

Factors Influencing High School Students to Pursue Youth Apprenticeship

A DISSERTATION  
SUBMITTED TO THE FACULTY OF  
UNIVERSITY OF MINNESOTA  
BY

Gregory Thomas Slupe

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS  
FOR THE DEGREE OF  
DOCTOR OF PHILOSOPHY

DR. THEODORE LEWIS, Ph.D., Advisor

APRIL, 2014



## Acknowledgements

The formation of knowledge, skill, and self-efficacy throughout a doctoral program occurs, in part, through the interactions one has with others in the hallway and classroom, over the phone and through e-mail, in office spaces and conference rooms. Many people have supported my doctoral studies at the University of Minnesota, the corresponding research, and in general, my educational and career related pursuits. I would like to extend my deepest gratitude and appreciation to each of you for sharing your time, talent and energy.

Dr. Theodore Lewis, it is difficult to fully express my respect and admiration for your body of research, the scholars you have shared ideas with, and the time you have taken out of your personal life to benefit yet another. Simply stated, I have learned a great deal from you, and will do my very best to honor your legacy with a commitment to research grounded in principles you have shared with me.

To my committee members, Dr. Rosemarie Park, Dr. Michael Baizerman, and Dr. James Brown, I appreciate your guidance and direction throughout the dissertation process. Furthermore, please know the time you have taken to provide me with feedback, offer advice, or facilitate contact with others is greatly valued.

I would like to also acknowledge the contributions of Dr. Mark Savickas, Dr. Nancy Betz, Dr. Ellen Hawley McWhirter, and Dr. Allen Phelps. Thank you for kindly sharing your instrumentation and prior research. Through connecting with each of you, I have developed a sense of community; I will do my best to share future insight and knowledge with others as you have with me.

Thank you to Dr. Jerome Johnson, Dr. Howard Lee, Dr. Brian Finder, Dr. Brian McAlister, Dr. Carol Mooney, Dr. Richard Rothaupt, Dr. David Stricker and Dr. Kenneth Welty at the University of Wisconsin-Stout. All of you have provided me with support and have shared your wisdom during my educational and career endeavors. I am fortunate to have worked with each of you in different capacities, and look forward to our next opportunity to collaborate.

To Cathy Crary, Sue Halama, Paula Haugle, Marla Konkol, Robin Kroyer-Kubicek, Candy Lund, Jude Marion, Kristan Motszko, and Jeffrey Sullivan, I extend my sincere appreciation. Through your effort to provide youth apprenticeship programming, a different type of educational experience has been offered to interested students. In supporting my research efforts, I am hopeful we can better understand the factors contributing to student participation in such programs.

A thorough review of writing style and initial encouragement to pursue a doctoral degree was offered by Dr. Amy Gillett. Monika Herrmann was instrumental in reviewing apprenticeship and educational content relative to Germany. Statistical analysis was conducted with the support of Cori Beskow, Jon Burton, Jennifer Mans, and Susan Green. Thank you all for contributing to this doctoral research.

It is most challenging to express in words on paper (or electronically) the feelings I hold for my family, immediate and extended, here and beyond. Regardless of proximity or time, each of you have, and will continue to be, influential on my life. The lessons and experiences we have shared together are reflected in this body of research centered on

student learning. Your compassion, understanding, and love extend beyond the margins of paper and forever through time.

**Dedication**

To Angie, Jaelyn, Ashley and Clayton

## Abstract

The reasons why some students participate in work-based learning programs, such as youth apprenticeship, while others do not, are not fully understood. The study to be reported asked what the significant factors are leading to entry into a youth apprenticeship program. In concert with the Social Cognitive Career Theory (Lent, Brown, & Hackett, 1994), the variables to be assessed included: personal inputs (age, gender, ethnicity, student grades, socioeconomic status), perceived environmental support, career self-efficacy, career outcome expectations and career attitudes. A total of five school districts, located in north central and west central Wisconsin, participated in the study. Of the 178 student participants in the survey, 83 students were in a youth apprenticeship program (YA), and 95 students were not enrolled in a youth apprenticeship program (Non-YA). There were a total of 97 female students ( $n_{YA} = 50$ ,  $n_{Non-YA} = 47$ ), and 81 male students ( $n_{YA} = 33$  YA,  $n_{Non-YA} = 48$ ). From analysis of the collected data, support, career self-efficacy, and career attitude predictors were significantly different between YA and Non-YA groups at  $p < .05$  and  $p < .01$  levels. Through these research efforts it became clearer, youth apprenticeship participants have a different type of educational experience in comparison to non-youth apprenticeship students. It is hypothesized, a youth apprenticeship experience nurtured by a supportive environment would lead to improved career self-efficacy and career attitudes.

## Table of Contents

LIST OF TABLES .....	viii
LIST OF FIGURES .....	ix
CHAPTER I INTRODUCTION.....	1
Apprenticeship in Wisconsin .....	13
Problem Statement .....	15
Research Questions .....	16
Variables .....	16
Definition of Terms.....	17
CHAPTER II REVIEW OF LITERATURE .....	20
History of Career and Technical Education (CTE) and Work-Based Learning .....	20
Present CTE and Work-Based Learning Models.....	24
History of German Apprenticeship and Vocational Education and Training (VET) ...	29
Germany’s VET Policies .....	30
Germany’s Educational System.....	33
Opportunities and Challenges of German VET .....	35
Market-based Approaches to CTE.....	40
History of Apprenticeship in the United States .....	44
Prospects and Challenges of Youth Apprenticeship .....	46
Related Studies using Social Cognitive Career Theory (SCCT) .....	53
Summary .....	57
CHAPTER III METHODOLOGY .....	60
Participants.....	60
Sampling .....	61
Survey Instrument and Measures.....	62
My Perception of Support.....	62
My Belief in Personal Career Decisions.....	63
My Expectations of a Future Career .....	65
My Attitude towards a Future Career .....	66

General Information about Myself.....	67
Research Design.....	68
Pilot Study.....	68
Main Study.....	69
Protection of Human Subjects .....	70
Data Analysis Software.....	71
CHAPTER IV DATA ANALYSIS AND FINDINGS.....	73
Participant Description.....	73
School District Participants.....	73
Student Participants: General Information About Myself .....	75
Missing, Incomplete, Invalid Data.....	78
Analysis Based on Research Question One .....	79
My Perception of Support.....	80
My Belief in Personal Career Decisions .....	82
My Expectations of a Future Career .....	84
My Attitude Towards a Future Career .....	86
Analysis Based on Research Question Two .....	89
CHAPTER V DISCUSSION.....	98
Similarities and Differences of Findings .....	98
Interpretation of Results and Limitations .....	103
Research Question One.....	103
Research Question Two .....	105
Generalizability of Findings .....	107
Discussion and Implications .....	108
BIBLIOGRAPHY.....	110
APPENDIX.....	127

### List of Tables

Table 1.1. Wisconsin Youth Apprenticeship Student Enrollment and Graduate Totals by School Year.....	15
Table 4.1. Summary of YA and Non-YA Survey Participants by School District.....	73
Table 4.2. Summary of Frequencies and Percentages for YA and Non-YA Students from Section 5: General Information about Myself .....	76
Table 4.3. Summary of Means, Standard Deviations, and ANOVA for YA and Non-YA from Section 1: My Perception of Support .....	81
Table 4.4. Summary of Means, Standard Deviations, and ANOVA for YA and Non-YA Students from Section 2: My Belief in Personal Career Decisions .....	83
Table 4.5. Summary of Means, Standard Deviations, and ANOVA for YA and Non-YA Students from Section 3: My Expectations of a Future Career .....	85
Table 4.6. Summary of Means, Percentages, and Pearson's Chi-Square for YA and Non-YA Students from Section 4: My Attitude Towards a Future Career.....	87
Table 4.7. Summed Means and Standard Deviations for YA and Non-YA Students from Section 4: My Attitude Towards a Future Career .....	88
Table 4.8. Correlations Between Predictor Variables Used in Discriminant Analysis .....	93
Table 4.9. Standardized Function Coefficients and Correlation Coefficients .....	95

**List of Figures**

Figure 1.1. Social Cognitive Career Theory (SCCT) Model.....	11
Figure 1.2. Model depicting constructs posited to influence participation in high school youth apprenticeship programs. ....	12
Figure 4.1. Youth Apprenticeship (YA) predictor variable matrix .....	91
Figure 4.2. Non-Youth Apprenticeship (Non-YA) predictor variable matrix .....	92

## **Chapter I**

### **Introduction**

Graduation from high school is a point in time marked by anticipation of “what might be” and the chance to pursue goals and dreams. Graduates begin a new chapter of life faced with unique opportunities and challenges. Decisions surrounding “what to do next” can make for either a seamless or difficult transition into adult life. Environmental supports and barriers, personal attributes and experiences, and a host of other variables ultimately impact career related decisions leading up to and following high school graduation (Argyropoulou et al., 2007, Gushue, 2006, Taylor, 2005).

For students interested in gaining first-hand career related experience, many high schools offer work-based learning opportunities. One particular work-based learning program, youth apprenticeship, introduces students to vocational experience through active participation outside of the school setting, and typically has two additional components: adult mentorship and credentials based on performance competency. Succinctly, youth apprenticeships involve both organized on-the-job learning along with classroom instruction (Bailey, 1993a).

The 1990s began with a renewed interest in apprenticeship training within the United States for several reasons. With potential shortages of skilled and knowledgeable technicians for jobs requiring more applied knowledge and skill than can be expected from secondary schooling alone, or for jobs demanding different preparation than offered by four year universities, apprenticeship training was viewed as a possible solution. Germany’s long standing tradition of apprenticeship training, its cultural embeddedness

within their society and comparatively low youth unemployment rate (Schmidt, 1998; Gitter & Scheuer 1997; Gregson, 1995) became a primary point of interest amongst scholars. Floundering (Gregson, 1995) and job-hopping upon graduation of high school were also examined and discussed within the literature focused on apprenticeship and career indecision (Multon, Heppner, & Lapan, 1995). Often equated with low skill, low wage employment, and temporary labor status with limited or no benefits beyond work compensation, job-hopping and floundering were, and continue to be viewed as signs of career indecision. In part, these concerns led to a healthy debate on the merits of apprenticeship training within the United States. Out of this debate came a revitalized U.S. Office of Apprenticeship housed within the United States Department of Labor, and an increase in apprenticeship training in the country. Unfortunately, the potential factors impacting a student's choice whether or not to pursue youth apprenticeship was not systematically examined.

Why seek a better understanding of the factors influencing students to pursue a high school youth apprenticeship? An answer to this question is clearly multifaceted and requires (at a minimum) a discussion of educational policy, student perspectives, and societal norms.

Although the age of compulsory attendance varies from age 16 to age 18 within the United States, all fifty states require students to attend elementary through secondary school (U.S. Department of Education, International Affairs Staff, 2005). Public education is tax supported. Up to age 18, students (minors) are considered the responsibility of their parents or guardians. Consequently, turning 18 years of age and

graduating from high school bestows new responsibilities and freedoms upon the young adult, including the right to vote and legal independence from parental/guardian control.

In the United States, education beyond high school is often referenced as a key to future success. Formerly the worldwide leader in college graduates, a report dated July 12<sup>th</sup>, 2012 by the U.S. Department of Education reported “the percentage of 25-34 year olds with some kind of postsecondary degree rose half a percentage point from 38.8 percent to 39.3 percent...President Obama has called for America to increase the number of degree-holders to 60 percent by the end of the decade” (U.S. Department of Education, 2012, para. 3).

Research and discussion surrounding this topic relative to skill and knowledge development is abundant (Lewis, 2007; U.S. Department of Education, 2006; Ali & Saunders, 2006; Evanciew & Wither, 2004) and regarded as necessary (U.S. Department of Education, 2006). Still, unlike primary and secondary education, post high school education is not mandated. Accordingly, many students do not pursue education immediately following high school graduation.

Despite the societal push toward post high school education, not all students have the means to pursue it. Some cannot afford it or may lack entrance requirements, while others are faced with challenges resulting from environmental barriers and/or lack of support.

Although financial support (i.e.: scholarships, student loans, government aid) may be available to students, some high school graduates see the rising cost of post high school education as insurmountable or are forced to take on worrisome debt (U.S.

Department of Education, 2006). The U.S. Department of Education (2012) reported "...40 states have cut funding for higher education in the past year and tuition at four-year public universities has risen 15 percent on average in the last two years (para. 5). The upward trend in tuition has not been short term. From 1995 to 2005 " average tuition and fees rose 51 percent at public four-year institutions and 30 percent at community colleges" (U.S. Department of Education, 2006, p. 10).

Clearly, post high school education becomes less of a reality when tuition and fees grow beyond the financial means of students with fewer resources or for those considered to be disadvantaged. Although many high school students see post high school education as a means toward future career goals, these limiting factors may prevent them from enrolling.

Measures of high school success, such as standardized test scores and/or grade point averages, are often employed as college or university admissions criteria. These "screening mechanisms" assist in determining if a high school graduate would prove successful within their programs. Although these criteria specify minimal requirements of high school achievement for admission, they may not necessarily predict student performance. For instance, a student might perform poorly on a standardized test due to extreme anxiety experienced during the examination period, although s/he might clearly demonstrate her/his knowledge of the same content under different circumstances. Ultimately, some students are not accepted into postsecondary education due to low test scores.

Environmental barriers and insufficient support systems are another set of hurdles the prospective postsecondary or 4-year college candidate might encounter. According to Lent, Brown, and Hackett (2000) “proximal environmental variables can moderate and directly affect the processes by which people make and implement career-relevant choices” (p. 38). For example, parental support has been shown to impact vocational/educational self-efficacy (Ali & Saunders, 2006), that is, beliefs about one’s ability to perform particular behaviors or courses of action. Such support, in turn, can impact interests, goals, and actions relative to careers (Lent et al, 2003; Lent, Brown, & Hackett, 1994). A lack of support or even discouragement from parents, friends and relatives, could have a negative effect on a students’ attitude towards pursuing further education. Choy (2001) reported “In 1999, 82 percent of students whose parents held a bachelor’s degree or higher enrolled in college immediately after finishing high school. The rates were much lower for those whose parents had completed high school but not college (54 percent) and even lower for those whose parents had less than a high school diploma (36 percent) (Indicator 26, The Condition of Education 2001)” (p. 3). Other obstacles might include limited or lack of financial assistance to pay for tuition, books and other fees, and/or conflicting family values. As offered, environmental barriers and insufficient support systems are wide ranging.

With these limiting factors in mind, some high school graduates may simply not desire post high school education immediately upon graduation, regardless of their resources, competencies, and environmental background. Whether through decisive action or by default, they enter the labor force. For some, a job following high school

will yield a paycheck within a couple of weeks and the opportunity to work and learn in the “real world” versus spending money on tuition for two to four years. In their minds, the benefits of postsecondary education fall short of the costs. Others have grown tired of trying to memorize information with seemingly little utility (Hamilton & Hamilton, 1994). These graduates might view direct entrance into the labor force as more appealing. There may be others who desire the opportunity to someday own and operate their family business. They could potentially receive the necessary training, instruction, and mentoring to be successful in life while working in an environment already familiar to them.

According to a U.S. Department of Education, National Center for Education Statistics report (Aud et al., 2013) “Between 1975 and 2011, the immediate college enrollment rate increased from 51 percent to 68 percent. In 2011, the immediate enrollment rate for high school completers from low-income families (52 percent) was 30 percentage points lower than the rate for completers from high-income families (82 percent, based on a 3-year moving average)” (p. 132). The percentage of high school completers who were enrolled in 2- or 4-year colleges by the October immediately following high school graduation has increased steadily between 1975 and 2011 for low, middle, and high income classifications. “Low income refers to the bottom 20 percent of all family incomes, high income refers to the top 20 percent of all family incomes, and middle income refers to the 60 percent in between” (Aud et al., 2013, p. 132). Regardless of socioeconomic status, one might speculate that the 32% of students not immediately enrolling in college in 2011 choose either to enlist in the military, to enter the labor

market, to postpone college temporarily, to pursue other goals, or were undecided about what to do next.

As offered, career indecision during high school and upon graduation has been posited as contributing to floundering or hopping from one job to the next. Just as graduation from high school marks a time of independence, it also marks one of the most challenging developmental tasks of a young person's life (Blustein et al., 2002), even more so during challenging economic times. Scholars who focus upon school-to-work transition have researched and discussed floundering and job-hopping at length. These behaviors have been attributable to an overabundance of choices and too much advice (Taylor, 2005), a lack of feeling committed to an employer (Gregson, 1995), and/or a dependence on knowledge about career opportunities stemming entirely from friends, neighbors, and relatives (Bailey, 1993a). Career development theorists have described it as part of an exploratory stage of career development (Hamilton, 1993).

There are a multitude of scenarios that might play out for any high school student following graduation. In the case of the adolescent who wishes to follow in her father's footsteps with plans of pursuing a four-year degree in civil engineering, it is plausible her father might actively support her future career goals; but what challenges will she face? Maybe her scores in math and science-based classes are subpar. She knows that taking these types of courses, coupled with a respectable overall grade point average and pre-college entrance exam score are keys to achieving her goal. Will she continue to move in the direction of her aspirations or will she modify them? Is the child who has developed an interest in mechanical devices and has taken several technology-based classes, but has

no definitive plans upon graduating high school, aware of the work-based learning opportunities available to him his junior and senior year? Might these opportunities help him confirm or reject interests leading to future career goals and actions?

It would be erroneous to think all students enrolled in college preparatory courses would eventually pursue postsecondary or 4-year college education. Similarly, although work-based learning programs are often equated, even explicitly called “school-to-career programs,” it would be incorrect to assume that all students enrolled in work-based learning programs immediately enter the workforce following graduation or never pursue postsecondary education.

Student diversity fuels the need for diverse educational opportunities throughout high school. Ideally, educational experiences and the subsequent attitudes, knowledge, and skills gained from these experiences would assure that all students, regardless of background, have the opportunity to become productive and contributing members of society. Some students develop understanding through tactile experiences engaging both hands and mind; some prefer educational experiences focused on reading and reflection; and some prefer a combination of the both. Clearly, the acquisition of these attitudes, concepts, and skills are unique for each student. The theory of multiple intelligences proposed by Gardner supports this rationale, suggesting “there are a number of intelligences that are developed-and can best be detected-in culturally meaningful activities” (Gardner & Hatch, 1989, p. 6).

Just as each high school student develops these attributes in her or his own way, each differs from the other with regard to career self-efficacy, attitudes, and outcome

expectations. Each grapples with decisions concerning course selection as a function of these and other factors. Questions challenging adolescents who are uncertain about themselves, or the career options available to them might include: *Does my goal to attend college require me to take two years of foreign language and advanced placement courses? Or, I like the idea of taking classes offered by the engineering and technology department because they are hands-on, but will they help me after graduation? Do courses related to my interests and future goals even exist? What if I'm interested in classes from both areas- can I fit everything in?* In light of this, many high schools provide career planning resources, guidance, and other support systems aimed at aiding students' career decision making.

Beyond more traditional classroom based approaches, work-based learning programs offer students an alternative way to experience, develop and acquire knowledge and skills relative to career and technical education (CTE) beyond traditional classroom-based approaches alone. Job shadowing, cooperative education, and as discussed, youth apprenticeships all fall within this category.

Career psychologists have taken several different approaches toward better understanding factors influencing career choice and their subsequent impact on career development. Bandura's construct of self-efficacy, the belief in one's capabilities to organize and execute the courses of action required to produce a result (Bandura, 1997), has been investigated in numerous studies related to career decision making and career indecision (Argyropoulou et al., 2007; Perry et al., 2007; Patton & Creed, 2007; Gushue, 2006) and has been adopted as part of the Social Cognitive Career Theory (Lent, Brown,

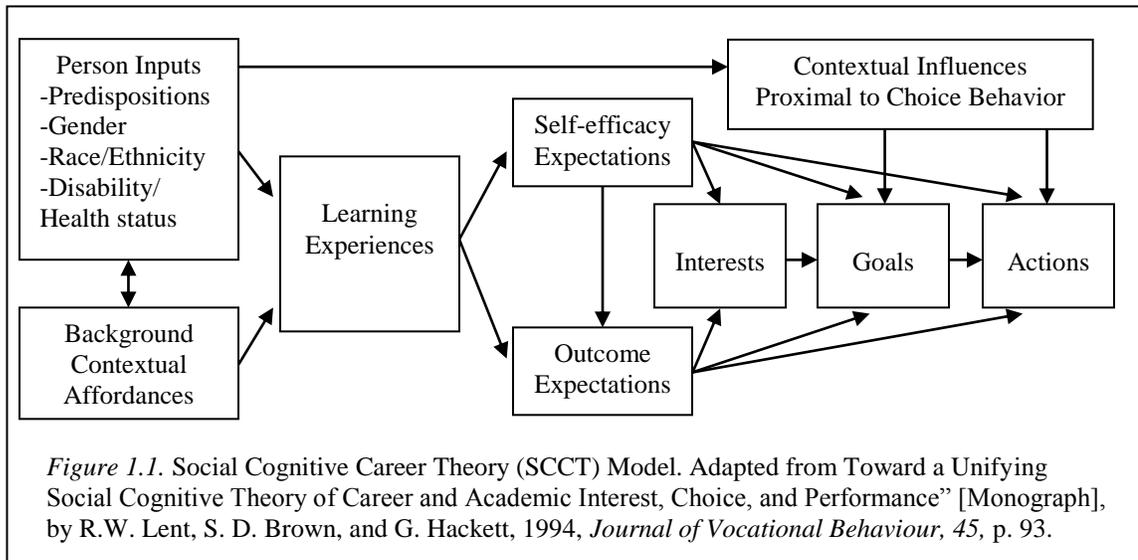
& Hackett, 1994). As Bandura (1997) stated, “people are unlikely to invest much effort in exploring career options and their implications unless they have faith in their abilities to reach good decisions” (p. 427). Betz and Klein (1996) developed the Career Decision-Making Self-Efficacy scale, to measure “an individual’s degree of belief that he or she can successfully complete tasks necessary to making career decisions” (p. 287). The instrument measures career choice competences deemed relevant for the career decision making process (Patton & Creed, 2007). In earlier work, Osipow et al., (1976) developed the Career Decision Scale (CDS) to measure career indecision and degree of certainty. Both of these instruments have been proven to provide satisfactory validity and reliability.

Since its publication in 1994, a growing number of researchers have utilized the Social Cognitive Career Theory (SCCT) in an effort to better understand the constructs and complex relationships inherent to career development (Patton & Creed, 2007; Ali & Saunders, 2006; Wettersten et al. 2005; Nauta & Epperson, 2003; McWhirter, Rasheed, & Crothers, 2000). According to Lent, Brown, and Hackett (2000), the SCCT represents an “effort to understand the processes through which people form interests, make choices, and achieve varying levels of success in educational and occupational pursuits” (p. 36).

Within the SCCT model, constructs have been classified according to two levels (see Figure 1.1). Level one cognitive-person variables include self-efficacy, outcome expectations, interests, goals, and actions, whereas level two variables include person-inputs (predispositions, gender, race/ethnicity, disability/health status), proximal and distal factors, and learning experiences (Lent, Brown, & Hackett, 1994). Level one

cognitive-person variables are said to “enable people to exercise agency (i.e., personal control) within their own career development” (Lent, Brown & Hackett, 2000, p. 36).

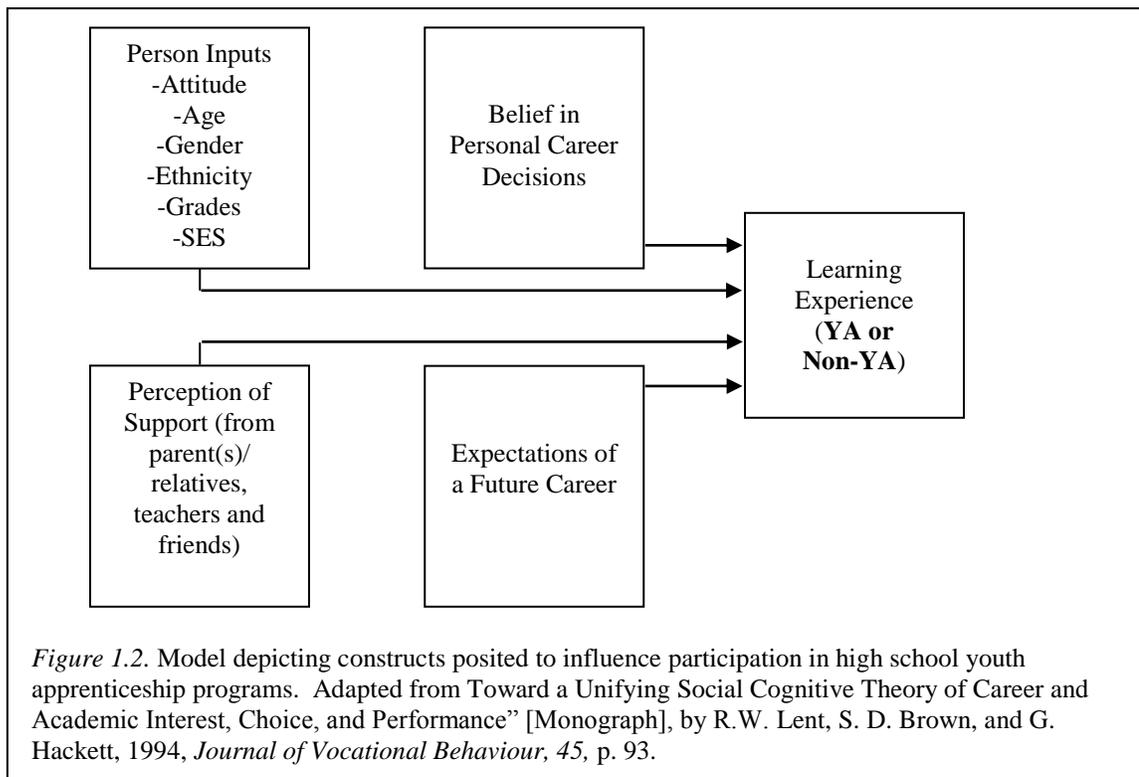
Level two variables “influence career related interests and choice behavior” (Lent, Brown & Hackett, 2000, p. 36).



Operational characteristics of the model are best summed by Lent et al. (2003):

SCCT consists of three overlapping models aimed at explaining the processes through which people (a) develop basic academic and career interests, (b) make and revise their educational and vocational plans, and (c) achieve performances of varying quality in their chosen academic and career pursuits. Self-efficacy, outcome expectations, and goals play key roles within each of these three models, operating in concert with a variety of additional person, contextual, and learning variables (e.g., gender, race–ethnicity, ability, social support, external barriers) to help shape people’s career trajectories. (p. 458)

This study was focused on two groups of students: those enrolled in a work-based learning program, specifically youth apprenticeship (YA), and their peers who are not (Non-YA). The adapted SCCT model used for this study (see Figure 1.2.) is reflective of the instrument that was issued to survey participants. Specifically, predispositions are represented as attitudes, background contextual affordances as perception of support, self-efficacy expectations as belief in personal career decisions, and outcome expectations as expectations of a future career. Personal inputs (attitude, age, gender, ethnicity, grades, and socioeconomic status), environmental supports, career self-efficacy, and career outcome expectations served as independent variables in relation to choosing, or not choosing to pursue an apprenticeship.



The merits of youth apprenticeship within the United States have been discussed and debated (Hamilton, 1993; Bailey, 1993a), but limited research exists on personal inputs, environmental supports, career self-efficacy, career outcome expectations and career attitudes relative to youth apprenticeship. A premise of this study was that an effort to expand empirical research based on these factors could potentially lead to an improved understanding of the reasons why students choose either to participate, or not participate in youth apprenticeship programs. Furthermore, information leading to an improved understanding of these factors and their subsequent effect on career related decisions could provide the educational community with new insight.

### **Apprenticeship in Wisconsin**

The Department of Workforce Development (DWD) is tasked with implementing and monitoring adult-based apprenticeship programs and youth apprenticeship programs in Wisconsin. The responsibility of administering adult-based apprenticeship program standards is held by the Bureau of Apprenticeship Standards (BAS) (Wisconsin Department of Workforce Development, 2013a). Classroom instruction is typically provided by the Wisconsin Technical College System, but can also begin while the student is in high school, however, “most trades require that applicants are high school graduates or the equivalent” (Wisconsin Department of Workforce Development, 2012, p. 9). Apprenticeship terms require a minimum of 2,000 hours of on-the-job learning along with related theoretical (academic) instruction (Wisconsin Department of Workforce Development, 2013b). Apprentices are paid progressively more money

throughout the term of their apprenticeship (Wisconsin Department of Workforce Development, 2013c).

The Wisconsin model of adult-based apprenticeship has been described as a win-win situation for both the apprentice and the employer. While learning a skilled trade, students are afforded entry into a career otherwise closed to them due to lack of experience. The goal is to develop knowledge, skills, and attitudes transferable between employers or from one geographical region to another. Employers, on the other hand reap the benefits of reduced turnover, workers learn the benefits of quality and teamwork within their respective environments, and low labor costs at the onset of the apprenticeship term reduces initial investment concerns.

Passed by state law in 1991, Wisconsin was one of the first states to enact a youth apprenticeship system for high school students. Youth apprenticeship programs are offered in two different formats, combining academic and technical instruction with mentored on-the-job learning (Wisconsin Department of Workforce Development, 2008). The Level One apprenticeship format requires 450 hours of on-the-job training, whereas the Level Two apprenticeship format requires a total of 900 hours. Work arrangements between the school and the employer may differ from district to district so long as child labor laws are not violated. For example, in certain situations students might attend school for a portion of the day and work the remainder, while in others, they might alternate full days in school with full days on the job. In either case, employers are to pay the apprenticeship student minimum wage or higher and apprentices must be assigned to a skilled, competent, and qualified mentor at the workplace.

This study focused exclusively on high school youth apprenticeship programs in Wisconsin. Student enrollment and graduate totals (Table 1.1) were provided by Amy Phillips, YA Program & WIA Technical Assistance Coordinator for the Wisconsin Department of Workforce Development, and are offered as a reference for understanding the population from which the sample was taken.

Table 1.1.  
*Wisconsin Youth Apprenticeship Student Enrollment and Graduate Totals by School Year*

	2012-13	2011-12	2010-11	2009-10	2008-09
Student Enrollment	1,883	1,686	1,660	1,660	1,895
Student Graduates	N/A	1,041	999	1,004	1,182

### **Problem Statement**

The factors why some students in Wisconsin high schools participate in the state's youth apprenticeship program while their peers in the same school cohort choose not to participate are not fully understood. Whether these factors are social, psychological, or cognitive in nature, or whether they are a function of guidance and counseling processes in schools has not been systematically investigated. The study being reported asked what are the significant factors that determine whether or not a student chooses to enter into a youth apprenticeship program.

## **Research Questions**

For the purpose of examining the identified problem, the following research questions were established:

- 1) Is there a significant difference between youth apprenticeship participants and non-participants pertaining to:
  - a. Perception of support (background contextual affordances)
  - b. Belief in personal career decisions (career self-efficacy)
  - c. Expectations of a future career (career outcome expectations)
  - d. Person inputs (attitude, age, gender, ethnicity, grades and socioeconomic status)
- 2) What combination of variables reflective of Social Cognitive Career Theory best discriminates between students who participated in youth apprenticeship and students who did not?

