JOB SHADOWING AS A MECHANISM FOR COLLEGE AND CAREER READINESS

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READINESS

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Schools currently face problems in preparing students for their post-secondary pursuits. The current job market remains unsaturated and almost half of all students that attend college end up dropping out. Almost a third of the students that do graduate end up working in a field unrelated to their course of study and college costs and debt are on the rise. To combat these issues, many schools require students to participate in job shadowing programs in hopes of providing authentic work experiences without the deleterious effects of adolescent work.

The purpose of this research is to better determine whether the job shadowing program at Mountainside Junior-Senior High School provides students with a more acute awareness of career decision making self-efficacy, knowledge of career entry requirements, and ideal job characteristics. More broadly, however, the hope is to gain insight as to whether job shadowing experiences do what many think they do; and that is, to arm high school students with a better ability to make career-related decisions upon matriculating to their post-secondary educational and job related pursuits.

A Randomized Control Trial (RCT) with two conditions on a volunteer sample of 30 ninth-grade students at Mountainside Junior-Senior High School was conducted. The treatment consisted of a one-day job shadowing experience of the students' (and families') choice; wherein

the student closely observed the work of an experienced employee for approximately three to seven hours. In the treatment group, job shadow placements included working in an auto body shop, observing a symphony orchestra flutist, working in a law firm, and observing a hospital nurse, amongst others. The treatment group was also administered an hour-long curriculum intervention designed to enhance college and career readiness and to prepare students for their job shadow placements.

Although no statistically significant differences in outcomes between the treatment and control groups were found, students were qualitatively appraised as developing a more acute awareness of the job preparation necessary to acquire a job. Additionally, many students either found the experience "very useful" or "extremely useless." These extremes are worthy of further consideration and will be discussed in more detail. Overall, this research provides much needed insight concerning job shadowing and informs current practices at Mountainside Junior-Senior High School and countless other high schools across Pennsylvania and the United States.

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1.0   INTRODUCTION

Job shadowing is a burgeoning practice in public schools created to provide opportunities that better match students to the current labor market (Arrington, 2000; Lozada, 2001; Sanders & Lewis, 2005). However, when I reviewed the literature, I found that most studies came from the medical field as health professionals strive to find creative ways to provide meaningful experiences to aspiring nurses and doctors (Iwata & Gill, 2013; Porter, Edwards & Granger, 2009; Wild et al., 2015). There are very few research studies in the field of education that focus on the efficacy of job shadowing programs for high school students.

When I examined the literature, I found that career education experiences and early implementation and instruction are vital to creating more knowledgeable and self-efficacious students (Betz & Hackett, 2006; Bryan et al., 2014; Byrd & MacDonald, 2005; Galliot & Graham, 2015; Stone-Johnson, 2015; Wimberly & Noeth, 2005). A relevant application of an early career education experience is adolescent work. Benefits of adolescent work include a better awareness of life beyond high school, a more mature orientation to work, greater independence and autonomy, and enhanced college and career readiness (Creed, Patton & Prideaux, 2007; D'Amico 1984; Mortimer, 2003; Staff & Mortimer, 2007; Steinberg et al., 1982). However, when students begin to approach 20 hours of work per week, many adolescents experience a sharp decline in grades, limited time for schoolwork, a negative effect on their personal relationships and mood, and a greater proclivity for deviant behavior (Apel et al. 2006;

Bachman & Schulenberg, 1993; Carr, Wright & Brody, 1996; D'Amico, 1984; Mortimer 2003; Staff & Uggen 2003; Warren & Lee, 2003). This research raises the question then; might a job shadowing experience provide a quality career experience for students without the deleterious effects of extensive adolescent work?

The purpose of this research is to better determine whether the job shadowing program at Mountainside Junior-Senior High School provides students with a more acute awareness of career decision making self-efficacy, knowledge of career entry requirements, and ideal job characteristics. More broadly, however, the hope is to gain insight as to whether job shadowing experiences do what many think they do; and that is, to arm students with a better ability to make career-related decisions upon matriculating to their post-secondary educational and job-related pursuits.

