil War. In the colonial period, apprenticeship was the routine way to enter a trade. A boy of twelve to fourteen years of age began to learn how to make a living either from his father or as an apprentice to a master craftsman (Rorabaugh, 1986, p. 77). The apprentice served with the expectation that the journeyman status would assure employment, and provide him

[her] enough money to settle down, marry, and eventually establish himself [herself] as a qualified master with his [her] own apprentices (Rorabaugh, 1986, p. 77). The master served as teacher and as master in loco parentis.

During the American Revolution, as young apprentices were drawn into the war, apprenticeship became both “... less entrenched and more anemic as a result of wartime turmoil and fluctuating economic conditions during the last quarter of the century” (Rorabaugh, 1986, p. 16). By the early 1800s, the influence of an expanding economy, the industrial revolution, an influx of highly skilled immigrants, and “democratization” of craft knowledge and trade “secrets” (Rorabaugh, 1986, p. 55), resulted in the American apprenticeship system becoming “... a mere reflection of its former self” (Schultz, 1987, p. 227). The idea of personal liberty and independence brought about by military experience caused many young men to reject the subservience of the traditional master-apprentice relationship. Rorabaugh (1986) added that the early system of the domestic apprenticeship, in which an apprentice lived with a master and was completely dependent upon him for sustenance ceased to exist.

According to Rorabaugh (1986), in the decade after the American Civil War, apprenticeship all but disappeared . Public inquiries conducted in the late 1800s described apprenticeship as having fallen largely into disuse. Elbaum (1989) described the census data taken in 1850 and 1900. He revealed that the ratio of apprentices to total employees in factory and craft work was less than 2 apprentices per 1,000 employees. “The traditional craft structure of apprentice, journeyman, and master was breaking up” (Quimby, 1984, p. 11).

The early influences of the industrial revolution altered attitudes toward training. During this period craftsman were separated from the customer and from the final product. Development of large scale production demanded a division of labor alien to the

craftsman. Training of highly-skilled workers was no longer required. Unskilled and semi-skilled (generally immigrant) workers were confined to a particular specialty, machine or process (Jacoby, 1991, p. 887). Machines were what made products. Thus, the broad-based, mastery-level skills of a journeyman or master craftsman were generally considered unnecessary (Elbaum, 1989; Jacoby, 1991). Yet, craftsmen remained an essential part of the industrial society (Elbaum, 1989; Jacoby, 1991; Nelson, 1991). The need for skilled craftsmen and the apprenticeship system continued. Apprenticeships even flourished to provide the necessary skills to build machines and keep them running, and maintain product quality and enhance the work ethic of the skill trades. At Goodyear Tire & Rubber company skilled craftsmen such as electricians and machinists were paid a bonus to their regular production-oriented hourly wage for “... technical or practical knowledge, initiative, neatness on the job, carefulness, and reliability” (Nelson, 1991, p. 80).

Miller (1985) noted that traditional apprenticeships were affected by the emerging industrial society and that apprenticeship had been rendered ineffective by the decline of the old form of industry. Another outcome of the industrial revolution and the factory system was the “... shattering of the influence of the guilds, with their notion of a just price and a just wage” (Ritzer & Walczak, 1986, p. 12). Discipline was required to manage a large and complex, group-oriented factory system. This discipline replaced the freedom and individuality of the earlier guild system. Control and exploitation of unorganized workers by owners and managers was common. The abuses of the factory system were well-known and these abuses led to a number of reactions and changes in the workplace including government legislation about work, work safety, sabotage on the part of the workers, and the growth of the union movement (Ritzer & Walczak, 1986, p. 12).

The true impact of scientific management on the workplace and on the nature of work of the time is questionable. Scientific management was based on replacing personal authority with an objective science of management and was the "... unquestioned orthodoxy of American management for more than a generation" (Howard, 1985, p. 19). According to Nelson (1991), however, most plants remained immune to the management system. "In these establishments there was no separation of mental and physical labor, no transfer of skill to the plant office--or at least no more than would have occurred if Taylorism had never appeared" (Nelson, 1991, p. 79). Manufacturers either selectively used scientific management or rejected it as inappropriate for the types of functions skilled workers performed. Nelson (1991) noted that only semiskilled workers hired for positions such as machine tenders were influenced by Taylorism in an effort to improve performance.

Nearly a century-long decline in apprenticeship training came to a halt in the early twentieth century (Elbaum, 1989; Jacoby, 1991). The preceding decline of apprenticeship was not due to a lack of employer interest, for employers were expending resources on training. On the other hand, Jacoby (1991) wrote that many firms found indentures "... burdensome because they gave apprentices legal rights to challenge management" (p. 888). Additionally, apprenticeship contracts "... threatened management's prerogative to hire, fire, and discipline workers at will" (Jacoby, 1991, p. 890). Apprentice turnover made training a losing venture for many firms. Cheap labor was easy to find and firms found it difficult to honor their training commitments. "Where unwritten understandings replaced indentures, legal responsibilities were blurred and the training arena became littered with disputes" (Jacoby, 1991, p. 889).

In the early twentieth century, due to a skilled labor shortage, many employers complained there was a lack of apprenticeship programs (Elbaum, 1989). Corporate

employers began to support and encourage the resurgence of apprenticeship programs. Jacoby (1991) added that numerous attempts, particularly by corporate employers, were made to revitalize this institution. But legal obligations that honored contracts when economic conditions began to change made cooperation with unions and agencies unfavorable. Again, alternative methods of obtaining workers and training employees emerged in the form of corporate training, professional association programs, and public industrial education. Some companies trained no skilled workers, preferring to hire them on the external labor market, while others used internal promotion.

During the period between 1900 and the 1930s, apprenticeship in the United States was transformed from a contractual arrangement between a company and a worker to an institution primarily controlled by unions. According to Jacoby (1991), this transformation resulted from the difficulties in enforcing the specific performance of training responsibilities by employers. One of the most important advances in American apprenticeship came in 1937 with the passage of the National Apprenticeship Training Act (the Fitzgerald Act). Strauss (1967) wrote that apprenticeship had declined during the depression, but revived somewhat with the passage of the Fitzgerald Act, which provided for a federally promoted national program. Administered by the Labor Department's Bureau of Apprenticeship and Training (BAT), this Law called upon the Secretary of Labor to promote more apprenticeship programs in private industry, safeguard the welfare of apprentices, and encourage the use of the highest standards in apprenticeship training programs.

A key characteristic of private sector apprenticeship programs was that they were typically operated and managed jointly by labor and management through Joint Apprenticeship Training Committees (JATC) (Ricucci, 1991), and were registered with the BAT or, in some cases, the State Apprenticeship Council (SAC). Rajan (1965) noted

that Wisconsin and Oregon were the only states with legislation governing apprenticeship training prior to the Fitzgerald Act.

There were many benefits of program registration to employees, unions, and employers alike. Graduated apprentices were certified in a craft or trade, which enhanced their economic stability and social status. Marshall and Briggs (1967) reported that certification bestowed a certain amount of geographic mobility to the journeyman to pursue jobs and opportunities in geographic areas other than his [her] own.

Certification also assured certain minimum standards of skills quality. Programs that were registered were favored by employers because certification enhanced their quality and it helped to ensure that standards of uniformity had been met. In addition, registration of apprenticeships improved employee relations, ensured availability of related technical instruction, and enhanced versatility of the workforce (Kursh, 1958, p. 8). In a U.S. Department of Labor (1989b) study entitled Apprenticeship 2000, an outstanding achievement of apprenticeship was identified as having maintained a reputation for high standards and quality over a period of time when many other elements of education and training were criticized for allowing standards to decline. Although, according to Strauss (1967), statistics as to apprenticeship were “... notoriously unreliable” (p. 9), the numbers of workers participating in apprenticeship programs in the U.S. had generally followed employment growth rates over the two hundred or so years that records had been kept. Prior to the eighteenth century, records for apprenticeship and indentured servitude were consolidated. Approximately 300,000 to 400,000 servants migrated to the thirteen mainland colonies from 1650 to the end of the colonial period (Galenson, 1981, p. 47). According to Galenson (1981), apprentices alone may have accounted for less than one percent of this population, or approximately 3,000 to 4,000 apprentices.

In the eighteenth century apprenticeship grew, especially in the heavily populated northeastern metropolitan areas. Rorabaugh (1986) reported that in 1795 there were an estimated 1411 indentured apprentices in Frederick County, Maryland alone. There is little available apprenticeship data for the years between 1865 and 1940, but numbers of apprentices gradually grew with population and with numbers of workers entering the workforce. According to the U.S. Department of Labor's (1979) Bureau of Apprenticeship Training, in 1941 there were approximately 26,000 registered apprentices. Due to post-World War II employment inflation, by 1950 this figure had grown to over 200,000 apprentices.

In 1949, over 50% of apprentices used the G.I. Bill of Rights, but as benefits ran out and the Korean War depleted manpower, the number of apprenticeships declined (Marshall & Briggs, 1967; Strauss, 1967). This period led to a burgeoning of apprenticeship programs aimed at rebuilding the nation's skilled work force and preparing it to meet employment and production demands (Ricucci, 1991, p. 181).

Since the 1960s the number of apprentices in the U.S. had grown by almost 200,000. In 1960 there were 160,000, in 1969 there were 250,000, in 1980 over 325,000, and in 1990 there were approximately 350,000 registered apprentices in the U.S. (U.S. Department of Labor, 1992, p. 12). Over eight hundred occupations had apprenticeship programs, but only thirty enrolled more than three-fourths of all apprentices (U.S. Department of Labor, 1987, p. 13). Of the 19 occupations representing apprenticeship programs, eight construction-related occupations made up approximately half of all registered apprentices in the U.S. in 1990: electricians 17.7%, carpenters 11.0%, plumbers 5.2%, pipe fitters 4.7%, sheet metal workers 4.5%, machinists 2.6%, tool & die makers 2.2%, and roofers 2.2% (U.S. Department of Labor, 1992, p. 21). Although an impressive number, 350,000 apprentices is less than

half of one percent of the total workforce (Hamilton, 1992, p. 12).

A renewed interest in apprenticeships had resulted because there had been (a) improvement in existing apprenticeship programs and (b) ground-breaking opportunities for new apprenticeship efforts. The large majority of these opportunities had been directed toward youth apprenticeship systems dedicated to school-to-work transition (Bailey, 1993; Hamilton, 1990). According to Hamilton (1990) youth apprenticeship was a means of preparing youth for work which uses "... people and activities outside the school to motivate youth to learn in school and teach them lessons they fail to learn there" (p. 17). Bailey (1993) added that youth apprenticeship lies somewhere between an educational experience confined to the classroom and work experience in which students are expected to learn just by being exposed to the workplace.

Youth apprenticeship was differentiated from the traditional U.S. apprenticeship system. Traditional apprenticeships served the labor needs of specific trade occupations. Approximately 53% of apprentices were registered in the construction industry (U.S. Department of Labor, 1992). The average U.S. apprentice was a 27-year-old, full-time employee with several years of work experience (Filipczak, 1992, p. 26). Bailey (1993) added that youth apprenticeship focused on school-age participants and was designed as a core part of basic adolescent education.

During the late 1980s and early 1990s, youth apprenticeship was being proposed as a system that could solve many of the perceived problems with vocational education of the non-college-bound and reintegrate alienated urban youth (Bailey, 1993; Hamilton, 1992). In response, the U.S. Department of Labor created an Office of Work-Based Learning that funded several apprentice-like training models. In 1988, a comprehensive examination of all aspects of the apprenticeship concept was undertaken by the U.S. Department of Labor under the general rubric of the Apprenticeship 2000 program.

Results of this effort included focus papers, policy reports of work-based learning, an international symposium on innovations in apprenticeship and training held in Paris in November of 1988, and several research and demonstration projects. Research projects initiated in support of Apprenticeship 2000 included short-term research reports on: (a) expansion of apprenticeship to new industries and occupations, (b) review of issues relating to women in apprenticeship, and (c) financial and non-financial incentives for apprenticeship programs (U.S. Department of Labor, 1989b, p. 25).

Any discussion of youth apprenticeship training must take into account the legislative framework which had promoted youth apprenticeship programs in the U.S. Work on proposed Federal legislation in the form of The National Youth Apprenticeship Act, and the School-to-Work Transition and Youth Apprenticeship Acts began in the late 1980s. By the early 1990s, with a new administration in Washington, these proposals had been revised and alternative school-to-work programs were being formulated. The Departments of Labor and Education, in cooperation with states, local communities, schools, and unions and businesses were working together in 1993 to develop new school-to-work systems (J.P. Moore, U.S. Department of Labor, personal communication, July 6, 1993). The School-to-Work Opportunities Act, a bill designed to provide development money for state use was sent to Congress in August of 1993.

Several U.S. apprenticeship-related theses and dissertations were completed in the 1940s and 1950s (Eberle, 1955; Myers, 1945; Perry, 1957; Schuster, 1959), but the review of related literature for the present study revealed few recent research-based publications concerning U.S. apprenticeship training programs. For example, in two separate studies apprenticeship was considered a component of vocational education. Miller's (1972) analysis of vocational teachers attitudes resulting from apprenticeship programs reported that experiences through apprenticeship will strengthen the preparation

of vocational teachers. In the second study, Herrington and Mandalong (1991) indicated that the actual roles and functions of public schools in supporting private sector apprenticeship programs as compared to formal roles and functions encoded in law and policy were incongruent.

In another study, Glover (1980) discussed the relationship between union apprenticeship programs and public vocational education. He recommended that vocational education could serve as career guidance for students, and that vocational facilities could be better utilized as training centers for apprenticeship programs.

Geraldi (1981) wrote that there was no significant difference in participation in different trade group apprenticeship training programs and participant perceptions of on-the-job or related-subjects training. A significant difference in apprentice perceptions of the quality of on-the-job training and the job proficiency rating received from the apprentice's supervisor was reported (Geraldi, 1981, p. 122).

Trade Union Apprenticeships

U.S. trade unions had benefitted from apprenticeship training by assuring that future craftsmen possessed the skills and knowledge necessary to maintain the standards of the trade; hence " ... apprenticeship is affected by the craftsman's concern with its status and success" (Leipmann, 1960, p. 14). Apprenticeship represented the major training interest of the craft unions. Marshall and Briggs (1967) wrote that apprenticeship, by maintaining craft identity, also strengthened the craft union as an institution and made it possible for the union to supply competent workers to maintain its jurisdiction. Employers benefited by the apprenticeship system in that they got workers who were trained according to methods and standards specified by the industry itself (Marshall & Briggs, 1967; Marshall & Tucker, 1992).

Union formal interests in structured apprenticeships began in the early years of the nineteenth century. The desire to regulate apprenticeship was one of the prime causes for the creation and growth of early trade unions (Barbash, 1967, p. 36). Apprenticeship in craft trades was similar to the earlier system of indenturement in Colonial America. In the early twentieth century, American apprenticeship programs became more formalized. They changed from a contractual arrangement between a company and a worker lacking legal strength to a formal and legal institution generally controlled by trade unions. Currently, the construction trades alone enroll more than half of all apprentices in the U.S. (U.S. Department of Labor, 1992, p. 12).

The combined effort of labor unions, employers, and government officials led to the participation of the U.S. federal government in the first national promotion of apprenticeship (Barbash, 1967; Pearson, 1974). This effort eventually led to the creation of apprenticeship legislation in the form of the National Apprenticeship Training Act. Since passage of the Act, more apprenticeship programs had been promoted in private industry, and the use of high standards in apprenticeship training had been encouraged and maintained. Apprenticeships were frequently used for skills training in the public sector. Riccucci (1991) reported that "... there appears to be growth in apprenticeship spending at the state and local levels of government" (p. 191). Today, apprenticeship training was lucrative mainly because of the strict work standards developed and maintained by the trade unions (Riccucci, 1991, p. 184).

Trade union apprenticeship programs operated and managed through Joint Apprenticeship Training Committees (JATC) were registered with the Department of Labor's Bureau of Apprenticeship Training (BAT) or, in some cases, the State Apprenticeship Council (SAC). Nearly 90% of all registered apprentices in the U.S. received their training through these committees (Gehan, 1990). Registration had enabled

trade unions to offer consistency in training and developed standards ensuring a high level of work performance quality. Apprentices certified in a trade possessed transferrable skills, were mobile, and were not constrained by statutory regulations. Registration of apprenticeships ensured a high quality, well trained, skilled, and flexible workforce.

Registered apprenticeship required on-the-job training as well as related technical instruction. Most trade union apprenticeship programs consisted of a minimum of 144 hours of related technical instruction per year usually coupled with several thousand hours of on-the-job training and instruction. Geraldi (1981) reported that research results pertaining to the formal related instruction "... can be categorized as mixed at best" (p. 23). On-the-job training appeared to be much more accepted by apprentices than formal related instruction (Geraldi, 1981, p. 55). He added that the related instruction component of the apprenticeship model was not as effective in producing improved job proficiency as the on-the-job training component (Geraldi, 1981, p. 55). Pearson (1974) noted that there was little consistency in the related instructional programs offered by the electrical apprenticeship training programs in his study.

Barbash (1967) reported that the training objectives of apprenticeship were unevenly and indifferently implemented; related instruction was completely absent in a major proportion of apprenticeship, and even where it was offered its relatedness was questionable (p. 41). On the other hand, several studies reported positive consequences of related technical training (Renzi, 1977; Shigetomi, 1971). The U.S. Department of Labor (1989a) reported that "much evidence suggests that the combination of experiential training and related instruction is highly effective--perhaps the most effective learning mode--in a wide variety of settings (p. 11).

According to Barbash (1967) the "ideal type" apprenticeship programs in the craft

union attempted to carry out the training function of apprenticeship and included some or all of the following features: (a) adequate financing, jointly through a collective agreement or unilaterally through the union; (b) training departments or coordinators in the national union and subordinate bodies in joint agencies; (c) systematic development of programs adapting training to new technologies, with emphasis on preparation of instructional materials and instructor training; and (d) formal apprenticeships "coupled" with preapprenticeship programs (Barbash, 1967, p. 54).

Barbash (1967) identified several uses and benefits of apprenticeship to craft unions. First, apprenticeship is one of the means which craft unions used to regulate the supply of craftsmen. Secondly, it helped the union to make high wages supportable for employers by producing a supply of skilled workers. The theory is that the "... all-around education of the apprentice makes him [her] a better mechanic than the nonunion man [woman]" (p. 47). Thirdly, apprenticeship strengthened the employment security of the craftsman by offering to qualify them technically for employment. Thus, "... the worker gets his [her] security not from the individual employer but from his [her] skill" (p. 48). And last, it supported the union's institutional power by organizing the instructional program around the job specifications of the jurisdictional claim (Barbash, 1967, p. 38).

Trade union apprenticeship activity in recent history had reflected the general decline of union membership and support in the United States. The extent of unionization of nonagricultural labor had been declining for more than two decades, from 35% in 1956 to barely 25% in 1978 (Farber, 1985, p. 8). The current union membership [in 1992] was 16% (Filipczak, 1993, p. 25).

Apprenticeship had also been in a state of steady decline or stagnation for several decades. It had never recovered from "... the spurt immediately following World War

II, and generated by the G.I. Bill of Rights” (Barbash, 1967, p. 51). In the 12 years between 1980 and 1992 over 57,000 fewer apprentices were registered with the Bureau of Apprenticeship and Training and State Apprenticeship Councils than in the previous decade (U.S. Department of Labor, 1992, p. 5).

Work Ethic Research

Work ethic as a research topic has been studied under the rubric of work values, Protestant work ethic, work attitudes, contemporary work values, traditional work ethic, and other related terms. The review of related literature revealed diverse definitions of work ethic. Work ethic as a construct has been conceptualized as attitudes, beliefs, and values. The review of related literature indicated that the concept of work ethic as a set of attitudes was an important underlying theme.

Many research-based studies of work ethic, including the measurement of work ethic and related topics, were available in the work-ethic-related literature. A summary of work ethic studies and the instruments used to measure work ethic follow.

Work Ethic Definitions

Any study of work ethics required a clear conceptualization of the associated terminology. The meanings of work ethic and related concepts such as work values had been the subject of considerable deliberations in the related literature. Cherrington (1980) identified the major reason for the differences of opinion about the work ethic as “... it has been defined in so many different ways” (p. 19). Maccoby (1983) added that different observers had defined the work ethic differently.

Perhaps the most common reference to work ethic was that of the Protestant work

ethic (PWE). This implied that the concept had been borrowed from the writings of Max Weber (Furnham, 1984a, 1990). The Protestant work ethic was the first formalized system to explain observed occurrences in the work environment (Poremba, 1990, p. 38). Mudrack (1992) defined the Protestant work ethic as a belief system about work with origins in the Protestant reformation and the Puritan movement. It grew out of a conviction that the honest performance of daily labor was the highest form of Christian obedience.

Cherrington's (1980) definition of Protestant work ethic added the following seven beliefs: (a) people had an obligation to fill their lives with heavy physical toil; (b) people were expected to spend long hours at work, with little time for leisure; (c) workers should have a good attendance record; (d) workers should be productive and take pride in their work; (e) workers should have feelings of commitment and loyalty to the profession, the company, and their work; (f) workers should be achievement-oriented; and (g) people should acquire wealth through honest labor; extravagance and waste should be avoided. There was some evidence that the use of Protestant work ethic had declined. Ray (1982) wrote that there was reason to believe that the Protestant work ethic had "... run its course" (p. 135). All religions had come to share Protestant work ethic attributes, "... so it is just no longer Protestant" (Ray, 1982, p. 135). Furnham (1984a) added that Protestant work ethic did not now discriminate between religions, hence the term Protestant had been dropped.

Work ethic was defined as a system of attitudes, beliefs, and values that reflect a positive attitude toward work--that "... work is important, virtuous, and fulfilling in its own right; that it dignifies the worker...and makes him or her a better person" (Quinn, 1983, p. 89). Defining the work ethic as a value or belief system with no religious implications broadened the Protestant work ethic and secularized the concept. Blood

(1969) operationally defined work ethic and stated that attitudes toward work were not dependent on religious affiliations. Wayne and Chapman (1992) offered a secular definition of work ethic as an “... obligation imposed on individuals by society referring to the usefulness, importance, or general worth that people assign to some behavior or conception related to work” (p. 128).