## **Variables**

To determine whether there are differences between those who participated in youth apprenticeship and those who do not, the following independent variables were investigated:

- 1) Perception of support (from parent(s)/relative, teachers and friends)
- 2) Career self-efficacy
- 3) Career outcome expectations
- 4) Person inputs (attitude, age, gender, ethnicity, student grades, and socioeconomic status)

## Definition of Terms

In order to provide a degree of precision and clarity, the following definitions are offered:

***Apprenticeship.*** According to *Webster's Ninth New Collegiate Dictionary* (1983), the word apprenticeship is a derivative of the word apprentice with its earliest recorded use in the English language dating back to the 14<sup>th</sup> century. The origin of the word can be traced from Middle English *aprentis*, from Middle French, from Old French, from *aprendre* to learn, from Latin *apprenere*, *apprehendere*. When used as a noun, the word apprentice is described as either (1) one bound by indenture to serve another for a prescribed period with a view to learning an art or trade, or (2) one who is learning by practical experience under skilled workers a trade, art, or calling.

For the purposes of the present study, the term “apprenticeship” will generally be used to describe a form of combined academic and work-based training involving mentorship, resulting in skills-based credentials (Fuller & Unwin, 2011).

***Career Decision.*** A common goal of many career and technical education programs is not only to offer student opportunities in work-based learning environments, but also to facilitate the process of making relevant career decisions. Career decision making is “the process people go through when they search for viable career alternatives, compare them, and choose one” (Gati & Asher, 2001, p. 7). However, a discussion surrounding the process of making career decisions would be incomplete without making mention of indecision and the contributions of Samuel Osipow (1999), who saw career “indecision as a state which comes and goes over time as a decision is made, is

implemented, grows obsolete, and eventually leads to the need to make a new decision (producing a temporary state of indecision).” (p. 147). As suggested in the literature, indecision is a normal part of human development. It has been speculated the frequency of career indecision cycle widens over the lifespan of a person. Indecisiveness, on the other hand, “is not an ordinary part of human growth and development, but is, instead, a personal trait” of someone who “repeatedly has trouble making career or other decisions to the point where closure is not reached in time to implement appropriate behavior” (Osipow, 1999, p. 148). Indecisiveness has also been referred to as generalized indecision (Argyropoulou et al., 2007).

***Registered apprenticeship.*** The United States Department of Labor, Employment and Training Administration, Office of Apprenticeship oversees the Registered Apprenticeship system and works closely with individual state apprenticeship systems “that have their own apprenticeship laws that govern Registered Apprenticeship training programs within their state or territory” (U.S. Department of Labor, 2013a).

***Youth apprenticeship.*** The general public within the United States is not likely familiar with the definition of youth apprenticeship, the details of youth apprenticeship training, the participants or program requirements. Some have confused the term youth apprenticeship with licensed union apprenticeships (Gregson, 1995) or adult-based apprenticeships.

A fraction of U.S. high school students enrolled in career and technical education classes are likely familiar with youth apprenticeships which typically involve work-based learning while completing their junior and/or senior year(s) of high school. Youth

apprenticeships introduce students to vocational experience through active participation outside of the school setting, and typically have two additional components: mentorship and credentials based on performance based competency. Cooperative education programs typically do not provide these credentials (Bailey & Merritt, 1993). Generally, youth apprenticeships involve structured or organized on-the-job learning along with classroom training (Bailey, 1993a).

For the purposes of the study, the term “youth apprenticeship” will be used in reference to secondary students participating in high school-based apprenticeship programs (Bailey & Merritt, 1993).

## **Chapter II**

### **Review of Literature**

The objective of this chapter is to review literature closely tied to the study being reported. It begins with a historical account of Career and Technical Education (CTE) and work-based learning, followed by an introduction to present day CTE and work-based learning practice. The history, policies, educational system, opportunities, and challenges of Germany's well established, policy driven approach to apprenticeship are then examined. A synopsis of the market-led approaches by Canada and the United Kingdom is provided next for an expanded international perspective, followed by a more detailed analysis of apprenticeship within the United States. Prospects and challenges in adopting youth apprenticeship as a broad educational reform follow. The chapter concludes with a review of the framework and constructs of the Social Cognitive Career Theory.

#### **History of Career and Technical Education (CTE) and Work-Based Learning**

For the United States, the later part of the 19<sup>th</sup> and early part of the 20<sup>th</sup> centuries marked an era of immigration, industrialization, and educational reform. An influx of new U.S. citizens along with technological advancements moved the country from an agrarian-based society to a highly developed industrialized society. Philosophical concepts of CTE, then known as vocational education, were discussed and debated, and ultimately led to legislative works passed into law (Dewey, 1977, Snedden, 1977, Snedden & Dewey, 1977). A synopsis of educational reformers and their philosophies toward education and work from this era, and related CTE policy, is relevant toward

better understanding the current status of both work-based learning and school-to-work transition.

During this time, two schools of thought surrounding pedagogy for engaging both hand and mind ensued. One view held the position vocational education should prepare students for specific careers, and in doing so, focus on outcomes supporting the objectives of business and industry. The other held the position vocational education should be designed to meet the needs of individual students and prepare them for life (Rojewski, 2002) within a democracy. Two names commonly attached to the first of these two views are David S. Snedden and Charles A. Prosser.

David Snedden sought to make clear distinctions between liberal (general) education and vocational education (Snedden, 1977). Through his eyes, vocational education was rightly offered by schools specifically organized for and separate from liberal education; physically and administratively. Vocational schools were to place greater emphasis on practical, occupational-specific knowledge and skill, and be governed by advisory committees of those “intimately identified with the occupation for which it trains” (Snedden, 1977, p. 51).

A former graduate student and friend of Snedden, Charles Prosser, became versed in both education and law (Moore & Gaspard, 1987). Through his relentless efforts, he became one of the most prominent spokespersons for vocational education of his time (Moore & Gaspard, 1987; Law, 1975). Serving on the Commission on Aid to Vocational Education in 1914, Prosser is credited with writing the final chapter outlining legislative recommendations that ultimately lead to the landmark Smith-Hughes Act of 1917 (PL 64-

347). This particular piece of legislation marked the first provision for federal funding of vocational education (U.S. Department of Education, Office of Vocational and Adult Education [US DOE OVAE], 2008).

Contrary to the views held by Snedden and Prosser, John Dewey's philosophy concerning vocational education was focused on the development of the individual student to function within a democratic society rather than social efficiency. Snedden's proposed separation of vocational education and general education was in Dewey's words, "to make both kinds of training narrower, less significant, and less effective than the schooling in which the material of traditional education is reorganized to utilize the industrial subject matter- active, scientific, and social- of the present-day environment" (Snedden & Dewey, 1977, p. 38). Dewey forcibly rejected the concept of dual administrations. He favored vocational education that alters and ultimately transforms business and industry. According to Dewey (1997):

...an education which acknowledges the full intellectual and social meaning of a vocation would include instruction in the historic background of present conditions; training in science to give intelligence and initiative in dealing with material and agencies of production; and study of economics, civics, and politics, to bring the future worker in touch with the problems of the day and the various methods proposed for its improvement. Above all, it would train power of readaptation to changing conditions so that future workers would not become blindly subject to a fate imposed upon them. (p. 318-319)

The Snedden/ Prosser philosophy, the Smith Hughes Act of 1917, and reauthorizations of the Act adding new vocational-specific areas, continued to serve the needs of business and industry for a long time. From a philosophical standpoint, not much had changed until the Vocational Education Act of 1963 (Rojewski, 2002; Law, 1975). This Act marked a departure from segregating vocational education from general education and toward the development of the individual, not the needs of the labor market (Law, 1975).

In more recent history, vocational education remains federally supported by means of the Carl D. Perkins Act of 1984. The original Act has since been reauthorized four times. The Carl D. Perkins CTE Improvement Act of 2006 (Perkins IV) has been authorized for six years (Threton, 2007). For the 2012 fiscal year, \$1.14 billion in funding was allocated to improve the quality of career and technical education programs across the United States (U.S. Department of Education, Office of Vocational and Adult Education [US DOE OVAE], 2012). Beyond renaming and redefining vocational education to career and technical education, Perkins IV, according to Threton (2007), “is ultimately intended to strengthen the focus on responsiveness to the economy, while tightening up the accountability statement in regards to the integration of academics and technical standards” (p. 69). As of the 2013 fiscal year, Perkins IV is up for reauthorization. According to a news release by the Association for Career and Technical Education (ACTE) and National Association of State Directors of Career Technical Education Consortium (NASDCTEc) on April 10<sup>th</sup>, 2013, Kimberly Green, Executive Director of the NASDCTEc stated:

The President's proposal to return Perkins funding to pre-sequester levels is a step in the right direction. However, with pressures of the global economy intensifying, greater investment in CTE is needed to bolster the U.S. economy, close the skills gap, and help more students be college and career ready. The existing funding for Perkins falls short of meeting the needs of communities across the country, where employers are still struggling to find well-qualified technicians and students often face waiting lists or find that CTE programs have closed due to lack of funding” (para. 5).

This brief historical account is by no means intended to overlook other educational philosophies, figures or events contributing to the history of CTE, but rather, within the confines of this chapter, to illustrate the story, debate, and progression leading to the present. In many respects, CTE has grown and transitioned from an educational concept based solely on the needs of business and industry towards preparing all students for “further education and for careers in current or emerging employment sectors” (U.S. DOE OVAE, 2008, p. ix) within a rapidly changing, technologically advanced society. Ultimately, work-based learning programs within high schools across the United States receive federal funding and guidance from the provisions enacted by the Perkins legislation.

### **Present CTE and Work-Based Learning Models**

Examination of the structure and operational characteristics of work-based learning within different societies offers policy makers, educators, and business/ industry professionals a perspective beyond their own. In several European countries, notably

Germany, Austria, Switzerland, and Denmark (Hamilton & Hamilton, 1994), apprenticeship has been employed as a means of facilitating school-to-work transition. Traditionally, apprenticeships have involved instruction at both the school and workplace. On-the-job training is performed under the supervision of a mentor.

In particular, the German dual vocational training model (dual system) has received a great deal of attention for its long standing ability to facilitate the transition from school-to-work (Gitter & Scheuer, 1997) while creating skilled and trained professionals (Beckmann, 2002), but balancing the supply of apprentices to the availability of apprenticeship positions within business and industry during tough economic times has proved challenging (Walden & Troeltsch, 2011; Idriss, 2002; Gitter & Scheuer, 1997). In light of this, federal policies were adopted to improve the number, diversity, and means by which apprenticeships are offered (Walden & Troeltsch, 2011; Idriss, 2002; Schmidt, 1998). A key aspect of this model according to Idriss (2002) is “the system has broader and deeper meaning for German society as a whole, and has social aspects in addition to its role in workforce training” (p. 474). As offered, the apprenticeship system of training and education is well rooted in German society, and has had a profound influence on the initial structure of vocational education within the state of Wisconsin as well (Kantor, 1986).

Work-based learning programs for high school students within the United States have taken on several different formats including (but not limited to) youth apprenticeship, cooperative education, internships, and job shadowing. Individual states and districts vary in how these programs are structured and offered (Minnesota

Department of Education, 2005; Wisconsin Department of Public Instruction [WI DPI], 2012; Work Based Learning Guide, 2010), but all have a work-based component.

In Wisconsin, for example (WI DPI, 2012), state certified youth apprenticeships require either 450 or 900 hours of paid work-based learning (dependent on level). The Youth Apprenticeship Program is administered by the Wisconsin Department of Workforce Development. Cooperative education programs (co-ops) may be either state certified (administered by the Wisconsin Department of Public Instruction for state certification requiring a minimum of 480 hours of work) or traditional (administered by local school districts void of state certification with work hours determined by local districts, but within the limits of child labor laws). Resources, such as support staff, available funding, and employer partnerships largely dictate the availability of these programs on a school to school basis.

CTE offers many students a unique form of educational opportunity. In many, if not most cases, work-based learning programs are offered through a CTE or vocational education department. Of course, these also differ in type, structure, and size from district to district. Of the approximately 18,000 public high schools in the United States in 2002, nearly half (51%) were either a full time CTE high school or a comprehensive high school (with academic focus) served by area CTE schools, and the majority (88%) of all public high schools offered at least one occupational program (Levesque et al., 2008). Depending on resources (i.e.: funding, staffing, materials, and equipment) available to each individual school district, high schools offer a variety of CTE programs. They may include agriculture, business, marketing, communications technology, computer

technology, construction, mechanics and repair, trade and industry/ transportation, precision production, health care, child care and education, protective services, food service and hospitality, personal and other services, along with other occupational programs (Levesque et al., 2008). According to the United States Department of Education (2003), “virtually every high school student takes at least one career and technical education course and one in four students take three or more courses in a single program area” (para. 1).

Whether in the United States or abroad, work-based learning has been both praised and criticized. High school work-based learning programs have been said to offer students the benefit of experiencing real world work experiences while in high school, integrating both vocational and educational experience (Gregson, 1995, Hamilton & Hamilton, 1994). Attitudes, knowledge, and skills developed through these experiences have been posited to contribute to adult success in the workplace (Bremer & Madzar, 1995).

Joseph Raelin has published several works on the attributes of work-based learning. According to Raelin (2010), work-based learning offers a “truer forecast of the real world” (p. 39) than classroom experiences alone as it “deliberately manages theory with practice and acknowledges the explicit and tacit forms of knowing at both the individual and collective levels” (p. 39). If knowledge is perceived as not only being stored information (i.e.: books, journals, cognitively), but also as fluid and something potentially created during work activities, the workplace has the capacity to facilitate the acquisition of knowledge. Raelin (2011) has also explored and discussed the potential for

effective work-based learning to serve as a healthy environment for what he terms “leaderful” practice, grounded in the ideals of worker empowerment, self-directed work teams, and in self-leadership.

Conversely, some work-based learning programs have been criticized for their shortcomings. Concerns have centered on issues of student tracking (Heintz, 2002; Gregson, 1995), equity (Taylor, 2005; Heintz, 2002; Gregson, 1995), vocational versus organizational skill development (Heintz, 2002), and employer participation (Idriss, 2002; Schmidt, 1998).

There are likely many reasons students choose or find themselves enrolled in work-based learning programs. Undoubtedly, work-based learning experiences offer students a real world perspective beyond the classroom or laboratory walls, with a social aspect unique to the work environment. Because U.S. business and industries compete for open-market share, a certain level of technology is necessary, along with managerial practices toward safety, quality, and productivity to remain both operational and/or profitable. The utilization of the latest technological advancements by these entities typically outpaces the technology offered in secondary school settings.

As previously mentioned, Germany’s model for facilitating the transition from adolescence into adulthood has been long established, is highly structured, and embodies German society in many respects. The magnitude and intent of interest is summed up by Bailey and Merritt (1993) as “Since the mid-1980’s hundreds of academics and policymakers have traveled to Europe to learn about apprenticeship systems in Germany and other countries, hoping to derive relevant lessons for U.S. educational reform” (p. 2).

To different degrees, other nations have adapted Germany's apprenticeship training and educational methods.

### **History of German Apprenticeship and Vocational Education and Training (VET)**

Germany has a rich heritage of apprenticeship. Known as the dual system, with formal education offered by public vocational schools and training provided by employers (Heinz, 2002), this marriage of sorts has a long lineage. As Schmidt (1998) wrote:

In medieval times, guilds developed training systems and determined who, how, and what needed to be taught. This training system, developed in the 12th and 13th centuries, may be considered the forerunner of the work-based part of the dual vocational training system (Federal Ministry of Education and Science, 1994). (para. 1).

The school-based section of the dual system emerged in the 16th and 17th centuries, when religious and artisanal Sunday Schools were established. These schools gradually evolved into general and commercial schools of continuing education and, at the beginning of the 20th century, were structured according to occupations (Federal Ministry of Education and Science, 1994). Vocational schools were one pillar of the dual training system in Germany. These vocational schools provided mostly theoretical knowledge relating to the profession to be learned. (para. 3)

At about the same time John Dewey and David Snedden were debating the philosophical constructs of vocational education within the United States, a German

philosopher by the name of Georg Kerschensteiner was promoting his own form of liberal education. Dewey proved inspirational to Kerschensteiner (“Review”, 2007) and is referred to in a number of his works (Oelkers, 2004).

Kerschensteiner was concerned vocational education carried the likelihood that, in developing ‘bourgeois’ virtues (sometimes referred to as ‘self-regarding’ virtues) through practical skills, young people would become egotistical and focused on themselves or specific jobs more so than the larger context in which their work took place (Winch, 2006). He realized not all workers could find satisfaction in work that was boring or repetitive in nature (Pritchard, 1992). While remaining committed to the development of civic virtues through vocational education, he maintained an extensive system of vocational secondary schools and post-compulsory schools while serving as the director of Munich’s schools (Winch, 2006).

### **Germany’s VET Policies**

The German government has also had a long standing tradition of policies governing apprenticeship. Key legislative works are partially responsible for the imbedded nature of the dual system approach to vocational training.

The Craft Act of 1897 (*Handwerkerschutzgesetz*) specified 1) chambers and guilds to be involved in training and holding examinations for journeymen or masters; 2) a technical qualification requirement for training apprentices by only skilled journeymen of at least 24 years of age who had either served a three-year apprenticeship or pursued their trades for at least five years as independent artisans; and 3) apprentices to be released from work to attend school and masters were obliged to ensure they did so

(Deissinger, 1994). Master craftsmen or –women (*Meister*) are required to study or survey current vocational training practices, vocational training curricula and teaching methods; the position and problems of young people in contemporary society and work, and state and federal labor laws before demonstrating their competence to an examination board set up by a chamber (Pritchard, 1992). Clearly, aptitude and skill are prerequisites for pursuing Meister status.

A second piece of legislation, the Vocational Training Act of 1969 (*Berufsbildungsgesetz*), represented the first comprehensive set of legal regulations for all phases of in-company training, continued training, and retraining (Deissinger, 1996). The Act “administered by the Ministry of Education and delegated to the national training authority, the Federal Institute for Vocation Training (BIBB)” (Sharpe & Gibson, 2005, p. 27), placed the responsibility of vocational training in the hands of firms and chambers (Deissinger, 1996). Only firms registered with a local chamber are allowed to provide accredited training for apprenticeships (Clarke, Lange, Shackleton & Walsh 1994). Chambers are tasked with interim and final assessment, and ultimately award vocational qualifications carrying national recognition (Pilz, 2007, Clarke et al., 1994). Within the literature, the Vocational Training Act of 1969 has been referred to as a specified labor law detailing the training contract or apprenticeship indenture, the personal and technical skills of training personnel, and training ordinances (Deissinger, 1996).

More recently, legislation has been passed in response to a decline in training opportunities, concerns surrounding the standards of general education, and rising qualification requirements within the labor market (Deissinger & Hellwig, 2005).

Amendments to the 1969 Act, passed by the Federal Parliament on January 27<sup>th</sup>, 2005 and documented by Deissinger and Hellwig (2005) included:

- increasing the number of young people taking up vocational training in the dual system;
- securing international competitiveness through training;
- promoting regional accountability for the training supply and the training quality;
- improving the transition between other sub-systems of VET and the dual system, including full-time vocational schools and vocational preparation courses; and
- enhancing and intensifying the cooperation between companies and vocational schools. (p. 317)

As described above, the dual system represents a cooperative effort between business and industry, organized labor, and government. Individual länder governments (states) are responsible for school/college education, while it is the responsibility of the Federal Institute of Vocational Training (BIBB) to oversee training policy and standards (Evans, Behrens, & Kaluza, 1999). The system is dual on a second count, which is that training occurs both in school and in industry. Content specifics are largely determined through the collaborative efforts of employer's associations and trade unions at the

sectoral level, and overseen by the Federal Institute for Vocational Training (*Bundesinstitut für Berufsbildung*), or BIBB which serves as a federal advisory board (Clarke et al. 1994). General training plans spell out the exact details of the learning content for individual firms, while the obligatory general syllabus defines the learning content for vocational schools (Pilz, 2007). According to Pilz (2009) “there are currently some 350 curricula (*Ausbildungsordnungen*) for apprenticeships, drawn up in agreement with unions and relevant employers’ association and underwritten by the state” (p. 191).

In Germany, financing of the dual system is shared. Companies are responsible for training costs and the training allowances (Pilz, 2007). The budget of the vocational school and the salaries of the teachers are paid by state governments. For example, a state employee in Bavaria is paid according to the Bavarian-Compensation-Act (Monika Herrmann, personal communication, June 6, 2013). In an effort to enhance training incentives, the German Federal Labour Office (*Bundesanstalt für Arbeit*) sometimes offers subsidies for wage payment assistance for apprentices and trainers (Beckmann, 2002), however it has been noted that the new federal states in the eastern part of Germany, have had difficulty implementing an appropriate funding scheme (Deissinger & Hellwig, 2005).

### **Germany’s Educational System**

The German educational system of today is characterized by strong institutional channeling (Heckhausen & Tomasik, 2002; Bailey & Merritt, 1993), “based on its streamed system of general education” (Sharpe & Gibson, 2005, p. 26). Educational mandates, pathways, and transitional times vary in Germany from state to state (*Länder*),

and it is considerably more complex when compared to the primary and secondary educational system of the United States. Students are required to start *Grundschule* (primary education) upon turning six (Hainmüller, 2003). Depending on the *Länder*, most students begin secondary schooling at age 10 and complete it at age 15 or 16. The four main types of general secondary school are *Hauptschule* (school for practical education); *Realschule* (school for a mix of practical and liberal education, with the latter being given greater emphasis than the former); *Gymnasium* (school for liberal education); and *Gesamtschule*, (comprehensive school offering practical, liberal and practical liberal education). Compulsory, tuition-free secondary education is divided into two levels within *Gymnasium*: *Unterstufe* (lower level secondary schooling during the first 5 or 6 years of secondary education) and *Oberstufe* (upper level secondary schooling during the last 3 years of secondary education).

The typical graduate of *Realschule* or *Hauptschule* often enters into an apprenticeship (Haynsworth & Perselay, 1994) upon completion. During this time, these same students will attend a vocationally oriented, state-based *Berufsschule* where they receive academic and theoretical training for 1-2 days per week, and train with a firm for the remainder of the week. (Behrens, Pilz, & Greuling, 2008; Idriss, 2002; Schmidt, 1998) Some schools offer blocked schedules where students will attend school for one full week (40 hours), followed by two weeks of full-time training on the job (Idriss, 2002; Schmidt, 1998). Apprentices will spend anywhere from 2 to 3 ½ years of training in a specific vocation (Behrens, Pilz, & Greuling, 2008; Heckhausen & Tomasik, 2002; Gitter & Scheuer, 1997). Similar in some respects to CTE courses offered in technical colleges

within the United States, students attend classes at the *Berufsschule* with others training for the same occupation (Idriss, 2002). According to Idriss (2002), “the majority of students are in the dual system, however, in some occupations-and especially in the eastern states-large numbers of students within the dual system are being trained at state-supported training facilities rather than in firms” (p. 482). “Students are required to pass an examination administered by external bodies (chambers of crafts and chambers of industry and commerce) in order to be awarded a journeyman certificate” (Gitter & Scheuer, 1997, p. 18).

Vocational education is a path pursued by many young Germans. At the turn of the 21<sup>st</sup> century, nearly two thirds of Germany’s young people participated in post-secondary education and training through the vocational training system (Idriss, 2002). During this same time, about 80% of young people in the vocational education systems participated as apprentices in the dual system, while the remaining 20% of students received full-time school-based training. In 2004, the dual system admitted 573,000 trainees on apprenticeship contracts (Pilz, 2009). In the same year, 1.6 million trainees were accounted for, making it the dominant form of training in Germany.

### **Opportunities and Challenges of German VET**

As described, the German system of vocational education and training is well established. To a certain degree, its success is measurable through legislative efforts and in the large number of students completing apprenticeships on an annual basis. Its general ability to transition students from school to the working world has drawn the attention of scholars, educators, and policymakers worldwide.

Perhaps, most intriguing about the German VET model is the level of commitment towards systematically training a future work force combined with the German social consensus on skilled labor. In Germany, skill is seen as holistic and vocational education is accorded parity of esteem with liberal learning (Lewis, 2007). This point has been elaborated further by Gitter and Scheuer (1997):

Germans consider vocational qualifications as having value in themselves, as the training will result in skills that can transfer to other occupations. Not only does apprenticeship confer broadly transferable skills on the individual, but also, it socializes the person into the work force- that is, it results in an understanding of the rules and values of the workplace, such as punctuality, discipline, and the acceptance of hierarchies. In addition, there is a perceived value in the feeling of belonging to a group of coworkers and sharing their common language and values. The German social consensus is that vocational training is important and should be provided to all youths. (p. 19)

This philosophy is further expanded from a social status perspective by Pilz (2007):

Even if a lifetime employment in one single occupation is becoming less common, the forming of social identity by the practised occupation is still an important matter. Vocationalism guarantees more or less some kind of social upgrading and also a safety net against unemployment. (p. 72)

A second point of interest is the concept of mentorship. Firms offering training in apprenticeships or any enterprise offering services to the public must employ a *Meister* (Clarke et al., 1994). These people occupy senior level positions (Clarke et al., 1994) and

hold the most valuable and significant manual qualification in German industry (Deissinger, 1994). The actual amount of time the *Meister* spends training an individual apprentice varies from firm to firm (Dougherty, 1987), but it could also be argued their qualifications, skill, and knowledge benefit the apprenticeship system on another level. As previously mentioned, the training necessary to become a *Meister* requires developing skills and knowledge specific to their respective discipline, of educational concepts and practices, and of social constructs (i.e. rules and regulations, adolescent position, and issues). Only after successful demonstration of these attributes to a chamber is the status bestowed. As suggested, the status of *Meister* represents a level of personal achievement. Their presence represents a standard of employee quality within each organizational unit and for the apprentices under their supervision. Furthermore, according to Deissinger and Hellwig (2005), “industry has now made an offer to send mentors to local schools and providers whose duty it shall be to support and guide during the apprenticeships.” (p. 319).

Other aspects of the German apprenticeship system have been mentioned in the literature and are worthy of consideration. Additional strengths of the German dual-system have been summarized by Pilz (2009) and offered as follows.

- The range of skills taught is complex and transferable between employers.
- The state exercises a coordinating role and ensures transparency by means of recognized occupations.

- The scheme has long-term stability, thereby creating continuity in the vocational training system; at the same time, each individual training process is a lengthy and sustained process of learning and socialization.
- Pay scales and status are governed by the recognized occupation in question.
- The training produces an occupational identity and sense of purpose, while the educational element fosters personal development. (p. 197)

The system has also faced its fair share of recent challenges. Discussions within recent literature focus on the availability of apprenticeship positions (Pilz, 2007; Deissinger & Hellwig, 2005; Idriss, 2002; Gitter & Scheuer, 1997) and modernization of the German apprenticeship system (Walden & Troeltsch, 2011; Pilz, 2007; Deissinger & Hellwig, 2005). Providing enough apprenticeship opportunities has stressed the dual system in recent years. To quote Pilz (2007), “In Germany over the past ten years the quantitative problem (of filling the gap between the high number of applicants and the shrinking amount of offered apprenticeships) eclipsed in many ways the qualitative aspects” (p. 83). The results of this “shrinking effect” came to a head in early 2004 and prompted the government to take action; introducing the Act to Secure Provision of Training Places (*Berufsausbildungssicherungsgesetz*) that established a training levy for companies with more than ten employees and with a training quota less than 7 percent (i.e. the share of apprentices among all employees) (Deissinger & Hellwig, 2005). As Deissinger and Hellwig (2005) wrote:

...In order to prevent the government from implementing the training levy, employers agreed on a “National Training Pact for Skills and Training (*Nationaler Pakt für Ausbildung und Fachkräftenachwuchs in Deutschland*) in which they promised to provide 30,000 additional apprenticeship places per annum for the next three years. At the same time, the government asserted to increase the number of training places in the federal administration by 20 per cent and to exert pressure on self-employing institutions within its responsibility to follow suit. (p. 318)

Combined with the federal legislation passed in 2005, it would appear the German government remains committed to several aspects of the long standing dual system, however attempts have also been made to modernize the VET system to meet the needs of both the labor market and the apprentice (Pilz, 2007). Within the commercial sector, Germany has made a shift from learning content knowledge to process knowledge and problem solving, has shifted the structure of the general syllabus from a static structure of different single subjects to a multi-dimensional combination of different learning contents, and has begun to foster cooperation between schools and firms toward united final exams. The effects of these efforts are not yet fully understood. As Pilz (2007) pointed out:

...the modernization process in this early stage can only be analyzed by using the relevant curricula and syllabuses, political papers and also the small number of existing research publications (Greiner, 2004; Deissinger & Hellwig 2005). Later

on, detailed quantitative and qualitative research on the basis of a more or less settled system, which enables statements on trends, will be necessary. (p. 71)

As stated, the concept of either partially or entirely borrowing the constructs of one education or training system for implementation by another nation is not uncommon. Differences in governing rules and regulations, economic conditions, societal or cultural norms, and long standing traditions can impact its success or lack thereof. Germany's highly structured, government-based system for transitioning youth into adulthood and comparatively low youth unemployment rates has drawn the attention of the international community for some time. Indeed, it is not difficult to locate comparative studies focusing on school-to-work transitioning or apprenticeship between country "x" and Germany. We will now focus our attention on market-based approaches to CTE evident in Canada, the United Kingdom, and the United States.

### **Market-Based Approaches to CTE**

Taylor and Watt-Malcolm (2007) reviewed the current framework and operational characteristics of Canada's approach toward apprenticeship in their study focusing on opportunities and limits of expansive learning. Similar to the German model of apprenticeship, students combine both on-the-job training with classroom instruction. The Canadian Apprenticeship Forum (CAF) assembles representatives from business, labor, government, education, and equity groups to support the system country wide. Provincial governments (such as Alberta, British Columbia, and Ontario) are responsible for regulation, certification and establishment of standards, and provide funding to

promote and deliver the programs for a relatively small number of participants (registered apprentices account for less than 1% of the national labor force).

The second largest province in terms of apprenticeship registration behind Ontario is Alberta (Taylor & Watt-Malcolm, 2007). The status of youth apprenticeships here has been investigated and documented by Lehmann (2005). In his words “compared to other Canadian provinces, Alberta has been the most persistent in its pursuit of linking schools and industry in general, and in expanding its youth apprenticeship programme in particular” (p. 109). “Informed by German dual system of vocational education” (Lehmann, 2005, p. 108), the Registered Apprenticeship Program (RAP) is aimed at providing high school students in Grade 11 (students 15 or 16 years old) with similar benefits. The system has been designed to incorporate flexibility between school and on-the-job training time, promote graduation of high school, encourage participation in post-secondary education, and address skill shortages in the trades sector (Lehmann, 2005).

In his mixed method comparative study focusing on the relationship between structural factors (i.e. class, gender) and individual-reflexive decision making in school-to-work transition, Lehmann (2004) found that “both the academic-track students and the youth apprentices whose transition plans reproduced their social status formed dispositions from a habitually limited range of possibilities” (p. 394). Within this system, Lehmann concluded it is necessary to recognize “the reproduction of social inequality in school-work transitions is not exclusively tied up with the transition process itself, we need to turn our attention to the economic rewards and social norms associated with certain careers” (p. 395).

To a similar extent as Germany, the United Kingdom has a far reaching history of apprenticeship. However, after several decades of declining participation in apprenticeship programs (Fuller & Unwin, 2003), and the recession in the early 1980's, the UK version of apprenticeship almost disappeared in its recognized form (Smith & Smith, 2007).

In an effort to improve the training and qualifications of youth entering into the labor market, the UK introduced the Modern Apprenticeship (MA) program in September of 1994 (McIntosh, 2005; Fuller & Unwin, 2003, Ryan & Unwin, 2001). The name 'Modern Apprenticeship' was chosen to distinguish it from the preexisting form of apprenticeship, offering new occupational sectors, promoting gender equality, and ultimately leading to a Level 3 National Vocational Qualification (NVQ) (Fuller & Unwin, 2003).