Therefore, the research question I ask is: How do job shadowing experiences affect students' career decision making self-efficacy, knowledge of college and career entry requirements, and formulation of ideal job characteristics? This study provides much needed insight and helps to analyze current practices at Mountainside Junior-Senior High School and countless high schools across Pennsylvania and the United States.

1.1   STATEMENT OF THE PROBLEM

In terms of preparing students for the work force, the country faces serious problems. Currently, over 40 percent of those enrolled in four-year colleges end up dropping out of school (Pervin, Reik, & Dalrymple, 2015; Symonds, Schwartz, & Ferguson, 2011). In addition, almost 32 percent of college graduates claim they never worked in a field related to their course of study

(O' Shaunessy, 2013). Further exacerbating the situation, prices for undergraduate tuition, fees, room, and board at public institutions rose 34 percent (from 2003 to 2014), and prices at private nonprofit institutions rose 25 percent after the adjustment for inflation (U.S. Dept. of Education, 2016). As a result, debt is on the rise. Approximately seven in ten seniors who graduated from public and nonprofit colleges in 2014 incurred student loan debt, with an average of $28,950 per borrower. In addition, over the last decade (from 2004 to 2014) the share of graduates with debt rose from 65 to 69 percent, which is more than twice the rate of inflation (Reed & Cochrane, 2012). Many attribute this phenomenon to a lack of connection between students' high school experience and their post-secondary pursuits (Rosenbaum, 2001). These growing concerns exist at the federal, state and local levels.

To combat these issues, high schools continue to add college and career readiness experiences into the scope and sequence of their programming to better prepare students for the job market (Arrington, 2000; Lozada, 2001; Sanders & Lewis, 2005). One commonly used intervention is job shadowing. Job shadowing is a burgeoning practice in public schools created to provide opportunities that better match students to the current labor market (Arrington, 2000; Lozada, 2001; Sanders & Lewis, 2005). However, there are very few research studies in the field of education that focus solely on the efficacy of job shadowing programs for high school students.

Currently, Mountainside Jr-Sr High School students in grades 10-12 are required to engage in a job shadowing experience as an important component to their college and career readiness programming. Although school administrators and school counselors often hear positive feedback from students and parents, the school lacks definitive evidence to support this

structure. As resources are limited, I need to ensure that the time, energy, and capital required to maintain this initiative are impactful to students and worthwhile investments.

2.0   REVIEW OF LITERATURE

2.1   A BRIEF HISTORY OF PUBLIC EDUCATION IN PENNSYLVANIA: PREPARING YOUTH FOR THE LABOR FORCE

In this section, I will provide a brief history of public education in Pennsylvania in regards to the State's responsibility for preparing youth for the labor force.

We will begin with the inception of Pennsylvania on March 12, 1641, when Charles II bestowed a large land mass west of the Delaware River to William Penn. William Penn was a visionary who saw the importance of education in preparing the youth for the trades. In his Frame of Government doctrine, he claimed that "education in some useful trade or skill was to be given to every child and this education was to be under direct control of the colonial government" (Walsh & Walsh, 1930, p. 2). His vision for public education was a key component to the inception of the new colony, designating education to the trades, but mostly to provide children with the ability to read scriptures and write by the age of 12. This is demonstrated in his letters to his family where he states the following:

> For their learning, be liberal. Spare no cost, for by such parsimony all is lost that is saved; but let it be useful knowledge such as is consistent with truth and godliness, not cherishing a vain conversation or idle mind; but ingenuity mixed with industry is good for the body and the mind too. I recommend the useful parts of mathematics, as building houses or ships, measuring, surveying, dialing, navigation; but agriculture especially is my eye. Let my children be husbandmen and housewives; it is industrious, healthy, honest and of good example (Penn, 1826 in Woody, 1920).

Penn envisioned public schools to be erected throughout the commonwealth, and it was written that Penn and the early leaders of Pennsylvania had a "clear conception of the importance of education and that they desired to make it universal and, to a large extent, compulsory and free" (Walsh, 1930, p. 8). Although there were a few public charters in the early years in Philadelphia and Eastern Pennsylvania, public schools did not become prevalent until the mid-1700s (Dunaway, 1961; Walsh & Walsh, 1930; Wickersham, 1886).