The work ethic according to Buchholz (1978) was a social attitude toward work. “People should work and those who do not are not useful members of society” (p. 220). Marland (1972) suggested that the concept of work was distinct from work ethic; “... work is an ever present, inescapable condition of life, whereas, work ethic carries moral or spiritual obligations apart from the worth of work itself” (p. 32). Assuming that the Protestant ethic could not be ignored and was an innate part of work ethic, a study by Mirels and Garrett (1971) explained the work ethic in terms of personality characteristics. That is, they suggested that the PWE was one of several work beliefs held by certain individuals or groups.

Many studies had measured work ethic in terms of either pro-work or anti-work items (Blood, 1969; Furnham, 1984a, 1984b; Mirels and Garrett, 1971; Ray, 1982; Wayne, 1984). Furnham and Rose (1987) suggested the existence of other rated ethics or belief systems that were not simply pro- or anti-PWE, but work-related ethics in their own right. The review of related literature in the present study revealed several studies which identified ethics other than the work ethic (Cherrington, 1980; Finkel, 1980; Furnham & Rose, 1987; Kelvin & Jarrett, 1984; Maccoby, 1983). Many similar work ethic terms had been used interchangeably with Protestant work ethic. For example, Buchholz (1978) identified a leisure ethic, while Kelvin and Jarrett (1984) stressed a wealth ethic. A welfare ethic was identified by Furnham and Rose (1987), and Finkel (1980) stated that the work ethic was giving way to a consumer ethic. Maccoby (1983)

identified what he called the American managerial work ethic.

Cherrington (1976) identified three separate ethics: (a) character, (b) new thought, and (c) personality, as having influenced current concepts of work ethic. "Character ethic" reflected the craft ethic concepts of Benjamin Franklin. Frugality, diligence, industry, and prudence were primary virtues of this ethic. The power of positive thinking was the cornerstone of "new thought", and the "personality ethic" relied on using one's personality to influence other people (p. 39).

Maccoby and Terzi (1981) suggested four separate ethics other than Protestant work ethic that have been evidenced in U.S. history. Craft, career, entrepreneurial, and self-fulfillment ethics were also identified. The craft ethic was oriented toward individual independence and self-control, while the entrepreneurial ethic was characterized by taking risks and exploiting people (Riedlinger, 1990, p. 70). The career ethic was identified in individuals wanting promotions, better corporate positions, and seeking activities to advance a career "independently of a specific organizational context" (Maccoby, 1983, p. 190). Finally, the self-fulfilling ethic was identified by the search for self-fulfillment, self-actualization, and personal growth (Maccoby & Terzi, 1981, p. 21).

As a trade unionist, Tyler (1983) reported that "... there are at least two work ethics: that of the overseer and that of the overseen" (p. 197). This did not mean that union workers were opposed to the work ethic, but work was not considered an ethical imperative. Since work was such a necessity, it was unnecessary to build a system of values to rationalize labor (Tyler, 1983, p. 197).

The definitions of work ethic and corresponding terms in the related literature offered a wide spectrum of interpretations of the concept of work ethic. Many researchers identified the concept of work ethic in terms of attitudes toward work (Buchholz, 1978; Cherrington, 1980; Maccoby, 1983; Pinder, 1984; Wayne, 1984). To

the extent that work ethics were related to individual or group attitudes toward work, an investigation into work attitudes was considered important.

Work Attitude Research and Measurement

Psychometrically, sound measurement was necessary to the future advancement of theory and practice of training and human resource development. It was an integral part of the development of any field of study. One reason for the lack of consistent and reliable measurement of work ethic in a training environment may be the lack of valid theoretical constructs. Many researchers and practitioners discussed training in broad, ambiguous terms that were not exact enough to build a theoretical base of knowledge. Based on the definitions of work ethic in the related literature, a major conceptual component of work ethic was attitude. Attitudes similar to workers' beliefs about the work ethic had been identified in studies by Kohn (1981).

Many practitioners as well as academicians had taken a "somewhat casual approach" to measuring attitudes toward training (Arvey and Cole, 1989, p. 89). Few instruments designed to measure trainee attitudes toward work had been scientifically developed and used. Goldstein (1986) added that the field of vocational education and training had not rigidly adhered to the demonstration of the notions of instrument and program validity and reliability in the past.

Cascio (1982) noted that examining a person's attitude toward a behavior helped to predict that behavior, assuming that the two measurements were equivalent. "Knowledge of a person's attitude, therefore, permits prediction of one or more specific behaviors" (Fishbein & Ajzen, 1975, p. 8). Henerson, Morris, and Fitz-Gibbon (1987), added that attitude was not something easily examined and measured the same way a heartbeat was measured. Attitudes could only be inferred by words and actions.

Attitudes tended to change with time, and there were a number of factors that form an individual's attitude. Recognizing these attributes, Phillips (1983) noted that it was still "... possible to get a reasonable fix on the attitude of an individual" (p. 21).

The review of related literature revealed many different approaches which could be used to obtain information on attitudes, including observation of actual behaviors, interviews, and self-report questionnaires. Many researchers felt that the most objective, least obtrusive method of determining one's attitude toward something would be to observe his or her actual behavior in situations involving the particular object, person, institute, or event of the attitude (Aiken, 1985; Fishbein, 1967; Nunnally, 1967). Criticisms of this method included: (a) it was very time-consuming; (b) it was expensive; and (c) it may involve rater bias issues (Oppenheimer, 1966, p. 33). Aiken (1985) added that attitudes manifested in human behavior may be quite different from inventoried attitudes, beliefs, or values.

All attitude measurement involved observation of one or more responses made by a subject, whether they were verbal, written, or behavioral responses (Fishbein & Ajzen, 1975, p. 15). The use of these responses in industrial research had led to the development of instruments like attitude surveys and work ethic surveys. Surveys had been used by social and organizational psychologists for many years as a tool to solve industrial relations problems and measure values and beliefs. According to Jacoby (1988), these surveys were based on a combination of scientific methods and concepts such as attitude constructs, scaling theory, interview methods, and the statistical methods of sampling and factor analysis.

Traditionally, attitude surveys had been a tool of management to measure worker morale and motivation. Jacoby (1988) indicated that attitude surveys played an important role in helping management to counter workers' attempts to organize through

unionization. The use of attitude surveys had recently changed with the on-set of organizational development activities such as total quality management, teamwork, and employee involvement schemes like Quality of Work Life. There was currently widespread use of attitude surveys among behavioral scientists, organizational psychologists, and some training and human resource development professionals.

Many variables that promoted attitude measurement had been put into a theoretical framework by Fishbein and Ajzen (1975). Their research had allowed researchers to employ statistical measures of attitudes and reliably predict subsequent behaviors. The problem lies in the lack of attitude measurement in attempting to link worker's attitudes with actual job-related training (Carnevale, 1990; Wilson, 1992). Only when the attitudes and values are measured with the same level of specificity as the behavior will they be highly predictive of the behavior in question (Fishbein & Ajzen, 1975, p. 16).

Work Ethic Instruments

Much of the research on the work ethic had been concerned with devising psychometrically acceptable measures of work ethic beliefs, and relating these beliefs to occupational beliefs and behaviors (Furnham, 1984a, p. 89). Few instruments had been devised to measure the economics of work ethic or its relationship with productivity. Many databases used to study the economics of the work ethic, especially "... those with large national samples which provide longitudinal measurements of attitudes, work histories, and control variables, were not specifically designed for this purpose" (Andrisani & Parnes, 1983, p. 102).

With these limitations in mind, and because "... there is no agreed form of measurement reflecting the work ethic itself or even its major components" (Clarke,

1983, p. 121), a review of the literature for studies reporting instruments measuring work ethics and work values was completed. References were limited to instruments (a) used to compose other instruments, (b) studied for validity and reliability, and (c) appearing to specifically measure occupationally-oriented work ethics.

The Work Values Inventory (WVI) developed by Super and his associates (Super 1957, 1962, 1969, 1973; Super & Overstreet, 1960) was the result of one of the first longitudinal studies of the career selection process. Designed to measure the perceived values that impacted on the career selection process (Super, 1957), the WVI was used to make 105 paired statement comparisons and provided ranked scores on 15 work value constructs (Riedlinger, 1990, p. 38). Subsequent studies using the WVI assessed the relationship of work values to concepts like status, interests, and achievement on the job (Super, 1962; Super, 1973). The WVI was referenced in several work ethic studies (Hill, 1992; Riedlinger, 1990; Wayne, 1984) and was used by Wayne (1984) to develop related work ethic measurement instruments. Although considerable attention had been given to Super's work, the WVI focused more on worker perceived needs, satisfaction, and life-career values than on specific occupational work ethic (Cockriel & Breme, 1975, p. 332).

Instruments designed and used to measure pro- and anti- Protestant work ethic beliefs appeared in the work of Blood, 1969; Buchholz, 1974, 1976, 1978; Furnham, 1984b; Furnham and Rose, 1987; Mendez, 1991; Mirels and Garrett, 1971; Ray, 1982; and Wollack, Goodale, Witjing, & Smith, 1971. The often-cited Protestant Ethic Scale developed by Milton R. Blood (1969) had two four-item subscales that measured adherence to pro- and non-Protestant ethic (Furnham, 1983, p. 117). The reliability and validity of Mirels and Garrett's (1971) Protestant Work Ethic Scale had been studied by factor analysis (Furnham, 1990, p. 323), and correlational studies (Waters and

Zakrajsek, 1991, p. 119). The greatest amount of research had been generated by the Mirels and Garrett instrument (Furnham, 1983; Poremba, 1990; Welborn, 1983). Welborn (1983) used the Mirels and Garrett (1971) Protestant Ethic Scale to measure what she called the American work ethic. Studies had revealed that the Mirels and Garrett scales possessed reasonable correlation (Furnham, 1983, p. 120). Ray (1982) offered an alternative to the Mirels and Garrett and Blood scale items. He developed a new 18-item scale he called the Eclectic Protestant Ethic Scale. It significantly correlated with demographics of church attendance, religious beliefs, and the scales of several related studies (Ray, 1982, p. 127).

Wollack, Goodale, Witjing, & Smith (1971), developed the Survey of Work Values as an index to measure occupationally-oriented constructs such as job involvement and pride in work, while avoiding the "puritanical tone" of most Protestant ethic scales (Huntington, 1987, p. 16). Furnham (1983) reported that the Survey of Work Values may have been the least used of the ethic scales, though it had been used by Stone (1975).

The studies of Buchholz (1974, 1976, 1978) included the development of scales to measure traditional Protestant beliefs about work and different categories of alternative ethics like leisure and welfare. Few descriptive statistics were found in the related literature for the Buchholz instruments. According to Poremba (1990), any measurements of alternative ethics or belief systems focused on the work of Buchholz.

Furnham's (1984a) Protestant work ethic study used five different traditional work ethic questionnaires to measure the work values of "mostly college-educated" subjects in England (p. 21). The Furnham and Rose (1987) study combined several instruments from the work of Mirels and Garrett and Buchholz to develop eight questionnaires, seven alternative ethic scales, and one Protestant ethic scale.

An instrument to measure both the traditional work ethic and more contemporary work values in respect to a broad range of occupations was developed and tested by Wayne (1984). The instrument's 119 items were developed from (a) a review and summary of items from related Protestant and contemporary work ethic instruments, (b) a content validation by a panel of experts, and (c) item and factor analyses. Based on results from a varied population of students and workers, Wayne (1984) concluded that "Protestant and contemporary work values are not mutually exclusive" (p. 108).

The Occupational Work Ethic Inventory (OWEI) was an instrument developed and tested by Petty (1991a), and recently used by Hill (1992) in a descriptive study of the occupational work ethic of workers employed in a variety of businesses and industries in Monroe County, Tennessee and by Allender (1993) in a study of the occupational work ethic of secondary vocational students in East Tennessee. The inventory's single word items were based on previous studies of affective work competencies done by Petty (1979, 1983, 1991a, 1991b); Petty & Morgan, (1980); Petty, Brauchle, & Morgan, (1983); and Petty & Campbell (1988).

A content analysis based on semantic differential initially established the following four subscales for the instrument: Dependable, Ambitious, Considerate, and Cooperative. A principle factor analysis of the OWEI instrument was calculated. Results of the factor analysis revealed that the OWEI subscales were valid and that the instrument's items loaded on one factor. Hill (1992) reported a Coefficient Alpha for the OWEI instrument of .95.

With few exceptions there had been little psychometric measurement on work ethic assessment. Generally speaking, the work ethic instruments referenced herein appeared to be moderately valid and reliable. That is, they tended to consistently measure what they purported to measure. Criticisms of the scales included: (a) scales included

more pro-work ethic items than anti-work ethic items; (b) many scales had been validated on one particularly homogeneous group like graduate students, but then used to measure the values of a different homogeneous group; and (c) the extremes of many of the items may have resulted in artificial response sets (Furnham, 1983, p. 119).

Work Ethic Research Studies

Cherrington (1980) offered support for the notion that integration of work and education [training] improved the quality of work, and both were facilitated by the development of positive work values (Welborn, 1983, p. 44). Cherrington (1980) suggested that acquisition of work values depended on (a) the socialization processes an individual receives when first entering the workforce, (b) training and learning experiences, and (c) influences of particular occupations.

In Cherrington's 1975 survey study of the attitudes and values of a sample of 3,053 American workers, approximately 50% were in production or assembly-line jobs, 20% in supervisory positions, and 30% in middle management or clerical/staff positions. The sample represented 53 companies that were predominately manufacturing plants (Cherrington, 1980, p. 177). Findings of this study supported the conclusions that American workers were strongly committed to pride in craftsmanship, the moral importance of work, efficient use of time, and the value of work (Cherrington, 1980, p. 182). Results of the survey supported the proposition that combining work and education [training] improved the quality of work, and both work and education were facilitated by the development of positive work values. Demographic variables of age and occupation provided supportive evidence to show that the socialization processes, occupation (job titles), and the training and learning experiences a person received on the job may have an influence on the acquisition of work values.

Several studies supported the notion that work ethics (attitudes and values) were influenced by socialization as a component of training (Blau, 1988; Fielding, 1986; Fullagar, McCoy, & Shull, 1992; Van Maanen, 1975). Fullagar, McCoy, & Shull, (1992) found that socialization experiences between an apprentice and journeymen had an effect on the apprentice's attitudes toward unions and loyalty to his or her union. British police recruits attitudes toward work were found to be positively affected by training socialization in a study conducted by Fielding (1986).

Mathieu (1988) found that satisfaction with training had a significant influence on commitment and the importance of work to participants in a labor organization. Fullagar, McCoy, and Shull (1992) reported that because a union was responsible for apprenticeship training, positive attitudes toward the training enhanced apprentices' attitudes and loyalty. They added that "... apprenticeship training was also the main medium for union socialization" (p. 16).

The teaching of work attitudes and values was studied by Nelson and Nies (1978). Results of their study suggested that work values taught to students oriented them to non-technical occupational basics such as attitudes and work values, and that those basics may be as important as the technical aspects of work.

Hill's (1992) study of the work ethic as determined by occupation, education, age, gender, work experience, and empowerment found significant differences in work ethic of workers categorized by occupation, such as technical and related occupations, as compared to other occupations. The conceptual works of Yankelovich and Immerwahr (1983) and Yankelovich and Harmon (1988) agreed with Hill's contention that low-discretion, non-technical occupations do not emphasize strong work values while high-discretion technical careers require positive work ethic.

Using the Occupational Work Ethic Inventory, Allender (1993) reported

significant differences in the work ethic among secondary vocational students categorized by occupational training area, gender, grade level, hours worked per week, and socio-economic status. The population for Allender's study consisted of students enrolled in secondary vocational programs in 15 schools representing 35 counties in East Tennessee. A total of 3,282 surveys were collected, resulting in a reported 99.9% response rate. Brenner (1988) reported that mid-level managers and supervisors with higher levels of education valued intrinsic work values, more autonomy on the job, and performance of managerial activities. The study indicated that age also affected the importance of intrinsic and extrinsic job characteristics.

Several studies had addressed comparisons of work ethics among occupational groups (Kim, 1977; Shapira & Griffith, 1990). Kim (1977) found that an index of Protestant work ethic correlated positively with occupational status and educational achievement in a sample of adult workers. Shapira and Griffith (1990) compared the work values of managers, production workers, and clerical workers in electronics manufacturing firms in Israel. Using Wollack, Goodale, Witjing, and Smith's (1971) work values instrument, they found that the work values of engineers were similar to those of managers. Both engineers and managers had significantly different work values than production and clerical workers.

Mietus (1979) conducted a study of the relationship between work values and occupations. The purpose of the study was to compare work values of students based upon their parents' occupations. A significant difference between occupations and different work value profiles was found. In an exploratory study conducted in the early 1970s by Lyman (1971), differences were discovered between the values that employed men attached to work and their different occupations.

Hales and Waggoner (1985) found significant differences between levels of

administration and gender in a study of 701 school administrators. The authors reported that males differed from females on 2 of the 11 work values measured. In an examination of factory production workers work values, Loscocco and Kalleberg (1988) reported that workers' non-work social values impacted their work values. The study indicated that work values were influenced by what was most available from the job i.e. the job's character.

Furnham and Koritsas (1990) reported research on the relationship between vocational preference and measures of the work ethic. The study used Holland's (1973) model of vocational preference which specifies six types of preference. The hypotheses that work ethic measurements would not be positively correlated with all of the preference types was supported.

A study by Miller (1974) researched vocational maturity and work values in a small sample of community college students. The results suggested a positive relationship between vocational maturity and work values more for women having an intrinsic work ethic than for men with an extrinsic work ethic. In a 1980 study, Miller reported that college students had significantly different work ethic values based upon different occupational goals, work type preference, and different amounts of prior work experience. Work ethic also differed between males and females, and between subjects in different age groups (Miller, 1980, p. 122).

In a study of the work ethic of students and teachers, Gnidzejko (1976) reported that teachers adhered to traditional work values and that there was a difference between reported work values of teachers and students. Welborn (1983) did a study of the relationship of the American work ethic perceptions of educators, students, and workers. Similar to the Gnidzejko (1976) study, Welborn found significant differences between teachers' and students' perceptions of the work ethic. In another study, Petty and

Campbell (1988) found that practitioners of a particular trade had significantly different work attitudes than did teachers of that trade.

Hanson and Ginsberg (1985) found that traditional American work values are important predictors of students' success in school. The authors concluded that educators seeking to improve the education system should consider the values held by students, parents, and peers.

In a replication of an early study by Buchholz (1974), Poremba (1990) attempted to (a) measure belief system dominance using an instrument developed by Buchholz (1974), and (b) determine if a relationship existed between dominant work values and job performance. The results of the study confirmed the findings of the earlier research. Specifically, the humanistic work ethic belief system was the most attractive, and there was no predictive relationship between a dominant ethic and performance.

Tang and Tzeng (1988) reported on a study of whether the work ethic of the 1980s was different than in the past. The study was conducted to examine the relationships between the Protestant work ethic and some demographic variables in a sample of subjects in the middle Tennessee area. The instrument included items from the Mirels and Garrett (1971) work ethic scale. Results revealed that Protestant work ethic endorsement was positively related to political party identification and negatively related to age, education, employment status, and marital status.

Using the Mirels and Garrett (1971) Protestant Work Ethic Scale, Tang (1989) completed another study that determined the effect of Protestant work ethic and challenge on time allocated in an experimental task. Results indicated that workers with low work ethic scores committed more time to performing a difficult task than those with high work ethic scores. Other studies that explored the relationship between work ethic and task behavior included Merrens and Garrett (1975). They hypothesized that subjects with

high ethics scores would perform better on low motivation and interest level tasks. As predicted, high ethics scorers spent significantly more time participating in low motivation and interest level tasks than low ethics scorers (Merrens & Garrett, 1975, p. 127).

In a study testing work group attachment, Protestant work ethic, job involvement, career salience, and organizational commitment, Randall and Cote (1991) found a positive relationship between Protestant work ethic and organizational commitment. Their study used Blood's Pro-Protestant and Non-Protestant ethic scales on a sample of 545 randomly selected staff personnel from a large university.

In an international study on age differences in work commitment and work values among a large sample of American and Japanese manufacturing workers, Loscocco (1989) found greater work commitment among older Japanese men, American men, and American women compared to younger counterparts.

Steiner and Dobbins (1987) conducted research based on the Leader-Member Exchange (LMX) model which emphasized that workers' roles in an organization are defined through interactions with their supervisor. The role of work values as a characteristic of the LMX model was examined. Results revealed that subordinates with high work values were given more autonomy on the job and more challenging tasks.

Donohue (1984) examined the relationship between adolescent work status and personal work values and other variables. The Work Values Inventory and the Basic Living Skills Form were administered to high school students classified as naturally occurring workers, vocational education workers, job seekers, and non-job-seekers. Results indicated that vocational education workers are more motivated by intrinsic work values than other workers. Findings suggested that differences between workers may be attributable to factors such as selection into the workplace.

Two samples of adolescent boys, 2, 213 in 1966 and 1, 886 in 1968, were

examined for commitment to the work ethic in a study by Agnew (1984). Results indicated that adolescents with a low commitment to the work ethic were more likely to become delinquent.

A longitudinal study examining the relationship between work ethic, religion, socio-economics, and job success was conducted by Cohen (1985). He found that the more emphasis given to intrinsic work attributes, the greater the educational and occupational attainment.

Age as a work ethic variable was studied by Rothenbach and Rash (1984). In a sample of 926 manufacturing workers, the youngest group (under 20 years old) had significantly different work ethic rankings than the older group. Norman (1987) however, questioned Rothenbach and Rash's (1984) findings because their research instrument lacked evidence of strong validity and reliability.

A British study of peoples' attitudes toward trade unions was conducted by Furnham (1984b). A Protestant work ethic questionnaire and an instrument designed to measure attitudes toward unions were used. Participants' beliefs in the Protestant work ethic and what the author identified as conservative voting behavior were predictive of negative attitudes toward unions.

Work ethic research by Mudrack (1992) examined the possibility that work ethics might influence whether workers participate in their company's fitness programs. The author hypothesized that programs regarded as leisure would not be used by work ethic endorsers. Findings indicated that work ethics was positively related to the frequency with which subjects used the exercise facilities. Results suggested that corporate-sponsored fitness programs are considered more "work" than "leisure" (Mudrack, 1992, p. 81).