Marked similarities and differences between the German and UK version of apprenticeship training can be drawn from Fuller and Unwin (2003):

In the first year of the Modern Apprenticeship, programmes were offered in 14 'prototype' occupational sectors, but they quickly expanded to just over 80 sectors, many of which had no previous experiences of offering apprenticeships or indeed substantive training to young people. The government pays for all training cost covered by the framework, and the employer pays the apprentice a wage. Given the range of sectors which are allowed to offer the Modern Apprenticeship and the relative freedom of the NTOs (*National Training Organization-responsible for designing the Modern Apprenticeship 'framework' for their*

*sector*), it is not surprising that there are enormous variations between apprenticeships in terms of: pay; length of training; provision of on and off-the-job training; and range of qualifications included. (p. 7)

As stated, both MAs and NVQs have received their share of scrutiny. According to Smith and Smith (2007), “employers did not play a major role in the development of the new vocational qualifications and the modern apprenticeship systems” (p. 62). The introduction of the NVQs along with traditional vocational qualifications has complicated the system and has even deterred employers and individuals from using the new qualification structures. Some employers and learners remain committed to traditional vocational qualifications despite the introduction of NVQs and government persuasion to pursue the changeover. Completion rates of MA have struggled and fallen below half in many industry sectors (Smith & Smith, 2007; Fuller & Unwin, 2003) and efforts towards gender balancing has eluded those sectors traditionally male or female dominant (Beck, Fuller, & Unwin, 2006). In contrast to the German system of apprenticeship training, “the system enjoys no legal status under statutory law and is represented as a program under the Ministry of Education and Skills” (Sharpe & Gibson, 2005, p. 31). Fuller and Unwin (2009) state the holistic notion of the apprentice and the journey they take towards becoming a morally upright citizen with an occupational expertise is being reinvented in England to the point where the meaning of apprenticeship has become “significantly diluted” (p. 406).

In April 2005 the label ‘Modern’ was dropped, and is now referred to under the umbrella term ‘Apprenticeships’ (Smith & Smith, 2007; Beck, Fuller, & Unwin, 2006).

Apprenticeships are divided into two levels: ‘Advanced Apprenticeships’ leading to level 3 NVQ; and ‘Apprenticeship’ leading to level 2 NVQ (Beck, Fuller, & Unwin, 2006).

Fuller and Unwin (2009) reported approximately one-hundred occupational areas.

### **History of Apprenticeship in the United States**

The history of CTE in the United States by means of apprenticeship was largely influenced by Kerchensteiner through his visit to the United States in the early part of the 20<sup>th</sup> century (Lewis, 2007). Until then, training in a particular craft was passed on from a master to apprentice for a specified number of years in return for food, clothing, and/ or shelter (Wisconsin Department of Workforce Development [WI DWD], 2012). A more formal approach to apprenticeship training was enacted in 1911, when the Wisconsin Apprenticeship Law (SS 106.01) was passed. This law established the state’s vocational school system (now recognized as the Wisconsin Technical College System) to provide related classroom instruction to apprentices. This school system was “modeled on the German continuation schools pioneered by the Munich educator Georg Kerschensteiner” and “provided four to eight hours of general and practical instruction each week to youth aged 14-16 who had left school and entered the labor force” (Kantor, 1986, p. 406)

The federal government responded by passing the National Apprenticeship Act in 1937. Originally, federal legislation was aimed at providing safeguards for those engaged in apprenticeships along with facilitating the efforts of individual states, employers, and educators (The National Apprenticeship Act of 1937, Fitzgerald Act, as amended PL 75-308, 50 Stat. 664, 57 Stat. 518, 29 U.S.C. 50, 50a, 50b.).

As a nation, the United States prospered following World War II until the 1970's when questionable product quality, oil shortages, and political unrest took center stage. Continuing economic struggles in the world marketplace prompted a closer look into other systems of training. In the 1980's, American students were falling behind their peers from other developed nations throughout the world, while at the same time, global competition in automotive and electronics industries forced American manufacturers to reconsider their business strategies. In both arenas, the topic of discussion was (and remains) largely focused on quality. Once again, policymakers and scholars became interested in re-examining characteristics of the existing apprenticeship model along with successful European apprenticeship models, like those found in Germany (Bailey, 1993a), Austria, Switzerland, and Denmark (Hamilton, 1993).

The United States Department of Labor, Employment and Training Administration, Office of Apprenticeship (OA), along with the National Association of State and Territorial Apprenticeship Directors (NASTAD), work together to achieve stability and recognition of the Registered Apprenticeship model (NASTAD, 2011). The federal Registered Apprenticeship system provides incremental wage increases commensurate with improvements in skill, on-the-job training, and industry issued, nationally recognized credentials (U.S. Department of Labor, 2013b)

According to the U.S. Department of Labor (2013c) website, there were over 147,000 individuals participating in Registered Apprenticeship programs during the 2012 fiscal year (10/01/2011 to 9/30/2012). In the same year, electricians accounted for the majority of these apprenticeships (36,742), followed by carpenters (15,479) and plumbers

(13,201). States with the most Registered Apprenticeship programs in FY 2012 included Virginia (2,750), New Jersey (1,830), Connecticut (1,347), Massachusetts (1,337), Michigan (1,184), and Wisconsin (1,066). While the number of program completers appears to be holding steady, the number of active programs appears to be trending downward between FY 2003 (32,196) to FY 2012 (21,278).

Under the federal government, individual states have established their own policies governing apprenticeship. Serving as an initial model for the national apprenticeship system, “Wisconsin has deliberately shaped its laws to include apprenticeship as part of the educational structure of the State” (Wisconsin Apprenticeship Manual, 2011, p. 2) and has been amended the original law several times since it was first enacted.

### **Prospects and Challenges of Youth Apprenticeship**

Much like Germany, the apprenticeship model of career and technical education within the United States has seen its fair share of challenges. Some critics question the willingness of employers to participate in an educational model whereby inexperienced workers, in their late teens, are educated at the expense of the company (Bailey, 1993a). A massive movement toward youth apprenticeship would require a substantial number of available jobs. In addition, potentially high turnover rates might further discourage management and business owners from becoming willing participants. These uncertainties, coupled with poor economic conditions and a competitive market system, may be less than appealing to those bearing training costs.

Where apprenticeship systems for training and education have been employed, there is also discussion surrounding inequalities toward minority groups and women. According to Bailey (1993a), “Blacks have been underrepresented among apprentices in this country,” and those “who have gained access to apprenticeship programs are much more concentrated in the lower skilled occupations” (p. 8). As in other countries utilizing apprenticeship training, women in America are underrepresented. A large number of vocations supported by employers have been traditionally dominated by males. Federal and state agencies have recognized these trends and, to some degree, appear to be taking measures to promote gender equity. The Office of Apprenticeship has adopted an Equal Employment Opportunity pledge all apprenticeship sponsors are to support (Apprenticeship in Wisconsin). Essentially, the sponsor is to take affirmative action to provide equal employment opportunity in apprenticeship and will operate the apprenticeship program as required under Title 29 CFR, Part 30. Health care, in particular, has emphasized the need for greater minority participation from its workforce to match its patient population and in turn ensure better communication between patient and caregiver, and overall, improve health care (McNeil Research and Evaluation Associates, 2005.).

The prospect and challenges of expanding existing youth apprenticeship programs within the United States has been critically examined by Hamilton and Bailey. Both have discussed the apprenticeship model from the perspective of a broad educational reform.

Hamilton acknowledged there are challenges in borrowing the German model of youth apprenticeship in its entirety that should not be overlooked, but advocated positive

features could be borrowed and adapted by the United States (Hamilton & Lempert, 1996). These positive attributes would ultimately improve the transition of many youth immediately entering the workforce beyond high school. Hamilton and co-author Lempert (1996), have examined the impact of apprenticeship on adolescent development. Their review of the German model in an effort toward providing insight for youth apprenticeships in the United States addressed four questions:

1. How are young people allocated to apprenticeships and thereby to occupations?
2. What are the occupational prospects for workers who have completed apprenticeships?
3. How does apprenticeship affect young people's political socialization?
4. How does apprenticeship affect young people's personality development?

(p. 429)

Of these, question 1. most closely aligns with the purpose of the present study concerning student inputs, environmental supports and barriers; while questions 2., 3., and 4. more closely align with the concept of youth apprenticeship as an educational model for adolescents.

Hamilton and Lempert (1996) addressed the first question by examining apprenticeship through the lens of equal opportunity along with diversity in personal capability and aspirations. In order for the German model to be successful in the United States, they cited the importance of equal access to training in desirable training firms and occupations made possible through government financial support, perhaps in the

form of tax incentives, subsidies, or a levy-grant system. They maintained, “Effective schooling is essential to equalizing access to desirable apprenticeships...that enable all young people to achieve high standards and prepare them all for demanding apprenticeships” (p. 448).

The second, third and fourth questions addressed the transformative capability of the German model, and its ability to serve as a foundation for career development, political socialization, and personality development. Of these, Hamilton and Lempert (1996) state:

Perhaps the most positive finding for the United States from the German research on apprentices’ careers is that a system that relies heavily on work-based learning teaches general skills that can be transported to other employers and used as a basis for further formal and informal learning. (p. 439)

Although not explicitly stated by Hamilton and Lempert, it could be inferred, socialization and personality development are partial products of career development through the youth apprenticeship model. As they stated, the degree to which these constructs are formed depends on several other factors including the size of training firms and their competency to provide training, job skill and knowledge requirements, and the ability to provide both academic rigor and occupational breadth.

Bailey has also contributed to the body of research surrounding youth transitioning beyond high school. In 1993, he co-authored a research report investigating the feasibility of youth apprenticeship within the United States for Manpower Demonstration Research Corporation (MDRC), a nonprofit, nonpartisan education and

social policy research organization dedicated to improving programs and policies affecting the poor (History of MDRC, 2013).

The framework for analysis included four components: student participation, educational content, location of instruction, and credentialing (Bailey & Merritt, 1993). Within this framework, they examined four programs claimed to share characteristics with the apprenticeship model; namely Agricultural education, Cooperative education, High School Career Academies, and Tech Prep. Of these programs, Bailey and Merritt concluded “none of the four school-to-work models examined “even approach the level of employer involvement implied by the youth apprenticeship model” (p. 51).

Of the four components examined, Bailey and Merritt (1993) concluded “one of the most serious potential problems with the model (*youth apprenticeship*) concerns location of instruction- that is, whether the workplace can effectively provide a significant portion of the education for a large segment of American youth” (p. 59). They raised specific concerns of whether or not the workplace can function as a learning environment on the same plane as formal educational institutions. Concerns over adequacy and consistency of youth apprenticeship training, and having enough student placements permeate their discussion, as they stated: “serious monitoring and improvement of on-the-job pedagogy is extremely problematic in a system based on voluntary employer participation” (p. 60). They concluded the report by recommending expansion of existing school-based models (specifically academies and Tech Prep) and classroom simulation of effective on-the-job learning experiences. Implications and recommendations are summarized in the final paragraph of the report:

Many barriers stand in the way of the development of a large-scale youth apprenticeship program. Nevertheless, we believe that the education reform discussion, of which youth apprenticeship programs are a part, is extremely important. Many of the reforms that are associated with apprenticeships can make fundamental contributions to the broad movement to strengthen education. These include efforts to break down the distinctions between learning and working, school and community, academic and vocational instruction, and college-bound and non-college-bound students; to foster interactive links between schools and employers; to incorporate authentic work related learning into the education of large numbers of adolescents; and to address the issues of assessment and certification within a broad and comprehensive framework. Current models of youth apprenticeship may have to evolve into strategies that will make them appropriate for the economic, cultural, and institutional context of the United States. In any case, the experiences that we gain through efforts to develop youth apprenticeship models and their components will certainly lead to a more effective education system in the United States. (Bailey & Merritt, 1993, p. 63-64)

While Hamilton and Bailey agreed on some aspects of youth apprenticeship, their enthusiasm toward adapting the German model was quite different. In a 1993 issue of the *Educational Researcher* devoted to youth apprenticeship, the two debated the applicability of the German model toward educational reform within the United States.

Bailey (1993a) outlined many of the same concerns in an article entitled *Can Youth Apprenticeship Thrive in the United States?* as was outlined in the 1993 report to

the MDRC (Bailey & Merritt, 1993), questioning its ability to provide an adequate number of equitable, legitimate learning experiences in an environment lacking governance. More specifically, Bailey (1993a) stated "...there is a significant institutional problem. There needs to be some form of overarching institution trusted by employers and workers (and unions where they exist)" (p. 7). He concluded by recommending classroom-based simulation of authentic work experiences, school-based enterprises, and cognitive apprenticeships; "measures to achieve many of the benefits of apprenticeship with less reliance on employers" (p. 9).

Hamilton's (1993) article *Prospects of an American-Style Youth Apprenticeship System* replied by stating Bailey's cautions are well founded, but disagreed with his recommendations. Hamilton believed:

...it would be a mistake to move the target closer and convince ourselves that such measures would be almost as good as apprenticeship. Even if we do not succeed in building the kind of comprehensive youth apprenticeship system that advocates envision, we will learn more and achieve more by trying than by compromising...I argue that a properly designed system can overcome the barriers Bailey has identified. (p. 11)

In an effort toward making desirable apprenticeships available, Hamilton (1993) offered two suggestions based on the German model: improvement in program accessibility through mass transit systems and boarding options, and guidance in selecting the right occupational area based on availability. His article concluded by stating concern over the

potential economic decline and social imbalance should the United States fail to use workplaces as learning environments.

Bailey's (1993b) rejoinder to Hamilton restates his original position, arguing: ...under present conditions, reformers can expect only tenuous employer commitment...If employer participation is based only on good-will and a sense of public responsibility, then schools are unlikely to prevail when disagreements arise over program specifics. The employers, not the schools, will have the leverage. (p. 17)

The efforts of Hamilton and Bailey encapsulates a portion of the present study; however the literature does not investigate and discuss the degree to which personal inputs, environmental supports and barriers, student attitudes towards career, career self-efficacy, and career outcome expectations impact the choice to pursue youth apprenticeship opportunities. Where youth apprenticeship opportunities exist in the United States, do they improve career opportunities for high school graduates based on individual differences?

### **Related Studies using Social Cognitive Career Theory (SCCT)**

Several studies have used the Social Cognitive Career Theory (SCCT) model to examine potential relationships between its constructs using high school participants. In particular, three independent studies, utilizing portions of the SCCT model, have been conducted to: predict high school girls' choice of an SME college major, SME self-efficacy, outcome expectations in college, and aspiration to become leaders in SME fields

(Nauta & Epperson, 2003); predict educational and vocational attitudes among rural high school students (Wettersten et al., 2005);

Nauta and Epperson (2003) conducted a 4 year longitudinal study with the objective of examining several SCCT variables simultaneously, including measures of interest and math ability in predicting SME outcomes for high school girls. A second goal of the study was “to assess, among women who had selected SME college majors, if SCCT variables were predictive of plans to become leaders within SME fields” (p. 449).

Consistent with the author’s study regarding youth apprenticeship participation by high school students, similar measures in the work by Nauta and Epperson (2003) included both first level cognitive-personal variables and second level personal inputs and learning experiences. More specifically, first level measures included high school and college SME self-efficacy, SME outcome expectations, interests, and leadership aspirations (closely related to goals in the SCCT framework). Second level measures of personal inputs and learning experiences included math and science ability, and year in school, and number of science and math classes taken.

The findings for this study (Nauta & Epperson, 2003) were consistent with several of SCCT’s predictions, but not all. Similar to the SCCT hypotheses, Nauta and Epperson found positive and significant relationships between math-science ability and high school SME self-efficacy. They also found positive relationships between SME self-efficacy and science interests, and between science interests and SME college major choices. Contrary to the SCCT, they did not find a significant relationship between the

learning experience of enrolling in high school math and science courses and college

SME self-efficacy. According to the authors:

...this may have been due to the restriction of range in the number of high school sciences and math classes these students had taken. Perhaps this hypothesized SCCT path would have been supported had our sample included students who, in high school, were not already in a college preparatory track and who did not already have some proclivity to prefer SME fields. (p. 454)

An in-depth review of all the findings from Nauta and Epperson's (2003) study is beyond the scope of this literary review, but the framework, constructs, and findings presented serve as a legitimate reference for the present study. Recommendations for replication of their study included utilizing a larger, more diverse sample; a re-examination of the instruments used in measuring the constructs; inclusion of outcome expectations measured throughout the entire longitudinal study; and multiple assessment of the SCCT variables in an order strictly consistent with the SCCT model to answer questions about the presumed causal sequence of these factors over time.

Another study conducted as part of a doctoral course at the University of North Dakota, examined similar constructs within the SCCT framework. It "investigated the ability of assessed levels of social support, perceived parental involvement, academic self-efficacy, and perceived educational barriers to predict school engagement and work role attitudes among rural high school students" (Wettersten et al., 2005, p. 658). The study was intended to test the generalizability of a previous study by Kenny et al. (2003)

focusing on urban youth, and expanded to include academic self-efficacy and perceptions of parents' pro-educational behavior (Wettersten et al., 2005).

Simultaneous regression analysis was used to test a total of nine predictor variables. To assess work role attitudes, four predictor variables: social support, academic self-efficacy, perceptions of parents' pro-educational behaviors, and perceptions of educational barriers were subjected to three separate simultaneous regression equations for three dependent variables: career outcome expectations, academic outcome expectations, and career salience (Wettersten et al., 2005). The authors found all three regression equations to be significant. To assess school engagement, the same four predictor variables previously identified (along with outcome expectations) were subjected to separate simultaneous regression equations for two dependent variables: school engagement attitude and school engagement behavior. Again, Wettersten et al. found both regression equations to be significant.

There were three recommendations for student intervention from this study of rural high school students consistent with discussions centered on youth apprenticeship:

- (b) linking rural students with mentors in both the local community, and through the Internet, to a larger community outside of their rural house;
- (c) providing career exploration classes that give traditional training in career information and exploration but also experiential training in relationship building and self-esteem building; and

(d) consulting with teachers and parents to build strong social skills and a supportive classroom environment as a means of increasing school engagement.

(Wettersten et al., 2005, p. 663)

### **Summary**

The intent of this chapter was to review literature relevant to a study focusing on personal inputs, environmental barriers, and supports of high school students pursuing youth apprenticeship programs while in high school. It began with an overview of CTE and work-based learning, and was followed by an in-depth analysis of the Germany's long standing, government-based approach to vocational education and training. The thorough review of this system was intended to illustrate the highly structured, imbedded nature of the dual system within German society. A synopsis of market driven approaches to youth apprenticeship by Canada and the United Kingdom offered another international perspective. Upon reviewing the framework of apprenticeship systems within the United States, prospects and challenges of adopting youth apprenticeship as a broad educational reform were discussed through the eyes of Hamilton and Bailey. This chapter concluded by examining two studies that employed the Social Cognitive Career Theory (SCCT) developed by Lent, Brown, and Hackett (1994). Both studies included constructs, methods, and analysis relative to career choice.

Several developed countries have attempted to adopt or adapt to a vocational education and training model (apprenticeship system) similar to Germany. Public policies, economic conditions, and cultural norms have largely affected public perception, longevity, support, and ultimately, the success of each. The apprenticeship

model of education and vocational training has been adapted at the national, state, and local levels within the United States to various degrees with similar results.

One of the primary objectives of any apprenticeship model of vocational education and training has been to balance the number of available apprenticeship participants with the number of available apprenticeship opportunities, while satisfying the needs of several groups. With regards to Germany's apprenticeship training system, Walden and Troltsch (2011) stated "the insufficient number of apprenticeship places in recent years is less the result of any supposed obsolescence of this training system than of the close link between the apprenticeship system and the employment system" (p. 305). Broadly speaking, although an apprenticeship system has been a model of learning (knowledge, skill, attitudes, norms, etc.), a dynamic tension has existed in meeting the range of needs by invested parties (states, school districts, individuals, employers, and society) (Fuller & Unwin, 2011). At the foundation of well established, large scale apprenticeship systems, government policies have been enacted to facilitate a degree of balance; the most effective systems have legislation which accounts for the dynamic nature of their participants.

Influenced by the educational philosophy of Kerchensteiner, grounded by state law and financially supported, the state of Wisconsin has had a long standing tradition of apprenticeship training. Youth apprenticeship programs can be found in all reaches of the state, ranging from rural communities to the largest school districts. Comparatively speaking, the availability of youth apprenticeship programs state-wide made it a suitable

choice for examining student related factors contributing to the participation in like programs.

The Social Cognitive Career Theory model, and prior research utilizing it, have served as guidance in the present study focused on youth apprenticeship and factors contributing to career decisions based on career attitudes and other personal inputs (age, gender, ethnicity, grades, socio-economic status), career self-efficacy, career outcome expectations and support mechanisms. According to the SCCT model, these factors are posited to impact future career related interests, goals, and ultimately, the actions individuals take to achieve their goals. (see Figure 1.1.). Youth apprenticeship students receive a unique type of educational experience, beyond what some might term a “traditional” classroom-based approach. A better understanding as to the underlying reasons to pursue a youth apprenticeship, work-based education, versus a purely classroom-based approach has not been systematically studied utilizing a model grounded in the SCCT.

The merit of work-based learning within the United States has been, and continues to be, examined and debated amongst philosophers, educators, and politicians. Several advantages and disadvantages of youth apprenticeship training have been offered and discussed. The primary focus of this study is to examine key factors posited to contribute to student participation in a YA program relative to career decisions. If these factors are more deeply understood from a student perspective, there exists a potential to address inaccuracies, modify policies, and ultimately, enhance student learning based on individual needs, sound data, and logic.

## **Chapter III**

### **Methodology**

This chapter will provide an overview of the procedures used in addressing the research questions outlined in Chapter I. It details the design of the study, including variables and their relationships. Variables employed in the study will be operationalized. The instrument used to collect data will then be described, along with piloting of an initial draft. Participant sampling and human subject procedures are discussed. Finally, statistical methods used to derive answers to the research questions are outlined.

#### **Participants**

The general approach was that high school students who were eligible to voluntarily participate in the research study would require written permission from a parent(s) or guardian (for students 17 years of age or younger) and assent by themselves (see Appendix B). Willing participants 18 years of age or older were to sign an assent form (see Appendix C) indicating voluntary participation. Students not providing written permission from their parent(s) or guardian, and/or not providing assent themselves, were not eligible to participate.

It was anticipated and confirmed in working with local district career and technical education (CTE) coordinators, due to compliance with child labor laws and course sequencing of high school CTE related classes, it was more typical to have junior (Grade 11) and senior (Grade 12) standing students participate in youth apprenticeships than freshman (Grade 9) or sophomores (Grade 10). Thus, the focus was on junior and senior level classes. Two types of students were of interest, those participating in Youth

Apprenticeship (YA) and their peers in the same cohort who had opted not to participate (Non-YA).

### **Sampling**

Potential schools offering youth apprenticeships leading to a Wisconsin State Skills Certificate were identified through contacts made with high school CTE instructors, school district youth apprenticeship coordinators, and Cooperative Education Service (CESA) agencies across the state of Wisconsin. Additionally, a request for participation in the study was included in the March, 2012 publication of *YA News* (see Appendix D), a statewide newsletter distributed to all coordinators of youth apprenticeship programs. A conscious effort was made to approach both urban and rural schools throughout Wisconsin to provide for a more diverse demographic base.

Upon receiving written approval from each school district (see Appendix E, F, G, H, and I) and the University of Minnesota Institutional Review Board (see Appendix J), meeting times and locations were confirmed with local youth apprenticeship coordinators and high school teachers to discuss the purpose of the research, measures within the survey, and survey protocol. Parental consent and student assent forms (paper copies) were made available to these people and distributed to students approximately one week prior to completion of the surveys.

Conceptually, the number of Non-YA students from each school was to equal the number of YA students. From school to school and collectively, sample size for both the YA ( $n = 83$ ) and Non-YA ( $n = 95$ ) groups was ultimately determined by the number of

voluntary participants. The completion rate of all 77 survey items by 178 participants was 79.21%.

### **Survey Instrument and Measures**

The entire survey consisted of 5 sections: My Perception of Support (25 items), My Belief in Personal Career Decisions (25 items), My Expectations of a Future Career (12 items), My Attitude Towards a Future Career (10 items), and General Information about Myself (5 items) (See Appendix K).

**My Perception of Support.** The original Teacher Support Scale (TSS) instrument (McWhirter, 1996) was developed to assess student perception of teacher support. Metheny, McWhirter, and O’Neil (2008) have examined the psychometric properties of the 21-item instrument. For the purpose of the present study, a modified version of the 25-item Teacher Support Scale (TSS)- Revised (E. H. McWhirter, personal communication, August 11, 2009) was used.

To gauge student perception of support beyond exclusively teachers, students responded to the statement “My parent(s)/relatives, teachers and friends...” as it was hypothesized parent(s)/relative and friends have the potential to influence student support given their relationship with the subjects. As offered, the present study was not concerned with assessment of “who specifically” has been supportive of career-related goals, aspirations, and actions, but more so in collectively gauging the perceived support of individuals likely to interact with the subjects on a regular basis. Sample items from the modified TSS included “My parents/relatives, teachers, and friends...are helpful when I have questions about career issues,” “...challenge me to think about my future

goals,” and “...think I should go to college.” Modifications to wording of specific items were not made from the original instrument developed by McWhirter. The modified instrument used in the present study, employs a 5-point Likert-type scale ranging from “strongly disagree” (1 point) to “strongly agree” (5 points).

According to McWhirter, Rasheed, & Crothers (2000):

A Cronbach’s alpha of .96 was obtained in a sample of freshman and sophomore high school students (McWhirter & Paa, 1999). McWhirter and Paa (1999) also reported evidence of concurrent validity, obtaining a correlation of  $r = .72$  ( $p < .001$ ) between TSS and Farmers (1983) six-item measure of teacher support. (p. 335)

**My Belief in Personal Career Decisions.** Bandura (1997) stated, “perceived self-efficacy refers to beliefs in one’s capabilities to organize and execute the courses of action required to produce given attainments” (p. 3). Within the framework of the SCCT model (see Appendix A), self-efficacy is posited to influence career outcome expectations, interests, goals, and actions. This construct is considered to contain a dynamic set of self-beliefs, specific to particular performance domains (Lent, Brown, & Hackett, 1994). They continually interact with other personal, behavioral, and contextual factors. Bandura (1997) spoke more directly on vocational self-efficacy:

Beliefs about one’s capabilities are influential determinants of vocational life paths (Betz & Hackett, 1986; Lent & Hackett, 1987). Young adults forgo vocations they see as providing valued benefits and rewards if they lack the efficacy to fulfill the entry requirements and occupational demands (Wheeler,

1983). A low sense of efficacy thus forecloses consideration of vocational options despite opportunities and attractive incentives. Beliefs of occupational efficacy are largely the product of socioeducational experiences and prevailing cultural attitudes and practices. The adverse experiences associated with low socioeconomic status breed a low sense of occupational efficacy regardless of the prestige level of the vocation. Efficacy beliefs are diminished by experiences arising from gender barriers as well as social class barriers (Hannah & Kahn, 1989). Cultural changes have expanded the array of career options for women compared to the opportunity structures for them in the past. But ingrained stereotyping practices change slowly. Women's lowered sense of efficacy for traditionally male-dominated occupations constrains their occupational development and pursuits (Betz & Hackett, 1981) (p. 188).

For the present study, the Career Decision Self-Efficacy Scale – Short Form (CDSE–SF) instrument was used (Betz & Klein, 1996; Betz, Hammond, & Multon, 2005). The 25 item instrument employs a 5 point Likert-type scale. The lead-in statement for all 25 items reads “How much confidence to you have that you could:”. Examples of individual items include “make a plan of your goals for the next five years”; “prepare a good resume”; “change occupations if you are not satisfied with one you enter”; define the type of lifestyle you would like to have.” Respondents choose from a 5 point continuum: no confidence at all (1 point), very little confidence (2 points), moderate confidence (3 points), much confidence (4 points), complete confidence (5 points).

The original CDSE-SF instrument (Betz & Klein, 1996; Betz, Hammond, & Multon, 2005) distributes the 25 items among five subscales (Scale 1- Self-Appraisal; Scale 2- Occupational Information; Scale 3-Goal Selection; Scale 4-Planning; Scale 5- Problem Solving). The total score is computed by summing all 25 items and dividing by 25. Use of the subscales was beyond the scope of this research; individual items were assessed independently and collectively.

The Manual for the Career Decision and Self-Efficacy Scale and CDSE-Short Form by Betz and Taylor (2006) reported a Cronbach's Alpha of .96 upon replacing an original item "Find information in the library about occupations you are interested in" with "Use the Internet to find information about occupations you are interested in." Detailed evidence of content validity and structure; concurrent, predictive and discriminant validity; criterion-related and construct validity can also be found in the aforementioned manual.

**My Expectations of a Future Career.** Outcome expectations are personal beliefs about probable response outcomes (Lent, Brown, & Hackett, 1994). Whereas the construct of self-efficacy focuses on the question "*can I do this,*" the construct of outcome expectations center on "*if I do this, what will happen.*" Outcome expectations relative to career choice have been assessed within the context of several different studies utilizing the SCCT framework (Metheny, McWhirter, & O'Neil, 2008; Ali, McWhirter, & Chronister, 2005; Wettersten et al., 2005; McWhirter, Rasheed, & Crothers, 2000). Career outcome expectations have been described as an individual's imagined consequences of engaging in a career.

The original 6-item Vocational Outcome Expectation scale (VOE) was constructed by McWhirter (McWhirter, Rasheed, & Crothers, 2000) and has since been revised to include six additional questions to represent Bandura's three types of outcome expectations (self-evaluation or satisfaction, physical, and social) specific to the process of career decision-making (Metheny, 2009). VOE-R was used to sample 279 two-year and four-year college students. Metheny (2009) detailed the psychometric properties for this study:

An alpha of .92 was obtained for the present sample, suggesting adequate internal consistency (Clark & Watson, 1995). An exploratory factor analysis (EFA) was conducted using maximum likelihood extraction, no rotation, and listwise deletion of missing values. The size of the eigenvalue for the first factor relative to that of the next largest factor was 7: 1. Further, the variance of inter-item correlations was reasonably low (0.008), suggesting adequate unidimensionality (Clark & Watson). (p. 55-56)

The present study examining of factors influencing participation in youth apprenticeship, utilized the 12-item VOE-R. It included response options ranging from "strongly disagree" (1 point) to "strongly agree" (4 points). Examples of VOE-R items included, "My career planning will lead to a satisfying career for me," "I will have a career/occupation that is respected in our society," and "My career/occupation choice will allow me to have the lifestyle that I want."

**My Attitude towards a Future Career.** Research surrounding the construct of attitude as it relates to career development has been extensive. Positive exploratory

attitudes have been posited to allow individuals “to learn and optimally adapt to shifting environmental demands and psychological states” (Flum & Blustein, 2000, p. 382).

Along similar lines, it was noted by Wettersten et al. (2005) “work role attitudes positively correlate with career exploration and commitment (Stumpf & Lockhart, 1987), and (c) the SCCT model has demonstrated explanatory power for predicting school and work performance (e.g., Flores & O’Brien, 2002; Smith and Fouad, 1999)” (p. 658).

For the present study, the Career Maturity Inventory – Screening Form S, developed by Savickas and Porfeli (2011), Northeastern Ohio Universities College of Medicine, was used. The Screening Form S (10 item instrument) is a shortened version of the Career Maturity Inventory- Counseling Form C (24 item instrument) developed by Crites and Savickas. Examples of items used in the assessment of student attitude include “I don’t know what courses I should take in school”; “I really can’t find any work that has much appeal to me”; “There are so many things to consider in choosing an occupation, it is hard to make a decision.” The response format is disagree (1 point) and agree (0 points), with higher student scores representing more positive attitudes toward career choice.

Savickas and Porfeli (2011) stated the CMI Screening Form, in comparison to the Vocational Identity Scale (Holland & Holland, 1977) “with a coefficient alpha of .87, correlated .84 with the 18 items in Form C and .79 with the 10-item Screening Form” (p. 366).