In the mid-1700s, the Quakers controlled the central government as they occupied most of the elected positions on the State council. The Quakers were in favor of public education, but in the early years focused on education for religious purposes only. They were the first settlers that instituted apprenticeships, however. Walsh & Walsh (1930) state the following:

> Hand work (work of the trades) of various sorts for the subjects listed by Penn were regularly taught wholly or in part in nearly all schools. In the towns where agriculture could not be taught, handwork of various kinds was developed and wood carving is frequently mentioned in the later curricula (p. 29).

They educated young women and men equally and were documented as providing education to freed African Americans and Native Americans as well. Although elementary education was provided sporadically in some settlements, the education was mostly devoted to religion and no formal state system of public schooling existed prior to the Constitution of 1776 being ratified as a result of the Revolutionary War (Ford, 1895; Walsh & Walsh, 1930; Woody, 1920).

The Constitution of 1776 provided for public education as followed:

> A school or schools shall be established in each county by the Legislature for the convenient instruction of youth, with such salaries to the masters paid by the public as may enable them to instruct youth at low prices; and all useful learning shall be duly encouraged and promoted in one or more Universities (Constitution of 1776, Section 44).

The next half century is marked by legislative action as the State government worked to make the laws in the Constitution of 1776 a reality. The State passed laws that required funding to colleges and universities, made provisions for children of poverty, and met the problem of elementary education by attempting to educate the poor as a separate class. In 1818, the State established Philadelphia as the first public school system, providing a mix of traditional and vocational opportunities to children at the public's expense. Shortly after, the industrial revolution began in the 1820s. However, public education still remained underfunded and remained a low priority to Pennsylvania residents at that time (Walsh & Walsh, 1930; Wickersham, 1886; Woody, 1920).

With the industrial revolution came the emphasis on preparing the youth for work. Roads, buildings, canals, and transportation became important focus areas. Labor unions became prevalent, and with labor unions came added pressure for the State to strengthen public education as citizens knew that an education was the only way for them to improve their social class. Organizations began to lobby for education and the once controversial Act of 1834 provided for each county to establish their own education division, a system of tax and levy, and the beginning of school boards, school directors, and a meeting structure for the division to report to the State. This first marked a more formalized construct of public education (Dunaway, 1961; Walsh & Walsh, 1930).

In early part of the 18th century, a school in Switzerland started the first vocational program that combined manual labor with traditional literary work. Educators in America began to hear of this and in the 1830s vocational schools began. The first of these schools in Pennsylvania was the Manual Labor Academy of Germantown in Bucks County. Additional schools began to seek charters with plots of land and workshops as a part of their educational

programming. However, this movement began to falter by 1840 and more traditional forms of schooling became the prevalent choice. The Act of 1854 provided a more centralized control of education by providing for county superintendents. These men began to address the insufficiencies that then existed (much of which were subpar buildings and equipment, underemployed teachers, poor teacher preparation, curriculum, discipline, and indifferent parents). Schools began to slowly develop as a result of this more centralized school control, the addition of county superintendents, and the public demand for new laws. This continued until the Civil War in 1861 (Trow, 1977; Walsh & Walsh, 1930, Wickersham, 1886).

With the end of the Civil War came a more centralized government. The government began to establish more authority over industry to control the monopolies and corporations that began to seize the market. Many young men who fought in the war moved to the cities because industry was booming and companies employed large swaths of men. Labor unions became powerful social and political entities and this more centralized form of authority and progressive mindset affected schools significantly. This included an extension of control over such matters as certification, quality of teaching, curricula, buildings, and equipment. Child labor laws and compulsory attendance laws were established and the State began to broaden the impact of the school system to meet the diversified needs of all children, and subsequently, the industries they matriculated into.

As Walsh & Walsh (1930) account, "the three Rs (Reading, wRiting, and aRithmetic) no longer met the needs in the elementary field and the old classical training of the secondary schools and colleges fell far short of meeting the practical demands of the diversified life of the times" (p.224). Hence, from the late 1800s to early 1900s, high schools added courses such as bookkeeping, accounting, and industrial education to meet the demands of the labor market. The

enrollment of students nearly doubled every decade that followed (Dunaway, 1961; Trow, 1977, Walsh & Walsh, 1930). Legislation was passed that extended the school year to eight months, provided minimum salaries for teachers, established a teacher retirement board, provided strict guidelines for certification, and established formal additions of junior high schools and supervising principals.