Recent research by Petty (1993a) suggested that age was an important

demographic variable when studying diverse working populations. Using the Occupational Work Ethic Inventory (OWEI), data was collected from 2,274 workers from private industry. A multivariate analysis of variance was used for five age groups (19 or under; 20 - 26; 27 - 35; 36 - 55; over 55) to determine significant differences. The results indicated that workers in the age group 36 - 55 were more ambitious than the other age groups. The author suggested that instructors and trainers should consider these differences when developing or delivering training.

Finally, in a similar study Watson (1993) found no significant differences between high school students enrolled in general education and those enrolled in Tech Prep, between male and female students, among students with differing grade levels, and between students working part-time and those not working. The study used the Occupational Work Ethic Inventory (OWEI) to collect data from 200 high school students in East Tennessee.

Summary of Literature Review

In summary, a review of work ethic research and the related work ethic literature revealed a wide variety of studies and relevant information. The large majority of the literature on work ethic in America focused on the influence of Puritanism and the Protestant work ethic on work and the growing success of a young nation. Changes in the work ethic of workers during the industrial revolution were attributed to the advent of the factory system of labor, and later to scientific management activities.

Among other variables, the changing social values of the 1960s and 1970s and subsequent shifts in demographics of the workforce were referenced in the related literature as strong influences on contemporary work ethics. Influences on American

work ethic included the three strategies of socialization: (a) training, (b) education, and (c) apprenticeship; occupational differences in values attached to work; and the effects of work experience on work ethic.

Much of the information and literature on work ethic in America corresponded with the historical development of apprenticeship and trade union apprenticeship training programs. Apprenticeship was found to be a relevant and powerful component in the development of a highly skilled and productive American workforce. Trade unions have supported, nurtured, and benefitted from apprenticeship programs. Development and maintenance of trade standards was one benefit of apprenticeship to employers and employees that was identified in the related literature.

Research dedicated to the study of work ethic revealed a discontinuity in definitions of work ethic and related terms. The most common reference to work ethic was found to be the Protestant work ethic. Work ethic was defined as a system of beliefs and attitudes. Thus, a review of the related literature concerning work attitude research and measurement was completed.

The work of Cherrington (1976, 1977, 1980) and the theoretical model of attitudes, beliefs, and values developed by Fishbein and Ajzen (1975) were used to develop the theoretical framework for the current study. The Fishbein and Ajzen (1975) study was the most cited attitude-related research referenced in the review of related literature. A review of work attitude and work ethic instruments indicated a variety of approaches to the measurement of the constructs with differing levels of validity and reliability.

Work ethic research studies were found to be as varied as the instruments used to measure work ethic. Most research studies reviewed used samples of convenience coupled with existing work ethic instruments. Demographic variables included age,

occupation, gender, work experience, and education. Many studies supported the general hypothesis that work ethic is a measurable construct that may impact a worker's commitment, loyalty, dedication, and performance on the job.

CHAPTER III

METHODS AND PROCEDURES

This chapter contains a description of the population and sample surveyed, the research design, the instrument used, independent and dependent variables, procedures used in data collection, and the methods of analyzing the data obtained from the survey.

Population and Sample

The targeted population for this study consisted of apprentices and instructors in the five-year national electrical apprenticeship training program sponsored by the International Brotherhood of Electrical Workers (IBEW) and the National Electrical Contractors Association (NECA). Due to the geographic dispersion of the population, a stratified random block or cluster sample (Gay, 1987; Borg & Gall, 1963) was used. The sample was stratified by geographic region and by size of union local membership participation in the apprenticeship training program. This study excluded journeymen or other IBEW employees not directly involved in the formal apprenticeship training program administered by Joint Apprenticeship Training Committees (JATCs) within IBEW-NECA.

The most effective access to apprentices and instructors participating in the apprenticeship training program was through their respective union local. Each "local" has defined jurisdiction over specific trades, industries, plants, companies, geographic locations, or a combination of these. A list of all U.S. IBEW locals (308 union locals) representing ten national geographic districts of the IBEW within the U.S. was compiled

from information obtained from the IBEW-NECA National Joint Apprenticeship Training Committee (NJATC) Executive Director's office. The districts were established by IBEW vice-presidential jurisdiction based on geographic location as shown in Table 1. District 1 representing Canada, and district 10 representing railroads were not included in the present study. Panama, Puerto Rico, and the Canal Zone in district 5 were also omitted from the study.

Each local was categorized by size based upon the approximate number of participants in each local apprenticeship program. These figures were obtained from approximations by IBEW-NECA training directors based upon projected 1992 membership data. Participation data was verified by applicable training directors during data collection activities. IBEW-NECA total apprenticeship participation is detailed in Appendix A. Table 2 summarizes union local apprenticeship program participation. Local sizes were categorized as (a) small, from 0 to 50 participants, (b) medium, from 51 to 150 participants, and (c) large, for union locals with over 150 apprenticeship participants. Each union local was assigned a random number from a table of random numbers (Gay, 1987) to facilitate randomization.

A major component of this study was to collect data from respondents representative of apprentices and instructors across the electrical trade union in the continental U.S. Based upon the target population of approximately 24,000 apprenticeship participants within the 308 union locals (including 1250 instructors), a minimum sample size (NEA Research Division, 1960) of 384 was needed to assure a 95% confidence level. According to Gay (1987) the minimum sample size for descriptive research is 10% of the population. In the present study this would indicate a minimum sample size of 2400 (including 121 instructors). Larger sample sizes are essential when the total sample is divided into several subsamples and when differences

Table 1**International Brotherhood of Electrical Workers' (IBEW) Union U.S.****Geographic Districts by States**

District number	States represented
2	Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont
3	Delaware, New Jersey, New York, Pennsylvania
4	District of Columbia, Kentucky, Maryland, Ohio, West Virginia, Virginia
5	Alabama, Florida, Georgia, Louisiana, Mississippi
6	Illinois, Indiana, Michigan, Minnesota, Wisconsin
7	Arizona, Kansas, New Mexico, Oklahoma, Texas
8	Colorado, Idaho, Montana, Utah, Wyoming
9	Alaska, California, Hawaii, Nevada, Oregon, Washington
11	Iowa, Missouri, Nebraska, North Dakota, South Dakota
12	Arkansas, North Carolina, South Carolina, Tennessee

Note. District 1 (Canada), district 10 (Railroads), and district 5 locations of Puerto Rico, Panama and the Canal Zone were not included in this study

Table 2

IBEW-NECA Apprenticeship Participation Summary

District number	Total participation ^a
2	836
3	5545
4	2867
5	2083
6	5050
7	1390
8	688
9	4026
11	960
12	768

Note. District 1 (Canada), district 10 (Railroads), and district 5 locations of Puerto Rico, Panama and the Canal Zone were not included in this study

^aIncludes apprenticeship participants reported in 1992 survey

in the results are expected to be small (Isaac & Michael, 1980, p. 190). Additionally, larger sample statistics involve smaller sampling errors, greater reliability, and tend to increase the power of a statistical test applied to the data (Isaac & Michael, 1980, p. 190).

A national stratified random sample of locals from the list of 308 was chosen by randomly selecting a number of locals from each geographic district. The number of locals chosen from each district was calculated by obtaining (a) the total number of locals per district by size, (b) the proportional number of locals required, based on the total number of locals by size, and (c) a randomized selection of the required number of locals by size in each district. A random number generator table (Gay, 1987) was used to identify the specific locals within each district. A total of 13 small, 18 medium, and eight large union locals were chosen to participate in this study.

The selection process resulted in a sample size of 4,489. This sample was significantly larger than the sample of 384 or 10% of the total population needed to adequately represent the target apprenticeship program population of approximately 24,000. However, given the practical constraints of the voluntary assistance of the IBEW-NECA, the national JATC organization, and the numerous union local organizations in providing the data needed, and in order to assure adequate geographic and demographic representation of the national apprenticeship program, this approach was necessary.

Research Design

The overall design of the study was developmental, ex post facto using descriptive research that used a survey technique to collect data. Multivariate analyses of

variance and correlation coefficient statistics were used to analyze the data collected.

The study was implemented with a survey instrument submitted to apprentices and instructors participating in apprenticeship training programs in the five-year national electrical apprenticeship training program administered by the International Brotherhood of Electrical Workers and the National Electrical Contractors Association. Randomly selected union locals were stratified by geographic location and size of local apprenticeship participation. Instruments were delivered (mailed) to selected union locals, completed by all available apprentices and instructors, and then returned by mail. The sampling unit was the individual apprentice or instructor who comprised the apprenticeship participants of each of the randomly selected union locals chosen to participate in the study.

Research Instrument

The research instrument utilized in the study was the Occupational Work Ethic Inventory (OWEI) (see Appendix B). It differed from previous OWEI instruments because the demographic section was modified. The original, unmodified OWEI survey instrument was developed as part of a research project conducted by Dr. Gregory C. Petty at the University of Tennessee-Knoxville. It was developed from an empirical investigation related to affective work competencies and work values, and has been revised and updated based upon research related to work ethic and the occupational work ethic (Petty, 1991a, 1993a, 1993b; Hill, 1992; Allender, 1993; Watson, 1993). A modified version of the instrument was used by Hill (1992), Allender (1993), and Watson (1993). Modifications were made to the demographic section of the instrument used in the present study; however, no modifications were made to the survey items.

Initial items used to develop the OWEI were selected from a list extracted from an extensive review of the related work ethic literature including work attitudes, work values, work ethics, and work habits. This literature search was done in support of the development of the Affective Work Competencies Inventory (AWCI) as part of a research project conducted by Dr. H.C. Kazanas at the University of Missouri in 1977-1978.

The original investigation of affective work competencies for the Affective Work Competency Inventory (AWCI) was conducted and published by Dr. H.C. Kazanas (1978). Later research by Petty and Morgan (1980) revealed 63 different affective work competencies as stated by employers, workers, and educators. A total of 15 affective work competency clusters were identified within these competencies. Items were then listed for semantic analysis and further refined by a panel of experts. Content and face validity was established by the panel of experts. Selected items were listed alphabetically and randomly sorted (Petty, 1983).

The Affective Work Competencies Inventory was factor analyzed by Brauchle, Petty, and Morgan (1983). According to Gorsuch (1983) the aim of factor analysis is to "...summarize the interrelationships among the variables in a concise but accurate manner as an aid in conceptualization" (p. 2). Based upon a sample of 1,485 industrial workers, supervisors, and vocational educators, the AWCI was subjected to an exploratory factor analysis. The extracted factors were analyzed in terms of their reliability, meaning, and usefulness as contributors to the instrument. Results of the factor analysis revealed that five factors accounted for most of the test variance. The content of factors identified included (a) Ambitious, (b) Self-control, (c) Organization, (d) Enthusiasm, and (e) Conscientiousness. These five factors accounted for 76.3 percent of the instrument's variance (Petty, Brauchle, & Morgan, 1983, p. 605). Tests for reliability of the instrument sub-scales revealed a Kuder-Richardson formula 20 estimate of from .64 to

.89 respectively. The results were considered "...within the range normally considered acceptable for instruments in development" (Petty, Brauchle, & Morgan, 1983, p. 607).

To provide discrimination between the dimensions of the work ethic measured by the subsequent OWEI instrument, and to establish content and face validity, initial subscales were developed using a content analysis procedure and another panel of subject-matter experts similar to those used by Kazanas (1978). The panel of subject-matter experts was made up of experts and practitioners in the fields of human resource development, training, vocational education, and languages. Single word or simple two-word item statement descriptors selected were independently categorized and recategorized by panel participants until consensus was reached (Petty, 1991a). The resulting clusters of subscales or factors were identified and labeled as Dependable, Ambitious, Considerate, and Cooperative (see Appendix C). At the beginning of the instrument a stem of "At work I can describe myself as:" was added to direct the participant to their responses. Content and face validity were verified by the panel of subject-matter experts. Aiken (1985) noted that content validity was judged by the subject-matter experts.

The development OWEI instrument was found to be highly consistent internally. The OWEI achieved a SAS® 89 (SAS Institute, 1985), Coefficient Alpha of .94 in a pilot study of 135 college students and staff employed in a small four-year liberal arts college in Tennessee. The pilot study was conducted by Hill (1992) during the Fall of 1990 to check internal validity of the OWEI instrument. As a result of this pilot analysis, all of the OWEI items were left intact.

In the present study, a pilot study to check OWEI instrument face and content validity was completed by 30 IBEW-NECA apprenticeship training program participants. Four training directors and 26 instructors were asked to review the instrument for errors,

content validity, ease of use, and face validity. Content validity was defined as the extent to which the instrument measured what it was designed to measure. Participants were asked how well the items appeared to represent the concept of work ethic and how well the items appeared to represent the four sub-scales of Ambitious, Considerate, Cooperative, and Dependable. Face validity was defined as the extent to which the instrument appeared to measure what it purported to measure. The instrument used in the present study was found to be free of errors and to possess face and content validity.

In research conducted by Hill (1992), the OWEI was found to be internally consistent and highly reliable. A correlation Coefficient Alpha of .95 was reported by Hill (1992). Subscale correlation coefficients were calculated using the same data. High reliability was indicated on each of the four factor subscales or theoretical constructs of the instrument. Results indicated Coefficient Alphas for standardized variables ranging from .72 for Cooperative and .75 for Ambitious, to .86 for Dependable and .87 for the subscale Considerate.

Based on a survey of 1,840 employees from 158 industries in Monroe County, Tennessee, and data collected from 2,274 workers from private industry, responses were used to factor analyze the OWEI items. During the summer of 1993, and using SAS® statistical software (SAS Institute, 1985), operating on a mainframe VAX/VMS system at the University of Tennessee-Knoxville, a principle factor analysis was performed on the OWEI data identified in Hill's (1992) and Petty's (1993a, 1993b) studies. Data were subjected to a principle factor analysis used with the promax method of rotation. The principle factor analysis was the most efficient method of common factor analysis (SAS Institute, 1985). The promax rotation had the advantage of providing both orthogonal and oblique rotations (SAS Institute, 1985).

Several previous work ethic studies investigated the existence of underlying work

ethic or work value constructs by using factor analytic procedures (Riedlinger, 1990; Super, 1973; Wayne, 1984; Furnham, 1983). Given the large array of correlation coefficients for the set of variables in the present study, factor analysis enabled the researcher to determine whether underlying patterns of mathematical relationships existed that were similar to the subscales identified by the semantic method. These relationships were such that data could be reduced to a subset of factors or components that accounted for a great deal of the observed interrelations in the data being studied. Factor analysis helped to ensure that the underlying construct of what was being sought was, in fact, what was being measured. Kachigan (1982) noted that by clustering a large number of variables into factors, data can be simplified, and consequently the researcher could gain insight into the construct or subject matter. Gorsuch (1983) stated that factor analysis summarizes interrelationships among variables as an aid in conceptualization (p. 2).

Results of the correlation coefficient and factor analysis revealed that the OWEI instrument's 50 items and four subscales did not load on multiple factors, but loaded on one factor. This indicated that the instrument was highly internally consistent and reliable and that the item content of the four subscales used as dependent variables in the present study could be retained for research purposes. Permission to use the OWEI for purposes of the present study was granted to the researcher by Dr. Gregory C. Petty in April, 1993.

The OWEI instrument used in the current study was divided into three segments. The first segment introduced the purpose of the survey and assured participants of confidentiality. The second segment included directions for use and participant perceived work ethics responses. The third segment obtained demographic information on participants; it was modified from the original instrument.

Data from the second segment of the OWEI was treated as interval data.

Responses given were on a scale from one to seven representing never to always, respectively. Nunnally (1967) reported that there was an advantage in improved reliability of scales with using more rather than fewer steps. Additionally, he suggested that as the number of steps increased from two up through 20, the increase in reliability "...tends to level off at about 7" (p. 521).

Although there was some disagreement as to whether the Likert-type scale yields interval or ordinal level data (Gardner, 1975), interval level data was appropriate for this instrument. Instrument measurement levels used for most social science research fall between ordinal and interval level data and are referred to as "ordered metric". The relative distances between categories are known but their absolute magnitude was difficult to measure (Nie, Hull, Jenkins, Steinbrenner & Brent, 1970). Many of the work ethic and work attitude survey studies referenced in the present study's review of related literature used scaled responses with interval level data. Labovitz (1970) noted that the use of powerful multivariate statistics tended to offset the small error resulting in treating ordinal variables as interval.

Data from the third and final segment of the OWEI survey instrument was also treated as interval data. According to Nunnally (1978), attitude surveys should contain non-scaled items used to collect demographic information relevant to the study. Demographic information obtained from respondents included occupation (job title), job specification, year participating or teaching in the apprenticeship program, and years of full-time work experience.

Based on a preliminary review of related work ethic instruments, the OWEI appeared to have the advantages of (a) being the only available instrument that measured occupational work ethic as opposed to Protestant, Puritan, or other work ethic; (b) measuring attitudes toward work and work values (occupational work ethic) by the use of

simple one-word descriptors; (c) being easy to understand and administer, quick to complete, and suited for use by the targeted population of this study; and, (d) providing the needed discrimination of work ethic qualities through the four OWEI subscales.

Other instruments for measuring work ethic included the Mirels and Garrett (1971) Protestant Ethic Scale, Buchholz' (1974) study evaluating beliefs about work, Cherrington's (1980) 191-item work ethic instrument, and more recently, an instrument developed to measure adherence to the Protestant ethic and contemporary work values developed by Franklin Wayne (1984). Each of these instruments was used to measure the Protestant work ethic in educational or business-oriented settings and was administered primarily to white-collar participants in office settings. The OWEI was developed to measure occupationally-oriented work ethic and had been used to measure the occupational work ethics of blue-collar workers in various industrial settings.

Independent Variables

The independent variables under study were the demographics obtained in the OWEI. The various levels of demographics were as follows: Occupation had two levels or job titles: (a) apprentice, and (b) instructor. Job specialization had three levels: (a) construction electrician, (b) wireman, or (c) residential electrician. Year participating in or teaching in the apprenticeship training program had five levels: (a) year one, (b) year two, (c) year three, (d) year four, and (e) year five. The levels for years of full-time work experience were determined by the frequency distributions of responses and included: (a) zero to five years of experience, (b) six to 10 years, (c) 11 to 15 years, (d) 16 to 20 years, and (e) over 21 years of full-time work experience. Demographics used in the current study were those independent variables identified as statistically significant

in the review of related literature.

Dependent Variables

Dependent variables for this study consisted of the four dimensions of occupational work ethic of the OWEI survey instrument. The four factors were developed by a panel of experts using a semantic differential method and were verified as reliable by a correlation coefficient and factor analysis procedure. These factors represented the subscales of the OWEI instrument. The subscale dependent variables were Dependable, Ambitious, Considerate, and Cooperative.

Data Collection Procedures

Permission to conduct the current study within the International Brotherhood of Electrical Workers union was granted in writing from the Executive Director of the National Joint Apprenticeship and Training Committee (NJATC), (See Appendix D). An announcement notifying each geographic district of the coming research survey was made to district training directors during the NJATC's annual training directors' conference held in Portland, Oregon on June 28-30, 1993. Appendix E shows the explanation and request for assistance used as a script by the NJATC Executive Director during the conference.

A letter notifying local training directors of the up-coming survey (with one copy of the survey instrument) was sent two weeks prior to the mail-out of the survey packets and is provided in Appendix F. OWEI survey instruments were then sent to union locals as part of a packet. Contents of each survey packet included: (a) a letter of endorsement

for the study from the Executive Director of the National Joint Apprenticeship and Training Committee and the researcher (see Appendix G), (b) a letter of introduction and thanks from the researcher (see Appendix H), (c) instructions for administration of the OWEI instrument (see Appendix I), (c) blank OWEI instruments, and (d) self-addressed and stamped envelopes for survey returns.

To assure an adequate response rate insuring a 95% confidence level, follow-up activities for the present study included an announcement of the up-coming survey made to approximately 600 IBEW-NECA apprentice instructors and training directors participating in the IBEW-NECA Instructor Training Institute held at the University of Tennessee-Knoxville, August 7-13, 1993. Appendix J shows the explanation and request for assistance used as a script by the researcher during the general assembly meeting; Follow-up letters mailed within one week of the survey due date to non-respondent locals (see Appendix K); Within two weeks of follow-up letter mail-outs, telephone calls to non-respondent locals were made (see Appendix L for the script of telephone follow-ups).

Data Analysis

Descriptive analyses were used on data from the demographic portion (section 3) of the OWEI instrument. The analyses included (a) frequency counts of dependent and independent variables, and (b) mean scores and standard deviations for dependent variables classified by each independent variable. Inferential statistics referenced herein were used to analyze the data from section two and section three of the OWEI survey. The following seven hypotheses were tested using the referenced statistical treatments. All statistical calculations were performed using SAS® statistical software (SAS Institute

1985), operating on a mainframe VMS/VAX system at the University of Tennessee-Knoxville.

Ho₁: There will be no significant differences in the work ethic, as measured by the OWEI survey instrument, among apprentices and instructors with different occupations (job titles).

To test null hypothesis number one, a factorial multivariate analysis of variance (MANOVA) was used to compare the means of apprentices and instructors on scores from the dependent variables (OWEI subscales scores). Partial correlation coefficients for the OWEI inventory subscales or factors verified from the factor analysis were calculated prior to deciding whether a factorial multivariate analysis of variance was appropriate for use in testing null hypothesis number one. This partial correlation was calculated to provide assurance that the dependent variables were significantly correlated. Prior to calculation of the factorial multivariate analysis of variance test, scatter plots were calculated to assure linearity. If there was a question concerning data linearity, a homogeneity of variance test was calculated.

Ho₂: There will be no significant differences in the work ethic, as measured by OWEI, among apprentices and instructors with different job specializations.

To test null hypothesis number two, a factorial multivariate analysis of variance was used to compare the means of apprentices and instructors on scores from the OWEI subscale dependent variables. To provide assurance that the dependent variables were significantly correlated, partial correlation coefficients for the OWEI inventory subscales or factors were calculated prior to deciding whether a factorial multivariate analysis of variance was appropriate for use in testing null hypothesis two. Linearity of data was assured prior to calculation of the factorial multivariate analysis of variance test.