**General Information about Myself.** The final section of the survey requested student background information. Measures of background information similar to those

used by McWhirter, Rasheed, and Crothers (2000) were used. Respondents indicated: 1) age as of their last birthday; 2) gender; 3) ethnicity; 4) overall grades throughout high school; and 5) female head of households' highest level of education.

### **Research Design**

**Pilot Study.** In May of 2011, a pilot study was conducted in order to assess student comprehension of the survey, and also to develop, revise, and impliment a protocol for the main study. Upon receiving approval from administration (see Appendix L) and the University of Minnesota Institutional Review Board (Appendix M), a meeting was held with the local vocational educational coordinator and CTE instructors to discuss the purpose of the research and details surrounding the pilot study (date/time, procedure, comments/concerns). Parental consent/assent forms for students 17 years of age or younger, and assent forms for students 18 years of age or older, were distributed to students approximately one week prior to conducting the survey.

A total of 24 students participated in the pilot study ( $n_{YA} = 13$ ,  $n_{Non-YA} = 11$ ). Surveys for youth apprenticeship (YA) students and non-youth apprenticeship (Non-YA) students were identical in content and void of personal identification (i.e.: student identification number or name).

The survey was administered by the principal investigator during a regularly scheduled class session. For coding and data analysis purposes, YA participants received survey packets copied on yellow paper and Non-YA students received white copies. Verbal instructions were given detailing the voluntary nature of the study, each section of the instrument, and procedure for submitting completed surveys confidentially. Students

were informed of the right to not participate in the study, and their right to withdraw from the study at any time without adverse consequence. They were asked to circle any specific instructions or statements they did not understand, and to explain their reason for circling the item within the margin of the paper. Upon submitting their survey, each participant was given a coupon for free ice cream at a local restaurant. All surveys were completed within 30 minutes.

**Main Study.** Minor modifications were made from the pilot study to the main study survey. Explicitly, within Section 5, Item 1, “What was your age on your last birthday?”, the choice of “Other \_\_\_\_\_ (Please FILL IN THE BLANK)” was replaced with “19 Years or older”. Within the same section, Item 6, “What is the female head of households’ occupation (Please PRINT Legibly)”, Item 7, “What is the male head of households’ highest level of education?” and Item 8 “What is the male head of households’ occupation (Please PRINT Legibly)” were removed from the main study instrument in order to shorten the overall length of the entire instrument and improve response rate with a single question examining social economic status: “What is the female head of households’ highest level of education?”

In a telephone conversation with Cathy Crary, Youth Apprenticeship Supervisor at the Wisconsin Department of Workforce Development on August 7<sup>th</sup>, 2009, it was explained that students within the state have the opportunity to participate in either Level 1 or Level 2 YA programs during high school. Level 1 youth apprenticeship requires the student to complete a minimum of 450 hours of work based learning, with a minimum of 250 hours taking place when related classes are held (Wisconsin Department of

Workforce Development, 2008). This is done in an effort to integrate classroom instruction and worksite learning. Level 2 youth apprenticeship requires the student to complete 900 hours and 500 hours respectively, and is targeted to high school juniors and seniors, with classes and work scheduled concurrently.

Survey protocol was identical between the pilot study and the main study. The principal investigator worked closely with the individual overseeing the youth apprenticeship program (high school counselor, YA program coordinator or local CTE coordinator), as well as classroom instructors at each individual school. In advance of each visit, an effort was made to clearly communicate the anticipated allotment of class time for all respondents to complete the survey and to answer any questions from instructional staff. Similar to the pilot study, surveys were completed in 15-30 minutes after a brief introduction and overview of the instrument. Students were offered a candy bar of their choice upon completion of the survey.

**Protection of Human Subjects.** The author of this dissertation was the principal investigator in this study. He has successfully completed training on the protection of human subjects offered by the University of Minnesota through the Collaborative IRB Training Initiative (CITI) hosted by the University of Miami Medical School. The training materials completed were specifically designed for those preparing to conduct research in social/behavioral sciences. Topical areas covered within the training modules included; history and ethics, regulatory overview, fundamental issues, vulnerable subjects (i.e. prisoners and children), and additional topics (i.e. international research and research involving the Internet).

The author has successfully completed a course entitled “Ethics and Responsible Research” at the University of Minnesota. In order to fulfill course requirements and improve understanding within this subject, he successfully completed the online workshops offered by the same institution on “Responsible Conduct of Research (RCR) Part 2”, specifically the “Intellectual Property Online Workshop” and “Quantitative Research Data Management Workshop.” The latter of these workshops focused on assuring data reliability, controlling access to data, managing data integrity, and following data retention guidelines.

Because this research was conducted within high schools and did not involve any treatments or changes in educational methods, content, or curriculum, the University of Minnesota Institutional Review Board (U of M IRB): Human Subjects Committee granted exemption from full committee review under federal guidelines 45 CFR Part 46.101 (b) category #1 Instructional Strategies In Educational Settings. Supplementary forms and information were provided to the U of M IRB. They were submitted at the same time as the exemption request explaining the proposed project, anticipated risks and benefits; letters of approval from each school district; and parental permission and student assent forms.

All completed instruments have been collected and controlled by the author. They have been, and will continue, to be controlled in accordance with University of Minnesota policy.

**Data analysis software.** The statistical software package utilized for performing descriptive analysis, analysis of variance (ANOVA), chi-square analysis, and

discriminant function data analysis (DFA) was IBM SPSS Statistics for Windows (Version 20.0). More specifically, the software was used to assess statistical assumptions and conditions, generate histograms and matrices, and perform the necessary calculations for the aforementioned statistics. Raw data were uploaded into SPSS and multiple imputation was utilized to address missing, invalid, and/or incomplete data. The knowledge and skill required to apply the software package to the present study were developed primarily through three graduate level statistics courses taken at the University of Minnesota. Field (2005) and Morgan et al. (2007) were the primary SPSS related reference materials used in conjunction with the software. Additional support in performing statistical analysis and multiple imputation was provided by the University of Wisconsin Stout-Applied Research Center.

## Chapter IV

### Data Analysis and Findings

This chapter will provide detailed analysis and findings based on data collected at five Wisconsin school districts offering youth apprenticeship programs. A description of each participating school is presented first, followed by an overview of the measures taken to address missing, incomplete, or invalid data. Descriptive item analysis, one-way analysis of variance (ANOVA), and chi-squared analysis address research question one, and serve as a precursor to discriminant function analysis (DFA). The chapter concludes with details concerning the assumptions for executing DFA and the findings concerning research question two.

#### Participant Description

**School District Participants.** A total of five school districts, located in north central and west central Wisconsin, participated in the study (Table 4.1). Of the 178 student participants in the survey, 83 students were in a youth apprenticeship program (YA), and 95 students were not enrolled in a youth apprenticeship program (Non-YA).

Table 4.1.

*Summary of YA and Non-YA survey participants by school district*

	School 1	School 2	School 3	School 4	School 5
Total YA Participants	17	31	53	≈12	23
Survey Participants					
YA	13	24	22	10	14
Non-YA	16	17	21	14	27
Total	29	41	43	24	41

School one was surveyed on Monday, May 7<sup>th</sup>, 2012. The survey was conducted on “meeting day” and began at 1:50 PM. Youth apprenticeship participants and Non-YA students came to the same class room to complete the survey.

Announcements were made over the public address system prior to the survey period at school two on Wednesday, May 9<sup>th</sup>, 2012. Both YA and Non-YA students reported to the media technology class room at 9:37 AM to complete the survey.

Representing the most YA students (53) in one school within the state, school three was surveyed on Thursday, May 10<sup>th</sup>, 2012. Similar to school two, announcements were made over the public address system at the beginning of the school day pertaining to the times and location of the survey. Youth apprenticeship participants began completing surveys at 9:00 AM. Non-youth apprenticeship participants began at 10:00 AM.

School four was surveyed on Friday, September 21<sup>st</sup>, 2012. Non-youth apprenticeship participants were surveyed during a senior level economics class meeting at 8:37 AM. Youth apprenticeship participants were surveyed at 11:50 AM in a CTE classroom.

The last school to be surveyed, school five, occurred on multiple dates. Held during a scheduled meeting day for students participating in work-based learning programs, surveys for YA students were administered on Wednesday, October 3<sup>rd</sup>, 2012 at 8:00 AM. Surveys for Non-YA students were completed on Monday, January 21<sup>st</sup>, 2013 during a first hour psychology class and second hour civics class.

**Student Participants: General Information About Myself.** All participants were asked to provide demographic data about themselves. Age, gender, ethnicity, grades, and socioeconomic status are classified as Level 2 person-inputs in the Social Cognitive Career Theory (see Figure 1.1.). These inputs have been posited to influence career related interests and choice behavior (Lent, Brown, & Hackett, 1994).

On the survey, students were able to select from one of the following age selections: 14, 15, 16, 17, 18, or 19 years or older. Through discussions with CTE coordinators and instructors, it was anticipated older high school students would be more likely to participate in youth apprenticeship programs than younger students. Although the survey was open to all ages of high school students, predominantly upper level classes, with students of junior or senior standing, were surveyed for the non-youth apprenticeship group.

Table 4.2 offers a summary of demographic data for both YA and Non-YA groups. As illustrated, the majority of YA participants were 17 years of age (56.6%), whereas the majority of Non-YA participants was 18 years of age (58.9 %). Because students 18 years of age or older could provide assent for themselves in advance or on the day for which the survey was administered, it was plausible for more 18 year old Non-YA students to have participated than any other age group.

Table 4.2.  
*Summary of Frequencies and Percentages for YA and Non-YA Students from Section 5: General Information about Myself*

Item	YA		Non-YA	
	<i>n</i>	%	<i>n</i>	%
<b>Age</b>				
14	0	0	0	0
15	1	1.2	0	0
16	10	12.0	5	5.3
17	47	56.6	32	33.7
18	25	30.1	56	58.9
19 Years or older	0	0	2	2.1
Total	83	100	95	100
<b>Gender</b>				
Male	33	39.8	48	50.5
Female	50	60.2	47	49.5
Total	83	100	95	100
<b>Ethnicity</b>				
White	80	98.8	91	96.8
Non-white	1	1.2	3	3.2
Total	81	100	94	100
<b>Grades</b>				
Mostly A's	35	44.3	36	41.4
Mostly B's	26	32.9	33	37.9
Mostly C's	18	22.8	15	17.2
Mostly D's	0	0	3	3.4
Mostly F's	0	0	0	0
Total	79	100	87	100
<b>Female Head of Household Level of Education</b>				
Completed Graduate Degree	8	10.0	13	14.0
Completed 4-Year Degree	19	23.8	18	19.4
Completed 2-Year Degree	32	40.0	19	20.4
Completed High School	17	21.3	40	43.0
Completed Elementary School	3	3.8	1	1.1
No Schooling	1	1.3	2	2.2
Total	80	100	93	100

The ratio of female to male participants for the Non-YA group was nearly one to one (49.5% to 50.5% respectively). Of the 83 youth apprenticeship students surveyed, 60.2% were female and 39.8% were male.

Student ethnicity was reported using race categories consistent with the 2010 United States Census. These categories included: White; Black or African American; American Indian or Alaska Native; Asian; Native Hawaiian or Other Pacific Islander; Some Other Race \_\_\_\_\_ (please fill in the blank). Although a concerted effort was made to approach all Wisconsin school districts offering youth apprenticeship programs, obtaining an ethnically diverse sample proved challenging. Of the 185 students reporting their ethnicity, a total of four students reported as Asian, one student as Some Other Race, and one student did not respond. This outcome was likely a function of the school populations from which the samples were drawn.

High school performance was collected by asking students to report their grades. Students responded to the statement “Throughout high school, my grades have been mostly:” by choosing from: A’s, B’s, C’s, D’s, or F’s. Self-reported grades for both YA and Non-YA students ranged primarily from mostly A’s to mostly C’s. Only three Non-YA students reported mostly D’s and no students reported mostly F’s. All 178 students answered the statement, however 12 students reported multiple answers for their grade (4 YA, 8 Non-YA). These cases were removed from the discriminant function analysis. It is acknowledged, student reporting of school performance may have positively skewed the data (resulted in higher reported grades than actually earned).

The final statement in Section 5 on the survey asked students to report the female head of households' highest level of education. The measure was used to determine the relative socioeconomic status of each survey participant. Response options listed on the survey included: no schooling; completed elementary school; completed high school; completed 2-year community college/technical college degree, completed 4-year degree; or completed graduate school degree. More youth apprenticeship students reported "Completed 2-year Degree" than any other category. For Non-YA students, "Completed High School" was most frequently reported. Data was not collected from three YA and two Non-YA students on this measure.

#### **Missing, Incomplete, Invalid Data**

Although a total of 178 students participated in the study, some students did not respond or provided multiple answers for a single question. A total of 17 cases (7 YA, 10 Non-YA) involved missing, incomplete, or invalid demographic data (ethnicity, grades and socioeconomic status), and were excluded from analysis. A total of 12 students reported multiple answers for their grade (4 YA, 8 Non-YA), and a total of five students did not respond to the question concerning female head of households' highest level of education (3 YA, 2 Non-YA). Three students did not report their ethnicity (2 YA, 1 Non-YA). All students participating in the study responded to the questions of age and gender.

At best, potential reasons for non-response to ethnicity, grades, and socioeconomic status could only be speculated. Students were not obligated to respond to any particular question, a point communicated to students prior to administering the

survey. As offered, Item 12 for career outcome expectations had the most non-responses (11) of any non-demographic measure. As the last instrument item to measure outcome expectations, it was positioned alone at the top of page 8 and immediately followed by Section 4 “My Attitude towards a Future Career.” It is possible this stand-alone item was overlooked by survey participants in anticipation of starting the next section.

Multiple imputation was performed for cases involving missing, incomplete, or invalid data for the predictor variables support, career self-efficacy, career outcome expectations, and career attitudes. Through statistical software, multiple imputation generated “possible values for missing values, thus creating several complete sets of data” (IBM, 2011, p. 13). A total of ten imputation datasets were created with the statistical software. The first dataset was arbitrarily chosen. Discriminant function analysis was performed using these multiple imputation datasets to produce outputs, and ultimately generate a model used to predict group membership for YA and Non-YA. Support from the University of Wisconsin-Stout, Applied Research Center was instrumental in conducting multiple imputation from the collected data.

### **Analysis Based on Research Question One**

Mean scores and standard deviation were calculated from Likert-type scales used in measuring career support, career self-efficacy, and career outcome expectations. One-way analysis of variance (ANOVA) was used to compare mean scores of youth apprenticeship and non-youth apprenticeship students across individual item measures and collectively for these variables. The assumed data conditions for conducting ANOVA: random sampling, independent observations, normal distribution, and

homogeneity of variance were examined and deemed satisfactory. Because the sample sizes for both groups are greater or equal to thirty ( $n \geq 30$ ), the Central Limit Theorem applies and sampling distributions were considered normal regardless of whether the original populations were normal or not (Everson, 2008a). Moreover, homogeneity of variance was concluded to be satisfactory upon comparing the variance of standard deviations (for individual items measured and collectively). According to Everson (2008b), if the largest variance is four or more times larger than the smallest variance, the assumption of equal variances has been violated. For none of the variables assessed was this the case.

**My Perception of Support.** A modified version of the 25-item Teacher Support Scale (TSS)-Revised (E. H. McWhirter, personal communication, August 11<sup>th</sup>, 2009) was used to measure support from parent(s)/relatives, teachers and friends based on a 5 point Likert-type scale. Higher mean scores for each item (and collectively) were representative of more support. Single item data was imputed for two youth apprenticeship cases; a total of 178 cases (83 YA, 95 Non-YA) were used in generating the descriptive statistics, ANOVA and finally, discriminant function analysis.

Upon examination of Table 4.3 and in conjunction with research question 1a., one-way ANOVA results revealed a statistically significant difference between YA and Non-YA group means for perception of support ( $F(1,176) = 7.33, p < .01$ ). Collectively, across all support items, the total mean score was greater for YA participants than for Non-YA participants. Youth apprenticeship participant mean scores were greater than Non-YA scores for 23 (92%) of the 25 question items. A total of 18 items (72%) were

significantly different between YA and Non-YA groups at  $p < .05$ , and a total of five items (20%) had significantly different group means at  $p < .01$ .

Table 4.3.

*Summary of Means, Standard Deviations, and ANOVA for YA and Non-YA Students from Section 1: My Perception of Support*

My parent(s)/relatives, teachers and friends....:	YA (n = 83)		Non-YA (n = 95)		F	Sig.
	M	SD	M	SD		
1. Expect me to work hard in school.	4.80	0.44	4.64	0.54	4.21	0.04*
2. Try to answer my questions.	4.25	0.68	4.27	0.69	0.04	0.84
3. Are interested in my future.	4.59	0.49	4.55	0.66	0.23	0.63
4. Take the time to help me get better grades.	4.11	0.73	3.83	0.92	4.85	0.03*
5. Will listen if I want to talk about a problem.	4.37	0.66	4.04	1.02	6.43	0.01**
6. Are helpful when I have questions about career issues.	4.31	0.78	4.10	0.81	3.32	0.07
7. Answer my questions about how to do better.	4.25	0.62	4.04	0.71	4.36	0.04*
8. Would tell other people good things about me.	4.39	0.70	4.23	0.80	1.84	0.18*
9. Are easy to talk to about school things.	4.16	0.88	4.00	0.92	1.34	0.25*
10. Challenge me to think about my future goals.	4.27	0.73	4.02	0.86	4.07	0.05*
11. Believe I am capable of achieving.	4.58	0.59	4.44	0.73	1.86	0.17*
12. Help me understand my strengths.	4.08	0.75	3.97	0.88	0.88	0.35*
13. Want me to do well in school.	4.70	0.60	4.71	0.48	0.01	0.94
14. Enjoy interacting with me.	4.34	0.69	4.11	0.84	3.98	0.05*
15. Care about me as a person.	4.54	0.55	4.44	0.56	1.44	0.23*
16. Expect me to study.	4.29	0.71	3.96	1.00	6.34	0.01**
17. Tell me if I'm not working hard enough.	4.08	0.89	3.83	1.02	3.08	0.08
18. Support my goals for the future.	4.42	0.70	4.27	0.83	1.62	0.20
19. Think I am a hard worker.	4.45	0.69	4.18	0.82	5.42	0.02*
20. Push me to succeed.	4.33	0.75	4.16	0.96	1.64	0.20
21. Are easy to talk to about things besides school.	4.04	0.94	3.82	1.16	1.81	0.18*
22. Let me know how to improve my grades.	4.02	0.81	3.62	0.97	8.90	0.00**
23. Take time to get to know me.	4.25	0.78	3.86	1.01	8.18	0.00**
24. Evaluate my work carefully.	3.89	0.81	3.42	1.10	10.32	0.00**
25. Think I should go to college.	4.72	0.53	4.50	0.74	5.46	0.02*
Mean Support	4.33	0.46	4.12	0.56	7.33	0.01**

*Note.* Survey coding: 1 = Strongly Disagree, 2 = Disagree, 3 = Not Sure, 4 = Agree, 5 = Strongly Agree; higher mean scores indicate more support. Single item data imputed for 2 YA cases

\*  $p < .05$ . \*\* $p < 0.01$ .

Based on individual item means and cumulative means for both YA and Non-YA participants, the data suggests both groups of students generally agreed to the statements on support by their parent(s)/relative, teachers and friends. Of the students surveyed, YA students perceived having more support than non-YA students. A Cronbach's alpha ( $\alpha = .94$ ) was calculated to assess internal reliability across all support items.

**My Belief in Personal Career Decisions.** Career self-efficacy was measured utilizing 25 items from the Career Decision Self-Efficacy Scale-Short Form (Betz & Klein, 1996; Betz, Hammond & Multon, 2005). A five point Likert-type scale allowed students to respond to individual statements pertaining to their degree of confidence (1 = no confidence to 5 = complete confidence). A total of 178 cases (83 YA, 95 Non-YA) were analyzed. Single item data was imputed for two YA cases and two Non-YA cases.

Youth apprenticeship students had a greater total mean score than the non-youth apprenticeship participants, and had higher mean scores for 24 (96%) of 25 items (Table 4.4). The only statement for which Non-YA students had a higher item mean score than YA students, Item 1 "Use the internet to find information about occupations," was also the greatest item mean score for Non-YAs.

With regards to research question 1b., ANOVA results revealed a statistically significant difference between group means ( $F(1,176) = 10.26, p < .01$ ) for self-efficacy. A total of 18 items (72%) were significantly different between YA and Non-YA groups at  $p < .05$ , and a total of twelve items (48%) had significantly different group means at  $p < .01$ . Internal reliability was  $\alpha = .95$ .

Table 4.4.

*Summary of Means, Standard Deviations, and ANOVA for YA and Non-YA Students from Section 2: My Belief in Personal Career Decisions*

How much confidence do you have that you could:	YA (n = 83)		Non-YA (n = 95)		F	Sig.
	M	SD	M	SD		
1. Use the internet to find information about occupations that interest you.	4.40	0.75	4.42	0.63	0.05	0.82
2. Select one major from a list of potential majors you are considering.	4.18	0.83	3.76	1.01	9.19	0.00**
3. Make a plan of your goals for the next five years.	4.04	0.85	3.50	1.12	12.94	0.00**
4. Determine the steps to take if you are having academic trouble with an aspect of your chosen major.	3.82	0.83	3.76	1.01	9.19	0.00**
5. Accurately assess your abilities.	4.07	0.71	3.74	0.93	7.19	0.01**
6. Select one occupation from a list of potential occupations you are considering.	4.24	0.77	3.83	1.08	8.24	0.00**
7. Determine the steps you need to take to successfully complete your chosen major.	4.22	0.80	3.75	1.00	11.77	0.00**
8. Persistently work at your major or career goal even when you get frustrated.	4.22	0.68	3.98	0.81	4.41	0.04*
9. Determine what your ideal job would be.	4.30	0.76	3.95	1.04	6.59	0.01**
10. Find out the employment trends for an occupation over the next ten years.	3.78	1.00	3.37	0.92	8.27	0.00**
11. Choose a career that will fit your preferred lifestyle.	4.19	0.77	4.04	0.92	1.37	0.24
12. Prepare a good resume.	3.96	0.96	3.48	1.02	10.39	0.00**
13. Change majors if you did not like your first choice.	3.74	0.90	3.70	0.91	0.09	0.77
14. Decide what you value most in an occupation.	4.25	0.75	3.96	0.81	6.32	0.01**
15. Find out about the average yearly earnings of people in an occupation.	4.33	0.70	4.08	0.87	4.06	0.05*
16. Make a career decision and then not worry whether was right or wrong.	3.72	0.91	3.33	1.16	6.27	0.01**
17. Change occupations if you are not satisfied with the one you entered.	3.80	0.89	3.59	0.96	2.16	0.14*

Table 4.4. (continued)

*Summary of Means, Standard Deviations, and ANOVA for YA and Non-YA Students from Section 2: My Belief in Personal Career Decisions*

How much confidence do you have that you could:	YA (n = 83)		Non-YA (n = 95)		F	Sig.
	M	SD	M	SD		
18. Figure out what you are and are not ready to sacrifice to achieve your career goals.	3.81	0.85	3.77	0.87	0.09	0.76
19. Talk with a person already employed in a field you are interested in.	4.45	0.75	4.10	0.89	7.96	0.01**
20. Choose a major or career that will fit your interests.	4.49	0.63	4.28	0.85	3.43	0.07
21. Identify employers, firms, and institutions relevant to your career possibilities.	4.29	0.69	3.81	0.96	14.21	0.00**
22. Define the type of lifestyle you would like to live.	4.53	0.65	4.31	0.72	4.76	0.03*
23. Find information about graduate or professional schools.	4.00	0.88	3.97	0.83	0.06	0.81
24. Successfully manage the job interview process.	4.11	0.86	3.80	1.03	4.66	0.03*
25. Identify some reasonable major or career alternatives if you are unable to get your first choice.	3.90	0.91	3.72	0.94	1.83	0.18*
Mean Career Self-Efficacy	4.11	0.52	3.83	0.63	10.26	0.00**

*Note.* Survey coding: 1 = No Confidence At All, 2 = Very Little Confidence, 3 = Moderate Confidence, 4 = Much Confidence, 5 = Complete Confidence. Higher mean scores indicate more self-efficacy. Single item data imputed for 2 YA cases and 2 Non-YA cases

\*  $p < .05$ . \*\* $p < 0.01$ .

**My Expectations of a Future Career.** Career outcome expectations were assessed using a twelve item measure. The Vocational Outcome Expectations-Revised instrument (Metheny, 2009) incorporated a 4 point Likert-type scale. Scores were assigned on a scale ranging from strongly disagree (1 point) to strongly agree (4 points). Higher scores are indicative of more positive career outcome expectations. Single item data was imputed for nine YA cases and four Non-YA cases; a total of 178 cases (83 YA,

95 Non-YA) were used in generating the descriptive statistics, ANOVA and discriminant function analysis.

Similar to support and career self-efficacy, youth apprenticeship students had a greater total mean score than non-youth apprenticeship students for career outcome expectations (see Table 4.5). Youth apprenticeship students had higher individual mean scores than Non-YA students across all twelve items. Total data dispersion for both groups was, relatively speaking, somewhat similar.

Analysis of variance revealed a statistically significant difference between group means ( $F(1,176) = 4.17, p < .05$ ) with regards to addressing research question 1c. Eight of twelve items (67%) were significantly different between groups at  $p < .05$ , and two of twelve items (17%) had significantly different group means at  $p < .01$ . Internal reliability was measured at  $\alpha = .92$  for career outcome expectations.

Table 4.5.

*Summary of Means, Standard Deviations, and ANOVA for YA and Non-YA Students from Section 3: My Expectations of a Future Career*

Item	YA (n = 83)		Non-YA (n = 95)		F	Sig.
	M	SD	M	SD		
1. My career planning will lead to a satisfying career for me.	3.55	0.50	3.40	0.53	3.92	0.05*
2. I will be successful in my chosen career/occupation.	3.60	0.49	3.42	0.54	5.45	0.02*
3. The future looks bright for me.	3.58	0.54	3.40	0.61	4.20	0.04*
4. My talents and skills will be used in my career/occupation.	3.71	0.46	3.48	0.56	8.56	0.00**
5. I have control over my career decisions.	3.59	0.52	3.45	0.60	2.66	0.10**
6. I can make my future a happy one.	3.69	0.47	3.59	0.52	1.72	0.19*

Table 4.5. (continued)

*Summary of Means, Standard Deviations, and ANOVA for YA and Non-YA Students from Section 3: My Expectations of a Future Career*

Item	YA (n = 83)		Non-YA (n = 95)		F	Sig.
	M	SD	M	SD		
7. I will get the job I want in my chosen career.	3.41	0.49	3.25	0.60	3.56	0.06
8. My career/occupation choice will provide the income I need.	3.41	0.54	3.35	0.66	0.46	0.50
9. I will have a career/occupation that is respected in our society.	3.57	0.52	3.45	0.60	1.80	0.18*
10. I will achieve my career/occupational goals.	3.53	0.50	3.42	0.54	1.94	0.17*
11. My family will approve of my career/occupation choice.	3.59	0.52	3.56	0.63	0.14	0.71
12. My career/occupation choice will allow me to have the lifestyle that I want.	3.54	0.55	3.53	0.60	0.03	0.85
Mean Career Outcome Expectations	3.56	0.37	3.44	0.42	4.17	0.04*

*Note.* Survey coding: 1 = Strongly Disagree, 2 = Disagree, 3 = Agree, 4 = Strongly Agree; higher mean scores indicate more positive career outcome expectation. Single item data imputed for 9 YA cases and 4 Non-YA cases

\*  $p < .05$ . \*\* $p < 0.01$ .

**My Attitude Towards a Future Career.** Ten items from the Career Maturity Inventory-Screening Form S (see Savickas & Profeli, 2011) were chosen to assess student attitude. Participants responded to statements with either disagree (1 point) or agree (0 points); all items were summed for a total participant score. Higher scores indicated more career maturity (positive attitude).

Frequencies, percentages, and Pearson's chi-squared statistics were calculated for career attitudes. A total of 178 cases (83 YA, 95 Non-YA) were examined. Single item data was imputed for two YA cases and two Non-YA cases. According to Field (2005), the assumptions of the chi-square test include: "each person, item, or entity contributes to only one cell of the contingency table" (p. 686), and "expected frequencies should be

greater than 5. Although it is acceptable in larger contingency tables to have up to 20% of expected frequencies below 5, the result is a loss of statistical power” (p. 686). These assumptions were met. Specifically, across all ten attitude items measured, zero cells (0%) had expected counts less than 5 when calculated using a 2 x 2 table. Direct comparison of percentages across dissimilar group sample sizes should be interpreted with caution.

Examination of Table 4.6 reveals the frequencies, percent disagree, and chi-square statistics for YA and Non-YA students. In response to research question 1d., a significant difference at the  $p = .05$  level was calculated for seven (70%) of the ten items assessing career attitude; five items (50%) were found to be statistically significant at the  $p = .01$  level. Internal reliability was measured at  $\alpha = .83$  for career attitudes.

Table 4.6  
*Summary of Frequencies, Percentages, and Pearson's Chi-Square for YA and Non-YA Students from Section 4: My Attitude Towards a Future Career*

Item	YA (n = 83)		Non-YA (n = 95)		$\chi^2$	Sig.
	n	% disagree	n	% disagree		
1. I can't understand how some people can be so certain about what they want to do.	59	71.1	53	55.8	4.44	0.04*
2. I don't know what courses I should take in school.	70	84.3	73	76.8	1.58	0.21
3. I know very little about the requirements of jobs.	77	92.8	78	82.1	4.48	0.03*
4. I really can't find any work that has much appeal to me.	81	97.6	80	84.2	9.18	0.00**
5. I often daydream about what I want to be, but I really have not chosen an occupation yet.	62	74.7	59	62.1	3.23	0.07
6. Everyone seems to tell me something different; as a result I don't know what kind of work to choose.	72	86.7	63	66.3	10.09	0.00**

Table 4.6 (continued)

*Summary of Frequencies, Percentages, and Pearson's Chi-Square for YA and Non-YA Students from Section 4: My Attitude Towards a Future Career*

Item	YA (n = 83)		Non-YA (n = 95)		$\chi^2$	Sig.
	n	% disagree	n	% disagree		
7. There are so many things to consider in choosing an occupation, it is hard to make a decision.	48	57.8	34	35.8	8.66	0.00**
8. I keep changing my occupational choice.	64	77.1	62	65.3	3.01	0.08
9. I don't know how to go about getting into the kind of work I want to do.	77	92.8	66	69.5	15.22	0.00**
10. I am having difficulty in preparing myself for the work that I want to do.	75	90.4	68	71.6	9.89	0.00**

*Note.* Survey coding: 1 = Disagree, 0 = Agree; higher summed scores indicate more career maturity (positive attitude) Single item data imputed for 2 YA cases and 2 Non-YA cases. Percentage Disagree calculated from 83 total YA participants and 95 total Non-YA participants  
\*  $p < .05$ . \*\* $p < 0.01$ .

Total sum mean scores (out of 10 points) and standard deviations for youth apprenticeship students and non-youth apprenticeship students are offered in Table 4.7. Youth apprenticeship students disagreed to approximately 2 more statements, and had a standard deviation of nearly 1 point less than Non-YA students.

Table 4.7.

*Summed Means and Standard Deviations for YA and Non-YA Students from Section 4: My Attitude Towards a Future Career*

	YA		Non-YA	
	M	SD	M	SD
Summed Means Career Attitudes	8.25	1.97	6.70	2.94

*Note.* Calculated from 83 total YA participants and 95 total Non-YA participants. Possible summed mean score range: 0 - 10. Single item data imputed for 2 YA cases and 2 Non-YA cases.