This steady increase continued throughout the 1900s. By 1960, 90 percent of Americans aged 14-17 were enrolled in public high schools and steadily increased through the remainder of the 20th century (Trow, 1977). In the remainder of the 20th century, schools began to morph into more traditional institutions whose focus was to provide a general education with the outside responsibility of preparing students for the world of work. The result is the school structures that currently exist today. In 2016, enrollment was at approximately 98% (Kena et al., 2016).

In the 21st century, the No Child Left Behind Act of 2001 (NCLB, 2001) and the Common Core State Standards (CCSS) initiative of 2010 (National Governors, 2010) were significant laws that changed the landscape of public education. As a result, there became a heavy focus on standards and testing and many believe these laws unintendedly resulted in disproportionate resources designated to career education. The result has been a lack of connectivity between high schools and the labor market (Rosenbaum, 2001).

It was not until recently that the federal and state governments began to address these deficiencies. On June 23rd of 2016, John King made statements on behalf of the U.S. House of Representatives Committee on Education and the Workforce stating that "49 States and the District of Columbia have adopted and are implementing rigorous college and career ready standards and aligned assessments for all students (King, U.S. Dept. of Education, 2016, p. 1). Policies such as the School to Work Opportunity Act (STWOA) of 1994 and PA Chapter 339

(these appear later in the literature review) addressed these gaps and began to break down the "silos" that currently exist between the labor force and k-12 schools (Patti, 2014).

In the next section, I will provide a brief history of vocational education in the United States, as these programs focused specifically on creating a more definitive pipeline from schools to the labor market. Like job shadowing, vocational education shares a direct link to the labor market, and therefore is worth discussing as background knowledge for this research.

2.2   VOCATIONAL EDUCATION IN THE 20TH CENTURY

The 1990 Perkins Act defines vocational education as "organized educational programs offering a sequence of courses which are directly related to the preparation of individuals in paid or unpaid employment in current or emerging occupations requiring other than a baccalaureate or advanced degree" (Vocational C.D.P., 1990).

Education specifically focused on the vocations began in 1924. Hawaiian, Alaskan, and Puerto Rican delegates brought the Smith-Hughes Act to Congress. After a few years of deliberation and failed attempts, Congress finally authorized the Act, providing for an annual appropriation of $30,000 to be available to those States that supported vocational education. Five years later in 1929, President Coolidge expanded the influence of the Smith-Hughes Act, appropriating $500,000 across all fifty states and designating the money to agriculture and home economics. In 1934, the government raised the amount to three million each year and equally divided the money among agriculture, home economics, and trade and industrial education. The government then increased the funding to 12 million in 1936. The George-Barden Act (the Vocational Education Act) of 1946 amended the Smith-Hughes Act by providing provisions for

teacher training, administration and supervision, the purchasing of equipment, and an increase of appropriations to $28,850,000 a year (Gordon, 1999; Gordon 2014; Evans, 1975; Library of Congress, 1977).

In subsequent years, amendments to the Vocational Education Act provided for additional training such as health related services, navigational piloting, diesel engine repair, and preparation for the armed services. The Vocational Education Act of 1963 provided for grants to be given for new vocational education programs and facilities in the states, setting an allotment formula to be designated to the states based on need. The Act also set advisory bodies to oversee programs, provided specific guidelines for vocational education facilities, and designated an updated formula to support work study programs and experimental residential schools (Evans, 1975; Gordon, 1999; Gordon 2014; Library of Congress, 1977).

Other Acts throughout the remainder of the 20th century (such as the Perkins Act of 1990, the STWOA of 1994, the National Skill Standards Act [NSSA] of 2000, and many others) provided for additional flexibility, government matching programs for work study initiatives, cooperative education programs, state advisory councils (to oversee vocational programming), additional funds to develop bilingual programs, and the increased spending of 80 million dollars annually with an additional 45 million devoted to work study programs (Evans, 1975; Gordon, 1999; Gordon 2014; Library of Congress, 1977).