Pearson's product moment correlation coefficient was calculated for the following

null hypothesis number three:

Ho₃: The years of full-time work experience are independent of apprentices' and instructors' perceived work ethic.

Pearson's product moment correlation coefficient was chosen as the statistic for null hypothesis number three because of its ability to identify the extent of the relationship between two variables. Pearson's product moment correlation coefficient, or simply the correlation coefficient, finds application in the widest range of data analysis problems (Kachigan, 1982, p. 127). The correlation coefficient was interpreted to test a hypothesized relationship at a specified level of probability. Gay (1987) noted that statistical significance refers to whether the obtained correlation coefficient is different from zero and reflects a true relationship, not a chance relationship.

Ho₄: There will be no significant differences in the work ethic, as measured by the OWEI, among apprentices and instructors categorized by years of full-time work experience.

To test null hypothesis number four, a MANOVA was used to compare the means of apprentices and instructors as categorized by years of full-time work experience on scores from the OWEI survey instrument dependent variables. To provide assurance that the dependent variables were significantly correlated, partial correlation coefficients for the instrument's subscales or factors were calculated prior to deciding whether a MANOVA was appropriate for use in testing null hypothesis number four. Linearity of data was assured prior to calculation of the MANOVA test.

Ho₅: There will be no significant differences in the work ethic, as measured by the OWEI survey instrument, among apprentices and instructors categorized by year participating in or teaching in the apprenticeship training program.

A multivariate analysis of variance was used to test null hypothesis number five.

The MANOVA was used to compare the means of apprentices and instructors as categorized by year participating in the program or year teaching in the apprenticeship training program based on scores from the OWEI survey instrument's dependent variables. To provide assurance that the dependent variables were significantly correlated, partial correlation coefficients for the instrument's subscales or factors were calculated prior to deciding whether a MANOVA was appropriate for use in testing null hypothesis five. Linearity of data was assured prior to calculation of the multivariate analysis of variance test.

Ho₆: There will be no interaction among the independent variables of occupation (job titles) and job specialization, years participating in or teaching in the apprenticeship program, and years of full-time work experience as measured by the OWEI.

To test null hypothesis number six, a MANOVA test was used to compare the interaction of means of scores from the dependent variables (OWEI subscales scores) on each of the independent variables. Kachigan (1982) noted that whenever the effect of two or more predictor variables on criterion variables is measured, possible interaction effects may occur.

Partial correlation coefficients for the OWEI subscales previously calculated indicated whether a factorial multivariate analysis of variance was appropriate for use in testing null hypothesis number six. Again, this partial correlation was calculated to provide assurance that the dependent variables were significantly correlated. Linearity had been previously assured by the results of the MANOVA test of each independent variable.

Ho₇: There will be no significant differences in the work ethic of apprentices participating in years three, four, and five (later years) and instructors teaching in years three, four, and five (later years) of the apprenticeship training program compared with

the work ethic of those apprentices and instructors participating or teaching in the first two years (early years) of the apprenticeship training program.

A multivariate analysis of variance was used to test null hypothesis number seven. The MANOVA F-value for each dependent variable was used to compare the work ethic of apprentices and instructors participating or teaching in the later years of the apprenticeship training program as compared with the work ethic of those apprentices and instructors participating or teaching in the early years of the apprenticeship training program. To provide assurance that the dependent variables were significantly correlated, partial correlation coefficients for the instrument's subscales or factors were calculated prior to deciding whether a MANOVA was appropriate for use in testing null hypothesis number seven. Again, linearity of data was assured prior to calculation of the multivariate analysis of variance (MANOVA) test.

Partial correlation coefficients for the four OWEI survey instrument subscales or factors were calculated prior to deciding whether a factorial multivariate analysis of variance was appropriate for use in testing the null hypotheses one, two, four, five, six, and seven. This partial correlation was calculated to provide assurance that the dependent variables were significantly correlated. The MANOVA test was used to test the first, second, fourth, fifth, sixth, and seventh null hypotheses. Pearson's product moment correlation coefficients were used to test relationships between variables for null hypothesis number three.

Independent variables were tested to determine whether significant differences can be shown for the dependent variables using the scores based on OWEI survey subscale responses. Generally speaking, analysis of variance was performed according to the specifications of Campbell and Stanley (1966) for an ex post facto design or the causal-comparative method as described by Isaac and Michael (1980). Causal-comparative

research was ex post facto in nature since data were collected after all events to be investigated or measured had occurred. The data for the dependent variables were then examined by analyzing relationships, causes, and their meanings. Since this study was measuring perceived work ethic that has already occurred, this study fit the ex post facto design. Isaac and Michael's (1980) causal-comparative design was used primarily for investigating causal relationships among subscales that could not be manipulated experimentally. Unless the applicable statistical software package suggested a smaller confidence level for a particular test a confidence level of .05 was used to determine any significant differences among the groups.

The multivariate analysis of variance was chosen as the statistic because it was a generalization of analysis of variance in which there are several dependent variables. By assessing several dependent variables instead of just one, it was possible to improve the chance of discovering changes produced by various treatments and interactions. An advantage of using MANOVA rather than several univariate analyses of variance (ANOVA) results was to protect against a Type I error when two-tailed tests of significance are used. Another advantage to MANOVA was that it may have revealed differences not shown in an ANOVA because the dependent variables were considered in combination and thus may be more powerful than separate ANOVAs (Monroe, 1989). A MANOVA test was used to investigate interaction of variables. Simply looking at the overall main effects may have lead to generalizations that were misleading or even incorrect.

Multivariate procedures indicating significant differences in the dependent variables required a univariate analysis of variance procedure to determine significant differences for the various levels of the applicable independent variable. Univariate analysis of variance was used to compare more than two groups in terms of mean scores

(Huck, Cormier, & Bounds, 1974). For the independent variable of occupation, with only two levels, the F-value data was sufficient to identify mean subscale scores which were significant. The F-value was sufficient to identify mean differences in null hypothesis seven since the independent variable had only two levels.

When significant differences were found, and since the significant F-ratio by itself did not indicate which of the group means were significantly different from the others (Huck, Cormier, & Bounds, 1974), a specific multiple comparison follow-up or post hoc procedure was used to determine which mean scores were significantly different from others. In the present study Fisher's Least Significant Difference (LSD) was used to identify which mean scores of independent variables with more than two levels were significantly different from others. Fisher's LSD was chosen because it is the most liberal of the common post hoc follow-up techniques. That is, it will find a significant difference between two means, even if they are relatively close together (Huck, Cormier, & Bounds, 1974). Additionally, Bernstein (1988) noted that Fisher's LSD was designed to control for pairwise alpha rate.

CHAPTER IV

ANALYSIS OF DATA AND RESULTS

The purpose of this study was to determine if there were significant differences in the work ethic of apprentices and instructors participating in the five year national apprenticeship training program sponsored by the International Brotherhood of Electrical Workers (IBEW) and the National Electrical Contractors Association (NECA). The study also sought to determine if there was any relationship between full-time work experience and the perceived work ethic of apprentices and instructors participating in the same five-year national apprenticeship training program. Results of this study as determined by a survey process are presented in this chapter.

Responses

A total of 4,489 OWEI survey instruments were mailed to a random sample of 39 International Brotherhood of Electrical Worker union locals throughout the U.S. representing the total apprenticeship program population of 24,750 apprentices and instructors. This population included 1,250 instructors. A total of 4,046 instruments were returned yielding an overall response rate of 90.1%.

Of the 4,046 survey instruments returned, 4,028 were usable giving a response rate of 89.7%. Of the survey instruments returned, 3,822 (85.1%) were from apprentices and 224 (5.0%) survey instruments were from instructors. Apprentices returned 3,810 usable instruments (84.9%) and instructors returned 218 (4.9%). Table 3 identifies response rates of participating union locals by districts. The overall response

Table 3

Responses of Participating Union Locals by District

District	Union local ^a	Random no. ^b	No. avail. ^c	No. resp. ^d	Percent
2	103	12	313	282	90
	99	56	60	42	70
	488	30	34	34	100
3	5	146	280	250	89
	439	77	90	80	89
	313	21	70	62	89
	712	49	54	50	93
	166	4	49	46	94
	438	75	49	49	100
	724	121	55	55	100
	380	39	85	79	93
	501	40	120	115	96
4	683	66	140	123	88
	82	111	87	83	95
	307	51	35	31	89
5	613	119	400	361	90
	323	148	71	64	90
	995	18	41	37	90
	915	133	114	92	81
6	110	142	163	154	94
	176	69	150	150	100
	16	3	90	85	94
	153	177	108	101	94
7	640	38	116	116	100
	584	19	36	29	81
	1141	136	95	93	98
8	68	115	320	240	75
	345	161	128	123	96
	291	91	65	63	97
	449	153	39	33	85
	1114	159	20	nre	nre

Table 3 (Continued)

District	Union local ^a	Random no. ^b	No. avail. ^c	No.resp. ^d	Percent
9	441	67	150	138	92
	280	7	108	102	94
	428	144	58	52	91
	659	181	37	31	84
11	124	17	218	191	88
	22	150	96	95	99
12	429	196	160	149	93
	175	20	185	166	90
Totals			4489	4046	90

^aUnion local number

^bRandom number assigned to union local

^cApproximate number of participants available at time of survey

^dTotal number of responses received from each union local

^eNonresponding union local

rate was improved by several union locals with large numbers of apprentices and instructors responding with a 100% response rate. A total of 26 (66.7%) of the 39 sampled union locals had a response rate of at least 90%. The overall mean of the response rates by participating union local was 90%. See Table 3 for percentages of responses for individual union locals.

Research Question One

The first research question of this study asked whether there was a difference in work ethic among apprenticeship training program participants categorized by occupation (job title).

In order to answer research question one, the respondents were asked to provide demographic data in section three of the survey instrument which included an identification of occupation (job title) as either apprentice or instructor. Of the 4,046 survey instruments returned, 4,028 (99.5%) were completed for this demographic item. A total of 3,994 (98.7%) responses were usable. Responses of the remaining 34 survey instruments were illegible and not usable.

A total of 3,822 respondents (85.1%) indicated participation in the IBEW-NECA apprenticeship training program as apprentices. A total of 3,783 responses were completed by apprentices and verified as usable for this survey item. This was 99.3% of the 3,810 completed apprentice responses. Of the 218 completed instruments from instructors responding to the survey, 211 were usable for this item. This was 94.2% of the 224 instruments returned from instructors. Table 4 shows frequency counts and percentages for all participant responses broken down by occupation (job title).

Table 4

Frequency Count of Total Respondents by Occupation (Job Title)

Occupation	Frequency ^a	Percent ^b
Apprentice	3822	85.1
Instructor	211	5.3

^aTotal frequency missing = 34

^bPercent of usable responses

Null Hypothesis One

Ho₁: There will be no significant differences in the work ethic, as measured by the OWEI survey instrument, among apprentices and instructors with different occupations (job titles).

A multivariate analysis of variance (MANOVA) was performed to determine if there was a significant difference in the perceived work ethic as measured by the OWEI among participants with different occupations (job titles). To verify that a multivariate analysis of variance procedure would be appropriate to examine potential differences in perceived work ethic between occupational groups, partial correlation coefficients were computed on the four OWEI survey instrument subscale scores (see Table 5). Each correlation had a strong positive correlation and a probability level of .0001, indicating that a significant interrelationship existed among the four dependent variables.

A multivariate analysis of variance using the Hotelling-Lawley Trace statistical procedure was used to test null hypothesis number one. Hotelling-Lawley Trace criterion is a MANOVA test that uses all the characteristic roots that can be found in a set of data (Larrabee, 1982). This procedure was necessary in order to test null hypothesis one for research question one prior to proceeding with a univariate analysis of variance. The Hotelling-Lawley Trace was one of several general omnibus statistics for testing multivariate null hypotheses. Others included Wilks lambda, Roy's largest root criteria, and Pillai's Trace. Hotelling-Lawley Trace was used when variables were diffuse, i.e. when differences among groups were spread among two or more dimensions (Bernstein, 1988).

Results of the multivariate analysis showing a significant difference indicated that a univariate comparison was required. According to Larrabee (1982), follow-up analyses

Table 5

**Partial Correlation Coefficients of Four OWEI Subscales for Variable of
Occupation (Job Title)**

	1 ^a	2	3	4
1 ^a	1.000	.724*	.703*	.707*
2		1.000	.586*	.621*
3			1.000	.699*
4				1.000

^aOWEI subscales were (1) Ambitious, (2) Considerate, (3) Cooperative, and
(4) Dependable

*p < .05

are required when a significant MANOVA omnibus statistic is obtained. The results of the multivariate procedure for null hypothesis one indicated a multivariate F-value for group comparison on the independent variable of occupation for 4 and 4005 degrees of freedom was 20.285 as shown in Table 6. This value was significant at the .05 level of significance so null hypothesis one (H_{01}) was rejected. Based on these results, a univariate comparison was completed to examine group responses for each of the four OWEI subscales referenced as dependent variables.

A univariate analysis of variance for significant differences in responses for each of the four OWEI subscales was performed by the independent variable of occupation (see Table 7). Occupational groups by job title (apprentices and instructors) differed for each of the following subscales of the work ethic survey: (a) Dependable with $F = 4.45$ and $PR > F = .0349$, (b) Ambitious with $F = 21.81$ and $PR > F = .0001$, and (c) Cooperative with $F = 8.03$ and $PR > F = .0046$. The univariate F-value for the subscale identified as Considerate was $F = .93$ with $PR > F = .3343$. The dimension of Considerate for the independent variable of occupation did not meet the established level of significance for this study.

Mean subscale scores and standard deviations for respondents grouped by occupation (job title) are shown in Table 8. Since the F-values for three of the four subscales were found to be significant by the univariate analysis of variance and the independent variable of occupation had only two levels, the subscale dimensions of Dependable, Ambitious, and Cooperative had higher mean values significantly greater than the lower values. For the subscales of Dependable and Ambitious, instructors scored significantly higher than apprentices. For the subscale dimension of Cooperative, apprentices had a higher significant mean value than instructors.

Table 6

**Multivariate Analysis of Variance for Mean Scores of Respondents Classified
by Occupation (Job Title)**

	Hotelling- Lawley Trace	df	F	PR > F
Occupation	.02026	4, 4005	20.285*	.0001

*p < .05

Table 7**Univariate Analyses of Variance for OWEI Subscales for Variable of Occupation (Job Title)**

Source	df	SS	F	PR > F
Dependable	1	1076.118	4.45*	.0349
Ambitious	1	1182.541	21.81*	.0001
Considerate	1	1558.357	.93	.3343
Cooperative	1	1355.759	8.03*	.0046

* $p < .05$

Table 8**OWEI Subscale Means and Standard Deviations for Variable of Occupation**
(Job Title)

Variable	n ^a	Mean	SD
Dependable*			
Instructor ^b	212	6.074	.556
Apprentice	3799	5.997	.516
Ambitious*			
Instructor	212	5.904	.574
Apprentice	3799	5.726	.539
Considerate			
Apprentice	3799	5.856	.625
Instructor	212	5.814	.602
Cooperative*			
Apprentice	3799	5.846	.581
Instructor	212	5.730	.585

^aTotal n = 4011 Total missing values = 17

^bInstructor and apprentice in order of mean score

*Significant $p < .05$

Research Question Two

The second research question addressed by this study asked if the work ethic differed among apprentices and instructors categorized by job specialization.

Respondents were asked to provide demographic data in section three of the survey instrument which included an identification of job specialization as either construction electrician, residential electrician, or wireman. Of the 4,046 survey instruments returned, 4018 (99.3%) were completed and usable for this demographic item.

A total of 463 (12.2%) apprentices reported job specialization as residential electrician. A total of 1,072 apprentices identified their job specialization as wireman. This was 28.3% of the 3,783 apprentice responses. Of the 3783 responses 2,248 (59.4%) apprentices reported their job specialization as construction electrician. A total of 62 (29.4%) instructors reported job specialization as wireman. Of the 211 instructor responses, 15 (7.1%) instructors identified their job specialization as residential electrician. Most instructors, a total of 134 (63.5%), reported their job specialization as construction electrician. Table 9 shows frequency counts for all participant responses by job specialization (construction electrician, residential electrician, or wireman).

Null Hypothesis Two

H₀₂: There will be no significant differences in the work ethic, as measured by the OWEI, among apprentices and instructors with different job specializations.

The multivariate analysis of variance (MANOVA) was performed to determine if there was a significant difference in the perceived work ethic as measured by the OWEI

Table 9

Frequency Count of Total Respondents by Job Specialization

Job Specialization	Frequency ^a	Percent
Construction electrician	2,382	59.6
Residential electrician	478	12.0
Wireman	1,134	28.4

^aTotal frequency missing = 34

among participants with different job specializations. To verify that a multivariate analysis of variance procedure would be appropriate to examine potential differences in perceived work ethic between job specialization groups, partial correlation coefficients were computed on the four OWEI subscale dimension scores (see Table 10). Each value had a strong positive correlation and a probability level of .0001, indicating that a significant interrelationship existed among the four dependent variables.

A multivariate analysis of variance using the Hotelling-Lawley Trace statistical procedure was used to test null hypothesis two. This procedure was necessary in order to test null hypothesis two for research question two prior to proceeding with a univariate analysis of variance.

Results of the multivariate analysis for null hypothesis two showing a significant difference indicated that a univariate comparison was required. Larrabee (1982) noted that further follow-up analyses are required when a significant MANOVA statistic is obtained. The results of the multivariate procedure for null hypothesis two indicated a multivariate F-value for group comparison on the independent variable of job specialization for 8 and 8002 degrees of freedom was 2.129 as shown in Table 11. This value was significant at the .05 level of significance so null hypothesis two (H_{02}) was rejected. Based on these significant results, a univariate comparison was completed to examine group responses for each of the four OWEI subscales.

A univariate analysis of variance for significant differences in responses for each of the four OWEI subscales was performed by job specialization levels (see Table 12). Job specialization by levels (construction electrician, residential electrician, wireman) differed for each of the following two subscales of the work ethic survey: (a) Dependable with $F = 3.40$ and $PR > F = .0333$, and (b) Ambitious with $F = 4.03$ and $PR > F = .0178$. The univariate F-value for the subscale of Considerate was $F = .11$ with

Table 10

**Partial Correlation Coefficients of Four OWEI Subscales for Variable of Job
Specialization**

	1 ^a	2	3	4
1 ^a	1.000	.723*	.701*	.704*
2		1.000	.582*	.614*
3			1.000	.698*
4				1.000

^aOWEI subscales were (1) Ambitious, (2) Considerate, (3) Cooperative, and
(4) Dependable

* $p < .05$

Table 11

**Multivariate Analysis of Variance for Mean Scores of Respondents Classified
by Job Specialization**

	Hotelling- Lawley Trace	df	F	PR > F
Job Specialization	.00425	8, 8002	2.129*	.0299

*p < .05

Table 12**Univariate Analyses of Variance for OWEI Subscales for Variable of Job
Specialization**

Source	df	SS	F	PR > F
Dependable	2	1073.943	3.40*	.0333
Ambitious	2	1174.704	4.03*	.0178
Considerate	2	1552.650	.11	.9833
Cooperative	2	1351.188	1.91	.1482

* $p < .05$

PR > F = .9833. For the subscale of Cooperative, the F-value was F = 1.91 with PR > F = .1482. Subscale dimensions of Considerate and Cooperative for the predictor variable of job specialization did not meet the established level of significance.

Frequencies, mean subscale scores and standard deviations for respondents grouped by job specialization are shown in Table 13. Since the independent variable of job specialization had three different levels used to group respondents, a pairwise comparison was computed using Fisher's least significant difference (LSD) procedure to determine which means differed significantly for each of the two subscales of the OWEI with significant F-values.

Results of the LSD analysis are reported in summary Table 14. Numbers for each job specialization group are arranged by respective descending mean scores. Common underlines connect groups for which the LSD analysis detected no significant differences. As shown in Table 14, the post hoc tests using Fisher's LSD detected significant differences in mean scores for the dependent variables of Dependable and Ambitious. Mean scores for variables of Considerate and Cooperative were not detected as significant by the LSD procedure. For the variables Dependable and Ambitious, results of the LSD procedure revealed that the mean scores for respondents identifying their job specialization as wireman were significantly higher than for respondents choosing construction electrician.

Table 13**OWEI Subscale Means and Standard Deviations for Variable of Job****Specialization**

Variable	n ^a	Mean	SD
Dependable*			
Wireman	1139	6.026	.491
Construction electrician	2390	5.984	.533
Residential electrician	480	5.740	.525
Ambitious*			
Wireman	1139	6.026	.491
Construction electrician	2390	5.717	.555
Residential electrician	480	5.740	.525
Considerate			
Construction electrician	2390	5.850	.630
Residential electrician	480	5.863	.616
Wireman	1139	5.857	.612
Cooperative			
Construction electrician	2390	5.826	.598
Residential electrician	480	5.847	.562
Wireman	1139	5.867	.551

^aTotal n = 4009 Total missing values = 19

*Significant $p < .05$

Table 14

Fisher's Least Significant Difference^a (LSD) Procedure for Comparisons of OWEI Subscale Means for Variable of Job Specialization

OWEI Subscale	Job Specialization ^b		
Dependable	3	2	1
Ambitious	3	2	1
Considerate ^c			
Cooperative ^c			

^aControlling the Type I comparisonwise error rate at .05 level of significance

^bJob specialization: (1) construction electrician, (2) residential electrician, (3) wireman

^cF-value for this subscale not significant

Research Question Three

Research question three asked if the years of full-time work experience were independent of apprentices' and instructors' perceived work ethic.

As part of the demographic data in section three of the survey instrument, respondents were asked to identify the number of years of full-time work experience that they had completed at the time of the survey. The range of all responses was reported as zero to 57 years of full-time work experience. The mean years of full-time work experience for apprentices was 4.65 and the mean years of full-time work experience for instructors was 20.95. Of the 4,046 survey instruments returned, 3,994 (98.6%) were completed and usable for this demographic item.

Null Hypothesis Three

H₀₃: The years of full-time work experience is independent of apprentices' and instructors' perceived work ethic.