## **Analysis Based on Research Question Two**

Discriminant function analysis (DFA) was utilized as a means to address research question two. Assumption and conditions for conducting discriminant function analysis were performed for validity of the study.

A linear relationship between all predictor pairings (gender, age, ethnicity, grades, socioeconomic status, perception of support, career self-efficacy, career outcome expectations, and career attitudes) was examined by generating matrix scatterplots for YA (Figure 4.1) and Non-YA (Figure 4.2). A linear fit line, determined using ordinary least squares, was added to each cell within the scatterplot for improved analysis. As best can be determined, the predictor pairings appear to exhibit relatively linear relationships.

The assumption of multivariate normality, “an extension of a normal distribution to multiple variables” (Field, 2005, p. 739), was examined within YA and Non-YA groups. According to Morgan, Leech, and Barrett (2007), “violations of multivariate normality may affect accuracy of estimates of the probability of correct classification” (p. 114).

Although most all of the predictor variables appear to be normally distributed (see Appendix N), combined YA and Non-YA distribution for mean scores of career outcome expectations suggest the data could be bimodal. This observation calls into question the assumption of multivariate normality for career outcome expectations. Logistic regression is suggested as a possible alternative to DA in cases where multivariate non-normality is suspected.

An assumption “that the variance of one variable is stable (i.e. relatively similar) at all levels of another variable” (Field, 2005, p. 733), can be tested using Box’s M and through examination of matrix scatterplots. Testing for homogeneity of variance-covariance is said to be “susceptible to deviations from multivariate normality” (Field, 2005, p. 725).

Equality between YA and Non-YA groups was initially investigated using Box’s M test ( $p = .03$ ). A significant score prompted closer examination of a matrix scatterplot (see p. 90 and 91). The spread of scores (variance) from the mean was determined to be relatively similar at all levels for the variables measured for both YA and Non-YA groups, however, the investigator acknowledges an assessment of variability in comparing the matrix scatterplots is subjective, and therefore open to differing interpretations.

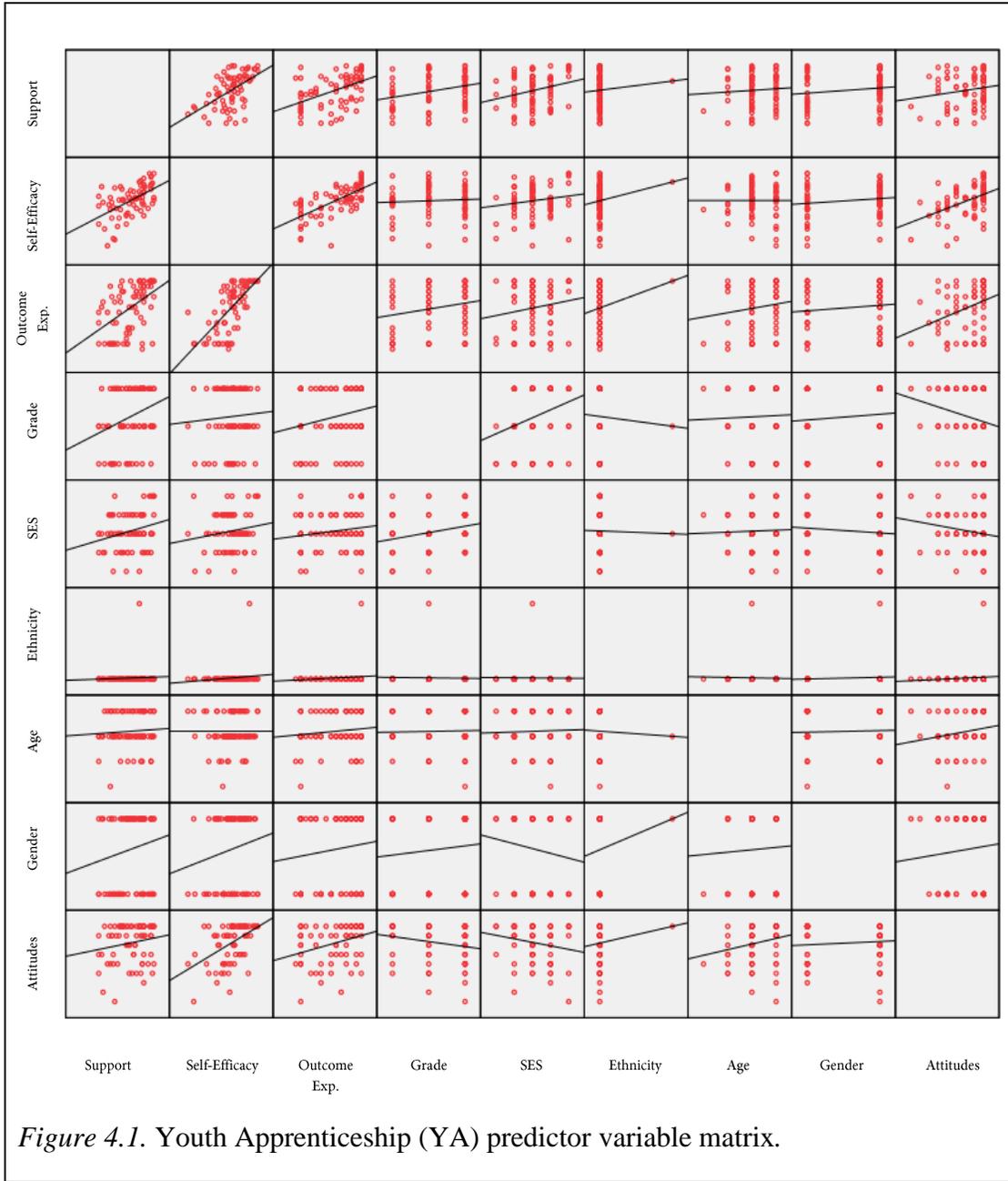
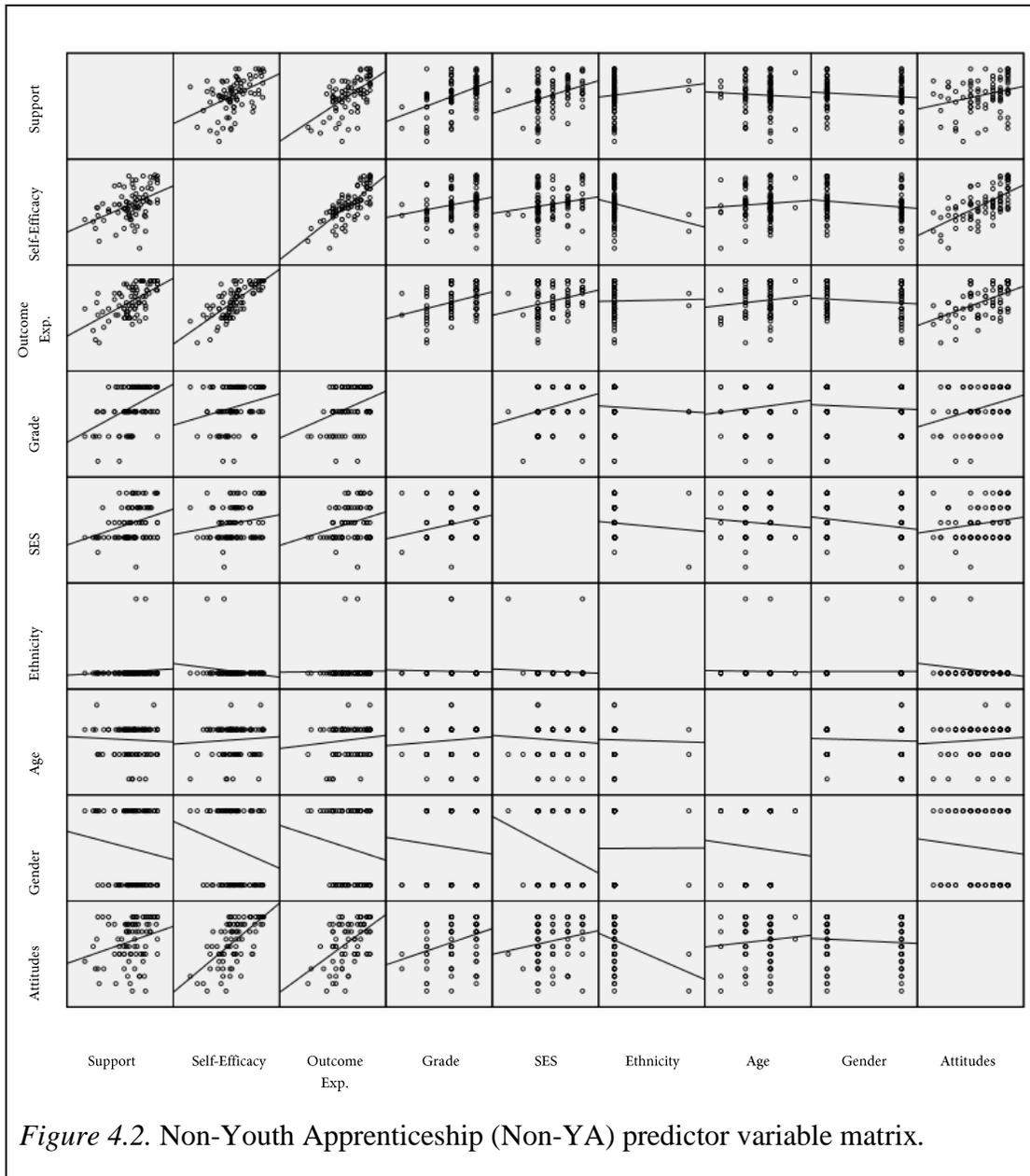


Figure 4.1. Youth Apprenticeship (YA) predictor variable matrix.



The condition of multicollinearity exists when “two or more variables are very closely linearly related” (Field, 2005, p. 738); perfect collinearity equals one. Pearson’s  $r$  can be used to assess the magnitude of the correlation and subsequently categorized as either small effect ( $r = .1$ ), medium effect ( $r = .3$ ) or large effect ( $r = .5$  and greater).

Correlation between predictor variables were investigated within a correlation matrix (Table 4.8). Correlations with a large effect included: self-efficacy and support ( $r = .49$ ), career attitudes and career outcome expectations ( $r = .51$ ), career outcome expectations and support ( $r = .56$ ), career attitudes and career self-efficacy ( $r = .61$ ), career outcome expectations and career self-efficacy ( $r = .71$ ).

Table 4.8.

*Correlations Between Predictor Variables Used in Discriminant Analysis*

Predictor		1.	2.	3.	4.	5.	6.	7.	8.
1. Support	Pearson $r$								
	N								
2. Self-Efficacy	Pearson $r$	.49**							
	N	178							
3. Outcome Exp.	Pearson $r$	.56**	.71**						
	N	178	178						
4. Attitudes	Pearson $r$	.29**	.61**	.51**					
	N	178	178	178					
5. Age	Pearson $r$	-.07	-.04	.07	.03				
	N	178	178	178	178				
6. Gender	Pearson $r$	.02	.01	.00	-.00	-.07			
	N	178	178	178	178	178			
7. Grade	Pearson $r$	.38**	.13	.26**	.10	.06	-.02		
	N	166	166	166	166	166	166		
8. SES	Pearson $r$	.26**	.19*	.25**	.10	-.03	-.14	.24**	
	N	173	173	173	173	173	173	161	

\*  $p < .05$ . \*\*  $p < 0.01$ .

The high correlation of the aforementioned variables might be anticipated based on literature review. As offered, a total of eight variables, gender, age, grades, socioeconomic status, support, career self-efficacy, career outcome expectations and career attitudes, were included in the discriminant function analysis.

Discriminant function analysis (DFA) was used to develop a statistical model capable of best predicting youth apprenticeship (YA) and non-youth apprenticeship (Non-YA) participation from collected data. As stated previously, multiple imputation was used for missing cases of all variables with the exception of demographic predictors (age, grade, and socioeconomic status). Of the 178 participants, a total of 17 cases were not included in the discriminant function analysis due to missing at least one of these variables. Student ethnicity was nearly homogenous, therefore it was not used as a predictor variable. The predictor variables used for the DFA included: support, career self-efficacy, career outcome expectations, career attitudes, age, gender, grade, and socioeconomic status.

Total mean scores for support, age, and career self-efficacy ( $p < .01$ ) were statistically significant predictors of group membership on their own at  $p \leq .05$  and  $p \leq .01$  levels. The total mean summation score for career attitudes ( $p < .01$ ) was also a statistically significant predictor of group membership on its own.

Wilks' lambda was significant ( $\lambda = .82$ ,  $\chi^2 = 32.21$ ,  $p < .01$ ). The relatively small effect size for the variance of the entire analysis was partial  $\eta^2 = .08$ . The effect size used to describe the variance of each discriminant function (.19) was calculated by squaring the cononical correlation (.43) found in the Eigenvalues table of the SPSS output. As such, the model including support, career self-efficacy, career outcome expectations, career attitudes, age, gender, and grade was able to significantly discriminate the YA and Non-YA groups.

Table 4.9 illustrates the standardized function coefficients. Of the eight predictor variables within the model, the table suggests age (-.68) contributed the most towards distinguishing between those enrolled in a youth apprenticeship program with those who did not. From the collected data, as the age of a student increased, they were less likely to participate in a YA program. The inverse relationship of age to group participation should be carefully considered within the context for which the data was gathered. Career attitude (.64), support (.36) and gender (.20), carried the second, third, and fourth most weight within the model, respectively.

Table 4.9.

*Standardized Function Coefficients and Correlation Coefficients*

	Standardized function coefficients	Correlations between variables and discriminant function
Age	-0.68	-0.62
Career attitudes	0.64	0.61
Support	0.38	0.46
Gender	0.20	0.21
Outcome expectations	-0.17	0.29
Career self-efficacy	0.07	0.47
Grades	0.04	0.08
Socioeconomic status	0.02	0.13

Correlations with the overall discriminant function can also be evaluated in Table 4.9. Age (-.62), career attitudes (.61), career self-efficacy (.47) and support (.46) could be considered moderately high correlations. On their own, all four of these predictors were also statistically significant at  $p \leq .05$  and  $p \leq .01$  levels, whereas grade, gender, career expectations and socioeconomic status were not.

The negative standardized function coefficients for age (-0.68) and outcome expectations (-0.07) are worthy of further discussion. As such, the DFA standardized

function coefficient is a between groups measure; between the youth apprenticeship and the non-youth apprenticeship group. Coding for all variables analyzed was set to YA = 1, Non-YA = 0.

It is speculated, a potential reason for the negative coefficient regarding age relates to the ability for students 18-years of age or older to provide self-assent. As represented in Table 4.2, of the students surveyed, 57% of YA students were 17 years old in comparison to 34% Non-YA students; 30% of YA students were 18 years old in comparison to 59% Non-YA students. All willing participants, youth apprenticeship or non-youth apprenticeship, were eligible to complete the survey instrument, but more Non-YA students 18 years old likely participated because they could provide assent for themselves “on-the-spot” without parental consent. Conversely, YA student participants represented a markedly smaller number of students from the population of each school, and consequently, there were typically far fewer YA students 18 years old. The negative value of the standardized function coefficient reflects this inverse pattern where older students tended to be Non-YA participants and younger students tended to be YA participants.

If data coding would have been reversed (YA=0 and Non-YA=1), the standardized function coefficients observed in Table 4.9 would have been positive for age and outcome expectations, but all other coefficients would have been negative. Future research could more closely control for age and outcome expectations to determine if these predictor variables truly have an inverse relationship with the discriminant function.

The discriminant function classification results correctly predicted 72.4% of youth apprenticeship students sampled and 64.7% of non-youth apprenticeship students sampled. Comparable classification percentages for each group were observed upon re-running the discriminant function analysis a second time with only age, career attitudes, support, and career self-efficacy used as predictor variables (YA predicted group membership = 73.5%, Non-YA group membership = 67.4%).

## Chapter V

### Discussion

#### Similarities and Differences of Findings

This study examined potential factors leading to participation in a youth apprenticeship program by high school students. Prior studies have investigated similar factors in relation to the career decisions faced by adolescents. Additional research efforts have focused specifically on the Wisconsin Youth Apprenticeship Program.

The research conducted by Nauta and Epperson (2003) found positive and significant relationships between math-science ability and high school science, math and engineering self-efficacy. They also found positive relationships between SME self-efficacy and science interests. The present study concerning youth apprenticeship participation also found positive correlation ( $r = .13$ ), albeit of small effect, between career self-efficacy and grades.

Wettersten et al. (2005) studied social support, perceived parental involvement, academic self-efficacy, and perceived educational barriers effect on career outcome expectations, academic outcome expectations, and career salience among high school students by means of separate simultaneous regression analysis. Their research proposed connecting rural students with mentors through the internet, providing career exploration through traditional and experiential means to foster relationships and self-esteem, and “consulting with teachers to build strong social skills and a supportive classroom environment as a means of increasing school engagement” (p. 663). Along similar lines, support from parent(s)/relatives, teachers and friends was positively correlated and

statistically significant at  $p < .01$  level with career outcome expectations ( $r = .56$ ), career self-efficacy ( $r = .49$ ), grades ( $r = .38$ ), and attitudes ( $r = .29$ ) for youth apprenticeship and non-youth apprenticeship students in the present study.

These findings and related career theory literature suggest a dynamic relationship exists between of individuals providing support, attitudes towards a future career, career self-efficacy, and career outcome expectations. Presence or absence of one of these constructs is influential on another (either positively or negatively), and likely impacts career relevant decisions, such as whether or not to pursue a youth apprenticeship while attending high school.

Several research efforts have centered on the Wisconsin Youth Apprenticeship Program (YAP) since its inception in 1991. Halpern (2009) described YAP as coming “closest of any program in the United States to embodying the elements and procedures in (as well as the issues and problems presented by) a full scale system” (p. 68).

Participating students work with mentors and must demonstrate a level of competency in industry established skill standards in order to receive a Certificate of Occupational Proficiency from the state.

Wisconsin has recognized and taken positive action to promote ethnic and gender equity within its youth apprenticeship program. According to Scribner and Wakelyn (1998), “the implications of discrimination of any kind occurring in the Youth Apprenticeship Program severely mitigate against one of the program’s fundamental objectives - - i.e., breaking down barriers to entry for occupations traditionally segregated according to gender and race” (p. 30). The present study confirmed active participation

by female students in youth apprenticeship programs across five Wisconsin high schools (of the 83 YA student surveyed, 60.2% were female and 39.8% were male), although specific program occupational areas by female students were not collected. Ethnic diversity was reflective of the school populations from which the samples were drawn.

The findings from the present study, and other similar studies, would dispel the notion youth apprenticeship participation suppresses post-secondary intentions and execution. In this study, youth apprenticeship self-efficacy mean scores were greater than non-youth apprenticeship self-efficacy mean scores for all seven items relative to selecting a major, modifying choice of major, and completion of a major (Table 4.4). Specifically, for Item 2 (select one major from a list of potential majors you are considering) and Item 7 (determine the steps you need to take to successfully complete your chosen major), YA students scored nearly one half point (.42 and .47 respectively) greater than Non-YA students on a 4 point Likert-type scale. Student perception of support from parent(s)/relatives, teachers, and friends to attend college for YA students were .22 points greater than Non-YA students on a 5 point Likert-type scale (Table 4.3). Prior research efforts parallel these findings.

Halpern (2009) stated:

A series of studies over more than a decade has found that participation in YAP does not deflect youth from higher education pathways- three quarters of graduates go to a technical or four year- and has positive effects on persistence in both technical and four year colleges (Orr, 1995; Knox, 1998; Phelps et al., 1999).  
(p. 71)

A Wisconsin Youth Apprenticeship Program study involving 37 students was conducted by Scribner and Wakelyn (1998). Utilizing focus groups and video conference interview, they examined how YA experiences enhanced students' learning experiences and career opportunities. Notable of their findings, and in concert with the present study, were three points. First, the intention to pursue a 2-year or 4-year education following high school graduation was reported by 96% of the students that participated in YAP. Second, interviewed students were generally enthusiastic about the opportunities afforded to them beyond their experience at school (i.e. latest technologies not available at school), and expressed their confidence (self-efficacy) in obtaining permanent employment if desired. According to Scribner and Wakelyn (1997), "students also demonstrated an enhanced sense of self-confidence, self-esteem and personal pride" (p. 30). Third, data from their study suggested students acquired career related skills and attitudes that would benefit them long term.

Twelve items from the Career Maturity Inventory – Screening Form S (Savickas & Porfeli, 2011) were used to assess career attitudes of YA and Non-YA participants in the present study. As reflected by analysis of the data, youth apprenticeship students generally had more positive attitudes towards their future careers than Non-YA students, across individual measures and collectively (Table 4.6). Based on these results, it could be hypothesized; students participating in YA programs have an improved attitude towards their future careers than non-youth apprenticeship students.

Clearly, the youth apprenticeship program in Wisconsin has been implemented to serve all students regardless of their personal inputs (i.e.: age, gender, ethnicity, grades,

and socioeconomic status). In one particular district, it has served as an effective instructional model for students at risk of leaving high school before graduation (Kenny & Collet-Klingenberg, 2000). Success of the program drew attention from the international Organization for Economic Cooperation and Development, a 21-member team from the state of Alabama, and nearby school districts.

Initiated in January 1999, a three-year research project led by Allen Phelps, Principal Director; Linda Scholl, Project Director; Marianne Mooney, Project Consultant, collected data from Wisconsin youth apprenticeship program graduates with exceptional needs in order to gain a better understanding of their learning experiences, accommodations, support strategies, and student outcomes. Information disseminated based on the findings of their research included presentations on: Youth Apprenticeship Experiences for Students with Disabilities: Major Findings; Accommodation and Inclusion Strategies; Successful Youth Apprenticeship Experiences: Program Components and Participation Profiles; Disability Disclosure in Work-Based Learning Programs: Key Issues (Center on Education and Work, School of Education, University of Wisconsin-Madison, 2013).

A review of literature was unable to yield any quantitative studies utilizing multivariate analysis in determining significant factors contributing to the participation in the Wisconsin Youth Apprenticeship Program with current high school students as the subjects. To the knowledge of the principal investigator, analysis by these means has not been conducted in comparison to students not pursuing youth apprenticeship.

In contrast to some of the prior literature and research on youth apprenticeship in Wisconsin (Kenny & Collet-Klingenberg, 2000, Phelps, Knox, & Griggs, 1999, Scribner & Wakelyn, 1998), the subject base of the present study was composed exclusively of enrolled high school students. Clearly, a successful youth apprenticeship model of any kind, has shared responsibilities between the apprentice and the mentor; and most often, between a school and work site. Company investment of time, capital, and human resources plays a key role in the knowledge, skills, and attitudes developed by the apprentice. However, an improved understanding of student factors leading to youth apprenticeship engagement through assessment of actively participating students (and non-participating students) could provide educators, counselors, and policy makers with deeper insight into the social, psychological, or cognitive factors impacting overall program participation. As presented earlier, the strength or weakness of multiple variables (personal factors, support, self-efficacy, outcome expectations, and attitudes, amongst others) impact career decisions during adolescence. Combined, these constructs are speculated to impact participation in work-based programs like youth apprenticeship.

### **Interpretation of Results and Limitations**

**Research Question One.** Is there a significant difference between youth apprenticeship participants (YA) and non-participants (Non-YA) pertaining to: perception of support, belief in personal career decisions, expectations of a future career, person inputs (attitude, age, gender, ethnicity, grades, and socioeconomic status)?

Analysis of variance (ANOVA) and chi-square statistics were computed to answer research question one a., b., c., and d. A statistically significant difference

between YA and Non-YA groups at  $p < .01$  was found through conducting analysis of variance (ANOVA) for perception of support (question 1a.), and career self-efficacy (question 1b.). Career outcome expectations was statistically significant only at the  $p < .05$  level (question 1c.) using the same measure. Chi-square analysis revealed statistical significance at  $p < .05$  for seven of ten items (70%) assessing career attitudes; five of ten items (50%) at  $p < .01$ .

Differences between youth apprenticeship and non-youth apprenticeship groups with respect to age, gender, grades, ethnicity, and socioeconomic status were likely impacted by populations from which the samples were drawn, sampling procedure, and instrument measures. Frequencies and percentages presented in Table 4.2 should be interpreted with these limitations in mind.

While the data collected from survey participants indicates there were statistically significant differences between YA and Non-YA groups for support, career attitudes, career self-efficacy, and career outcome expectations, they might also be examined and discussed from a practical viewpoint. Active participants in a youth apprenticeship program were most often exposed to career related curriculum through a classroom component or special workshops during their youth apprenticeship experience. At one of the schools surveyed, special guests from business and industry were brought into the classroom to conduct mock interviews with students. Workplace assessments, performed by the employer (mentor), were used to score student timeliness, workplace attitude, competencies, and demonstration of skill. According to one of the youth apprenticeship coordinating instructors, assessment guided by state of Wisconsin Employability Skills

was unique to her classes at her school. Through classroom and work-based learning experiences YA participants are afforded versus Non-YA students, the statistical differences observed between these groups with regards to support, career attitude, career self-efficacy, and career outcome expectations can be substantiated in a practical sense.

**Research Question Two.** What combination of variables reflective of the Social Cognitive Career Theory best discriminates between students who participated in youth apprenticeship and students who did not?

Although age, as a predictor variable, demonstrated statistically significant difference between YA and Non-YA groups on its own ( $p < .01$ ); was the most heavily weighted standardized function coefficient (-.68); and was most the most highly correlated variable of the predictors with regards to the discriminant function analysis, two factors might call to question the internal validity of these findings. As acknowledged in Chapter IV, Non-YA students 18 years of age or older might have been more willing to participate in the research study due to the opportunity to provide assent for themselves. While it could be argued, YA students 18 years of age or older had the same opportunity, an effort to have similar group sample sizes (YA and Non-YA) is reason to interpret age cautiously. Two Non-YA participants responded as 19 years or older, therefore, the exact age of these students was not determined, compromising the internal validity of mean age for this group.

From DFA analysis of the collected data, and upon acknowledgement of the aforementioned limitations, career attitude was the most heavily weighted factor within the model followed by support. Both variables were moderate to highly correlated with

the discriminant function. These findings are consistent with the Social Cognitive Career Theory (SCCT) (Lent, Brown & Hackett; 1994). Career related attitudes would be considered a predisposition (categorized as a person input in Figure 1.1) and categorized as a person input. Combined with environmental supports, these two constructs are posited to influence a student's learning experience. For the present study, learning experiences were differentiated by either participating in youth apprenticeship or not. Stated differently, person inputs (predispositions, gender, race/ethnicity, disability/health status) and background contextual affordances (mechanisms of support) would be expected to affect learning experiences per SCCT. Learning experiences are influential on the development of career self-efficacy and career outcome expectations. In sum, if career related attitudes and support are statistically different initially, these factors should naturally accept the most weight in correctly classifying survey participants into youth apprenticeship or non-youth apprenticeship groups by means of discriminant function analysis (with the limitations associated with the category of age taken into consideration).

Of the variables not yet discussed, specifically gender, grades, and socioeconomic status, it is interesting to note their comparatively small coefficient weights and small correlations with the DFA model. In other words, these variables could be considered to be less of a factor in correctly predicting group membership in comparison to career attitudes and support; a noteworthy point considering the concerns surrounding apprenticeship expressed in Chapter II.

Upon running the initial DFA model with all eight predictor variables (age, career attitudes, support, gender, outcome expectations, career self-efficacy, grades, and socioeconomic status), YA participation was correctly predicted at 72.4%; Non-YA at 64.7%. In direct response to addressing research question two, when including only the four most highly correlated variables with the initial DFA model (age, career attitudes, support and career self-efficacy), YA participation was correctly predicted at 73.5%; Non-YA at 67.4%.

### **Generalizability of Findings**

As stated in chapter III, the target population of this research was focused on students likely to participate in Wisconsin Youth Apprenticeship Program (YAP) while in high school. All programs statewide were invited to participate in the survey through the March 2012 issue of YA News (see Appendix D). Based on communications with those closely connected to Wisconsin YAP, the likely age of participating high school students was approximated to be between 16 and 18 years of age; consequently, classes with students of junior or senior standing were approached.

Generalizability of the findings in comparing youth apprenticeship and non-youth apprenticeship sample groups from this study would be applicable to student populations with like personal inputs/demographics (i.e.: age, gender, ethnicity, grades, socioeconomic status). As acknowledged, an ethnically diverse sample was not attained for this research based on populations from which the samples were drawn; a suggested point of consideration to others in reviewing the analysis and discussion of this study.

## **Discussion and Implications**

Future research of factors posited to influence high school students to pursue a youth apprenticeship has the potential to inform and guide students, parents, educators, and policy makers. Data collected and analyzed from youth apprenticeship and non-youth apprenticeship students within five Wisconsin school districts has produced, in the opinion of the principal investigator, some interesting findings.

Over the course of the present study, two primary challenges were identified: obtaining ethnically diverse sample groups based on populations of schools willing to participate, and coordinating in-class survey dates/times. If student ethnicity is to be assessed as a contributing factor for participation in a youth apprenticeship program, a concentrated and deliberate effort should be placed on connecting with administrative officials and career and technical education coordinators within ethnically diverse school districts to draw minorities into the sample. Students missing in-class time to complete the survey instrument was one reason administration (at a larger, more ethnically diverse school district than those surveyed) did not grant permission to the principle investigator. Options for completing the survey instrument, non-intrusive to class time, should be investigated and discussed with all potential participants. Administration of the survey instrument in a computer based format (versus paper and pencil) could help facilitate these efforts. It is posited more school districts with greater ethnically diverse populations would be willing participants if these considerations are fully acknowledged.

Through these research efforts it is clear, youth apprenticeship participants have a different type of educational experience in comparison to non-youth apprenticeship

students. There were notable differences in support, career attitudes, and career self-efficacy and career outcome expectations between these groups. The Social Cognitive Career Theory model (Lent, Brown, & Hackett, 1994) suggested environmental support (and barriers) and personal inputs (predispositions) influence learning experience, and consequently, career-self efficacy and career outcome expectations. It is hypothesized, a youth apprenticeship experience nurtured by a supportive environment would lead to improved career self-efficacy and career outcome expectations.

Extended research might also consider youth culture as a potential variable. Many of the students participating in youth apprenticeship programs at the schools surveyed were enrolled in career and technical education courses, but were there specific social groups they identified themselves with? In other words, what “world” did these students see themselves as members of?

An effort to more thoroughly investigate these factors by means of obtaining a wider spectrum of school districts is proposed for future research. Educational policies, sensitive to these factors, could be implemented and/or modified regarding youth apprenticeship programming. A deeper understanding of the social, psychological, and cognitive aspects of participation in youth apprenticeship programs has the potential to provide high school counselors with improved insight of the program. Student anticipation of “what might be” or decisions about “what to do next” could be positively supported.

**Bibliography**

- ACTE & NASDCTEc News Release. (2013, April 10). *President's proposed budget restores Career Tech Ed funding but still falls short of need*. Retrieved from: [www.acteonline.org](http://www.acteonline.org)
- Ali, S. R., & Saunders, J. L. (2006). College expectations of rural Appalachian youth: An exploration of social cognitive career theory factors. *The Career Development Quarterly*, 55(1), 38-51. doi: 10.1002/j.2161-0045.2006.tb00003.x
- Ali, S. R., McWhirter, E. H., & Chronister, K. M. (2005). Self-efficacy and vocational outcome expectations for lower SES adolescents: A pilot study. *Journal of Career Assessment*, 13(1), 40-58. doi: 10.1177/1069072704270273
- Argyropoulou, E. P., Sidiropoulou-Dimakakou, D., & Besevegis, E. G. (2007). Generalized self-efficacy, coping, career indecision, and vocational choices of senior high school students in Greece: Implications for career guidance practitioners. *Journal of Career Development*, 33(4), 316-337. doi: 10.1177/0894845307300412
- Aud, S., Wilkinson-Flicker, S., Kristapovich, P., Rathbun, A., Wang, X., & Zhang, J. (2013). *The condition of education 2013 (NCES 2013-037)*. Washington, DC: U.S. Department of Education, National Center for Education Statistics. Retrieved from: <http://nces.ed.gov/pubsearch>.

- Austin, C. (2010). Perceived factors that influence career decision self-efficacy and engineering related goal intentions of African-American high school students. *Career and Technical Education Research, 35*(3), 119-135.  
doi: 10.5328/cter35.310
- Bailey, T. (1993a). Can youth apprenticeship thrive in the United States? *Educational Researcher, 22*(3), 4-10.
- Bailey, T. (1993b). Youth apprenticeship in the context of broad educational reform. *Educational Researcher, 22*(3), 16-17.
- Bailey, T., & Merritt, D. (1993). *The school-to-work transition and youth apprenticeship: Lessons from the U.S. Experience*. New York: Manpower Demonstration Research Corp.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: W. H. Freeman.
- Beck, V., Fuller, A. & Unwin, L. (2006). Increasing risk in the 'scary' world of work? Male and female resistance to crossing gender lines in apprenticeships in England and Wales. *Journal of Education and Work, 19*(3), 271-289.  
doi: 10.1080.13639080600776920
- Beckmann, M. (2002). Firm-sponsored apprenticeship training in Germany: Empirical evidence from establishment data. *Labour, 16*(2), 287-310.
- Behrens, M., Pilz, M., & Greuling, O. (2008). Taking a straightforward detour: Learning and labour market participation in the German apprenticeship system. *Journal of Vocational Education & Training, (60)*1, 93-104.  
doi: 10.1080/13636820701837730

- Betz, N. & Taylor, K. (2006). *Manual for the Career Decision Self-Efficacy Scale and CDSE- Short form*. [Available: betz.3@osu.edu]
- Betz, N. E., Hammond, M., & Multon, K. (2005). Reliability and validity of response Continua for the Career Decision Self-efficacy Scale. *Journal of Career Assessment, 13*(2), 131-149. doi: 10.1177/1069072704273123
- Betz, N., & Klein, K. (1996). Relationships among measures of career self-efficacy, generalized self-efficacy, and global self-esteem. *Journal of Career Assessment, 4*, 285-298. doi: 10.1177/106907279600400304
- Blustein, D. L., Chaves, A. P., Diemer, M. A., Gallagher, L. A., Marshall, K. G., Sirin, S., & Bhati, K. S. (2002). Voices of the forgotten half: The role of social class in the school-to-work transition. *Journal of Counseling Psychology, 49*(3), 311-323. doi: 10.1037//00220167.49.3.311
- Bremer, C. D., & Madzar, S. (1995). Encouraging employer involvement in youth apprenticeship and other work-based learning experiences for high school students. *Journal of Vocational and Technical Education, 12*(1). Retrieved from <http://scholar.lib.vt.edu/ejournals/JVTE/v12n1/bremer.html>
- Center on Education and Work, School of Education, University of Wisconsin-Madison, (2013). *Students with disabilities in Wisconsin youth apprenticeship programs: Conducting research to document and disseminate inclusion and support strategies*. Retrieved from: <http://www.cew.wisc.edu/ya/powerpointpresentations.htm>

- Choy, S. (2001). *Students whose parents did not go to college: Postsecondary access, persistence, and attainment* (NCES 2001–126). Washington, DC: U.S. Department of Education, National Center for Education Statistics.
- Clarke, L., Lange, T., Shackleton, J.R., & Walsh, S. (1994). The political economy of training: Should Britain try to emulate Germany? *Political Quarterly*, 65(1), 74-92. doi: 10.1111/j.1467-923X.1994.tb00391.x
- Cohen, J. (1988). *Statistical power analysis for the behavioural sciences* (2nd ed.). New York: Academic Press.
- Cornell University. (2013). *Human ecology bio page: Stephen Hamilton*. Retrieved from: <http://www.human.cornell.edu/che/bio.cfm?netid=sfh3>
- Deissinger, T. (1994). The evolution of the modern vocational training systems in England and Germany: A comparative view. *Compare: A Journal of Comparative Education*, (24)1, 17-36. doi: 10.1080/0305792940240103
- Deissinger, T. (1996). Germany's vocational training act: Its function as an instrument of quality control within a tradition-based vocational training system. *Oxford Review of Education*, 22(3). Retrieved from <http://www.jstor.org/stable/1050589>.
- Deissinger, T., & Hellwig, S. (2005). Apprenticeship in Germany: Modernising the dual system. *Education + Training*, 47(4/5), 312-324. doi: 10.1108/00400910510601896
- Dewey, J. (1997). *Democracy and education: an introduction to the philosophy of education*. New York: The Free Press.
- Dewey, J. (1977). On industrial education. *Curriculum Inquiry*, 7(1), 53-60.

- Dougherty, C. (1987). The German dual systems: A heretical view. *European Journal of Education*, 22(2), 195-199.
- Evanciew, C., & Wither, S.V. (2004). Replacing technically skilled workers: Challenges and suggestions. *Journal of Industrial Teacher Education*. 41(1). Retrieved from <http://scholar.lib.vt.edu/ejournals/JITE/v41n1/evanciew.html>
- Evans, K., Behrens, M., & Kaluza, J. (1999). Risky voyages: Navigating changes in the organisation of work and education in Eastern Germany. *Comparative Education*, 35(2), 131-150. doi: 10.1080/03050069927937
- Everson, M. (2008a). *Lecture notes for week 7, EPSY 5262, (October 12-October 20, 2008)*. (Available: gaddy001@umn.edu).
- Everson, M. (2008b). *Introduction to the one-way between subjects ANOVA, EPSY 5262*. (Available: gaddy001@umn.edu).
- Field, A. (2005). *Discovering statistics using SPSS* (2nd ed.). London: SAGE Publications Ltd.
- Flum, H., & Blustein, D. L. (2000). Reinvigorating the study of vocational exploration: A framework for research. *Journal of Vocational Behavior*, 56(3), 380-404. doi: 10.1006/jvbe.2000.1721
- Fuller, A., & Unwin, L. (2003). Creating a 'Modern Apprenticeship': A critique of the UK's multi-sector, social inclusion approach. *Journal of Education and Work*, 16(1), 5-25. doi: 10.1080/1363908022000032867

- Fuller, A., & Unwin, L. (2009). Change and continuity in apprenticeship: The resilience of a model of learning. *Journal of Education and Work*, 22(5), 405-416.  
doi:10.1080/13639080903454043.
- Fuller, A., & Unwin, L. (2011). Apprenticeship as an evolving model of learning. *Journal of Vocational Education & Training*, 63(3), 261-266.  
doi: 10.1080/13636820.2011.602220
- Gardner, H., & Hatch, T. (1998). Multiple intelligences go to school: Educational implication of the theory of multiple intelligences. *Educational Researcher*, 18(8), 4-10.
- Gati, I., & Asher, I. (2001). The PIC model for career decision making: Prescreening, in depth exploration, and choice. In T. L. Leong & A. Barak (Eds.), *Contemporary models in vocational psychology: A volume in honor of Samuel H. Osipow* (p. 6-54). New Jersey: Lawrence Erlbaum Associates.
- Gitter, R. J., & Scheuer M. (1997). U.S. and German youths: Unemployment and the transition from school to work. *Monthly Labor Review*, 120(3), 16-20.
- Gregson, J. A. (1995). The school-to-work movement and youth apprenticeship in the U.S.: Educational reform and democratic renewal? *Journal of Industrial Teacher Education*, 32(3), 7-29.
- Gushue, G. V. (2006). The relationship of ethnic identity, career decision-making self efficacy and outcome expectations among Latino/a high school students. *Journal of Vocational Behavior*, 68, 85-95.

- Hainmüller, B. (2003). The educational structure of the German school system. *Teachers Training College in Offenburg, Germany*. Retrieved from [http://www.ltu.se/cms\\_fs/1.4767!/7c7da33e.pdf](http://www.ltu.se/cms_fs/1.4767!/7c7da33e.pdf)
- Halpern, R. (2009). *The means to grow up. Reinventing apprenticeship as a developmental support in adolescence*. New York, NY: Routledge
- Hamilton, S. F. (1990). *Apprenticeship for adulthood. Preparing youth for the future*. New York: Free Press.
- Hamilton, S. F. (1993). Prospects for an American-style youth apprenticeship system. *Educational Researcher*, 22(3), 11-16.
- Hamilton, S. F., & Hamilton, M. A. (1994). Schools and workplaces: Partners in transition. *Theory into Practice*, 33(4), 242-248.
- Hamilton, S. F., & Lempert W. (1996). The impact of apprenticeship on youth: A perspective analysis. *Journal of Research on Adolescence*, 6(4), 427-455.
- Haynsworth, T., & Perselay, G. (1994). A U.S. youth apprenticeship program. *Journal of Education for Business*, 69(5), 252-256. doi: 10.1080/08832323.1994.10117694
- Heckhausen, J., & Tomasik, M. J. (2002). Get an apprenticeship before school is out: How German adolescents adjust vocational aspirations when getting close to a developmental deadline. *Journal of Vocational Behavior*, 60(2), 199-219. doi: 10.1006/jvbe.2001.1864
- Heinz, W. R. (2002). Transition discontinuities and the biographical shaping of early work careers. *Journal of Vocational Behavior*. 60(2), 220-240. doi: 10.1006/jvbe.2001.1865

- History of MDRC. (2013). *About MDRC: History*. Retrieved from <http://www.mdrc.org/about/about-mdrc-history>
- Holland, J. L., & Holland, J. E. (1977). Vocational indecision: More evidence and speculation. *Journal of Counseling Psychology, 24*(5), 404-414.
- IBM SPSS Statistics for Windows (Version 20.0) [Computer software]. Armonk, NY: IBM Corp.
- IBM. (2011). *IBM SPSS Missing Values 20*. Retrieved from [ftp://public.dhe.ibm.com/software/analytics/spss/documentation/statistics/20.0/en/client/Manuals/IBM\\_SPSS\\_Missing\\_Values.pdf](ftp://public.dhe.ibm.com/software/analytics/spss/documentation/statistics/20.0/en/client/Manuals/IBM_SPSS_Missing_Values.pdf)
- Idriss, C. (2002). Challenge and change in the German vocational system since 1990. *Oxford Review Of Education, 28*(4), 473-490.  
doi: 10.1080/0305498022000013625
- Kantor, H. (1986). Work, education, and vocational reform: The ideological origins of vocational education, 1890-1820. *American Journal of Education, 94*(4), 401-426.
- Kenney, L. M. & Collet-Klingenberg, L. (2000). Manufacturing and production technician youth apprenticeship program: A partnership. *Peabody Journal of Education, 75*(3). 51-63. doi: 10.1207/S15327930PJE7503\_4
- Kenny, M. E., Blustein, D. L., Chaves, A., Grossman, J. M., & Gallagher, L. A. (2003). The role of perceived barriers and relational support in the educational and vocational lives of urban high school students. *Journal of Counseling Psychology, 50*(2), 142-155. doi: 10.1037/0022-0167.50.2.142

- Law, C. J. (1975). *A search for a philosophy of vocational education*. (ERIC Document  
Reproduction Service No. ED 126 368). Raleigh, NC: North Carolina Division of  
Occupational Education.
- Lehmann, W. (2004) 'For some reason, I get a little scared': Structure, agency, and risk  
in school-work transitions. *Journal of Youth Studies*, 7(4), 379-396.  
doi: 10.1080/1367626042000315185
- Lehmann, W. (2005). 'I'm still scrubbing the floors': experiencing youth apprenticeships  
in Canada and Germany. *Work Employment Society*, 19(1), 107-129.  
doi: 10.1177/0950017005051298
- Lent, R. W., Brown, S. D., & Hackett, G. (1994). Toward a unifying social cognitive  
theory of career and academic interest, choice, and performance. *Journal of  
Vocational Behavior*, 45, 79-122.
- Lent, R. W., Brown, S. D., & Hackett, G. (2000). Contextual supports and barriers to  
career choice: A social cognitive analysis. *Journal of Counseling Psychology*,  
47(1), 36-49. doi: 10.1037/0022-0167.47.1.36
- Lent, R. W., Brown, S. D., Schmidt, J., Brenner, B., Lyons, H., & Treistman, D. (2003).  
Relation of contextual supports and barriers to choice behavior in engineering  
majors: Test of alternative social cognitive models. *Journal of Counseling  
Psychology*, 50(4), 458-465.

Levesque, K., Laird, J., Hensley, E., Choy, S.P., Cataldi, E.F., & Hudson, L. (2008).

*Career and Technical Education in the United States: 1990 to 2005* (NCES 2008 035). Washington, DC: National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education.

Lewis, T. (2007). The problem of cultural fit- what we can learn from borrowing the

German Dual System. *Compare*, 37(4), 463-477.

McIntosh, S. (2005). The returns to apprenticeship training. *Journal of Education and*

*Work*, 18(3), 251-282. doi: 10.1080/13639080500200500

McNeil Research and Evaluation Associates. (2005). *Strengthening our nation's*

*workforce with demand driven solutions*. Document prepared for U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship,

Retrieved from <https://www.workforce3one.org/view/2029>

McWhirter, E. H. (1996). *Teacher Support Scale (TSS)*.

(Available:ellenmcw@uoregon.edu).

McWhirter, E. H., Rasheed, S., & Crothers, M. (2000). The effects of high school career

education on social-cognitive variables. *Journal of Counseling Psychology*, 47(3),

330-341. doi: 10.1037//0022-0167.47.3.330

Metheny, J. (2009). *Family of origin influences on the career development of young*

*adults: The relative contributions of social status and family support* (Doctoral

dissertation). Retrieved from: [https://scholarsbank.uoregon.edu/](https://scholarsbank.uoregon.edu/xmlui/bitstream/handle/1794/10349/Metheny_JenniferR_phd2009su.pdf?sequence=1)

[xmlui/bitstream/handle/1794/10349/Metheny\\_JenniferR\\_phd2009su.pdf?](https://scholarsbank.uoregon.edu/xmlui/bitstream/handle/1794/10349/Metheny_JenniferR_phd2009su.pdf?sequence=1)

[sequence=1](https://scholarsbank.uoregon.edu/xmlui/bitstream/handle/1794/10349/Metheny_JenniferR_phd2009su.pdf?sequence=1)

- Metheny, J., McWhirter, E. H., & O'Neil, M. E. (2008). Measuring perceived teacher support and its influence on adolescent career development. *Journal of Career Assessment, 16*(2), 218-237. doi: 10.1177/1069072707313198
- Minnesota Department of Education. (2005, February). *100 Work-based learning FAQ's. Career and Technical Education*. Retrieved from: <http://education.state.mn.us/mdeprod/groups/CareerTechEd/documents/FAQ/002052.pdf>
- Morgan, G. A., Leech, N. L. & Barrett, K. C. (2007). *SPSS for intermediate statistics: Use and interpretation* (3rd ed.). New York: Routledge
- Moore, G., & Gaspard, C. (1987). The quadrumvirate of vocational education. *Journal of Vocational and Technical Education, 4*(1), 3-17.
- Multon, K. D., Heppner, M. J. & Lapan, R. T. (1995). An empirical derivation of career decision subtypes in a high school sample. *Journal of Vocational Behavior, 47*, 76-92.
- NASTAD. (2011). *An overview of the NASTAD organization*. Retrieved from <http://www.nastad.us/overview.html>
- Nauta, M. M. & Epperson, D. L. (2003). A longitudinal examination of the social cognitive model applied to high school girls' choices of nontraditional college majors and aspirations. *Journal of Counseling Psychology, 50*(4), 448-457. doi: 10.1037/0022-0167.50.4.448
- Oelkers, J. (2004). Nohl, Durkheim, and Mead: Three different types of "history of education". *Studies in Philosophy and Education, 23*, 347-366.

- Osipow, S. H. (1999). Assessing career indecision. *Journal of Vocational Behavior*, 55, 147-154.
- Osipow, S. H., Carney, C. G., Winer, J., Yanico, B., & Koschier, M. (1976). *The Career Decision Scale* (3rd ed.). Columbus, OH: Marathon Consulting & Press.
- Patton, W. & Creed, P. (2007). The relationship between career variables and occupational aspirations and expectations for Australian high school adolescents. *Journal of Career Development*, 34, 127-148. doi: 10.1177/0894845307307471 pdf/apprenticeship\_booklet.pdf
- Perry, J. C., DeWine, D. B., Duffy, R. D., & Vance K. S. (2007). The academic self efficacy of urban youth: A mixed methods study of a school-to-work program. *Journal of Career Development*, 34, 103-126. doi: 10.1177/08948445307307470
- Phelps, A. L., Knox, K., & Griggs, L. (1999). *The Wisconsin youth apprentices go to college: Access, persistence, and achievement*. Paper prepared for the April 22nd, 1999 Annual Meeting of the American Educational Research Association, Montreal, Canada.
- Pilz, M. (2007). Two countries-one system of vocational education? A comparison of the apprenticeship reform in the commercial sector in Switzerland and Germany. *Compare*, 37(1), 69-87. doi: 10.1080/03057920601061802
- Pilz, M. (2009). Why Abiturienten do an apprenticeship before going to university: The role of 'double qualifications' in Germany. *Oxford Review of Education*, 35(2), 187-204. doi: 10.1080/03054980902771072

- Pritchard, R. M. O. (1992). The German dual system: Educational utopia? *Comparative Education*, 28(2), 131-143.
- Raelin, J. A. (2011). Work-based learning: How it changes leadership. *Development and Learning in Organizations*, 25(5), 17-20. doi: 10.1108/14777281111159393
- Raelin, J. A. (2010). Work-based learning: Valuing practice as an educational event. *New Directions for Teaching and Learning*, 124, 39-46. doi: 10.102/tl.419
- Review. (2007). [Review of the book *Erleben und lernen. Einführung in die Erlebnispädagogik*, by Heckmair B. & Werner M.]. *Social Work Education*, 26(3), 318-326.
- Rojewski, J. W. (2002). Preparing the workforce of tomorrow: A conceptual framework for career and technical education. *Journal of Vocational Education Research*, 27(1), 7-35. doi: 10.5328/JVER27.1.7
- Ryan, P., & Unwin, L. (2001). Apprenticeship in the British 'training market'. *National Institute Economic Review*, 178(1), 99-114. doi: 10.1177/002795010117800114
- Savickas, M. L., & Porfeli, E. J. (2011). Revision of the Career Maturity Inventory: The adaptability form. *Journal of Career Assessment*, 19(4), 355-374. doi: 10.1177/1069072711409342
- Schmidt, K. A. (1998a). A comparative study of two delivery mechanisms of dual vocational training in Germany: Implications for training in the United States. *Journal of Industrial Teacher Education*, 35(3), 24-43.
- Scribner, J. P., & Wakelyn D. (1998). Youth apprenticeship in Wisconsin: A stakeholder-based evaluation. *The High School Journal*. 82(1), 24-34.

- Sharpe, A., & Gibson, J. (2005). *The apprenticeship system in Canada: Trends and issues*. Ottawa, ON: Center for the Study of Living Standards. Retrieved from <http://www.csls.ca/reports/csls2005-04.pdf>
- Smith, A., & Smith E. (2007). The development of key training policies in England and Australia: A comparison. *London Review of Education*, 5(1), 51-67.  
doi: 10.1080/14748460701243259
- Snedden, D. (1977). Fundamental distinctions between liberal and vocational education. *Curriculum Inquiry*, 7(1), 41-52.
- Snedden, D., & Dewey, J. (1977). Two communications. *Curriculum Inquiry*, 7(1), 33-39.
- Taylor, A. (2005). It's the rest of your life: The pragmatics of youth career decision making. *Youth and Society*, 36, 471-503.  
doi: 10.1177/0044118X04268485
- Taylor, A., & Watt-Malcolm, B. (2007). Expansive learning through high school apprenticeship: Opportunities and limits. *Journal of Education and Work*, 20(1), 27-44.
- Threton, M. D. (2007). The Carl D. Perkins Career and Technical Education (CTE) Act of 2006 and the roles and responsibilities of CTE teachers and faculty members. *Journal of Industrial Teacher Education*, 44(1), 66-82.
- U.S. Department of Education, International Affairs Staff. (2005). *Education in the United States: a brief overview*. Washington, DC: Author.

U.S. Department of Education, Office of Vocational and Adult Education. (2008). *Carl D. Perkins Vocational and Technical Education Act of 1998. Report to Congress on state performance, program year 2005-2006*. Washington, DC: Author.

U.S. Department of Education, Office of Vocational and Adult Education. (2012). *Investing in America's future: A blueprint for transforming Career and Technical Education*. Washington, DC: Author.

U.S. Department of Education. (2003). *Student information on Career and Technical Education*. Retrieved from <http://www2.ed.gov/students/prep/job/cte/index.html>

U.S. Department of Education. (2006). *A test of leadership: Charting the future of U.S. higher education*. Washington, DC: Author.

U.S. Department of Education. (2012). *New state-by-state college attainment numbers show progress toward 2020 goal*. Retrieved from <http://www.ed.gov/news/press-releases/newstate-state-college-attainment-numbers-show-progress-toward-2020-goal>

U.S. Department of Labor. (2013a). *The National Association of State and Territorial Directors (NASTAD)*. Retrieved from <http://www.doleta.gov/OA/nastad.cfm>

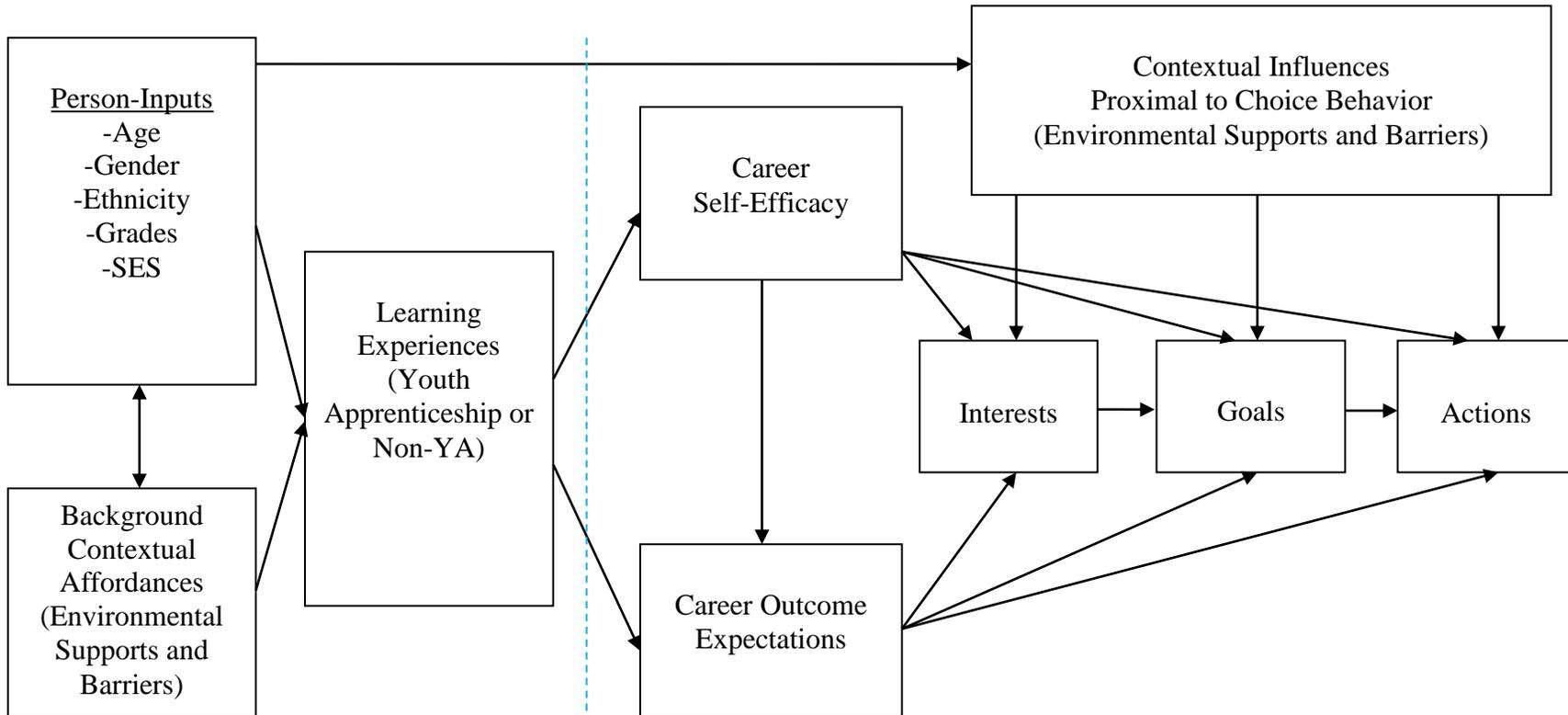
U.S. Department of Labor. (2013b). *What is registered apprenticeship?* Retrieved from <http://www.doleta.gov/OA/apprenticeship.cfm>

U.S. Department of Labor. (2013c). *Registered apprenticeship national results*. Retrieved from [http://www.doleta.gov/OA/data\\_statistics.cfm](http://www.doleta.gov/OA/data_statistics.cfm)

- Walden, G. & Troeltsch, K. (2011). Apprenticeship training in Germany – still a future orientated model for recruiting skilled workers? *Journal of Vocational Education & Training*, 63(3), 305-322. doi: 10.1080/13636820.2011.570454
- Webster's ninth new collegiate dictionary. (1983). Springfield: Merriam-Webster.
- Wettersten, K. B., Guilmino, A., Herrick, C. G., Hunter, P. J., Kim, G. Y., Jagow, D., Beecher, T., Faul, K., Baker, A. A., Rudolph, S. E., Ellenbecker, K., & McCormick, J.(2005). Predicting educational and vocational attitudes among rural high school students. *Journal of Counseling Psychology*, 52(4), 658-663. doi: 10.1037/0022-0167.52.4.658
- Winch, C. (2006). Georg Kerschensteiner-founding the dual system in Germany. *Oxford Review of Education*, 32(3), 381-396. doi: 10.1080/03054980600776530
- Wisconsin Apprenticeship Manual. (2011). *A compilation of the regulations, policies and procedures under which the Wisconsin apprenticeship program functions*. Retrieved from [http://dwd.wisconsin.gov/apprenticeship/pdf/wisconsin\\_apprenticeship\\_manual.pdf](http://dwd.wisconsin.gov/apprenticeship/pdf/wisconsin_apprenticeship_manual.pdf)
- Wisconsin Department of Public Instruction. (2012, September). *Wisconsin work-based learning programs*. Retrieved from <http://cte.dpi.wi.gov/files/cte/pdf/wblbrochure12.pdf>
- Wisconsin Department of Workforce Development. (2008). *Investing in Wisconsin's future: Wisconsin Youth Apprenticeship Program*. Retrieved from [http://www.dwd.state.wi.us/dwd/publications/dws/youthapprenticeship/detw\\_9654\\_p.pdf](http://www.dwd.state.wi.us/dwd/publications/dws/youthapprenticeship/detw_9654_p.pdf)

- Wisconsin Department of Workforce Development. (2012). *Apprenticeship in Wisconsin, fulfilling the needs of industry*. Retrieved from <http://dwd.wisconsin.gov/apprenticeship/>
- Wisconsin Department of Workforce Development. (2013a). *About the Bureau of Apprenticeship Standards: Administrative authority*. Retrieved from [http://dwd.wisconsin.gov/apprenticeship/about\\_apprenticeship.htm](http://dwd.wisconsin.gov/apprenticeship/about_apprenticeship.htm)
- Wisconsin Department of Workforce Development. (2013b). *Wisconsin apprenticeship since 1911: Apprenticeship occupations*. Retrieved from <http://dwd.wisconsin.gov/apprenticeship/sponsors.htm>
- Wisconsin Department of Workforce Development. (2013c). *Wisconsin apprenticeship since 1911: Benefits of apprenticeship*. Retrieved from <http://dwd.wisconsin.gov/apprenticeship/individuals.htm>
- Work based learning guide 2010. (2010). *Learning for life in the 21<sup>st</sup> century*. Retrieved from <http://www.iowaworkforce.org/files/wlg02.pdf>

Appendix A  
Social Cognitive Career Theory (SCCT) Model



Blue dashed line is NOT part of the original model. It is offered to distinguish between the Level 1 variables (right hand side) of the cognitive-person (career self-efficacy, career outcome expectations, interests, goals/aspirations, and actions) and Level 2 variables (left hand side). The latter is considered paths through which physical attributes, e.g., gender and race, features of the environment, and particular learning experiences such as youth apprenticeships or Non-YA, influence career self-efficacy and career outcome expectations. (Lent, R. W, Brown, S. D., Hackett, G., 2000)

## Appendix B

## CONSENT FORM

**Youth Apprenticeship Study**

School District of the Menomonie Area  
Menomonie, Wisconsin

Your child is invited to participate in a study of factors influencing the career decision process. She/he has been selected as a possible participant from the School District of the Menomonie Area which offers a work-based learning program called youth apprenticeship, and is either of Junior or Senior standing. We ask that you read this form and ask any questions you may have before agreeing to be in the study.

This study is being conducted by: Gregory T. Slupe, Principal Investigator and Doctoral Student, Department of Organizational Leadership, Policy, and Development, University of Minnesota-Twin Cities

**Background Information:**

Several reasons have been offered as to why students remain undecided about career and/or educational choices following high school graduation. An objective of work based learning programs is to expose students to career opportunities, along with concepts and practices followed by business and industry, but do they affect career related attitudes, beliefs and outcomes that impact career choice? Based on literary review, variables relative to career choice have not been investigated for students completing a specific work based learning program, like youth apprenticeship, in comparison to those who have not.

The purpose of this study is to better understand the degree to which youth apprenticeship programs, affect career opportunities for all high school students. The information could potentially help explain career related attitudes, beliefs and outcomes relative to the youth apprenticeship experience.

**Procedures:**

If you consent to this study, we would ask your child to provide information on the degree to which personal factors (gender, age, socio-economic status, ethnicity and grades) and perceived supports might affect his/her:

1. attitude toward making career choices
2. expectation of potential career outcomes
3. belief in their ability to make career related decisions

All students of junior or senior standing within your child's high school is eligible to participate in the study upon providing written permission by their parent(s) or guardian (for students less than 18 years of age) and from themselves. The survey instrument will be of paper and pencil format and administered at your child's school. All completed surveys will be placed in a mailing envelope by the participants themselves. There will be no personal identifiers (names) on the instrument and no method used to track their individual responses.

### **Risks and Benefits of being in the Study**

The study has some anticipated risk. First, the principal investigator has no control over participants who verbally share survey responses with other people. This is a determination made by the participant and is strongly discouraged. Second, the risk of individual stress from answering any or all questions cannot be anticipated. Students have the right to not answer particular questions if this is the case, or withdraw from the survey while completing it. However, because no personal identifiers or method will be used to track individual responses, *submitted surveys cannot be withdrawn as they cannot be identified*. Results from this study will be a composite of all participating high schools.

There are no direct benefits to those participating in this survey. The findings are intended to be used by the principal investigator for the sole purpose of the intended research. Data will be published in aggregate form. Findings of the final report will be made available upon request.

### **Confidentiality:**

The records of this study will be maintained by the principal investigator. Research records will be stored securely. All completed survey instruments will be maintained and destroyed in compliance with University of Minnesota policy.

### **Voluntary Nature of the Study:**

Participation in this study is voluntary. Your decision whether or not to participate will not affect your current or future relations with your child's school standing (i.e. grades) or the University of Minnesota. If you decide to participate, your child is free to not answer any/all questions or withdraw at any time without affecting those relationships.