The Pearson product-moment correlation coefficient was performed to determine if there was a relationship between years of full-time work experience and respondent's work ethic. To verify that a Pearson product-moment correlation coefficient procedure would be appropriate to examine potential relationships in perceived work ethic between full-time work experience groups, the key assumptions for linearity, randomization, and normal distribution were confirmed. Potential differences in perceived work ethic between full-time work experience groups were computed on the four OWEI subscale dimension scores (see Table 15). For the predictor variable of Dependable, a Pearson product-moment correlation coefficient of .04 and a level of significance of $p = .006$ were

Table 15

Summary of Correlations for Years of Full-Time Work Experience and OWEI

Subscale Scores

	^a WrkExp	^b (1)	(2)	(3)	(4)
WrkExp	1.0000	.04 c(.006*)	.10 (.0001*)	-.02 (.0246*)	-.03 (.0267*)
(1)		1.0000	.72	.70	.70
(2)			1.0000	.58	.61
(3)				1.0000	.70
(4)					1.0000

^aYears of full-time work experience

^bOWEI subscales were (1) Ambitious, (2) Considerate, (3) Cooperative, and

(4) Dependable

^cValues in parentheses indicate significance levels

* $p < .05$

reported. For the Ambitious subscale, a correlation coefficient of .10 and a significance of $p = .0001$ was reported. For the variable of Considerate, a Pearson product-moment correlation coefficient of -.02 and a $p = .0246$ level of significance was reported. The Cooperative subscale dimension of the work ethic reported a correlation coefficient of -.03 and a significance of $p = .0267$. According to Gay (1987), statistical significance refers to whether "...the obtained coefficient is really different from zero and reflects a true relationship, not a chance relationship" (p. 233). The findings shown in Table 15 indicated that the correlations between the variable of years of full-time work experience and the four subscales of Dependable, Ambitious, Considerate, and Cooperative were significant ($p > .05$); thus, null hypothesis three (H_{03}) was rejected.

Research Question Four

The fourth research question addressed by this study asked if the work ethic differed among apprentices and instructors categorized by years of full-time work experience.

Demographic data in section three of the survey instrument included identification of the number of years of full-time work experience a respondent had completed at the time of the survey. The range of responses was reported as zero to 57 years of full-time work experience. Full-time work experience included non-electrician work experience. The mean years of full-time work experience was 4.65 for apprentices and 20.95 for instructors. Years of full-time work experience were categorized by the following intervals: (a) zero to five years, (b) six to ten years, (c) 11 to 15 years, (d) 16 to 20 years, and (e) more than 21 years of full-time work experience. Of the 4,046 survey instruments returned, 3,994 (98.7%) were completed for this demographic item.

A total of 2,821 apprentices reported that they had from zero to five years of full-time work experience. This was 74.6% of the 3783 total apprentice responses. A total of 663 (17.5%) apprentices reported that they had six to ten years of full-time work experience. Of the 3783 responses, 181 (4.8%) apprentices reported that they had from 11 to 15 years of full-time work experience. A total of 68 (1.8%) apprentices had from 16 to 20 years of work experience and a total of 50 (1.3%) apprentices reported they had over 21 years of full-time work experience. Of the 211 instructor responses, five (2.4%) had from zero to five years of full-time work experience, 32 (15.2%) had six to ten years, 32 (15.2%) had 11 to 15 years, and 35 (16.6%) had 16 to 20 years of full-time work experience. Over half of the responding instructors reported that they had over 21 years (group five) of full-time work experience. A total of 107 (50.7%) instructors identified with group five. Table 16 provides frequency counts for research participants responding by years of full-time work experience.

Null Hypothesis Four

Ho₄: There will be no significant differences in the work ethic, as measured by the OWEI, among apprentices and instructors categorized by years of full-time work experience.

To determine if there was a significant difference in the perceived work ethic as measured by the OWEI among participants with different levels of full-time work experience, the multivariate analysis of variance (MANOVA) was performed. To verify that a multivariate analysis of variance procedure would be appropriate to examine potential differences in perceived work ethic between full-time work experience groups, partial correlation coefficients were computed on the four OWEI subscale dimension

Table 16

Frequency Count of Total Respondents by Years of Full-Time Work

Experience^a

Years of full-time work experience	Frequency	Percent
0 - 5	2826	70.8
6 - 10	695	17.4
11 - 15	213	5.3
16 - 20	103	2.6
> 21	157	3.9

^aTotal frequency missing = 0

scores (see Table 17). The resulting values showed strong positive correlations, indicating that a significant interrelationship existed among the four dependent variables, and supported proceeding with the multivariate analysis.

A multivariate analysis of variance using the Hotelling-Lawley Trace statistical procedure was used to test null hypothesis four. Hotelling's Trace criterion was necessary in order to test null hypothesis four for research question four prior to proceeding with a univariate analysis of variance. Results of the multivariate analysis showing a significant difference supported the calculation of a univariate comparison. Larrabee (1982) noted that posteriori analyses are required when a significant MANOVA omnibus statistic is obtained.

The results of the multivariate procedure indicated a multivariate F-value for group comparison on the independent variable of years of full-time work experience for 20 and 16,066 degrees of freedom of 7.166 as shown in Table 18. This value was significant at the .05 level of significance, so null hypothesis four (H_{04}) was rejected and univariate tests were completed to determine differences in the work ethic among respondent groups with different levels of full-time work experience.

A univariate analysis of variance for significant differences produced significant F-values for each of the four OWEI subscales (see Table 19). Years of full-time work experience by levels (zero to five years, six to ten years, 11 to 15 years, 16 to 20 years, and more than 21 years of full-time work experience) differed for all four of the subscales of the work ethic survey: (a) Dependable with $F = 6.39$ and $PR > F = .0001$, (b) Ambitious with $F = 10.52$ and $PR > F = .0001$, (c) Considerate with $F = 2.73$ and $PR > F = .0181$, and (d) Cooperative with $F = 3.05$ and $PR > F = .0094$.

Frequencies, mean scores and standard deviations for respondents grouped by levels of full-time work experience are shown in Table 20. Since the variable of years of

Table 17

**Partial Correlation Coefficients of Four OWEI Subscales for Variable of
Years of Full-Time Work Experience**

	1 ^a	2	3	4
1 ^a	1.000	.723*	.702*	.707*
2		1.000	.586*	.619*
3			1.000	.697*
4				1.000

^aOWEI subscales were (1) Ambitious, (2) Considerate, (3) Cooperative, and
(4) Dependable

* $p < .05$

Table 18

**Multivariate Analysis of Variance for Mean Scores of Respondents Classified
by Years of Full-Time Work Experience**

	Hotelling- Lawley Trace	df	F	PR > F
Years of Full-Time Work Experience	.03568	20,16066	7.166*	.0001

*p < .05

Table 19**Univariate Analyses of Variance for OWEI Subscales for Variable of Years of Full-Time Work Experience**

Source	df	SS	F	PR > F
Dependable	5	1079.961	6.39*	.0001
Ambitious	5	1184.754	10.52*	.0001
Considerate	5	1561.781	2.73*	.0181
Cooperative	5	1360.594	3.05*	.0094

* $p < .05$

Table 20**OWEI Subscale Means and Standard Deviations for Variable of Years of Full-Time Work Experience**

Variable	n ^a	Mean	SD
Dependable*			
0 - 5 years	2826	5.983	.513
6 - 10 years	695	6.016	.518
11 - 15 years	213	6.047	.459
16 - 20 years	103	5.983	.674
> 21 years	157	6.139	.540
Ambitious*			
0 - 5 years	2826	5.699	.533
6 - 10 years	695	5.774	.560
11 - 15 years	213	5.836	.483
16 - 20 years	103	5.876	.592
> 21 years	157	5.916	.592
Considerate*			
0 - 5 years	2826	5.854	.617
6 - 10 years	695	5.825	.649
11 - 15 years	213	5.833	.589
16 - 20 years	106	5.883	.681
> 21 years	157	5.870	.626

Table 20 (Continued)

Variable	n ^a	Mean	SD
Cooperative*			
0 - 5 years	2826	5.844	.574
6 - 10 years	695	5.817	.607
11 - 15 years	213	5.808	.560
16 - 20 years	106	5.840	.652
> 21 years	157	5.815	.572

^aTotal n = 3994 Total missing values = 34

*Significant $p < .05$

full-time work experience had five different levels used to group respondents, a pairwise comparison was computed using Fisher's LSD procedure to determine which population means differed significantly for each of the four subscales of the OWEI.

The LSD analysis reported in summary Table 21 indicated that respondents who had five or less years of full-time work experience scored significantly higher than all other levels of work experience for the work ethic dimensions of Dependable, Considerate, and Cooperative. For the work ethic dimensions of Dependable and Ambitious, respondents with over 21 years of full-time work experience scored significantly higher than those who had from zero to five years and those with from six to ten years work experience. For the work ethic dimension of Dependable, respondents with over 21 years of full-time work experience scored significantly higher than those who had 16 to 20 years of experience. Respondents reporting from 16 to 20 years of full-time work experience scored significantly higher than those who had five or less years of work experience for the work ethic subscale dimension of Ambitious. Numbers for each work experience group are arranged by respective descending mean scores. Common underlines connect mean score groups for which the LSD analysis detected no significant differences.

Table 21

Fisher's Least Significant Difference^a (LSD) Procedure for Comparisons of OWEI Subscale Means for Variable of Years of Full-Time Work Experience

OWEI subscale	Years of full-time work experience ^b				
Dependable ^c	5	3	4	2	1
Ambitious ^c	1	2	3	4	5
Considerate ^c	4	5	3	2	1
Cooperative ^c	4	2	5	3	1

^aControlling the Type I comparisonwise error rate at .05 level of significance

^bYears of full-time work experience: (1) 0 - 5, (2) 6 - 10, (3) 11 - 15, (4) 16 - 20, (5) > 21

^cF-value for this subscale shown to be significant

Research Question Five

The fifth research question in this study asked if the work ethic differed among apprentices and instructors categorized by year participating or teaching in the apprenticeship training program.

Respondents reported their year of participation in the apprenticeship program or the program year they taught in the demographic data section of the survey instrument. Year in the apprenticeship program was categorized by the following intervals: (a) year one, (b) year two, (c) year three, (d) year four, and (e) year five. Of the 4,046 survey instruments returned, 4,028 (99.6%) were completed for this demographic item.

A total of 791 (20.9%) apprentices out of 3,791 usable apprentice responses reported that they were participating in year one of the apprenticeship program. A total of 789 (20.8%) apprentices were categorized in year two. Of the 3,791 responses, 717 (18.9%) apprentices reported that they were participating in year three. A total of 881 (23.2%) apprentices were in year four of the apprenticeship training program, and 613 (16.2%) apprentices were categorized as participating in year five. Of the 206 total instructor responses, 39 (18.9%) were teaching in the first year of the program. A total of 46 (22.3%) instructors in the second year, 39 (18.9%) in the third year, 48 (23.4%) in the fourth year, and 34 (16.5%) of the responding instructors indicated that they were teaching in the fifth year of the apprenticeship training program. Table 22 provides frequency counts for participants responding by year participating or teaching in the apprenticeship training program.

Table 22**Frequency Count of Respondents by Year Participating or Teaching in
Apprenticeship Training Program**

Year participating or teaching	Frequency ^a	Percent
Year One		
Apprentice	791	20.9
Instructor	39	18.9
Year Two		
Apprentice	789	20.8
Instructor	46	22.3
Year Three		
Apprentice	717	18.9
Instructor	39	18.9
Year Four		
Apprentice	881	23.2
Instructor	48	23.4
Year Five		
Apprentice	613	16.2
Instructor	34	16.5

^aTotal frequency missing = 31

Null Hypothesis Five

H₀₅: There will be no significant differences in the work ethic, as measured by the OWEI survey instrument, among apprentices and instructors categorized by year participating or teaching in the apprenticeship training program.

A multivariate analysis of variance (MANOVA) was performed to determine if there was a significant difference in the perceived work ethic of participants categorized by year participating in the program or year teaching in the apprenticeship training program. To verify that a MANOVA would be an appropriate method to examine potential differences in perceived work ethic between groups, partial correlation coefficients were computed on the four OWEI subscale dimension scores (see Table 23). Computing of the multivariate analyses was confirmed by the resulting strong positive correlations, indicating that a significant interrelationship existed among the four dependent variables.

The Hotelling-Lawley Trace multivariate statistical procedure was used to test null hypothesis five. Hotelling-Lawley Trace criterion was necessary in order to test null hypothesis five for research question five prior to proceeding with a univariate analysis of variance. Results of the multivariate analyses showing a significant difference supported the calculation of a univariate comparison.

The results of the multivariate procedure indicated a multivariate F-value for group comparison on the independent variable of year participating in or teaching in the apprenticeship training program for 16 and 16,010 degrees of freedom was 7.184 as shown in Table 24. This value was significant at the .05 level of significance, so null hypothesis five (H₀₅) was rejected and the univariate analyses were completed to determine differences in the work ethic among respondent groups participating or teaching

Table 23

**Partial Correlation Coefficients of Four OWEI Subscales^a for Variable of
Year Participating or Teaching in Apprenticeship Training Program**

	1 ^a	2	3	4
1 ^a	1.000	.725*	.699*	.703*
2		1.000	.583*	.617*
3			1.000	.694*
4				1.000

^aOWEI subscales were (1) Ambitious, (2) Considerate, (3) Cooperative, and
(4) Dependable

* $p < .05$.

Table 24

**Multivariate Analysis of Variance for Mean Scores of Respondents Classified
by Year Participating or Teaching in Apprenticeship Training Program**

	Hotelling- Lawley Trace	df	F	PR > F
Year participating or teaching in apprenticeship program	.02872	16,16010	7.184*	.0001

*p < .05

participating or teaching in different years of the apprenticeship training program.

Univariate analyses of variance for significant differences produced significant F-values for each of the following OWEI subscale dimensions (see Table 25): (a) Dependable with $F = 7.84$ and $PR > F = .0001$, (b) Considerate with $F = 12.73$ and $PR > F = .0001$, and (c) Cooperative with $F = 20.93$ and $PR > F = .0001$. The F-statistic for the dimension of Ambitious was $F = 1.37$ and $PR > F = .2409$; therefore, this subscale dimension did not meet the established level of significance used in this study.

See Table 26 for respondent frequencies, mean scores and standard deviations for responses grouped by year participating or teaching in the apprenticeship training program. Since the independent variable of year participating or teaching in the apprenticeship training program had five different levels used to group respondents, a pairwise comparison was required and computed using Fisher's LSD procedure to determine which population means differed significantly for each of the four subscales of the OWEI (indicating significant F-values).

The LSD analysis reported in summary Table 27 indicated that respondents who participate or teach in year one of the apprenticeship program scored significantly higher than participants or instructors in years two, three, four, and five for the work ethic dimensions of Dependable, Considerate, and Cooperative. For the work ethic dimension of Considerate, respondents participating or teaching in year two scored significantly higher than those respondents participating or instructing in years three, four, and five. For the work ethic dimension of Cooperative, respondents participating in the program or teaching in the apprenticeship training program in year two scored significantly higher than those respondents participating or instructing in years three, four, and five. Respondents participating or instructing in year three scored significantly higher than those respondents participating or instructing in year five for the work ethic

Table 25

**Univariate Analyses of Variance for OWEI Subscales for Variable of Year
Participating or Teaching in Apprenticeship Training Program**

Source	df	SS	F	PR > F
Dependable	4	1077.758	7.84*	.0001
Ambitious	4	1181.330	1.37	.2409
Considerate	4	1551.942	12.73*	.0001
Cooperative	4	1352.010	20.93*	.0001

* $p < .05$

Table 26**OWEI Subscale Means and Standard Deviations for Variable of Year****Participating or Teaching in Apprenticeship Training Program**

Variable	n ^a	Mean	SD
Dependable*			
year one	830	6.084	.502
year two	835	6.012	.524
year three	756	5.968	.525
year four	929	5.973	.496
year five	647	5.963	.544
Ambitious			
year one	830	5.765	.540
year two	835	5.747	.545
year three	756	5.732	.547
year four	929	5.719	.532
year five	647	5.708	.553
Considerate*			
year one	830	5.969	.593
year two	835	5.888	.608
year three	756	5.814	.645
year four	929	5.810	.615
year five	647	5.771	.636

Table 26 (Continued)

Variable	n ^a	Mean	SD
Cooperative*			
year one	830	5.978	.570
year two	835	5.876	.558
year three	756	5.811	.588
year four	929	5.770	.571
year five	647	5.750	.594

^aTotal n = 3997 Total missing values = 31

*Significant $p < .05$

Table 27

Fisher's Least Significant Difference^a (LSD) Procedure for Comparisons of OWEI Subscale Means for Variable of Year Participating or Teaching in Apprenticeship Training Program

OWEI subscale	Year participating or teaching ^b				
Dependable	5	3	4	2	1
Ambitious ^c					
Considerate	2	5	4	3	1
Cooperative	1	4	3	2	5

^aControlling the Type I comparisonwise error rate at .05 level of significance

^bYear participating or teaching: (1) year one, (2) year two, (3) year three, (4) year four, (5) year five

^cF-value for this subscale not shown to be significant

subscale dimension of Cooperative. Numbers for each year of the apprenticeship program are arranged by respective descending mean scores of each of the four OWEI subscales. Common underlines connect groups for which the LSD analysis detected no significant differences.

Research Question Six

The sixth research question addressed in this study asked if there was an interaction between the independent variables of occupation (job title), job specialization, year participating or teaching in the apprenticeship program, and years of full-time work experience as measured by the OWEI.

The OWEI background information in section three of the inventory included responses to each independent variable: (a) occupation (job title), (b) job specialization, (c) year participating or teaching in the apprenticeship program, and (d) years of full-time work experience. Occupation (job title) had two levels: (a) apprentice, and (b) instructor. Job specialization had three levels: (a) construction electrician, (b) residential electrician, and (c) wireman. Year participating or year teaching in the apprenticeship program had five levels: (a) year one, (b) year two, (c) year three, (d) year four, and (e) year five. Years of full-time work experience had five levels: (a) zero to five years, (b) six to ten years, (c) 11 to 16 years, (d) 16 to 20 years, and (e) over 21 years of full-time work experience. Of the 4,046 total responses, 4,028 (99.5%) were completed for occupation (job title). A total of 3,994 (98.7%) responses were usable for this variable. For the variable of job specialization 4,018 (99.3%) were completed. Years of full-time work experience had a response rate of 98.0%, for a total of 3,994. Of the 4,046 survey instruments returned, 4,012 (99.2%) were completed for the demographic item of year

participating or teaching in the apprenticeship training program. Tables 4, 9, 16, and 22 provide frequency counts and percentages for total research participants and by each independent variable and level.

Null Hypothesis Six

Ho₆: There will be no interaction among the independent variables of occupation (job title) and job specialization, years participating in or teaching in the apprenticeship program, and years of full-time work experience as measured by the OWEI.

The multivariate analysis of variance (MANOVA) was performed to determine if there was an interaction among the independent variables of occupation (job title), job specialization, year participating or teaching in the apprenticeship training program, and years of full-time work experience as measured by the OWEI. To verify that a multivariate analysis of variance procedure would be appropriate to examine interaction effects, partial correlation coefficients were computed on each of the four OWEI subscale dimension scores for each independent variable (see Tables 5, 10, 17, and 23). Each of the resulting values indicated strong positive correlations, indicating that significant interrelationships existed among the four dependent variables for each independent variable. These significant interrelationships supported proceeding with the multivariate analyses.

The results of the multivariate procedure for null hypothesis six reported a multivariate F-value for group comparison on each independent variable and the interaction of variables. Multivariate F-value main effects were reported for each of the four OWEI subscale scores for the variables of occupation (job title), job specialization, and year participating or teaching in the apprenticeship training program. No interaction

effects were reported for the variable of years of full-time work experience.

A multivariate F-value for the subscale dimension of Dependable was reported as $F = 2.36$ and $PR > F = .0001$. This value was considered significant in this study, so univariate tests of interaction were computed. The F-values for the following interactions were reported for the work ethic dimension of Dependable (see Table 28): (a) occupation by job specialization with $F = .25$ and $PR > F = .7761$, (b) occupation by year participating or teaching in the apprenticeship training program with $F = 1.65$ and $PR > F = .1588$, (c) job specialization by year participating or teaching in the apprenticeship training program with $F = .73$ and $PR > F = .6648$, and (d) occupation by job specialization by year participating or teaching in the apprenticeship training program with $F = 1.22$ and $PR > F = .2815$. These interactions did not meet the established level for significant results used in this study.

For the work ethic subscale of Ambitious (see Table 29) the F-values for the following interactions were reported: (a) occupation by job specialization with $F = .50$ and $PR > F = .6072$, (b) occupation by year participating or teaching in the apprenticeship training program with $F = .20$ and $PR > F = .9390$, (c) job specialization by year participating or teaching in the apprenticeship training program with $F = 1.07$ and $PR > F = .3836$, and (d) occupation by job specialization by year participating or teaching in the apprenticeship training program with $F = .79$ and $PR > F = .6077$. These interactions were not significant at the established level for significant results used in this study.

The F-values for the following interactions were reported for the work ethic subscale dimension of Cooperative (see Table 30): (a) occupation by job specialization with $F = .07$ and $PR > F = .9352$, (b) occupation by year participating in the program or year teaching in the apprenticeship training program with $F = .84$ and $PR > F = .4999$, (c) job specialization by year participating in the program or year teaching in the

Table 28**Multivariate Analyses of Variance Summary for OWEI Subscale Dimension of Dependable**

Source	df	SS	F	PR > F
Dependable	3976	1067.227	2.36*	.0001
JobTtl ^a x JobSpec ^b	2	.13468	.25	.7761
JobTtl x Year ^c	4	1.7537	1.65	.1588
JobSpec x Year	8	1.5526	.73	.6648
JobTtl x JobSpec x Year	8	2.5973	1.22	.2815

^aOccupation (Job title)

^bJob Specialization

^cYear participating or teaching in the apprenticeship training program

* $p < .05$

Table 29**Multivariate Analyses of Variance Summary for OWEI Subscale Dimension of Ambitious**

Source	df	SS	F	PR > F
Ambitious	3976	1168.301	2.52*	.0001
JobTtl ^a x JobSpec ^b	2	.02991	.50	.6072
JobTtl x Year ^c	4	.2311	.20	.9390
JobSpec x Year	8	2.4786	1.07	.3836
JobTtl x JobSpec x Year	8	1.8459	.79	.6077

^aOccupation (Job title)

^bJob Specialization

^cYear participating or teaching in the apprenticeship training program

* $p < .05$

Table 30**Multivariate Analyses of Variance Summary for OWEI Subscale Dimension of Cooperative**

Source	df	SS	F	PR > F
Cooperative	3976	1337.830	3.58*	.0001
JobTtl ^a x JobSpec ^b	2	.04423	.07	.9352
JobTtl x Year ^c	4	1.1082	.84	.4999
JobSpec x Year	8	1.3684	.52	.8436
JobTtl x JobSpec x Year	8	1.7865	.68	.7126

^aOccupation (Job title)

^bJob Specialization

^cYear participating or teaching in the apprenticeship training program

* $p < .05$

apprenticeship training program with $F = .52$ and $PR > F = .8436$, and (d) occupation by job specialization by year participating or teaching in the apprenticeship training program with $F = .68$ and $PR > F = .7126$. These interactions did not meet the established level for significant results used in this study.