### **Contacts and Questions:**

The principal investigator conducting this study is Gregory T. Slupe, a student at the University of Minnesota. You may ask any questions you have now. If you have questions later, **you are encouraged** to contact him at 715-309-8690 (mobile), 715-231-1041(home) or by e-mail: [slupeg@uwstout.edu](mailto:slupeg@uwstout.edu). Dr. Theodore Lewis, Professor Emeritus at the University of Minnesota-Twin Cities is his advisor. He can be contacted at [lewis007@umn.edu](mailto:lewis007@umn.edu).

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, **you are encouraged** to contact the Research Subjects' Advocate Line, D528 Mayo, 420 Delaware St. Southeast, Minneapolis, Minnesota 55455; (612) 625-1650.

### ***THANK YOU FOR CONSIDERING THIS REQUEST!***

#### **Statement of Consent:**

I have read the above information. I have asked questions and have received answers. I consent to participate in the study.

Signature of Participant: \_\_\_\_\_ Date: \_\_\_\_\_

Signature of Parent or Guardian: \_\_\_\_\_ Date: \_\_\_\_\_  
(If student is less than 18 years of age)

Signature of Investigator: \_\_\_\_\_

## Appendix C

ASSENT FORM  
**YOUTH APPRENTICESHIP STUDY**  
 School District of the Menomonie Area  
 Menomonie, Wisconsin

You are invited to participate in a study of factors influencing the career decision process. You were selected as a possible participant because you are a student within the School District of the Menomonie Area where a work-based learning program called youth apprenticeship is offered. We ask that you read this form and ask any questions you may have before agreeing to be in the study.

The purpose of this study is to better understand the degree to which youth apprenticeship programs, affect career opportunities for all high school students. The information could potentially help explain career related attitudes, beliefs and outcomes relative to the youth apprenticeship experience.

If you agree to be in this study, we would ask you provide information on the degree to which personal factors (gender, age, socio-economic status, ethnicity and grades) and perceived supports might affect your:

1. attitude toward making career choices
2. expectation of potential career outcomes
3. beliefs in your ability to make career related decisions

All students of junior or senior standing within your high school are eligible to participate in the study upon providing written permission by their parent(s) or guardian (for students less than 18 years of age) and from themselves. The survey instrument will be of paper and pencil format and administered at your school. All completed surveys will be placed in a mailing envelope by the participants themselves. There will be no personal identifiers (names) on the instrument and no method used to track your individual responses.

You can ask any questions that you have about this study by contacting me, Greg Slupe, Principal Investigator and Doctoral Student at the University of Minnesota, directly at 715-309-8690 (mobile), 715-231-1041 (home) or by e-mail at slupeg@uwstout.edu.

Signing here means that you have read this paper or had it read to you and that you are willing to be in this study. If you don't want to be in this study, don't sign. Remember, being in this study is up to you. There will be no adverse consequences if you don't sign this or even if you change your mind later.

Signature of participant (18 years of age or older) \_\_\_\_\_

Date \_\_\_\_\_

## Appendix D

## YA News Request for Participants: March 2012

VOLUME 5, ISSUE 3

Page 3

**PhD Candidate needs OUR Help!**

Does your consortium have **15-20 TOTAL YA students** (any combination of programs) **at ONE HS?**

**PhD Candidate, Greg Slupe, AND YA NEED YOU!**

My name is Greg Slupe. I work as an Assistant Professor at the University of Wisconsin-Stout in the Engineering and Technology Department. Currently, I am also a doctoral candidate at the University of Minnesota working on *research focused on Youth Apprenticeship*.

The purpose of my study is to expand empirical research on how personal inputs (gender, age, SES, ethnicity, grades) and environmental supports affect self-efficacy, outcome expectations and attitudes related to career decisions; comparing those students who have participated in a youth apprenticeship program with those who have not. In an effort to have similar measures, I am interested in surveying only the YA work-based learning program. Schools willing to participate in the study should have a minimum of 15-20 YA students.

If you are interested in assisting with this research project, or have further questions regarding the research, email me at [slupeg@uwstout.edu](mailto:slupeg@uwstout.edu). 715-232-1462; UW-Stout, 334 Fryklund Hall

**Certifications Database**

*The DOL Employment and Training Administration Launches Enhancements to the Certification Finder Database and Search Tool.*

As part of efforts to promote credential attainment, the Department of Labor-sponsored CareerOneStop electronic tool

has launched enhancements to the Certification Finder database and search tool that highlights certain credentials with icons indicating that were recognized, endorsed, or accredited by specific third-party organizations.

The Certification Finder tool can be

searched by industry, occupation, or keyword to find relevant personnel/workforce certifications that can help an individual qualify for employment and advancement. To view the Tool, visit: [http://www.acinet.org/certifications\\_new/Default.aspx](http://www.acinet.org/certifications_new/Default.aspx).

**NRCCTE NEWS:** It Is Who You Meet...An Argument For Work Based Learning

The research "It's who you meet: Why employer contacts at school make a difference to the employment prospects of young adults" by the Education and Employers Taskforce is based on a survey undertaken pro-bono by YouGov which asked young adults aged 19-24 about their current em-

ployment status and to reflect on their experiences of the world of work whilst they were at school. The findings were striking:

- 26.1% of young people who could recall no contact with employers whilst at school went on to become NEET (Not

in Employment, Education or Training).

- This was reduced significantly to 4.3% for those who had taken part in four or more activities involving employers (career insights, mentoring, work tasters, work experience etc).

- AND the robust statistical analysis demonstrates that these outcomes are *not linked* to academic achievement.

[Click here](#) to read the full report.

## Appendix E

## Administration Approval: School District of Elmwood



# School District of Elmwood

Superintendent  
Elementary Principal  
Paul E. Blanford  
715-639-2711

213 S. Scott St.  
Elmwood, WI 54740  
[www.elmwood.k12.wi.us](http://www.elmwood.k12.wi.us)  
Fax: 715-639-3110

MS/HS Principal  
Athletic Director  
Jennifer E. Alwin  
715-639-2721

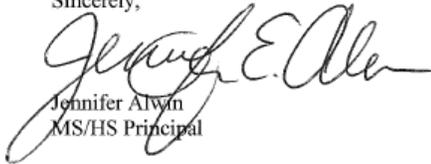
March 22, 2012

Gregory T. Slupe  
N4944 567<sup>th</sup> Street  
Menomonie, WI 54751

Dear Greg:

Per your request, I am writing this letter to grant permission for you to survey our students for the Youth Apprenticeship research project. You may survey a selection of Juniors and Seniors representing Youth Apprenticeship participants and non-participants as outlined in your documentation you emailed on March 20, 2012. We look forward to working with you.

Sincerely,



Jennifer Alwin  
MS/HS Principal



**AN EQUAL OPPORTUNITY EMPLOYER**

The School District of Elmwood does not discriminate on the basis of race, color, sex, handicap or national origin while employing in any educational activity.

## Appendix F

## Administration Approval: Antigo High School

**Antigo High School**

**Thomas Zamzow**  
*Principal*

**Trisha Detert**  
*Associate Principal*

1900 Tenth Avenue  
Antigo, WI 54409  
Tel (715) 623-7611  
Fax (715) 623-7624

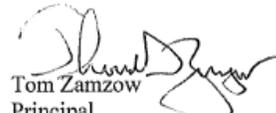
**Thomas Kislow**  
*Dean of Students*  
*Activities/Athletic Director*  
**Brian Holmes**  
*Director of Technology*

March 21, 2012

Gregory T Slupe  
Assistant Professor  
Engineering and Technology Department  
University of Wisconsin – Stout  
334 Fryklund Hall  
Menomonie, WI 54751

**ANTIGO STUDENTS PARTICIPATE IN SURVEY**

Per your request, I am writing to grant permission to administer the Youth Apprenticeship pilot study to high school students who are of a junior or senior standing.

  
Tom Zamzow  
Principal

## Appendix G

## Administration Approval: Merrill High School



# MERRILL HIGH SCHOOL

1201 N. Sales Street \* Merrill, Wisconsin 54452  
Telephone (715) 536-4594 \* Fax (715) 536-5504

*Shannon M. Murray, Principal*

March 19, 2012

Gregory T Slupe  
Assistant Professor  
Engineering and Technology Department  
University of Wisconsin—Stout  
334 Fryklund Hall  
Menomonie, WI 54751

## MERRILL STUDENTS PARTICIPATE IN SURVEY

For the Youth Apprenticeship research project conducted by Gregory Slupe, I give my permission to have our students participate by taking a survey.



Shannon Murray  
Principal

## Appendix H

## Administration Approval: Eau Claire Area School District

894-Exhibit

Eau Claire Area School District  
500 Main Street  
Eau Claire, WI 54701

REQUEST FOR USE OF EAU CLAIRE AREA SCHOOL DISTRICT  
IN CONNECTION WITH RESEARCH OR SURVEY PROJECTS  
BY A GRADUATE STUDENT, UNDERGRADUATE STUDENT, OR FACULTY MEMBER

*(Attach abstract of study and any instruments to be administered. Submit in triplicate. Two signed copies are to be returned by the applicant to the appropriate university/college administrative official/dean.)*

This routing form is to be used by a college or university faculty member or student desiring to make use of the Eau Claire Area School District staff, students, facilities, records, etc. in connection with course requirements or research. A faculty member must sponsor use of public schools by undergraduates.

It should be noted that colleges and universities make heavy use of the Eau Claire Area School District in connection with teacher education programs (particularly student teaching and other related activities). Therefore, use of the schools for other purposes must be somewhat limited in terms of those uses conflicting or competing with the teacher education program.

- Name of College/University UNIVERSITY OF MINNESOTA - TWIN CITIES
- (1) Initiator(s) conducting research or survey GREGORY T. SLUPE  
Indicate:  Undergraduate Student  Graduate Student  Faculty Member  
If undergraduate, indicate faculty member as sponsor: \_\_\_\_\_  
Contact Info: slupe.g@uwstout.edu Phone 715. 232. 1462 (OFFICE)  
715. 231. 1041 (HOME)
- (2) Initiator(s) conducting research or survey \_\_\_\_\_  
Indicate:  Undergraduate Student  Graduate Student  Faculty Member  
If undergraduate, indicate faculty member as sponsor: \_\_\_\_\_  
Contact Info: \_\_\_\_\_ Phone \_\_\_\_\_
- Name of person(s) conducting actual research/survey GREGORY T. SLUPE
- 
- Location of research or survey project (where will the project be conducted?)  
Eau Claire North H.S. & Eau Claire Memorial High School
- Date the project will begin: SEPT. 1, 2012 Date the project will end: NOV. 1, 2012
- Names of Eau Claire Area School District employees involved, if any: \_\_\_\_\_  
KRISTAN MOTSZKO, INTERNSHIP TEACHER-COORDINATOR ECASD

In the abstract of study, specifically address the following:

1. Indicate that no change will be involved in Eau Claire Board of Education curriculum scope and sequence in any grade or class as a result of the project.
2. Provide evidence that no control group shall be denied the use of the best teaching methods in use in the school district.
3. Provide evidence to indicate that the class time devoted to the experimental procedures shall not interfere with the regular allotment of time for the program of studies. (continued)



## Appendix I

## Administration Approval: School District of the Menomonie Area




---

**School District of the Menomonie Area**


---

Administrative Service Center  
215 Pine Ave. NE • Menomonie, WI 54751 • (715) 232-1642 • FAX (715) 232-1317 • www.msd.k12.wi.us

August 16, 2010

Downsville Elementary  
N2681 460th Street  
PO Box 78  
Downsville, WI 54735  
(715) 664-8546

Gregory T. Slupe  
N4944 567th Street  
Menomonie, WI 54751-5482

Knapp Elementary  
110 South Street  
Knapp, WI 54749  
(715) 665-2131

Dear Greg:

Per your request, I am writing to grant permission to administer the final Youth Apprenticeship survey to high school students who participated in the YA program during the 2011-12 school year as well as those participating in the YA program this fall as outlined in your e-mail dated July 20, 2012.

Menomonie High School  
1715 5th Street West  
Menomonie, WI 54751  
(715) 232-2606

Sincerely,

Menomonie Middle School  
920 21st Street South  
Menomonie, WI 54751  
(715) 232-1673

*Christine Stratton*

Christine Stratton  
District Administrator

Oaklawn Elementary  
500 21st Street South  
Menomonie, WI 54751  
(715) 232-3798

cas/pgw

River Heights Elementary  
615 24th Avenue West  
Menomonie, WI 54751  
(715) 232-3967

Wakanda Elementary  
1801 Wakanda Street NE  
Menomonie, WI 54751  
(715) 232-3898

## Appendix J

## Main Study Institutional Review Board Approval

**From:** [irb@umn.edu](mailto:irb@umn.edu)  
**To:** [slup0003@umn.edu](mailto:slup0003@umn.edu)  
**Subject:** 1204E13089 - PI Slupe - IRB - Exempt Study Notification  
**Date:** Wednesday, April 18, 2012 11:01:11 AM

---

TO : lewis007@umn.edu, slup0003@umn.edu,

The IRB: Human Subjects Committee determined that the referenced study is exempt from review under federal guidelines 45 CFR Part 46.101(b) category #1 INSTRUCTIONAL STRATEGIES IN EDUCATIONAL SETTINGS.

**Study Number:** 1204E13089

**Principal Investigator:** Gregory Slupe

**Title(s):**

An Examination of Factors Influencing Career Decisions of High School Students Participating in Youth Apprenticeship Programs

---

This e-mail confirmation is your official University of Minnesota RSPP notification of exemption from full committee review. You will not receive a hard copy or letter. This secure electronic notification between password protected authentications has been deemed by the University of Minnesota to constitute a legal signature.

The study number above is assigned to your research. That number and the title of your study must be used in all communication with the IRB office.

For research in schools: Any changes to this research must be approved by the IRB and school district involved before initiation.

If you requested a waiver of consent or documentation of consent and you received this email, approval for the waiver has been granted.

This exemption is valid for five years from the date of this correspondence and will be filed inactive at that time. You will receive a notification prior to inactivation. If this research will extend beyond five years, you must submit a new application to the IRB before the study's expiration date.

Upon receipt of this email, you may begin your research. If you have questions, please call the IRB office at (612) 626-5654.

You may go to the View Completed section of eResearch Central at <http://eresearch.umn.edu/> to view further details on your study.

The IRB wishes you success with this research.

We have created a short survey that will only take a couple of minutes to complete. The questions are basic, but will give us guidance on what areas are showing improvement and what areas we need to focus on: <https://umsurvey.umn.edu/index.php?sid=94693&lang=um>

## Appendix K

## Youth Apprenticeship Study

## General Instructions

Please answer each question carefully and honestly on this form. Be assured that all your responses will be held confidentially and will be reported in group form. Your individual responses will never be identified. Participation in the survey is completely voluntary. You may choose not to participate.

**Do NOT include your name on the answer sheet.**

---

### Section 1: My PERCEPTION of SUPPORT

Please read each statement, beginning with “My parent(s)/relatives, teachers and friends...” and think carefully about whether you agree or disagree. For example, if you strongly disagree with the statement, darken “STRONGLY DISAGREE”. If you are “in the middle” or not sure whether you agree or disagree, darken “NOT SURE”. There are no right or wrong answers. **Mark your answer by COMPLETELY DARKENING the corresponding circle.**

#### MY PARENT(S)/RELATIVES, TEACHERS AND FRIENDS...:

1.) Expect me to work hard in school.

STRONGLY DISAGREE      DISAGREE      NOT SURE      AGREE      STRONGLY AGREE  
                                                                                       

2.) Try to answer my questions.

STRONGLY DISAGREE      DISAGREE      NOT SURE      AGREE      STRONGLY AGREE  
                                                                                       

3.) Are interested in my future.

STRONGLY DISAGREE      DISAGREE      NOT SURE      AGREE      STRONGLY AGREE  
                                                                                       

4.) Take the time to help me get better grades.

STRONGLY DISAGREE      DISAGREE      NOT SURE      AGREE      STRONGLY AGREE  
                                                                                       

5.) Will listen if I want to talk about a problem.

STRONGLY DISAGREE      DISAGREE      NOT SURE      AGREE      STRONGLY AGREE  
                                                                                       

6.) Are helpful when I have questions about career issues.

STRONGLY DISAGREE      DISAGREE      NOT SURE      AGREE      STRONGLY AGREE

### Section 1: My PERCEPTION of SUPPORT (continued)

#### MY PARENT(S)/RELATIVES, TEACHERS AND FRIENDS....:

7.) Answer my questions about how to do better.

STRONGLY DISAGREE      DISAGREE      NOT SURE      AGREE      STRONGLY AGREE  
                                                                                       

8.) Would tell other people good things about me.

STRONGLY DISAGREE      DISAGREE      NOT SURE      AGREE      STRONGLY AGREE  
                                                                                       

9.) Are easy to talk to about school things.

STRONGLY DISAGREE      DISAGREE      NOT SURE      AGREE      STRONGLY AGREE  
                                                                                       

10.) Challenge me to think about my future goals.

STRONGLY DISAGREE      DISAGREE      NOT SURE      AGREE      STRONGLY AGREE  
                                                                                       

11.) Believe I am capable of achieving.

STRONGLY DISAGREE      DISAGREE      NOT SURE      AGREE      STRONGLY AGREE  
                                                                                       

12.) Help me understand my strengths.

STRONGLY DISAGREE      DISAGREE      NOT SURE      AGREE      STRONGLY AGREE  
                                                                                       

13.) Want me to do well in school.

STRONGLY DISAGREE      DISAGREE      NOT SURE      AGREE      STRONGLY AGREE  
                                                                                       

14.) Enjoy interacting with me.

STRONGLY DISAGREE      DISAGREE      NOT SURE      AGREE      STRONGLY AGREE  
                                                                                       

15.) Care about me as a person.

STRONGLY DISAGREE      DISAGREE      NOT SURE      AGREE      STRONGLY AGREE  
                                                                                       

16.) Expect me to study.

STRONGLY DISAGREE      DISAGREE      NOT SURE      AGREE      STRONGLY AGREE  
                                                                                       

17.) Tell me if I'm not working hard enough.

STRONGLY DISAGREE      DISAGREE      NOT SURE      AGREE      STRONGLY AGREE  
                                                                                       

18.) Support my goals for the future.

STRONGLY DISAGREE      DISAGREE      NOT SURE      AGREE      STRONGLY AGREE

**Section 1: My PERCEPTION of SUPPORT (continued)**  
**MY PARENT(S)/RELATIVES, TEACHERS AND FRIENDS...:**

19.) Think I am a hard worker.

STRONGLY DISAGREE      DISAGREE      NOT SURE      AGREE      STRONGLY AGREE  
                                                                                                                       

20.) Push me to succeed.

STRONGLY DISAGREE      DISAGREE      NOT SURE      AGREE      STRONGLY AGREE  
                                                                                                                       

21.) Are easy to talk to about things besides school.

STRONGLY DISAGREE      DISAGREE      NOT SURE      AGREE      STRONGLY AGREE  
                                                                                                                       

22.) Let me know how to improve my grades.

STRONGLY DISAGREE      DISAGREE      NOT SURE      AGREE      STRONGLY AGREE  
                                                                                                                       

23.) Take time to get to know me.

STRONGLY DISAGREE      DISAGREE      NOT SURE      AGREE      STRONGLY AGREE  
                                                                                                                       

24.) Evaluate my work carefully.

STRONGLY DISAGREE      DISAGREE      NOT SURE      AGREE      STRONGLY AGREE  
                                                                                                                       

25.) Think I should go to college.

STRONGLY DISAGREE      DISAGREE      NOT SURE      AGREE      STRONGLY AGREE  
                                                                                                                       

**End of Section 1**

---

## Section 2: My BELIEF in PERSONAL CAREER DECISIONS

**INSTRUCTIONS:** For each statement below, please read carefully and indicate how much confidence you have that you could accomplish each of these tasks by marking your answer according to the key. Mark your answer by COMPLETELY DARKENING the corresponding circle.

**Example:** How much confidence do you have that you could:

Summarize the skills you have developed in the jobs you have held?

NO CONFIDENCE AT ALL	VERY LITTLE CONFIDENCE	MODERATE CONFIDENCE	MUCH CONFIDENCE	COMPLETE CONFIDENCE
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

If your response was "Moderate Confidence," you would completely darken the circle below it.

### HOW MUCH CONFIDENCE DO YOU HAVE THAT YOU COULD:

1.) Use the internet to find information about occupations that interest you.

NO CONFIDENCE AT ALL	VERY LITTLE CONFIDENCE	MODERATE CONFIDENCE	MUCH CONFIDENCE	COMPLETE CONFIDENCE
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2.) Select one major from a list of potential majors you are considering.

NO CONFIDENCE AT ALL	VERY LITTLE CONFIDENCE	MODERATE CONFIDENCE	MUCH CONFIDENCE	COMPLETE CONFIDENCE
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

3.) Make a plan of your goals for the next five years.

NO CONFIDENCE AT ALL	VERY LITTLE CONFIDENCE	MODERATE CONFIDENCE	MUCH CONFIDENCE	COMPLETE CONFIDENCE
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4.) Determine the steps to take if you are having academic trouble with an aspect of your chosen major.

NO CONFIDENCE AT ALL	VERY LITTLE CONFIDENCE	MODERATE CONFIDENCE	MUCH CONFIDENCE	COMPLETE CONFIDENCE
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

5.) Accurately assess your abilities.

NO CONFIDENCE AT ALL	VERY LITTLE CONFIDENCE	MODERATE CONFIDENCE	MUCH CONFIDENCE	COMPLETE CONFIDENCE
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

6.) Select one occupation from a list of potential occupations you are considering.

NO CONFIDENCE AT ALL	VERY LITTLE CONFIDENCE	MODERATE CONFIDENCE	MUCH CONFIDENCE	COMPLETE CONFIDENCE
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

7.) Determine the steps you need to take to successfully complete your chosen major.

NO CONFIDENCE AT ALL	VERY LITTLE CONFIDENCE	MODERATE CONFIDENCE	MUCH CONFIDENCE	COMPLETE CONFIDENCE
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## Section 2: My BELIEF in PERSONAL CAREER DECISIONS (continued)

### HOW MUCH CONFIDENCE DO YOU HAVE THAT YOU COULD:

8.) Persistently work at your major or career goal even when you get frustrated.

NO CONFIDENCE AT ALL	VERY LITTLE CONFIDENCE	MODERATE CONFIDENCE	MUCH CONFIDENCE	COMPLETE CONFIDENCE
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

9.) Determine what your ideal job would be.

NO CONFIDENCE AT ALL	VERY LITTLE CONFIDENCE	MODERATE CONFIDENCE	MUCH CONFIDENCE	COMPLETE CONFIDENCE
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

10.) Find out the employment trends for an occupation over the next ten years.

NO CONFIDENCE AT ALL	VERY LITTLE CONFIDENCE	MODERATE CONFIDENCE	MUCH CONFIDENCE	COMPLETE CONFIDENCE
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

11.) Choose a career that will fit your preferred lifestyle.

NO CONFIDENCE AT ALL	VERY LITTLE CONFIDENCE	MODERATE CONFIDENCE	MUCH CONFIDENCE	COMPLETE CONFIDENCE
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

12.) Prepare a good resume.

NO CONFIDENCE AT ALL	VERY LITTLE CONFIDENCE	MODERATE CONFIDENCE	MUCH CONFIDENCE	COMPLETE CONFIDENCE
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

13.) Change majors if you did not like your first choice.

NO CONFIDENCE AT ALL	VERY LITTLE CONFIDENCE	MODERATE CONFIDENCE	MUCH CONFIDENCE	COMPLETE CONFIDENCE
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

14.) Decide what you value most in an occupation.

NO CONFIDENCE AT ALL	VERY LITTLE CONFIDENCE	MODERATE CONFIDENCE	MUCH CONFIDENCE	COMPLETE CONFIDENCE
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

15.) Find out about the average yearly earnings of people in an occupation.

NO CONFIDENCE AT ALL	VERY LITTLE CONFIDENCE	MODERATE CONFIDENCE	MUCH CONFIDENCE	COMPLETE CONFIDENCE
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

16.) Make a career decision and then not worry whether it was right or wrong.

NO CONFIDENCE AT ALL	VERY LITTLE CONFIDENCE	MODERATE CONFIDENCE	MUCH CONFIDENCE	COMPLETE CONFIDENCE
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## Section 2: My BELIEF in PERSONAL CAREER DECISIONS (continued)

### HOW MUCH CONFIDENCE DO YOU HAVE THAT YOU COULD:

17.) Change occupations if you are not satisfied with the one you enter.

NO CONFIDENCE	VERY LITTLE	MODERATE	MUCH	COMPLETE
AT ALL	CONFIDENCE	CONFIDENCE	CONFIDENCE	CONFIDENCE
<input type="radio"/>				

18.) Figure out what you are and are not ready to sacrifice to achieve your career goals.

NO CONFIDENCE	VERY LITTLE	MODERATE	MUCH	COMPLETE
AT ALL	CONFIDENCE	CONFIDENCE	CONFIDENCE	CONFIDENCE
<input type="radio"/>				

19.) Talk with a person already employed in a field you are interested in.

NO CONFIDENCE	VERY LITTLE	MODERATE	MUCH	COMPLETE
AT ALL	CONFIDENCE	CONFIDENCE	CONFIDENCE	CONFIDENCE
<input type="radio"/>				

20.) Choose a major or career that will fit your interests.

NO CONFIDENCE	VERY LITTLE	MODERATE	MUCH	COMPLETE
AT ALL	CONFIDENCE	CONFIDENCE	CONFIDENCE	CONFIDENCE
<input type="radio"/>				

21.) Identify employers, firms, and institutions relevant to your career possibilities.

NO CONFIDENCE	VERY LITTLE	MODERATE	MUCH	COMPLETE
AT ALL	CONFIDENCE	CONFIDENCE	CONFIDENCE	CONFIDENCE
<input type="radio"/>				

22.) Define the type of lifestyle you would like to live.

NO CONFIDENCE	VERY LITTLE	MODERATE	MUCH	COMPLETE
AT ALL	CONFIDENCE	CONFIDENCE	CONFIDENCE	CONFIDENCE
<input type="radio"/>				

23.) Find information about graduate or professional schools.

NO CONFIDENCE	VERY LITTLE	MODERATE	MUCH	COMPLETE
AT ALL	CONFIDENCE	CONFIDENCE	CONFIDENCE	CONFIDENCE
<input type="radio"/>				

24.) Successfully manage the job interview process.

NO CONFIDENCE	VERY LITTLE	MODERATE	MUCH	COMPLETE
AT ALL	CONFIDENCE	CONFIDENCE	CONFIDENCE	CONFIDENCE
<input type="radio"/>				

25.) Identify some reasonable major or career alternatives if you are unable to get your first choice.

NO CONFIDENCE	VERY LITTLE	MODERATE	MUCH	COMPLETE
AT ALL	CONFIDENCE	CONFIDENCE	CONFIDENCE	CONFIDENCE
<input type="radio"/>				

**End of Section 2**

### Section 3: My EXPECTATIONS of a FUTURE CAREER

Instructions: Please respond to each question by marking your answers from the options listed below.  
Mark your answer by COMPLETELY DARKENING the corresponding circle.

1.) My career planning will lead to a satisfying career for me.

STRONGLY DISAGREE

DISAGREE

AGREE

STRONGLY AGREE

2.) I will be successful in my chosen career/occupation.

STRONGLY DISAGREE

DISAGREE

AGREE

STRONGLY AGREE

3.) The future looks bright for me.

STRONGLY DISAGREE

DISAGREE

AGREE

STRONGLY AGREE

4.) My talents and skills will be used in my career/occupation.

STRONGLY DISAGREE

DISAGREE

AGREE

STRONGLY AGREE

5.) I have control over my career decisions.

STRONGLY DISAGREE

DISAGREE

AGREE

STRONGLY AGREE

6.) I can make my future a happy one.

STRONGLY DISAGREE

DISAGREE

AGREE

STRONGLY AGREE

7.) I will get the job I want in my chosen career.

STRONGLY DISAGREE

DISAGREE

AGREE

STRONGLY AGREE

8.) My career/occupation choice will provide the income I need.

STRONGLY DISAGREE

DISAGREE

AGREE

STRONGLY AGREE

9.) I will have a career/occupation that is respected in our society.

STRONGLY DISAGREE

DISAGREE

AGREE

STRONGLY AGREE

10.) I will achieve my career/occupational goals.

STRONGLY DISAGREE

DISAGREE

AGREE

STRONGLY AGREE

11.) My family will approve of my career/occupation choice.

STRONGLY DISAGREE

DISAGREE

AGREE

STRONGLY AGREE

**Section 3: My EXPECTATIONS of a FUTURE CAREER (continued)**

12.) My career/occupation choice will allow me to have the lifestyle that I want.

STRONGLY DISAGREE

DISAGREE

AGREE

STRONGLY AGREE

**End of Section 3****Section 4: My ATTITUDE towards a FUTURE CAREER**

Instructions: Please respond to each statement by indicating if you AGREE or DISAGREE. Mark your answer by COMPLETELY DARKENING the corresponding numbered circle.

1.) I can't understand how some people can be so certain about what they want to do.

DISAGREE

AGREE

2.) I don't know what courses I should take in school.

DISAGREE

AGREE

3.) I know very little about the requirements of jobs.

DISAGREE

AGREE

4.) I really can't find any work that has much appeal to me.

DISAGREE

AGREE

5.) I often daydream about what I want to be, but I really have not chosen an occupation yet.

DISAGREE

AGREE

6.) Everyone seems to tell me something different; as a result I don't know what kind of work to choose.

DISAGREE

AGREE

7.) There are so many things to consider in choosing an occupation, it is hard to make a decision.

DISAGREE

AGREE

8.) I keep changing my occupational choice.

DISAGREE

AGREE

**Section 4: My ATTITUDE towards a FUTURE CAREER (continued)**

9.) I don't know how to go about getting into the kind of work I want to do.

DISAGREE

AGREE

10.) I am having difficulty in preparing myself for the work that I want to do.

DISAGREE

AGREE

**End of Section 4**

---

**Section 5: GENERAL INFORMATION about Myself**

Instructions: For each question or statement below, please COMPLETELY DARKEN the corresponding circle of your choice OR provide a LEDGIBLY PRINTED written answer.

1.) What was your age on your last birthday?

 14 15 16 17 18 19 Years or older

2.) Gender:

 Female Male

3.) Ethnicity:

 White Black or African American American Indian or Alaska Native Asian Native Hawaiian or Other Pacific Islander Some Other Race \_\_\_\_\_ (Please FILL IN THE BLANK)

4.) Throughout high school, my grades have been mostly:

 A's B's C's D's F's

**Section 5: GENERAL INFORMATION about Myself (continued)**

5.) What is the female head of households' highest level of education?

- Completed Graduate Degree
- Completed 4-Year Degree
- Completed 2-Year Community College/Technical College Degree
- Completed High School
- Completed Elementary School
- No schooling

**End of Section 5**

**CONGRATULATIONS!!! YOU ARE FINISHED WITH THE SURVEY!**

**THANK YOU FOR COMPLETING IT!!!**

## Appendix L

## Pilot Study Administration Approval: School District of the Menomonie Area


**School District of the Menomonie Area**

Administrative Service Center  
215 Pine Ave. NE • Menomonie, WI 54751 • (715) 232-1642 • FAX (715) 232-1317 • www.msd.k12.wi.us

Downsville Elementary  
N2681 460th Street  
PO Box 78  
Downsville, WI 54735  
(715) 664-8546

August 16, 2010

Gregory T. Slupe  
N4944 567th Street  
Menomonie, WI 54751-5482

Knapp Elementary  
110 South Street  
Knapp, WI 54749  
(715) 665-2131

Dear Greg:

Menomonie High School  
1715 5th Street West  
Menomonie, WI 54751  
(715) 232-2806

Per your request, I am writing to grant permission to administer the Youth Apprenticeship pilot study to high school students who are of a junior or senior standing as outlined in your letter dated August 3, 2010.

Sincerely,

Lucas Charter School  
N5630 200th Street  
Menomonie, WI 54751  
(715) 232-1790

Christine Stratton  
District Administrator

Menomonie Middle School  
920 21st Street South  
Menomonie, WI 54751  
(715) 232-1673

cas/pgw

Oaklawn Elementary  
500 21st Street South  
Menomonie, WI 54751  
(715) 232-3798

River Heights Elementary  
615 24th Avenue West  
Menomonie, WI 54751  
(715) 232-3987

Wakanda Elementary  
1801 Wakanda Street NE  
Menomonie, WI 54751  
(715) 232-3898

## Appendix M

## Pilot Study Institutional Review Board

## UNIVERSITY OF MINNESOTA

*Twin Cities Campus**Human Research Protection Program  
Office of the Vice President for Research**D528 Mayo Memorial Building  
429 Delaware Street S.E.  
MMC 820  
Minneapolis, MN 55455  
Office: 612-626-5654  
Fax: 612-626-6661  
E-mail: [irb@umn.edu](mailto:irb@umn.edu) or [irb@umn.edu](mailto:irb@umn.edu)  
Website: <http://research.umn.edu/subjects/>*

09/01/2010

Gregory T Slupe  
N4944 567th Street  
Menomonie, WI 54751-5482

RE: "Youth Apprenticeship Pilot Study "  
IRB Code Number: **1007P86192**

Dear Dr. Slupe:

The Institutional Review Board (IRB) received your response to its stipulations. Since this information satisfies the federal criteria for approval at 45CFR46.111 and the requirements set by the IRB, final approval for the project is noted in our files. Upon receipt of this letter, you may begin your research.

IRB approval of this study includes the assent form and parental consent form, both received August 30, 2010.

The IRB would like to stress that subjects who go through the consent process are considered enrolled participants and are counted toward the total number of subjects, even if they have no further participation in the study. Please keep this in mind when calculating the number of subjects you request. This study is currently approved for 12 subjects. If you desire an increase in the number of approved subjects, you will need to make a formal request to the IRB.

For your records and for grant certification purposes, the approval date for the referenced project is August 9, 2010 and the Assurance of Compliance number is FWA00000312 (Fairview Health Systems Research FWA00000325, Gillette Children's Specialty Healthcare FWA00004003). Research projects are subject to continuing review and renewal; approval will expire one year from that date. You will receive a report form two months before the expiration date. If you would like us to send certification of approval to a funding agency, please tell us the name and address of your contact person at the agency.

As Principal Investigator of this project, you are required by federal regulations to inform the IRB of any proposed changes in your research that will affect human subjects. Changes should not be initiated until written IRB approval is received. Unanticipated problems or serious unexpected adverse events should be reported to the IRB as they occur.

The IRB wishes you success with this research. If you have questions, please call the IRB office at 612-626-5654.

We have created a short survey that will only take a couple of minutes to complete. The questions are basic, but will give us guidance on what areas are showing improvement and what areas we need to focus on:

<https://umsurvey.umn.edu/index.php?sid=36122&lang=um>

Sincerely,

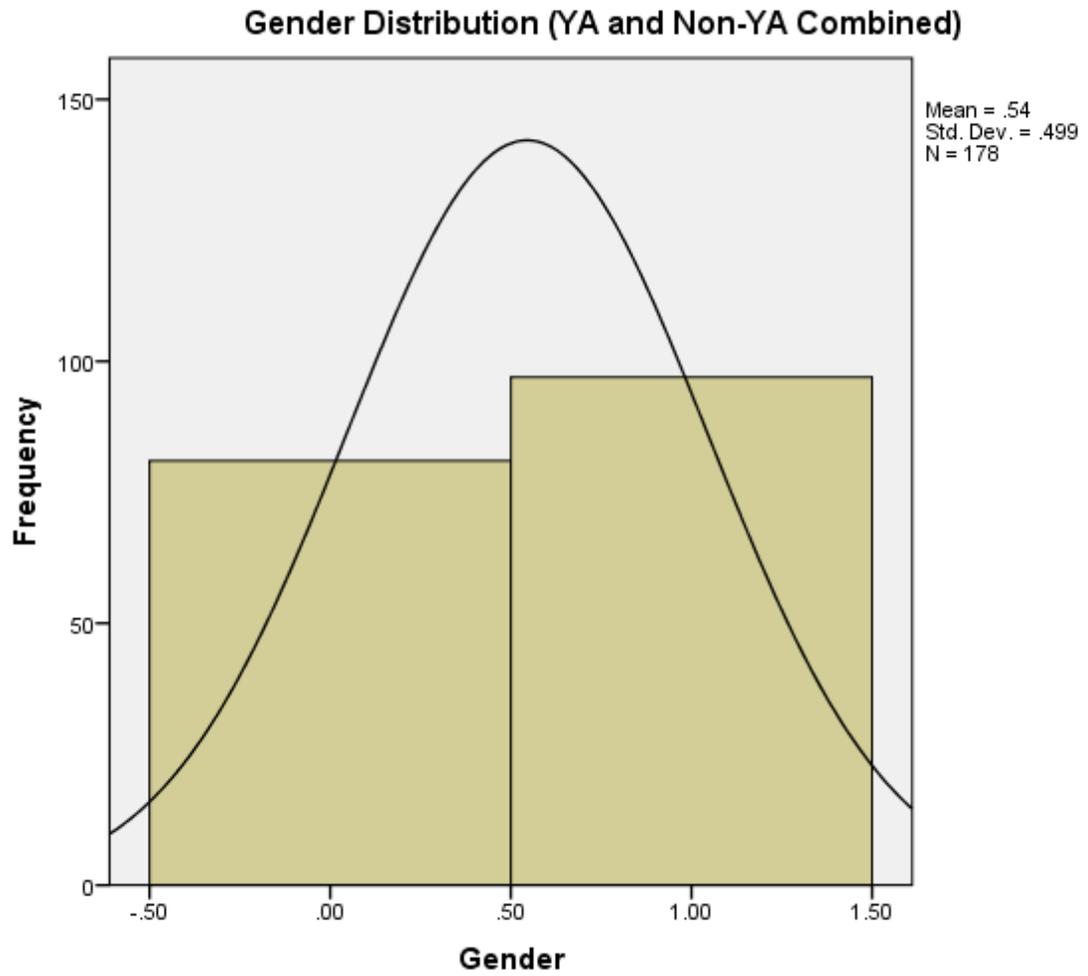


Christina Dobrovolny, CIP  
Research Compliance Supervisor  
CD/ks

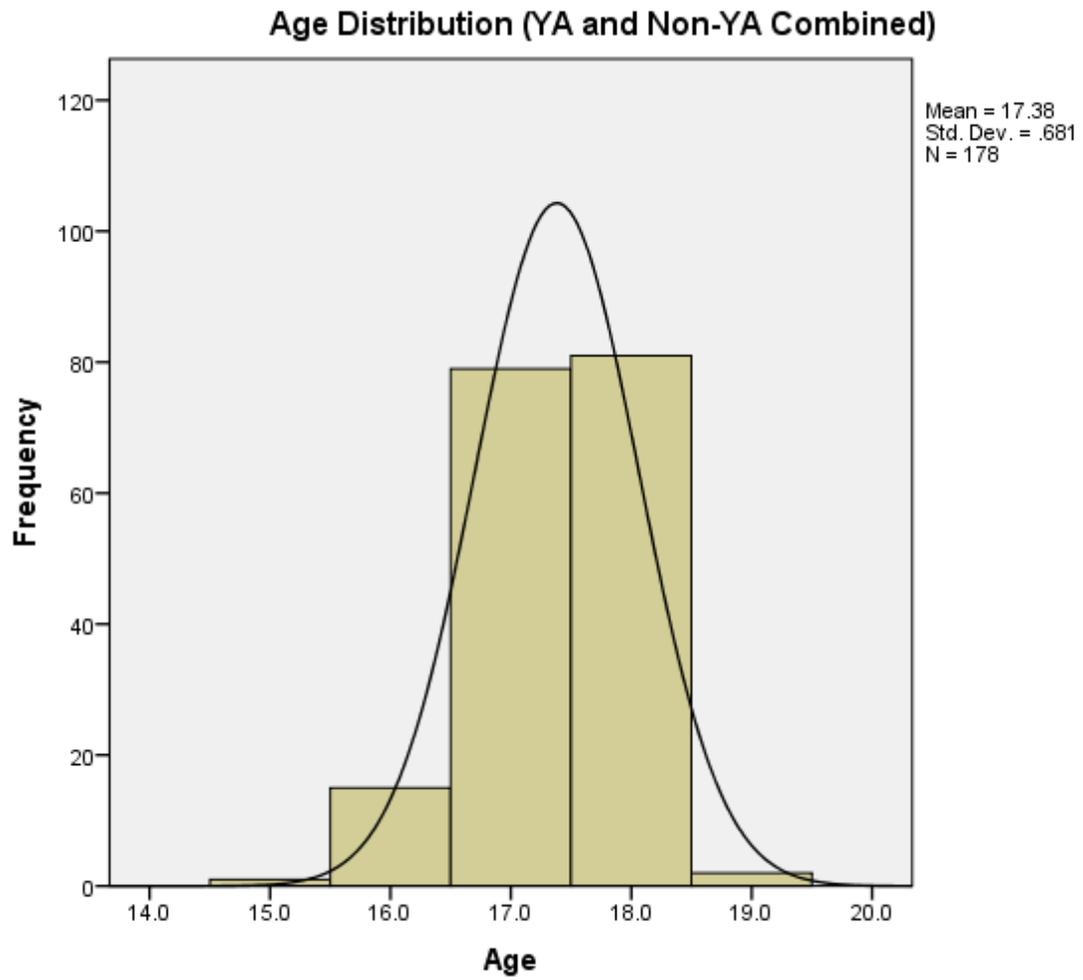
CC: Theodore Lewis

Appendix N

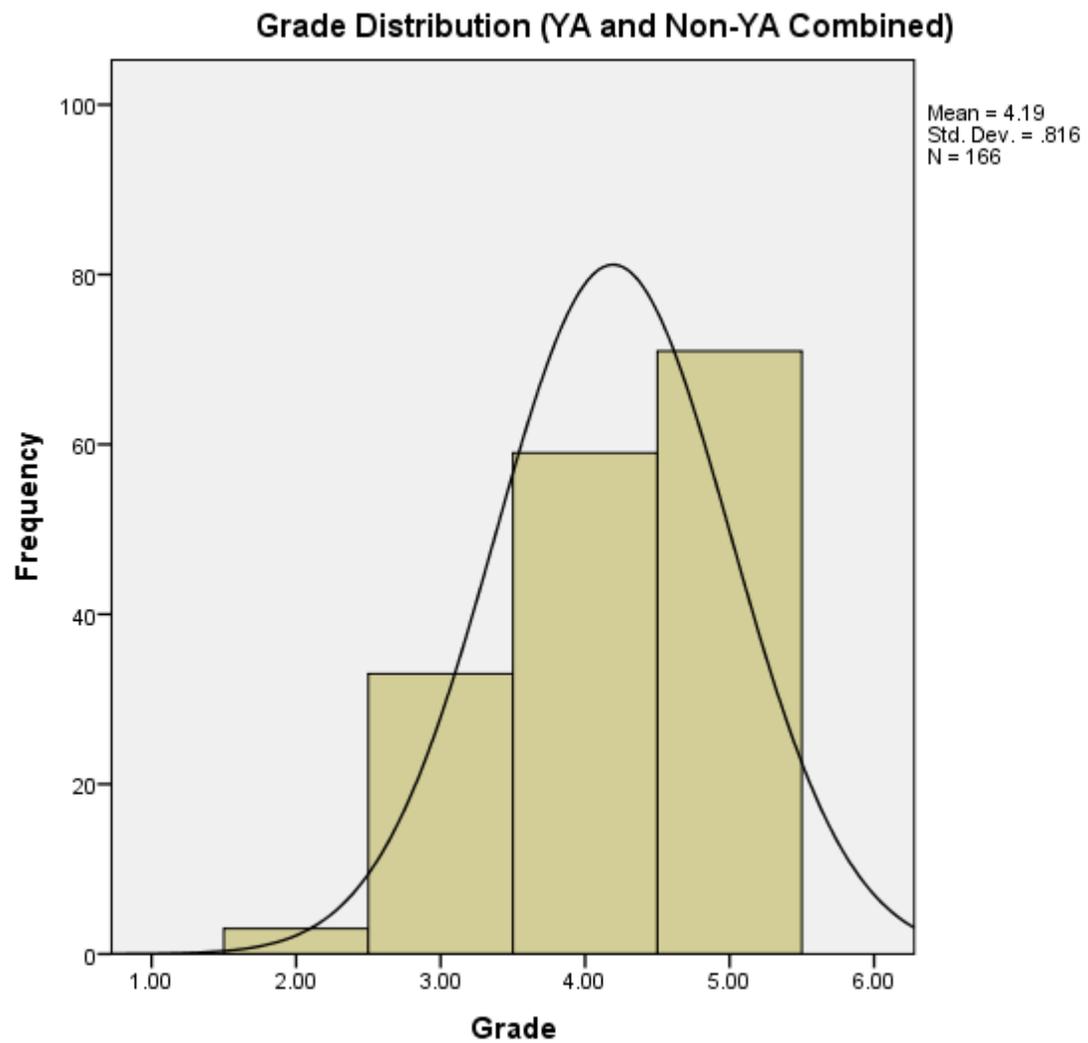
Combined YA and Non-YA Predictor Variable Distributions



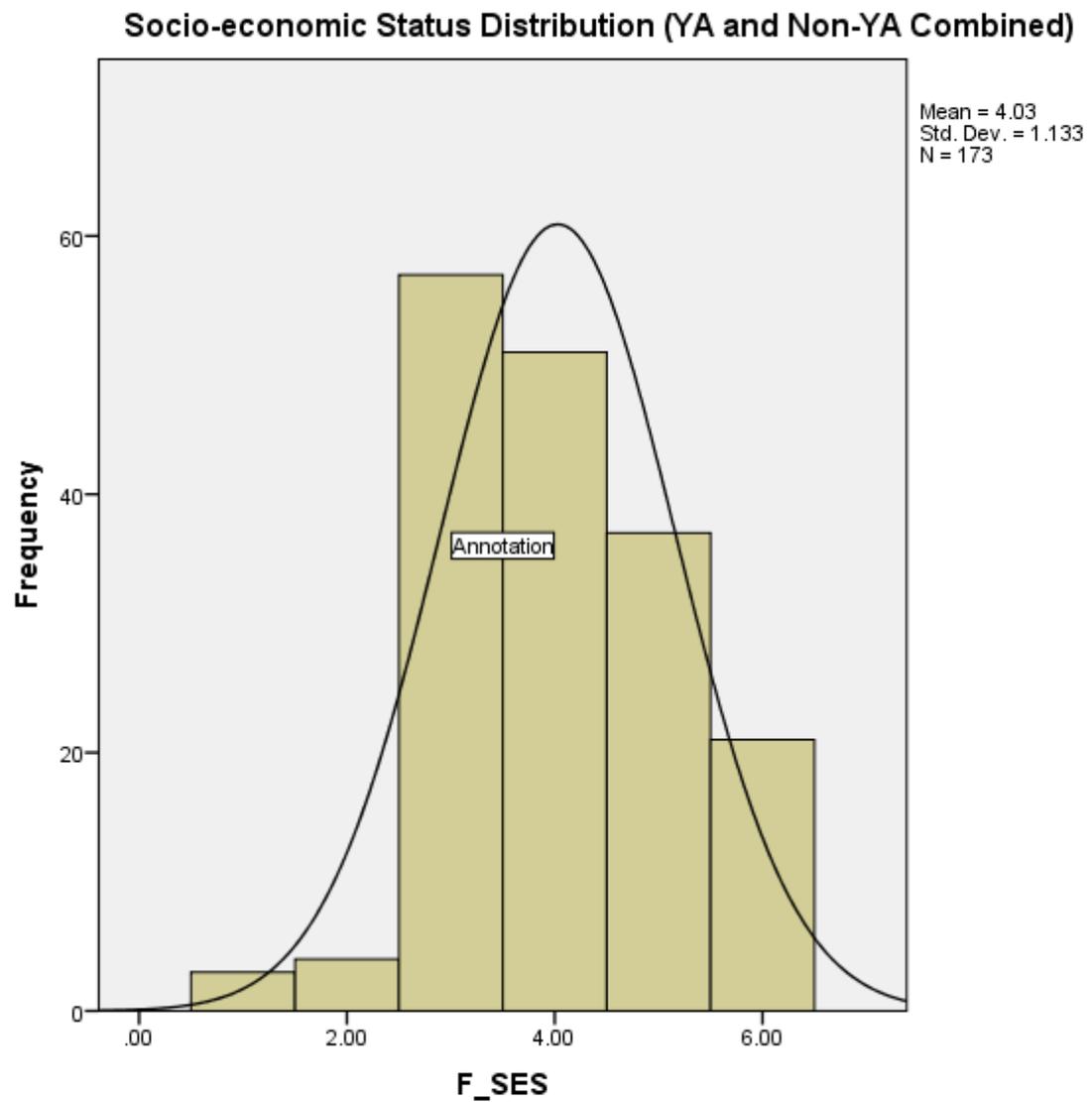
a. Male = 0, Female = 1



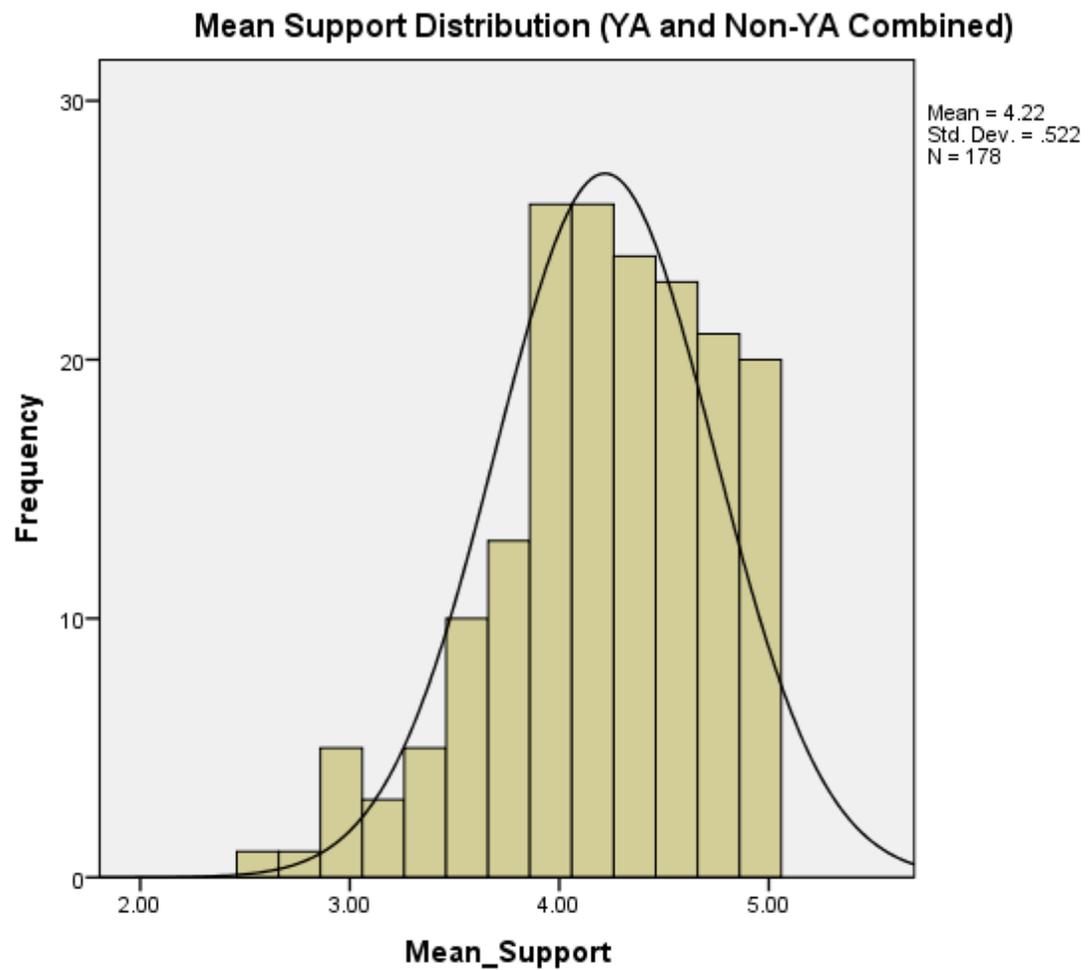
a. Age as of last birthday



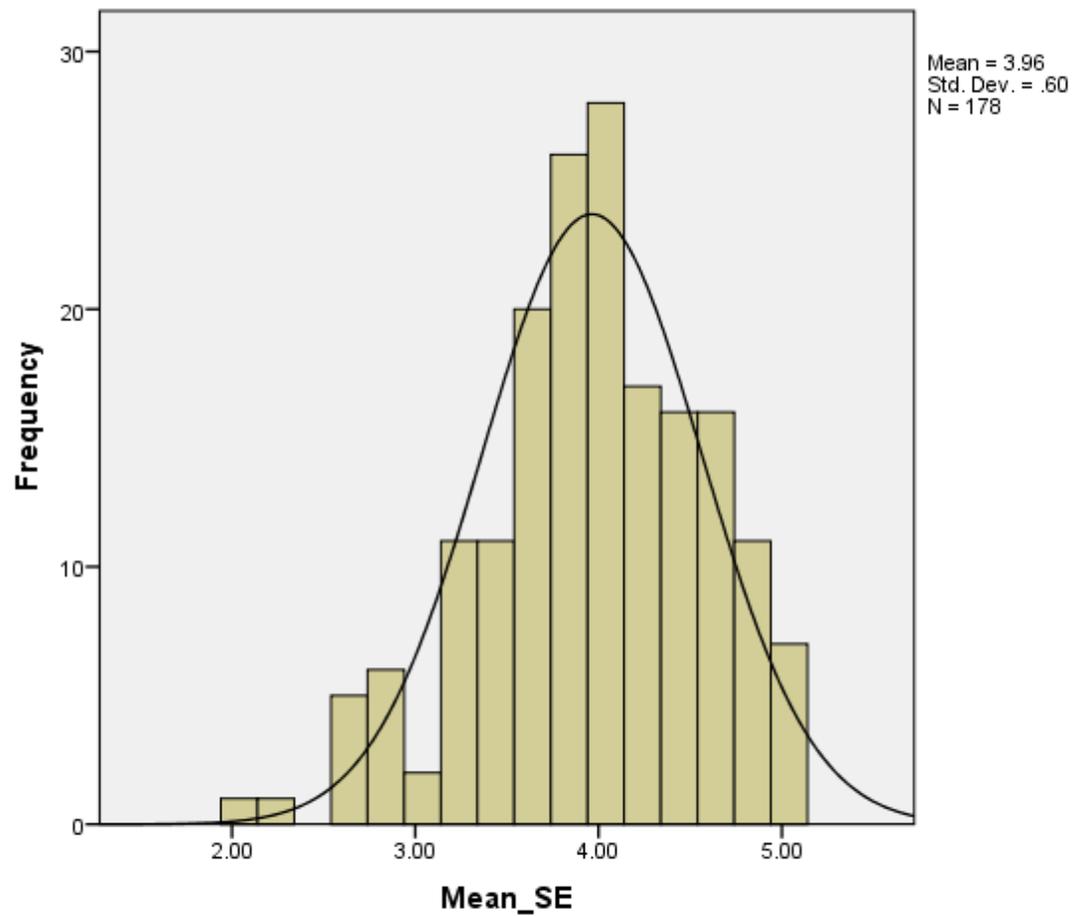
- a. Data for (12) students was invalid or incomplete
- b. 1 = Mostly F's, 2 = Mostly D's, 3 = Mostly C's, 4 = Mostly B's, 5 = Mostly A's



- a. Data for (5) students was invalid or incomplete
- b. 0 = No Schooling, 1 = Elementary School, 2 = High School, 3 = 2-Year Community College  
4 = 4-Year Degree, 5 = Graduate Degree

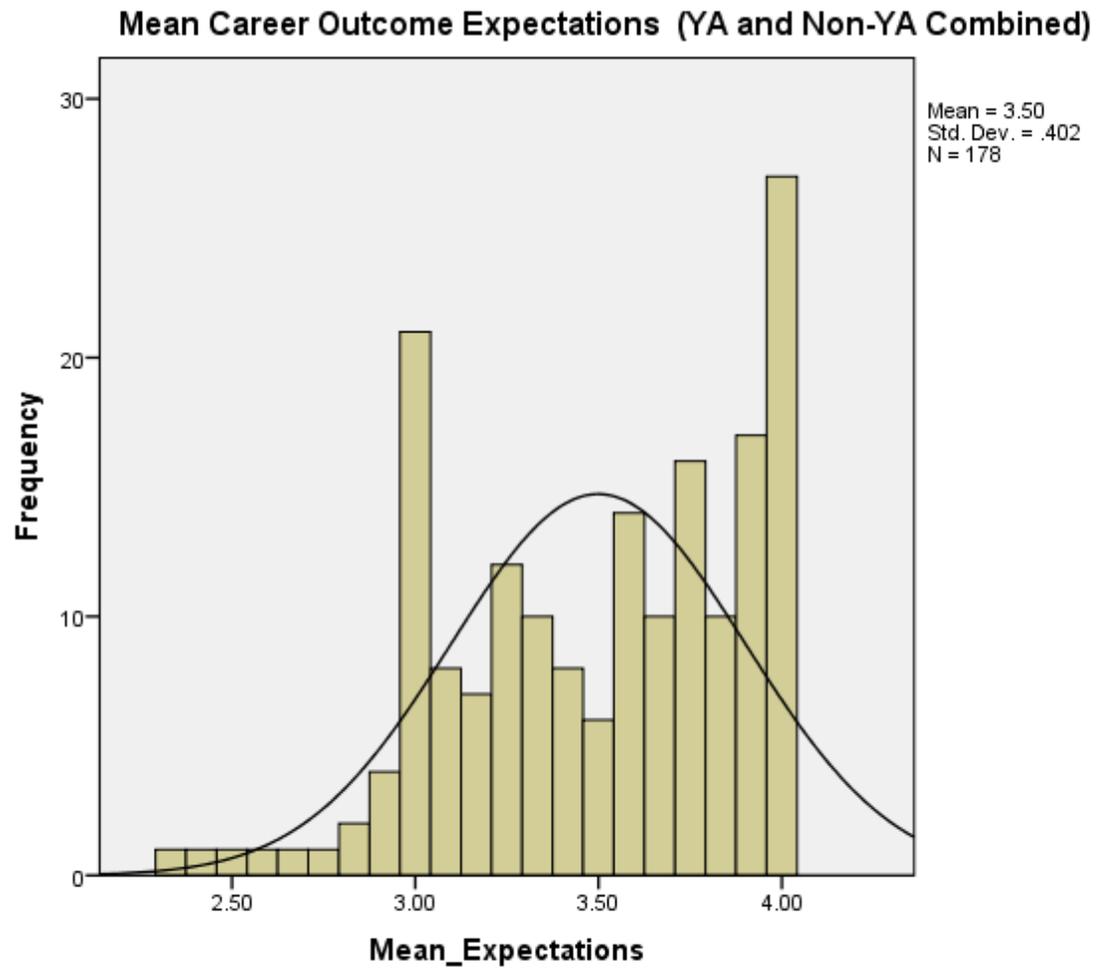


- a. 1 = Strongly Disagree, 2 = Disagree, 3 = Not Sure, 4 = Agree, 5 = Strongly Agree  
b. Higher scores indicate more support

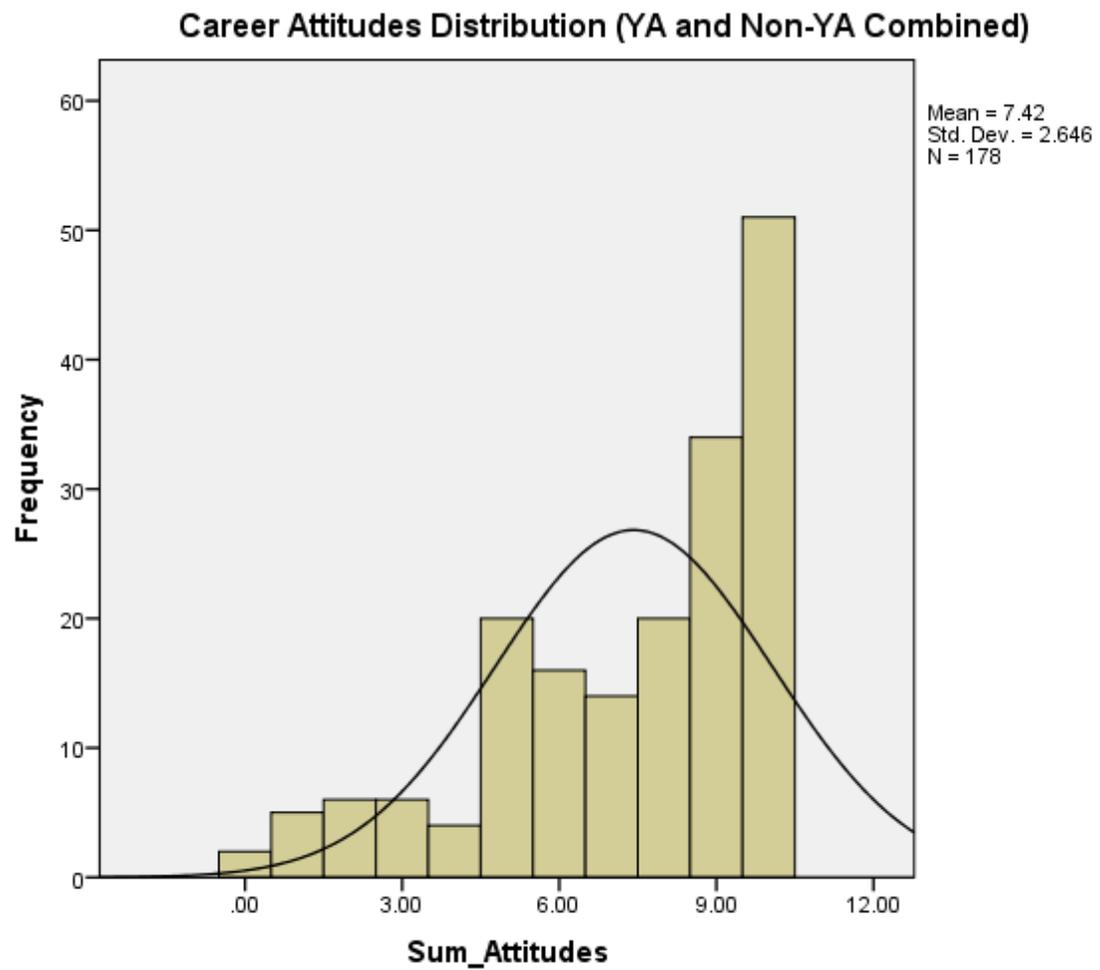
**Mean Career Self-Efficacy Distribution (YA and Non-YA Combined)**

a. 1 = No Confidence At All, 2 = Very Little Confidence, 3 = Moderate Confidence, 4 = Much Confidence, 5 = Complete Confidence

b. Higher scores indicate greater self-efficacy



- a. Strongly Disagree = 1, Disagree = 2, Agree = 3, Strongly Agree = 4  
b. Higher scores indicate more positive career outcome expectations



- a. Total summation of Attitude scores for each student; 1 = Disagree, 0 = Agree
- b. Higher scores indicate more career maturity (positive attitude)