The F-values for the following interactions were reported for the work ethic subscale dimension of Considerate (see Table 31): (a) occupation by job specialization with $F = .74$ and $PR > F = .4795$, (b) occupation by year participating or teaching in the apprenticeship training program with $F = 1.36$ and $PR > F = .2443$, (c) job specialization by year participating or teaching in the apprenticeship training program with $F = 1.39$ and $PR > F = .1973$, and (d) occupation by job specialization by year participating or teaching in the apprenticeship training program with $F = .83$ and $PR > F = .5744$. These interactions did not meet the established level of significance used in this study.

The multivariate F-values for interaction effects of each of the OWEI subscale dimensions on each of the independent variables did not meet the $p < .05$ established level for significant results used in this study, so null hypothesis six (H_{06}) was not rejected.

Table 31**Multivariate Analyses of Variance Summary for OWEI Subscale Dimension of Considerate**

Source	df	SS	F	PR > F
Considerate	3975	1537.953	2.57*	.0001
JobTtl ^a x JobSpec ^b	2	.5623	.74	.4795
JobTtl x Year ^c	4	2.0842	1.36	.2443
JobSpec x Year	8	4.2380	1.39	.1973
JobTtl x JobSpec x Year	8	2.5443	.83	.5744

^aOccupation (Job title)

^bJob Specialization

^cYear participating or teaching in the apprenticeship training program

* $p < .05$

Research Question Seven

Research question seven asked if there were significantly different levels of work ethic for respondents participating in years three, four, and five (later years) of the apprenticeship training program as compared with those respondents participating or teaching in the first two years (early years) of the apprenticeship training program as measured by the OWEL.

A total of 1,673 respondents reported that they participated in years one and two of the apprenticeship training program. This was 41.7% of the 4,046 total responses. A total of 2,340 (57.8%) respondents indicated that they participated in years three through five. Table 32 provides frequency counts for all research participants responding by participation or teaching in years three, four, and five of the apprenticeship training program or participation or teaching in the first two years of the apprenticeship training program.

Null Hypothesis Seven

H₀₇: There will be no significant differences in the work ethic of apprentices participating years three, four, and five (later years) and instructors teaching in years three, four, and five (later years) of the apprenticeship training program compared with the work ethic of those apprentices and instructors participating or teaching in the first two years (early years) of the apprenticeship training program.

A multivariate analysis of variance (MANOVA) was performed to determine if there was a significant difference in the levels of work ethic for respondents participating or teaching in the later years of the apprenticeship training program as compared with

Table 32

Frequency Counts of Years One and Two (Early Years)

Apprentices/Instructors and Years Three, Four, and Five (Later Years)

Apprentices/Instructors

Years participating or teaching in apprenticeship program	Frequency	Percent
Years one and two (Early years) ^a		
Apprentice	1575	94.8
Instructor	85	5.1
Years three, four, and five (Later years) ^b		
Apprentice	2200	94.8
Instructor	120	5.1

^aTotal frequency missing = 13

^bTotal frequency missing = 20

those respondents participating or teaching in the early years of the apprenticeship training program. To verify that a multivariate analysis of variance procedure would be appropriate to examine potential differences in perceived work ethic between respondents participating and teaching in the later years of the apprenticeship training program as compared with those respondents participating or teaching in the early years of the apprenticeship training program, partial correlation coefficients were computed on the four OWEI survey instrument subscale scores (see Table 33). Each correlation had a strong positive correlation and a probability level of .0001, indicating that a significant interrelationship existed among the four dependent variables.

A multivariate analysis of variance using the Hotelling-Lawley Trace statistical procedure was used to test null hypothesis seven. This procedure was necessary in order to test the null hypothesis seven for research question seven prior to proceeding with a univariate analysis of variance.

Results of the multivariate analysis showing a significant difference indicated that a univariate comparison was required. The results of the multivariate procedure indicated a multivariate F-value of 20.7392 for group comparisons on the independent variable showing significantly different levels of work ethic for respondents participating or teaching in later years of the apprenticeship training program as compared with those participating or teaching in the early years of the apprenticeship training program for 4 and 3,971 degrees of freedom (see Table 34). This value was significant at the .05 level of significance so null hypothesis seven (H_{07}) was rejected. Based on these results, a univariate comparison was completed to examine group responses for each of the four OWEI subscales referenced as dependent variables.

A univariate analysis of variance for significant differences in responses for each of the four OWEI subscales was performed by independent variable of different levels of

Table 33

Partial Correlation Coefficients of Four OWEI Subscales for Variable of Years One and Two (Early Years) by Years Three, Four, and Five (Later Years)

	1 ^a	2	3	4
1 ^a	1.000	.725*	.700*	.703*
2		1.000	.583*	.617*
3			1.000	.695*
4				1.000

^aOWEI subscales were (1) Ambitious, (2) Considerate, (3) Cooperative, and (4) Dependable

* $p < .05$

Table 34

Multivariate Analysis of Variance for Mean Scores of Respondents Classified by Years One and Two (Early Years) and Years Three, Four, and Five (Later Years)

	Hotelling- Lawley Trace	df	F	PR > F
Early years				
and later years	.020890	4, 3971	20.739*	.0001

*p < .05

work ethic for respondents participating and teaching in later years of the apprenticeship training program as compared with those respondents participating or teaching in the early years of the apprenticeship training program (see Table 35). Groups of apprentices and instructors participating and teaching in the later years of the apprenticeship training program as compared with those apprentices and instructors participating or teaching in the early years of the apprenticeship training program differed for each of the following subscales of the work ethic survey: (a) Dependable with $F = 22.18$ and $PR > F = .0001$, (b) Ambitious with $F = 4.08$ and $PR > F = .0001$, (c) Cooperative with $F = 40.94$ and $PR > F = .0001$, and (d) Cooperative with $F = 64.15$ and $PR > F = .0001$.

Mean subscale scores and standard deviations for respondents grouped by years three, four, and five (later years) of the apprenticeship training program and years one and two (early years) of the apprenticeship training program are shown in Table 36. Since the F-values for the four subscales were found to be significant by the univariate analyses of variance, and the independent variable of years grouped by early years versus later years had only two levels, the subscale dimensions of Dependable, Ambitious, Considerate, and Cooperative had higher mean values significantly greater than the lower values. For each of the four subscales respondents participating or teaching in the early years scored significantly higher than those respondents participating in later years.

Follow-up of Non-respondents

A telephone follow-up of the one non-responding union local revealed that participants in the apprenticeship training program were not available for survey at this time. This union local represented a total of 20 possible responses which was 0.4% of the total sample of 4,489, and 0.5% of the 4,046 total responses of this study.

Table 35**Univariate Analyses of Variance for OWEI Subscales for Variable of Years
One and Two (Early Years) and Years Three, Four, and Five (Later Years)**

Source	df	SS	F	PR > F
Dependable	1	1067.116	22.18*	.0001
Ambitious	1	1167.761	4.08*	.0001
Considerate	1	1537.953	40.94*	.0001
Cooperative	1	1336.749	64.15*	.0001

* $p < .05$

Table 36**OWEI Subscale Means and Standard Deviations for Variable of Years One and Two (Early Years) and Years Three, Four, and Five (Later Years)**

Variable	n ^a	Mean	SD
Dependable*			
Early years	1673	6.048	.514
Later years	2340	5.968	.519
Ambitious*			
Early years	1673	5.755	.542
Later years	2340	5.720	.543
Considerate*			
Early years	1673	5.928	.602
Later years	2340	5.801	.631
Cooperative*			
Early years	1673	5.927	.566
Later years	2340	5.778	.583

^aTotal n = 4013 Total missing values = 15

*Significant $p < .05$

Summary

This chapter presented the results and analyses of data from the OWEI survey items including independent and dependent variable data and statistical results. Each null hypothesis was tested at the $p < .05$ level of significance.

The results indicated that of the total overall response rate of over 90%, approximately 85% were apprentices and 15% were instructors. Null hypothesis one--there will be no significant differences in the work ethic, as measured by the OWEI, among apprentices and instructors with different occupations (job titles)--was rejected at the established level of significance for this study. Three of the four subscales were found to be significantly different while the subscale of Considerate was not significant. Instructors scored slightly higher than apprentices on work ethic subscale of Dependable and significantly higher for Ambitious, while apprentices scored significantly higher on Cooperative than instructors.

Null hypothesis two, there will be no significant differences in the work ethic, as measured by the OWEI, among apprentices and instructors with different job specializations, was rejected. Approximately 60% of respondents were construction electricians, 28% were wiremen, and 12% were residential electricians. Subscales of Dependable and Ambitious were found to be significant while Considerate and Cooperative were not significant. Wiremen scored significantly higher on the subscales of Dependable and Ambitious than construction electricians. Null hypothesis two was rejected at the established level of significance for this study.

Null hypothesis three asked if years of full-time work experience were independent of respondents' perceived work ethic. Results indicated that all four subscale scores had weak but significant correlations, so null hypothesis three was rejected.

Null hypothesis four stated that there would be no significant differences in the work ethic, as measured by the OWEI, among apprentices and instructors categorized by years of full-time work experience. Null hypothesis four was rejected at the $p < .05$ level of significance. Results indicated that approximately 75% of apprentices had five or less years of full-time work experience, while only about 2% of instructors had five or less years of full-time work experience. Over 50% of instructors had over 21 years of full-time work experience. All four subscale dimensions were found to be significant. Respondents with five years or less of full-time work experience had significantly higher work ethic scores on subscales of Dependable, Considerate, and Cooperative than all other respondent groups. Respondents with over 21 years of full-time work experience had significantly higher scores on Dependable and Ambitious than all other respondent groups.

Null hypothesis five--there will be no significant differences in the work ethic, as measured by the OWEI, among apprentices and instructors categorized by year participating or teaching in the apprenticeship training program--was rejected at the established level of significance for this study. Results indicated that there were approximately equal numbers of respondents by occupation in each of the five years of the apprenticeship training program. The subscales of Dependable, Considerate, and Cooperative were significant. The subscale of Ambitious was found to be not significant at the established level of significance. Respondents in year one of the program were reported to score significantly higher than respondents in years two through five.

Null hypothesis six stated that there will be no interaction among the independent variables of occupation (job title), job specialization, year participating or teaching in the apprenticeship training program, and years of full-time work experience as measured by the OWEI. Null hypothesis six was not rejected. Significant F-values were reported for

the dependent variables of Dependable, Ambitious, Considerate, and Cooperative. No significant differences were reported for interaction effects for the independent variables of occupation (job title), job specialization, year participating or teaching in the apprenticeship training program, and years of full-time work experience.

Null hypothesis seven stated that there would be significantly different levels of work ethic for respondents participating or teaching in years three, four and five (later years) of the apprenticeship training program as compared with those respondents participating or teaching in the first two years (early years) of the apprenticeship training program as measured by the OWEI. Null hypothesis seven was rejected at the $p < .05$ level of significance. The work ethic subscales of Dependable, Ambitious, Considerate, and Cooperative indicated significant differences. Results indicated that respondents participating or teaching in the early years reported significantly higher work ethic scores than those respondents participating or teaching in later years for the subscale dimensions of Dependable, Ambitious, Considerate, and Cooperative.

CHAPTER V

SUMMARY, FINDINGS, CONCLUSIONS, RECOMMENDATIONS AND IMPLICATIONS

This chapter presents a summation of the study, its major findings, conclusions drawn, and recommendations for future research on work ethic that were developed as a result of the findings of this study.

Summary

The purposes of this study were to (a) determine through survey research whether there were any significant differences in the work ethic of apprentices and instructors in a national apprenticeship training program sponsored by the International Brotherhood of Electrical Workers (IBEW) and the National Electrical Contractors Association (NECA) as categorized by occupation (job title), job specialization, year participating in or teaching in the apprenticeship training program, or years of full-time work experience; (b) determine if there was a relationship between years of full-time work experience and apprentices' and instructors' perceived work ethic; and (c) determine whether interaction existed between the independent variables of occupation, job specialization, year participating or teaching in the apprenticeship training program, and years of full-time work experience as measured by the OWEI survey instrument.

Where significant differences were found, the study sought to determine how categories of apprentices and instructors differed for the four subscale dimensions of the work ethic. The dimensions of the work ethic were measured by the four subscales of

the OWEI. The subscales were Dependable, Ambitious, Considerate, and Cooperative.

An extensive review of related literature revealed that a dearth of baseline data were available on the occupational work ethic of participants in apprenticeship training programs. Although the review of related literature revealed a rich diversity in work ethic and work values definitions and approaches to measurement, no attempts to establish relatively stable baseline work ethic data were found. This deficiency in baseline data was the basis of the rationale for this study. The present study examined the sociological impact of work ethic, and determined to what extent apprentices and instructors grouped by occupation, job specialization, year participating in or teaching in the apprenticeship training program, or years of full-time work experience perceived their work ethic.

Seven null hypotheses were developed from the seven research questions in the present study. Each question and hypothesis focused on the work ethic of apprenticeship training program participants categorized by one of four independent variables. The first three null hypotheses developed from research questions focused on the demographic variables of this study. Null hypothesis one, developed from research question one, focused on whether there were any significant differences among respondents categorized by occupation (job title); null hypothesis two focused on the independent variable of job specialization. Null hypothesis three and research question three focused on whether there was a relationship between years of full-time work experience and the work ethic of participants. The fourth research question and null hypothesis four focused on whether there was a difference in the work ethic of respondents when categorized by years of full-time work experience. Null hypothesis five, developed from research question five, asked whether there was a difference in the work ethic among respondents categorized by year participating in or teaching in the apprenticeship training program. Research question six and null hypothesis six asked if there was an interaction between the

independent variables of occupation (job titles), job specialization, years participating in or teaching in the apprenticeship training program, and years of full-time work experience. The seventh and final research question and null hypothesis seven asked whether there was a significantly higher level of work ethic for respondents participating in years three, four, and five (later years) of the apprenticeship training program as compared to participants in the first two years (early years) of the apprenticeship program.

The population sampled in the present study consisted of apprentices and instructors participating in the IBEW-NECA national apprenticeship training program. Of the 308 local unions in the United States with JATC apprenticeship programs, 39 local unions were selected by stratified random technique according to geographic region and relative size.

The voluntary participation of apprentices and instructors was solicited during the following activities: (a) IBEW training directors' conference held in Portland, Oregon in June, 1993; (b) University of Tennessee Instructor Training Institute held in Knoxville, Tennessee in August, 1993; and (c) two letters of introduction and requests for participation in the research project mailed to IBEW-NECA training directors. Voluntary participation of apprentices was obtained through verbal instructions given prior to administration and in the instructions printed on the OWEI survey instrument.

Data for the study were collected from survey instruments mailed to a sample of 4489 apprentices and instructors participating in the national IBEW-NECA apprenticeship training program. The survey used the Occupational Work Ethic Inventory (OWEI) to collect data. The inventory consisted of three sections: (a) section one introduced the purpose of the survey and assured participants of confidentiality, (b) section two included directions for use and measured participant perceived work ethics through completion of

fifty items using a seven point Likert-type scale for responses, and (c) the third and final section of the OWEI requested demographic data from the respondents.

Several weeks prior to receiving the survey instruments, at a conference in Portland, Oregon, the training directors of the International Brotherhood of Electrical Workers trade union were advised of the research effort and the forthcoming arrival of questionnaires. Five weeks prior to mailing OWEI questionnaires a letter of introduction to the study explaining the significance of full participation was sent to all IBEW-NECA training directors. During the fourth annual University of Tennessee IBEW Instructor Training Institute, a training conference for IBEW-NECA instructors and training directors held August 7-13, 1993 in Knoxville, Tennessee, an announcement concerning the importance of the study was made to approximately six hundred participating apprenticeship instructors and training directors.

The survey was administered from August 30, 1993 to September 17, 1993 with one local union responding on September 27, 1993. A follow-up letter was sent to all participating local unions approximately one week after the surveys were mailed. Within one week of mailing the follow-up letters, telephone calls to non-respondent local unions were completed.

A total of 4,489 instruments were distributed and 4,046 completed instruments were returned. OWEI questionnaires were returned from 90.1% of the sampled apprentices and instructors. Data were useable from 4,028 instruments or 89.7% of the returned OWEI questionnaires.

After OWEI instruments were collected, data was compiled and verified as correct. Data compilation, verification, and analyses were completed on a VMS/VAX mainframe computer system. The statistical analysis used the SAS® (SAS Institute, 1985) statistical software running on the VMS/VAX mainframe.

Data obtained from the demographic section of the OWEI instrument yielded frequency information on occupation (job title), job specialization, year participating or teaching in the apprenticeship training program, and total years of full-time work experience. Means and standard deviations were calculated for the demographic data.

To verify that data grouped by each independent variable met the criteria for multivariate analysis, partial correlation coefficients of the four OWEI subscales were calculated. Null hypotheses one, two, four, five, six, and seven were tested using multivariate analyses of variance (MANOVA) procedures. Null hypothesis three was tested using a test of correlation.

Mean scores were computed for each level of independent variable for each of the hypotheses tested using multivariate statistics. For rejected hypotheses univariate analysis of variance (ANOVA) tests were then computed to determine whether there were significant differences in the means of each of the work ethic subscale dimensions. For significant differences discovered by the univariate analyses of variance a post hoc follow-up test using Fisher's LSD procedure was used to make pair-wise comparisons. For null hypothesis three, Pearson's product-moment correlation coefficients were computed for each of the subscale dimensions.

Major Findings

This section summarizes the major findings from the present study on the work ethic of apprentices and instructors in a trade union apprenticeship training program. Based on multivariate analyses of variance, null hypotheses one, two, three, four, five, and seven for research questions one, two, three, four, five, and seven were rejected at the $p < .05$ level of significance established as significant in this study. Null hypothesis

six, stating there will be no interaction among the independent variables of occupation, job specialization, years participating in or teaching in the apprenticeship program, and years of full-time work experience as measured by the OWEI was not rejected at the established level of significance for the present study.

The following major findings resulted from the statistical tests used to determine whether study participants differed in their work ethic when categorized by the four independent variables or whether there was a correlation between years of full-time work experience and work ethic:

1. There was a high rate of response to the survey research by sampled local unions and by sampled participants. District 6, consisting of Illinois, Indiana, Michigan, Minnesota, and Wisconsin had the highest overall response rate of 95.9% of available participants. District 8, representing the Southwestern states had the lowest response rate, due primarily to one nonresponding union local, although it was still 80%.

2. The demographic information of the participants in the IBEW-NECA apprenticeship training program revealed that the large majority of participants were apprentices. Respondents accurately and effectively completed the survey content items and demographic items in over 98 percent of the returned inventories. Apprentices were more accurate than instructors in completing the research instrument. Apprentices had a useable response rate of over 99 percent, while instructors had a useable response rate of 94.2 percent.

3. There was a significant difference in the perceived work ethic between apprentices and instructors in the IBEW-NECA apprenticeship training program. Instructors scored significantly higher than apprentices for the subscales of Dependable and Ambitious. Apprentices in the apprenticeship training program scored significantly higher than instructors for the subscale dimension of Cooperative. Follow-up tests using

Fisher's LSD indicated no significant differences in work ethic mean scores between apprentices and instructors for the subscale Considerate. Instructors had more work experience and were generally older than apprentices. They were more emotionally stable, patient, hard-working, independent, resourceful, and reliable.

4. There was a significant difference among apprentices and instructors categorized by different job specializations on their work ethic scores as measured by the OWEI. In the demographic section of the research instrument, respondents categorized their job specialization as either construction electrician, residential electrician, or wireman. The category of construction electrician was the predominant choice of job specialization for apprentices and instructors. The mean subscale scores for respondents reporting wireman as their job specialization were significantly higher for the subscale dimensions of Dependable and Ambitious than respondents reporting their job specialization as construction electricians. Fisher's LSD did not detect significant differences in mean scores for respondents categorized by job specialization for the subscales of Considerate and Cooperative. No significant differences were noted for job specialization of residential electrician.

5. There was a significant relationship between respondents' years of full-time work experience and their perceived work ethic. Apprentices' and instructors' mean scores on all four subscales of Dependable, Ambitious, Considerate, and Cooperative indicated weak but significant correlations with the variable of years of full-time work experience.

6. Over 75% of sampled apprentices reported five or less years of full-time work experience. Over half of the instructors surveyed reported that they had over 21 years of full-time work experience. Less than two% of apprentices had over 21 years of full-time work experience, and only 2% of instructors reported five or less years of full-time work

experience. Respondents with five or less years of full-time work experience scored significantly higher than all other respondents with full-time work experience for the dimensions of Dependable, Considerate, and Cooperative. Those with over 21 years of full-time work experience scored significantly higher than respondents with ten or less years of full-time work experience for the dimensions of Dependable and Ambitious. Apprentices and instructors with over 21 years of full-time work experience scored significantly higher than respondents with 16 to 20 years of full-time work experience for the dimension of Dependable. Respondents with 16 to 20 years of full-time work experience scored significantly higher than those with five or less years of full-time work experience for the dimension of Ambitious. Respondents with the least work experience were more punctual, accurate, dedicated, considerate, likeable, well groomed, orderly, and cooperative. Respondents with the most work experience were more careful, dependable, enthusiastic, initiating, and ambitious.

7. Apprentices and instructors were categorized by the year in which they participated or taught in the five-year training program. There were approximately equal numbers of respondents participating or teaching in each of the five years of the program. There were a few more participants and instructors in year four than in years one, two, three, and five. There was a significant difference in respondent's work ethic when they were categorized by the year participating or teaching in the apprenticeship training program. Respondents who participated or taught in the first year of the program scored significantly higher than those in years two, three, four, or five on the work ethic dimensions of Dependable, Ambitious, Considerate, and Cooperative. For the work ethic dimension of Considerate, respondents participating or teaching in year two scored significantly higher than those respondents participating or instructing in years one, three, four, and five. For the work ethic dimension of Cooperative, respondents participating

or teaching in year two scored significantly higher than those respondents participating or instructing in years three, four, and five. Respondents participating or teaching in year three scored significantly higher on the work ethic dimension of Cooperative than those respondents participating or instructing in the fifth year of the training program.

8. There was no interaction among the independent variables of occupation, job specialization, years participating or teaching in the apprenticeship program, and years of full-time work experience. There were no confounding effects of the independent variables on respondents' perceived work ethic.

9. There was a significant difference in the work ethic of respondents participating or teaching in years one and two (early years) as compared with those participating or teaching in years three, four, and five (later years) of the apprenticeship training program. Those apprentices and instructors participating or teaching in the early years scored significantly higher on the work ethic dimensions of Dependable, Ambitious, Considerate, and Cooperative than respondents in later years.

10. The analyses of data collected from respondents in the present study suggested differing profiles of apprenticeship program participants. Apprentices are primarily characterized as cooperative, adaptable, orderly, perceptive, careful, and following directions and regulations. Apprentices' secondary characteristics are considerate, appreciative, cheerful, courteous, friendly, helpful, likeable, modest, pleasant, and well-groomed. Apprentices tended to perceive their work ethic characteristics similar to those workers categorized in technical, precision production and craft occupations reported by Hill (1992). Instructor profiles include the primary characteristics of ambitious, conscientious, enthusiastic, independent, initiating, responsible, persevering, persistent, resourceful, and hard-working. Secondary instructor work ethic characteristics are dependable, accurate, careful, dedicated, devoted,

effective, efficient, honest, loyal, patient, reliable, productive, punctual, and emotionally stable. Instructors perceived their primary work ethic characteristics similar to those workers categorized in managerial and professional occupations as reported by Hill (1992).

Conclusions

Within the delimitations specified in the present study, and with the extent to which the data and findings were valid and reliable, the following conclusions have been drawn. These conclusions are based on the review of related literature and the analyses of data collected from the study's participants using the OWEI survey instrument.

1. Apprentices and instructors participating in the five-year national apprenticeship training program sponsored by IBEW-NECA display a relatively high level of perceived work ethic as measured by the OWEI survey instrument used in this study. The overall mean scores on a seven-point scale for apprentices was 5.87. The overall mean score for instructors was 5.91. There was a significant difference noted in the work ethic of participants based on occupation (job title). The work ethic for instructors was moderately stronger than apprentices' work ethic. Instructors were more ambitious than apprentices. Ambition was exemplified as conscientious, enthusiastic, hard-working, initiating, and resourceful. This study indicated that instructors were more dependable than apprentices. Dependable was defined as accurate, careful, dedicated, devoted, loyal, and productive. A high level of work ethic for apprentices may have an impact on the overall quality of the apprenticeship training program and may have an influence on the success rate of apprentices in completing the training program and achieving journeyman status. For the most part, this conclusion was consistent with

previous studies by Hill (1992), Allender (1993), and Shapira and Griffith (1990) which demonstrated differences in work ethic based on occupations and work experiences.

Overall differences suggested that the work ethic of instructors versus apprentices for the work ethic dimension of Ambitious revealed the largest difference in mean scores. Instructors were more conscientious, independent, initiating, responsible, persistent, and resourceful than apprentices. These results suggest that maturity may have influenced instructors' work attitudes and work ethics. They were more emotionally stable, patient, hard-working, independent, resourceful, and reliable--traits more attributable to mature adults.

2. Apprentices were more considerate, courteous, friendly, helpful, pleasant, adaptable, cooperative, and followed regulations and directions to a greater extent than their instructors. Apprentices had less work experience. Further research is needed to determine specifically what work experiences influence work ethic. Research into group work and concepts of teamwork and participative management suggested that humanistic values such as cooperation, emotional stability, and consideration are humanistic skills currently required in the workplace (Glassman & Kates, 1990; Parker, 1990; Varney, 1990). Apprentices displaying work ethic dimensions of cooperation and consideration may be better equipped for a workplace requiring humanistic skills.

3. The relationship between participants' perceived work ethic and reported years of full-time work experience was significant, but not strong. This study demonstrated that there was no causal link between work experience and the perceived work ethic of apprentices and instructors in the IBEW-NECA apprenticeship training program. Previous work experience had a significant, albeit weak, influence on the work ethic of participants and instructors in the apprenticeship training program.

Controlling for work experience, occupation had an effect on work ethic. For

example, instructors had much more work experience than apprentices, thus more on-the-job learning, socialization, and opportunities to develop positive work ethics. On the other hand, apprentices followed directions and regulations better than instructors and were more cooperative, adaptable, and perceptive. Again, experience and maturity may have had an influence on the work ethic scores of instructors. Levinson (1978) noted that as individuals mature, they become less likely to adapt to change and more likely to become a mentor to younger associates. For the most part, workers with more work experience are older than workers with less work experience. Rodgers & Herzog (1987) reported that older respondents tended to rate themselves more accurately than younger respondents. The cause of this anomaly may be that younger workers have less mature attitudes about their perceived work values and work ethics and thus tend to rate themselves higher on attitude scales. As workers grow older, or move from trainee status to worker or trainer status, their work ethic may change. Statistical tests of independence used in the present study tended to provide only minimal information regarding other relationships between study variables.

4. This study detected only moderate differences in the work ethic of apprentices and instructors when categorized by job specialization. Those respondents identifying themselves as wiremen were more effective, accurate, productive, dedicated, emotionally stable, independent, enthusiastic, and ambitious than construction electricians. This may be an indication that apprentices and instructors perceived the term wireman in a more positive light than the job description of construction electrician. Wiremen may be perceived as possessing a broader base of knowledge and skill than construction electricians. The job specialization of residential electrician had no statistical significance in the present study.

5. Apprentices and instructors in the first year of the apprenticeship program are

more dedicated, dependable, punctual, appreciative, likeable, adaptable, cooperative, and perceptive than participants and instructors in other years of the training program.

Respondents in the later years of training reported having a weaker work ethic than those in the initial years of the apprenticeship training program. Participation in the apprenticeship training program had some influence on participants' and instructors' work ethic. More research was needed to identify the extent and nature of this influence.

6. The work of Cherrington (1980) implied that work ethics can be taught and are influenced by work experiences and socialization processes such as training and apprenticeship. It was suggested that participants in years three, four, and five (later years) of the apprenticeship training program would have significantly higher levels of work ethic than respondents in the first two years (early years) of the program. Data from the present study did not support this proposition. Perceived work ethic may be influenced by the length of a training or apprenticeship program. Many studies of socialization and the influence of work experience on work attitudes and work ethics were carried out on newly hired participants just entering the workforce or participating in short-term training. The impact of the socialization process may be interrupted or influenced in a long-term training or apprenticeship environment. The present study found that respondents with many years (> 21 years) of work experience had a significantly higher work ethic than respondents with little work experience. This supports, in part, Cherrington's (1980) suggestion that work ethic can be influenced by work experiences and socialization processes such as training and apprenticeship. More research is needed to identify to what extent socialization issues such as training and apprenticeship influence the initial development of the work ethic.

This study provided baseline data on the work ethic of apprentices and instructors in a national trade union apprenticeship program. The sample size and powerful

multivariate data analyses provided a substantial data base of information on the work ethic of apprenticeship training program participants categorized by occupation, job specialization, year participating in or teaching in the apprenticeship program, and years of full-time work experience. Work ethic research is generally classified as attitude research. This study contributed substantial baseline data on the work ethic of apprentices (trainees) and instructors (trainers) to the measurement of attitudes research base. Finally, the rationale for continuation of occupational work ethic research has been established by this study.

Recommendations

With respect to the review of related literature and the findings and conclusions of this study of the work ethic of apprentices and instructors in a trade union apprenticeship training program, the following recommendations are offered:

1. The OWEI instrument could be used in a variety of industrial, business, and educational environments for various purposes of career guidance, curriculum development, instructor and student evaluations, continuing and certification education, and clarification of work ethics and work value attributes. Results of the use of this occupational survey instrument could prove useful in helping instructors and trainers periodically measure, review, and modify their perceived work ethic. Such a review and any subsequent modification may improve teaching abilities and provide positive role models for students and apprentices. Use of the instrument could assist instructors and trainers in consistently measuring the perceived work ethic or work values of their students or apprentices over time. It would be valuable to perform longitudinal studies with various student demographic variables to identify specific characteristics that change

over time. Consistent use of the OWEI may provide instructional designers and curriculum developers with an increased awareness of the importance and impact of work attitudes and work ethic on the users of their instructional products. Training programs must be developed and designed to change performance on the job not only by influencing skills and knowledge, but by influencing attitudes. Helping managers, executives, and administrators to become cognizant of the work attitudes and work ethics of their employees and the overall work attitudes of the workforce is another benefit of using the OWEI survey. The success or failure of an organization depends on what employees value and their attitudes toward work. An increased awareness of the importance of work ethic may have an effect on the quality of management.

2. To further establish validity of the OWEI survey instrument, a detailed study of the content and/or factors and sub-scales of similar and established work ethic instruments should be completed. Concurrent validity could be established by determining the relationship between measurements on the OWEI and those on some other established work ethic measurement instrument. Predictive validity could be determined by establishing some behavioral criterion to measure work success on the job and relating this behavior to specific measures of work ethic by overall OWEI scores or subscale scores. Additional factor analyses based on data from diverse populations could improve the internal consistency and reliability of the OWEI instrument. An additional benefit of further instrument development studies would be to uncover user literacy issues not discovered in previous research.

3. Duplication of this study, specifically controlling for such demographic variables as socio-economic status, ethnic origin, and status of nuclear family or other types of family influence could start a baseline clarification of those characteristics that influence work ethic preferences in workers. Additional statistical tests of independence

on several different variables should be done to provide information on potential relationships between study variables.

4. Further survey research should be conducted using random samples of other blue-collar workers from populations that include (a) more females and ethnic minorities, (b) representatives from other trade and non-trade unions, (c) unionized workers from various geographic regions and metropolitan versus rural locations, and (d) workers not represented by a union or trade group. Differences noted in such studies would be important in establishing profiles of occupational work ethics.

Perceived work ethic of other diverse populations and reference groups should be measured. More data should be collected using samples of (a) white-collar and management level workers, (b) entry-level management employees, (c) union and non-union workers employed in organizations with different styles of management, i.e. team-oriented or participatory versus autocratic, dictatorial management styles, (d) service industry workers, and (e) self-employed or contract workers. Differences noted in such studies would be important in establishing profiles of organizational and career work ethic requirements.

5. Empirical linkages between performance on-the-job and perceived work ethic are needed. The link between observable job behaviors and specific work ethic attributes should be studied so that certain work ethic characteristics could be focused upon in training and on-the-job instruction. These linkages could also help in developing content for job analyses and information for development of additional work ethic measurement instruments.

6. Future longitudinal research should be conducted to measure the stability of work ethics over time. Such studies could address the question of whether job experiences and socialization processes, such as training and apprenticeship, affect the

development or variation of occupational work ethics.

7. Since the apprenticeship training program in the present study was found to have some influence on the work ethic of apprentices, other apprenticeship training programs should be studied using the same or similar instruments to identify similarities and differences in program characteristics. Studies of the work ethic of journeymen instructing on-the-job and workers serving as coaches and mentors should be undertaken to establish similar baseline data. Such studies could provide input to develop or improve trade and youth apprenticeship training programs.

8. Globalization of the workforce is a growing and critical issue. Measurements of the work ethics of blue-collar and trade workers representing different cultures should be made. The OWEI has been translated into several languages, i.e. German, French, Japanese, and Spanish. Studies of blue-collar and trade workers in different cultures could provide data to compare with existing cross-cultural studies and provide baseline data for future and longitudinal work ethic research.

9. Profiles of different service-oriented occupations and organizations could be developed using the OWEI to gather data. General workforce attitudinal characteristics and organizational characteristics and profiles applicable to the service industry could be established from this data. This information may be useful when developing training programs, training materials, and instructor methodologies.

10. More detailed definitions for the different job specializations used in the electrical trade are needed. A detailed job and task analysis would assist in the development of job descriptions and job specializations.

Implications

This study focused on the measurement of work ethics, those personal beliefs and attitudes in the affective domain that most training and human resource development practitioners consider “soft skills”, which are generally not accessible to quick measurement or simple comprehension. The objectives of training and human resource development are to (a) increase productivity and worker performance on-the-job, (b) improve worker skills, knowledge, and attitudes, and (c) improve the overall quality of the workforce. If these objectives are to be met, then quantitative, statistically sound research using valid and reliable attitude measurement methods must be supported by organizations and educational institutions. Additionally, such studies should be undertaken by training and human resource development practitioners and professionals with the discipline and dedication necessary to master intellectually challenging statistical and theoretical concepts. The outcomes of this study brought to light the importance of developing a baseline for the measurement of attitudes and work ethics. Hopefully, this study will serve as an impetus for the continuing development of occupational work ethic inventories and affective work competencies currently lacking in the analysis phase of most performance-based training.

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APPENDIXES

APPENDIX A

IBEW-NECA TOTAL APPRENTICESHIP PARTICIPATION

aIBEW-NECA Total Apprenticeship Participation

Location	Local union no.	^b Total participants
Alabama	136	101
	505	75
	443	11
	558	98
	1001	8
Alaska	1547	90
	518	4
Arizona	640	^c 95
	570	56
Arkansas	436	15
	700	17
	1516	24
	295	28
California	428	^c 62
	234	36
	482	6
	100	79
	11	475
	684	34
	595	108
	302	118
	442	17
	440	66
	340	105
	477	73
	569	175
	6	122
	332	118
	639	24
	617	77
	441	^c 170
	413	45
	551	46
	591	39
	180	28
	952	61

Appendix A (Continued)

Location	Local union no.	^b Total participants
Colorado	113	34
	68	^c 300
	969	18
	12	25
Connecticut	488	^c 38
	35	57
	90	51
	208	13
Delaware	313	^c 74
Washington D.C.	26	549
Florida	756	36
	728	56
	1205	31
	177	144
	349	62
	606	55
	676	16
	308	25
	915	^c 100
	323	^c 70
Georgia	1531	16
	613	^c 393
	1579	137
	779	14
	1316	26
	508	75
	511	1
Hawaii	1186	318
Idaho	291	^c 61
	449	^c 50

Appendix A (Continued)

Location	Local union no.	^b Total participants
Illinois	649	16
	461	49
	197	27
	601	38
	134	1457
	309	35
	538	32
	146	58
	117	67
	701	206
	176	^c 127
	34	86
	364	81
	145	112
	193	35
	150	124
	702	38
Indiana	16	^c 79
	305	54
	697	105
	481	219
	873	29
	668	59
	531	46
	855	15
	153	^c 113
	725	77
Iowa	13	18
	405	76
	347	96
	704	16
	231	29
	288	17
Kansas	661	5
	226	42
	271	57

Appendix A (Continued)

Location	Local Union No.	^b Total Participants
Kentucky	183	70
	369	158
	1701	24
	816	72
Louisiana	576	10
	995	^c 48
	1077	16
	861	75
	446	24
	130	93
	194	29
Massachusetts	1253	31
	567	36
	103	^c 413
	223	38
	7	53
	96	15
Maryland	24	229
	307	^c 41
Michigan	252	56
	445	18
	692	33
	58	230
	979	10
	948	24
	107	20
	219	14
	131	63
	665	39
	1070	8
	275	19
	557	7
	498	19

Appendix A (Continued)

Location	Local union no.	^b Total participants
Minnesota	242	51
	294	26
	343	100
	292	196
	110	^c 166
Mississippi	852	64
	903	49
	480	94
	917	31
Missouri	350	4
	257	46
	95	25
	124	^c 184
	453	26
	545	22
Montana	1	173
	623	^c 20
Nebraska	532	15
	507	^d
	265	20
Nevada	22	^c 82
	357	131
	401	34
New Jersey	490	^d
	400	36
	211	48
	439	^c 71
	675	53
	164	144
	581	68
	52	123
	456	38
	102	64
	358	53
	262	53
	296	86
	592	23

Appendix A (Continued)

Location	Local union no.	^b Total participants
New Mexico	611	78
New York	724	^c 50
	325	45
	41	102
	139	10
	840	17
	241	16
	25	165
	106	15
	631	37
	363	70
	3	2194
	237	35
	328	14
	781	14
	215	29
	86	117
	166	^c 46
	43	72
	438	^c 45
	181	42
	910	43
	501	^c 194
North Carolina	238	8
	379	14
	553	^d
	495	3
	342	5
North Dakota	1426	47
	714	40
Ohio	306	64
	540	31
	88	20
	212	155
	38	242
	683	^c 154
	82	^c 69

Appendix A (Continued)

Location	Local union no.	^b Total participants
	648	63
	32	30
	129	27
	688	20
	972	^d
	1105	13
	673	33
	575	14
	867	19
	246	25
	8	194
	573	28
	64	26
Oklahoma	590	12
	1141	^c 70
	444	7
	584	^c 30
Oregon	932	16
	659	^c 32
	48	264
	280	^c 98
Pennsylvania	375	60
	712	^c 42
	10	15
	654	80
	56	21
	143	72
	686	23
	414	24
	380	^c 75
	98	322
	5	^c 294
	743	56
	607	23
	81	71
	163	28
	812	12
	229	21

Appendix A (Continued)

Location	Local union no.	^b Total participants
Rhode Island	99	^c 72
South Carolina	776	11
South Dakota	1250	6
	426	33
Tennessee	175	^c 147
	835	^d
	934	50
	760	110
	1925	2
	474	123
	429	^c 161
	270	50
Texas	920	2
	520	80
	602	21
	479	146
	278	52
	59	81
	583	55
	116	53
	527	48
	716	195
	324	10
	850	18
	460	4
	898	^d
	60	107
	301	30
	1151	4
	72	12
	681	20
Utah	354	^c 116
Vermont	300	19

Appendix A (Continued)

Location	Local union no.	^b Total participants
Virginia	1340	70
	80	52
	666	165
	637	66
Washington	191	190
	970	47
	112	55
	46	450
	73	72
	76	111
	497	30
West Virginia	466	36
	596	10
	425	15
	317	32
	968	37
	141	14
Wisconsin	577	46
	953	72
	158	43
	890	41
	127	23
	159	71
	494	200
	430	25
	388	46
Wyoming	322	30
	415	19

^aLocal unions with Joint Apprenticeship Training Committees (JATC)

^bIncludes apprenticeship participants reported in 1992 survey

^cIncluded in study sample

^dNo data available

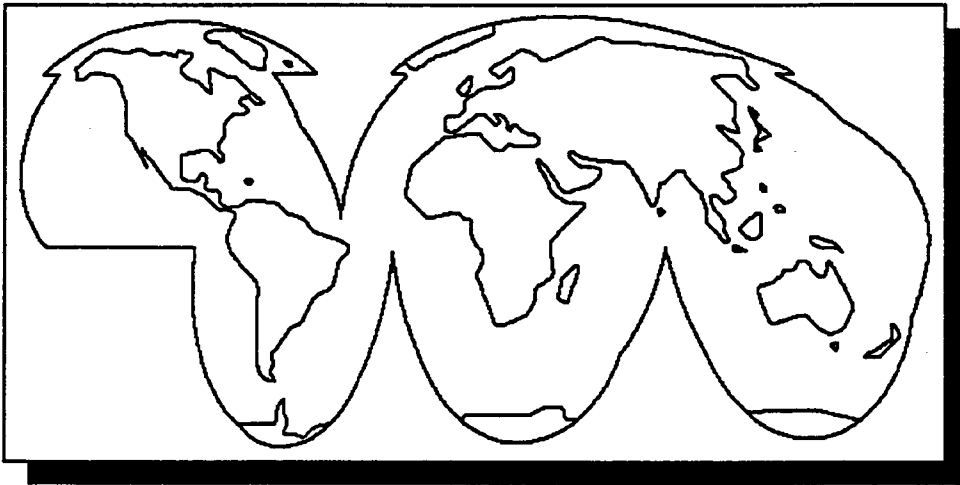
APPENDIX B

OCCUPATIONAL WORK ETHIC INVENTORY (OWEI)

OCCUPATIONAL WORK ETHIC INVENTORY

© 1993 by G. C. Petty

The purpose of this inventory is to obtain information about desirable characteristics of workers. Your responses will be kept strictly confidential and your name is not required on this form. It is important for you to answer each item as truthfully as possible.



DIRECTIONS:

For each work ethic descriptor listed below, CIRCLE THE NUMBER that most accurately describes your standards for that item. There are seven possible choices for each item:

<u>Never</u>	<u>Almost Never</u>	<u>Seldom</u>	<u>Sometimes</u>	<u>Usually</u>	<u>Almost Always</u>	<u>Always</u>
1	2	3	4	5	6	7

THERE ARE NO RIGHT OR WRONG ANSWERS. There also is no time limit, but you should work as rapidly as possible. Please respond to every item on the list.

At work I can describe myself as:

Descriptors	Never					Always	
	1	2	3	4	5	6	7
1. dependable	1	2	3	4	5	6	7
2. stubborn	1	2	3	4	5	6	7
3. following regulations	1	2	3	4	5	6	7
4. following directions	1	2	3	4	5	6	7
5. independent	1	2	3	4	5	6	7
6. ambitious	1	2	3	4	5	6	7
7. effective	1	2	3	4	5	6	7
8. reliable	1	2	3	4	5	6	7
9. tardy	1	2	3	4	5	6	7
10. initiating	1	2	3	4	5	6	7
11. perceptive	1	2	3	4	5	6	7
12. honest	1	2	3	4	5	6	7
13. irresponsible	1	2	3	4	5	6	7
14. efficient	1	2	3	4	5	6	7
15. adaptable	1	2	3	4	5	6	7
16. careful	1	2	3	4	5	6	7
17. appreciative	1	2	3	4	5	6	7
18. accurate	1	2	3	4	5	6	7
19. emotionally stable	1	2	3	4	5	6	7
20. conscientious	1	2	3	4	5	6	7

At work I can describe myself as:

Descriptors	Never							Always	
	1	2	3	4	5	6	7		
21. depressed	1	2	3	4	5	6	7		
22. patient	1	2	3	4	5	6	7		
23. punctual	1	2	3	4	5	6	7		
24. devious	1	2	3	4	5	6	7		
25. selfish	1	2	3	4	5	6	7		
26. negligent	1	2	3	4	5	6	7		
27. persevering	1	2	3	4	5	6	7		
28. likeable	1	2	3	4	5	6	7		
29. helpful	1	2	3	4	5	6	7		
30. apathetic	1	2	3	4	5	6	7		
31. pleasant	1	2	3	4	5	6	7		
32. cooperative	1	2	3	4	5	6	7		
33. hard working	1	2	3	4	5	6	7		
34. rude	1	2	3	4	5	6	7		
35. orderly	1	2	3	4	5	6	7		
36. enthusiastic	1	2	3	4	5	6	7		
37. cheerful	1	2	3	4	5	6	7		
38. persistent	1	2	3	4	5	6	7		
39. hostile	1	2	3	4	5	6	7		
40. dedicated	1	2	3	4	5	6	7		
41. devoted	1	2	3	4	5	6	7		
42. courteous	1	2	3	4	5	6	7		
43. considerate	1	2	3	4	5	6	7		
44. careless	1	2	3	4	5	6	7		
45. productive	1	2	3	4	5	6	7		
46. well groomed	1	2	3	4	5	6	7		
47. friendly	1	2	3	4	5	6	7		
48. loyal	1	2	3	4	5	6	7		
49. resourceful	1	2	3	4	5	6	7		
50. modest	1	2	3	4	5	6	7		

(OVER PLEASE)

BACKGROUND INFORMATION

DIRECTIONS:

Please check or fill in the appropriate response for each item. Completion of this inventory acknowledges your voluntary participation and your understanding that this data will be used for research purposes only and will be kept completely confidential.

(1) Your Job Title:

___ Apprentice

___ Instructor

(2) Your Job Specialization:

___ Construction electrician

___ Residential electrician

___ Wireman

(3) What year in apprenticeship are you in, or in what year do you primarily teach:

___ year 1

___ year 2

___ year 3

___ year 4

___ year 5

(4) Years of full-time work experience (fill in number of years):

___ years

APPENDIX C
OCCUPATIONAL WORK ETHIC INVENTORY SUBSCALES

Occupational Work Ethic Inventory (OWEI) Subscales

Dependable

accurate
careful
dedicated
dependable
depressed¹
devoted
effective
efficient
emotionally stable
honest
loyal
patient
productive
punctual
reliable
tardy¹

Ambitious

ambitious
apathetic¹
conscientious
enthusiastic
hard working
independent
initiating
irresponsible¹
negligent¹
persevering
persistent
resourceful

Considerate

appreciative
cheerful
considerate
courteous
devious¹
friendly
helpful
hostile¹
likeable
modest
pleasant
rude¹
selfish¹
well groomed

Cooperative

adaptable
careless¹
cooperative
following regulations
following directions
orderly
perceptive
stubborn¹

¹Items reversed

APPENDIX D
LETTER OF PERMISSION FOR STUDY FROM
NJATC EXECUTIVE DIRECTOR



National Joint Apprenticeship and Training Committee for the Electrical Industry

A. J. Pearson, Executive Director

• 16201 Trade Zone Ave., Suite 105

• Upper Marlboro, MD 20772

Phone 301 249-2042

FAX 301 249-4961

April 22, 1993

The Graduate School
University of Tennessee
Knoxville, TN 37996

TO: WHOM IT MAY CONCERN

SUBJECT: Permission for Research Study

This is to advise that Mr. Tim Hatcher has permission to conduct a research study in the National Joint Apprenticeship and Training Committee (NJATC) Program for the electrical construction industry. The NJATC program is co-sponsored by the International Brotherhood of Electrical Workers (IBEW) and the National Electrical Contractors Association (NECA).

Not only do we grant Mr Hatcher permission to conduct this study, but we encourage his work in this needed effort. This study will involve a survey of the work ethic of apprentices and trainers in the NJATC apprenticeship program.

With all the research in national skill standards and the need for more highly qualified graduates from our schools, work ethics is being ignored. The weakness, or deficiency, may well be the greatest problem within our economy. The lack of work ethic and a positive attitude toward one's job is, we suspect, a major issue.

We are hopeful this study will benefit not only the IBEW and NECA, but all business and corporations.

It is with pleasure that we can be a small part of this effort.

Sincerely,

A. J. Pearson
Executive Director

AJP:mr

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APPENDIX E

SCRIPT FOR INTRODUCTION OF RESEARCH PROJECT-

TRAINING DIRECTORS' CONFERENCE

Draft Script for A.J. Pearson
NJATC Training Directors' Conference
Work Ethic Research Announcement

Approximate Time: 2 minutes

Business, industry, and educational leaders are becoming more and more concerned about the importance of work attitudes but very little reliable information is available concerning this critical topic. As leaders in our industry, you, the training directors of IBEW-NECA, are in a unique position to assist in meaningful research on the critical issue of work attitudes.

In a joint effort, the University of Tennessee and NJATC is conducting research on the work attitudes of apprentices and instructors. From August 30 to September 16 of this year several thousand apprentices and instructors throughout the country will be asked to complete a short questionnaire that will be sent through you the TDs.

The questionnaire is designed to gather information on attitudes toward work along with some relevant background information. Results of this study will enhance our apprenticeship program. Your assistance in this effort is very important.

If you are randomly chosen to participate in this research please have your apprentices and instructors complete the questionnaire and return to Tim Hatcher, the project director as directed.

For the TDs chosen to participate, your prompt attention and professionalism is essential to the completion of this study. Please make sure questionnaires are completed and returned as requested. Once you are contacted as a participant, any questions you may have should be forwarded to Tim Hatcher - Research Project Manager. His telephone number and address will be mailed to you and will be included in the packets of questionnaires. Tim will also be available during the UT Institute and can be contacted at the University of Tennessee - Knoxville through Dr. Cheek's office.

Research such as this is critically important to help improve apprenticeship training programs and to bolster positive relations between academia and innovative trade unions like IBEW-NECA. This research is a first. Nothing similar has been done in the long history of trade unions in the U.S. We are helping to break new ground - to pioneer new partnerships. Lets make this research a success for all of us.

APPENDIX F

LETTER OF INTRODUCTION TO STUDY TO TRAINING

DIRECTORS FROM NJATC EXECUTIVE DIRECTOR



National Joint Apprenticeship and Training Committee for the Electrical Industry

A. J. Pearson, Executive Director

• 16201 Trade Zone Ave., Suite 105

• Upper Marlboro, MD 20772

Phone 301 249-2042

FAX 301 249-4961

July 27, 1993

Mr. Phil Johnson, TD
Denver Elec JATC
5610 Logan St.
Denver, CO 80216

Dear Mr. Johnson:

Business, industry and educational leaders are becoming more and more concerned about the importance of work attitudes. However, very little reliable information is available concerning this critical topic. As a leader in industry, you, the training professionals of IBEW-NECA, are in a unique position to assist in meaningful research on the critical issue of work attitudes.

In a joint effort, the University of Tennessee and NJATC is conducting research on the work attitudes of apprentices and trainers. We need your assistance in administering a short survey to your apprentices and instructors.

The survey instrument you are asked to administer will take only a few minutes of your, and their, time. It is designed to gather information on attitudes toward work along with some relevant background information. Results of this study will enhance the apprenticeship program. Your assistance in this effort is very important.

All replies will be kept confidential. Names are not required on the questionnaire, but we do need the background information on the last page of the instrument.

You - or your designee - will receive: instructions, blank questionnaires and self-addressed return envelope(s) no later than August 31, 1993. Before administering the questionnaires, please read all instructions and make sure the participants understand the directions and have no questions.

Each apprentice and trainer in your training program should complete one survey form and return it to you or your designee. It is recommended that the survey be given and collected in each training class as a whole, and not be taken away by apprentices to complete. Due to sickness, vacation, work assignments and other reasons, a less than 100% response is anticipated. Please try to get as many surveys completed as possible.

Your prompt attention to this request is essential to the completion of this study. Your participation is vital and your professionalism relied upon. In the event we do not receive your completed surveys by September 18, 1993, we will contact you. Please do not wait to mail in your returns - as soon as you are finished please drop the envelope(s) in the mail.

We would like to take this opportunity to thank you again for your help. If you have any questions, please do not hesitate to contact Tim Hatcher. He may be reached at 615/966-2969. Mailing address is Tim Hatcher, Project Director, 402 Claxton Addition, Technological & Adult Education, University of Tennessee, Knoxville, TN 37996.

Sincerely,

A. J. Pearson
Executive Director

AJP:mr

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APPENDIX G
LETTER OF STUDY ENDORSEMENT
TO TRAINING DIRECTORS



National Joint Apprenticeship and Training Committee for the Electrical Industry

A. J. Pearson, Executive Director

• 16201 Trade Zone Ave., Suite 105

• Upper Marlboro, MD 20772

Phone 301 249-2042

FAX 301 249-4961

Dear IBEW-NECA Training Director:

Business, industry and educational leaders are becoming more and more concerned about the importance of work attitudes. However, very little reliable information is available concerning this critical topic. As a leader in industry, you, the training professionals of IBEW-NECA, are in a unique position to assist in meaningful research on the critical issue of work attitudes.

In a joint effort, the University of Tennessee and NJATC is conducting research on the work attitudes of apprentices and trainers. We need your assistance in administering a short survey to your apprentices and instructors.

The survey instrument you are asked to administer will take only a few minutes of your, and their, time. A copy is enclosed for your review. It is designed to gather information on attitudes toward work along with some relevant background information. Results of this study will enhance the apprenticeship program. Your assistance in this effort is very important.

All replies will be kept confidential. Names are not required on the questionnaire, but we do need the background information on the last page of the instrument.

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Each apprentice and trainer in your training program should complete one survey form and return it to you or your designee. It is recommended that the survey be given and collected in each training class as a whole, and not be taken away by apprentices to complete. Due to sickness, vacation, work assignments and other reasons, a less than 100% response is anticipated. Please try to get as many surveys completed as possible.

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Sincerely,

A. J. Pearson, Executive Director
NJATC

AJP:mr

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Tim Hatcher
Occupational Work Ethic Project Director
University of Tennessee

APPENDIX H

LETTER OF INTRODUCTION AND THANKS TO

TRAINING DIRECTORS FROM RESEARCHER



Department of Technological and Adult Education
402 Claxton Addition
Knoxville, Tennessee 37996-3400
(615) 974-2574

MEMORANDUM

TO: IBEW TRAINING DIRECTORS PARTICIPATING IN UT WORK ETHIC
RESEARCH PROJECT

DATE: August 29, 1993

Dear Research Participant,

The work attitudes of apprentices and instructors is a critical component in creating successful apprenticeship training programs. In cooperation between NJATC-NECA and The University of Tennessee, this Work Ethic Research Project will provide ground-breaking baseline data needed to establish valid and reliable methods of measuring work attitudes.

Your role in this research is very important. Please take a few minutes from your busy schedule to complete the instructions for administration of the questionnaires. Your prompt attention and professionalism will make the difference between success and failure of this project.

On a more informal note, I would like to thank each of you personally for helping me with this project. I regret I cannot thank each of you in-person. I can however, thank all of you by sharing with you the research findings and conclusions. I will be sending a research summary report to A.J. Pearson as soon as it is complete. I am confident he will share the results with each of you in a timely manner.

In closing, I would like for each of you to know that over the past few years my involvement with IBEW-NECA, the NJATC, and the IBEW instructors I have had the pleasure to get to know through the UT Instructor Training Institute has strengthened my positive attitude toward organized labor. Wherever I may find employment in the future, rest assured that I will continuously fight for workforce development and support the positive influence that organized labor can have on the skill development, work ethic and attitudes of the American worker.

Thank you very much for your help. If you have any questions or comments please call me at 615-966-2969.

Sincerely,

A handwritten signature in cursive script, appearing to read "Tim Hatcher".

Tim Hatcher
Occupational Work Ethic Project Manager
Department of Technological and Adult Education
The University of Tennessee

APPENDIX I
INSTRUCTIONS FOR ADMINISTRATION OF OWEI

INSTRUCTIONS FOR ADMINISTERING QUESTIONNAIRES

LU(s): _____

Training Director: _____

BEFORE YOU HAND OUT THE QUESTIONNAIRES PLEASE READ ALL OF THESE INSTRUCTIONS*.

1. Administer the questionnaires as soon as possible upon receipt. Give the questionnaires at the beginning or end of each training class and collect questionnaires immediately. This should take no more than 10 minutes of class time.
2. Make sure the background information on the last page of the questionnaire is completed by each participant.
3. Hand out the questionnaires and read the following to participants:

"This is a survey of the work ethic of apprentices and instructors. It is part of a joint research effort of IBEW JATC's and The University of Tennessee. All replies will be kept confidential. Please do not put your name on your questionnaire. Complete each item in pen or pencil.

Now, please turn to the back page first. Check one response only for items one and two. For item three: if you are an apprentice please check what year you are in. If you are an instructor please check which year you PRIMARILY teach in. If your teaching duties are equally split, please check all years that apply. For item 4 please fill in your total number of years of full-time work experience. The handwritten number at the bottom of the back page is for tabulation purposes only by the researcher.

Now open the questionnaire but please do not start. For each of the fifty items circle the number that most accurately describes your standards for that item. There are seven possible choices for each item: 1 is never, 2 is almost never, 3 is seldom, 4 is sometimes, 5 is usually, 6 is almost always, and 7 is always. There are no right or wrong answers. Work as rapidly as possible and respond to each item on the list. When you are done hand in your completed questionnaire. Are there any questions? Please begin."

4. Take all completed questionnaires and place them in the provided stamped and addressed envelope(s). If you have more than one LU it is not necessary to separate them.

NOTE: Large programs have two envelopes. Please split the responses into two equal stacks and place one stack in each envelope.

5. Place envelope(s) in mail box to assure receipt no later than **September 18, 1993**. Please do not wait to mail in your returns - as soon as you are finished drop the envelope(s) in the mail.

6. If we do not receive your completed questionnaires by **September 18, 1993**, we will contact you.

*** If you have any questions, do not hesitate to contact Tim Hatcher at 615-966-2969.**

Your Assistance is Appreciated.

APPENDIX J
SCRIPT FOR INTRODUCTION OF RESEARCH PROJECT-
UT/NJATC INSTITUTE

Script for A.J. Pearson
NJATC Sunday General Session
Work Ethic Research Announcement

Approximate Time: 2 minutes

Business, industry, and educational leaders are becoming more and more concerned about the importance of work attitudes but very little reliable information is available concerning this critical topic. As leaders in our industry, you, the training professionals of IBEW-NECA, are in a unique position to assist in meaningful research on the critical issue of work attitudes.

In a joint effort, the University of Tennessee and NJATC are conducting research on the work attitudes of apprentices and instructors. From August 30 to September 16 of this year several thousand apprentices throughout the country and many of you instructors will be asked to complete a short questionnaire that will be sent through the Training Directors.

The questionnaire is designed to gather information on attitudes toward work along with some relevant background information. Results of this study will enhance our apprenticeship program. Your assistance in this effort is very important.

If you are randomly chosen to participate in this research, please complete the questionnaire and return to the TD as directed.

For the TDs chosen to participate, your prompt attention and professionalism is essential to the completion of this study. Please make sure questionnaires are completed and returned as requested. Once you are contacted as a participant, any questions you may have should be forwarded to Tim Hatcher - Research Project Manager. His telephone number and address have already been mailed to the TDs and will be included again in the packets of questionnaires. Tim will also be available during the Institute.

Research such as this is critically important to help improve apprenticeship training programs and to bolster positive relations between academia and innovative trade unions like IBEW-NECA. This research is a first. Nothing similar has been done in the long history of trade unions in the U.S. We are helping to break new ground--to pioneer new partnerships. Let's make this research a success for all of us.

APPENDIX K
FOLLOW-UP LETTERS TO NON-RESPONDENTS



Department of Technological and Adult Education
402 Claxton Addition
Knoxville, Tennessee 37996-3400
(615) 974-2574

Mr. Jim Paladino, TD
Omaha Kern Elec JATC
8646 L. St.
-Omaha, NE 68127

September 10, 1993

Dear Mr. Paladino,

Early this month you were asked to participate in the Work Ethic Research project in cooperation between NJATC-NECA and The University of Tennessee. If you have completed and returned the questionnaires sent to you please accept my sincere thanks. If not, please do so today. Because only a few IBEW apprenticeship training programs are asked to participate it is extremely important that your sample be included in the study if the results are to accurately represent the apprentices and instructors of the IBEW across the country.

If by some chance you did not receive the packet of questionnaires and instructions, or it has been misplaced, please call me at 615-966-2969, and I will send you another packet immediately. Your role in this research is very important. Thanks again for your help.

Sincerely,

Tim Hatcher
Occupational Work Ethic Project Manager
Department of Technological and Adult Education
The University of Tennessee-Knoxville

APPENDIX L
SCRIPT FOR FOLLOW-UP OF NON-RESPONDENTS

Script for follow-up telephone calls to non-respondents

Hello. This is Tim Hatcher with the University of Tennessee Work Ethic Research Project. Earlier this month you were sent a packet of material and questionnaires and asked to participate in the Work Ethic Research Project in cooperation between NJATC-NECA and The University of Tennessee. Have you completed and returned the questionnaires sent to you ? If so, please accept my sincere thanks. If not, when may I expect to receive them ? Because only a few IBEW apprenticeship training programs were asked to participate, it is extremely important that your sample be included in the study if the results are to accurately represent the apprentices and instructors of the IBEW across the country.

VITA

Timothy Gary Hatcher was born in Knoxville, Tennessee on October 19, 1950 to Lucille Dunn and Troy Milburn Hatcher. He graduated from South High School in June 1968. He was awarded an athletic scholarship to Marion Institute in Marion, Alabama where he majored in Mechanical Engineering for one year. For the next several years, he served in the Armed Services, attended the University of Tennessee, and worked various odd jobs including plumber's helper and building supply house worker. In 1975, he entered a technical training program in Oak Ridge, Tennessee, and completed training in welding technology and non-destructive testing. Soon after graduation, he moved to Bristol, Tennessee, and accepted a position in quality control with Bristol Steel & Iron Works, a major supplier of structural steel to the power industry. He left Bristol Steel & Iron Works in 1976.

For the next 5 years, he was promoted from quality control technician to quality assurance specialist, serving in these positions with several major international engineering, construction, and research firms such as the Tennessee Valley Authority, Rust Engineering Company, United Engineers & Constructors, and Battelle Memorial Institute. During this period he traveled extensively throughout the U.S. and Canada.

In 1981, he accepted the position of Quality Control Supervisor for Ruston Gas Turbines, an international company with facilities in Houston, Texas, and Lincoln, England. He traveled throughout the U.K., Mexico, and Europe as the quality assurance representative of Ruston Gas Turbines, Inc. In 1984 he was promoted to Quality Assurance Manager for Ruston Gas Turbines, Inc., and remained in this position until leaving in 1986.

During his tenure with Ruston Gas Turbines he decided to return to college to complete his education in training and human resource development. Soon after moving

back to Knoxville to start a total quality management (TQM) consulting practice, he applied and was accepted into The University of Tennessee's Technological and Adult Education (TAE) program. He entered the TAE program in 1987 and received a Bachelor of Science Degree in Industrial Education with a major in Industrial Training and Supervision in 1988.

He entered the Graduate School of The University of Tennessee, Knoxville in September 1988. As a student, he served as a graduate teaching and research assistant in the Office for Human Resource Development and the Office for Vocational Education. He received the Master of Science Degree in Industrial Education with a major in Industrial Training in 1989. He co-presented a paper and published an article on performance-based testing with Dr. Cliff Campbell in 1989.

Upon graduating, he accepted a position with Roane State Community College as Assistant Director of the Waste Management Training Center located in Oak Ridge, Tennessee. In 1990, he accepted the position of Manager of Performance-Based Training for Martin Marietta Energy Systems, a large government contractor in Oak Ridge, Tennessee. In this internal consultant position he was responsible for establishing performance-based training systems for approximately 19,000 employees located at the five Ohio, Kentucky, and Tennessee research and manufacturing sites managed by Martin Marietta Energy Systems. He co-authored an article for publication in the American Society for Training and Development (ASTD) Technical and Skills Training journal in May of 1991. He was instrumental in chartering the East Tennessee chapter of the National Society for Performance and Instruction (NSPI), and served as its first elected president in 1991. He presented a paper at the NSPI International Conference in Los Angeles, CA in 1991. On May 18, 1991, he married Dr. Linda Monroe, a professor of Medical Laboratory Technology at Roane State Community College.

Due to ethical and managerial differences, in 1991 he decided to leave employment in the government sector and established Training for Human Excellence, Inc., a consulting human resource development and training firm located in Knoxville, Tennessee. As principal consultant and president, he developed training programs, offered seminars and workshops, and consulted with local and national manufacturers and colleges. During this period he served as an adjunct faculty member in the University of Tennessee's Department of Technological and Adult Education teaching off-site undergraduate courses in Training for Human Resource Development.

In Fall of 1991, he entered the doctoral program at the University of Tennessee in the Department of Technological and Adult Education and began a graduate teaching assistantship. During the summer of 1993, he accompanied Drs. Cameron, Campbell, and Cheek on a study tour of vocational training and apprenticeship training systems in Sweden, Germany, and England. He published several training-related articles in 1993. He received his Doctor of Education Degree with a specialization in Industrial Training from the Department of Technological and Adult Education in December of 1993.

The author is currently president of Training for Human Excellence, Inc. He is a member of NSPI, ASTD, and the American Society for Quality Control (ASQC).