Vocational education then declined from 1982-1992 as the United States labor market shifted from an industrial to a service economy in the digital revolution (Evans, 1975; Gordon, 1999; Gordon 2014; Library of Congress, 1977). At this time, unemployment rose and high school graduates began to flounder in the job market. As a result, the youth apprenticeship movement in the 1980s and 1990s emerged with a focus on assisting high school graduates in

finding meaningful and stable employment. However, this initiative inadvertently fell on non-college-bound high school students. In addition, employers gave little consideration to youth apprentices' academic records. As a result, students developed "little incentive to study, and this created a vicious cycle in which low skills among high school graduates reinforced low expectations among employers" (Urquiola et al., 1997, p. 14). Ultimately, the youth apprenticeship movement died out because the demand for higher skilled employees began to increase with the maturation of the labor market. Also, jobs previously earmarked for high school graduates began to require higher levels of skill (Murnane & Levy, 1996). As a result, the National Assessment of Vocational Education (NAVE) found that declining vocational enrollment during this time might have been attributed to several factors such as increasing high school graduation requirements and the vulnerability of secondary vocational programs to local economic conditions (Boesel et al., 1994).

The STWOA of 1994 (Public Law 103-239) is a landmark piece of legislation particularly important to this research as it provided national guidelines for states to develop comprehensive school-to-work programs. These programs were created to galvanize the school-to-labor force pipeline and create opportunities for students to engage in K-12 opportunities in career exploration, career counseling, transferable work experiences, and post-secondary planning (Benz, Yovanoff & Doren, 1997). As a follow up to this national legislation, Pennsylvania's Chapter 339 code followed in 2008 (PA Code § 339.31), which mandated more specific requirements for schools. I will analyze this particular mandate more specifically later in this review of literature.

Most theorists believe that as the industrial revolution grew in the 20th century, the demand for skilled workers began to grow. Thus, the demand for educational programs that

could provide training and skills for those jobs began to grow (Becker, 1964; Benavot, 1983; Harbison & Myers, 1964; Schultz, 1961; Trow, 1977). Other theorists believe that the rise in immigrants, the influx of secondary students, and the broadening of compulsory education laws resulted in a demand for practical training (Benavot, 1983; Cubberley, 1934; Kerschensteiner, 1911; Taylor, 1914). Conversely, conflict neo-marxist theorists such as Bowles and Gintis (1976) believed that vocational education was a class-based solution invented by business capitalists as a way of manipulating loyal and disciplined workers to assume their position in the division of labor. These theorists believe that vocational education was a relatively cheap way of transforming the less educated population into docile employees to maintain current power structures (Bowles & Gintis, 1976; Spring, 1972).

Nevertheless, vocational education is still prominent in this country today. Career and Technical Education (CTE) courses are offered in approximately 93% of all secondary schools. In 2008, 3.7 percent of all students (approximately 4 million) in the United States attended a CTE school (U.S. Dept. of Education, 2008). In 2009, almost 94 percent of all high schools in the United States offered CTE courses and 13.1 percent of high school students' credits earned were CTE credits. These courses include family and consumer science, labor preparation, agriculture, business and office marketing and management, health, and personal finance (Boesel et al., 1994; U.S. Dept. of Education, 2009). Students at Mountainside Junior-Senior High School, for instance, currently receive credits in STEAM (science, technology, engineering, art, and mathematics), 21st century skills, personal finance, and family and consumer sciences (to name just a few).

2.3   COLLEGE AND CAREER READINESS

In this section, I provide a review of literature focused on college and career readiness. I highlight multiple studies and have organized them by data collection methods. The purpose of focusing on research methodology is to show depth of evidence and the confluence of both quantitative and qualitative data in this body of research. Studies range from surveys to 9000 students, to small group interviews of first generation college upperclassmen, to meta-analyses of documents and multiple data sources. This method of presentation also shows a distinct variation of age ranges, respondents, and subjects.

2.3.1 Research Methodology: Surveys

Creed and Patton (2006) used surveys as a data collection method when they studied the correlation between the confidence a high school student has to carry out career exploration tasks and career indecision. They surveyed 166 students when they were in 8th and 10th grade, finding no significant causal relationship between career indecision and career decision-making self-efficacy.

Wimberly and Noeth (2005) also focused their attention on middle and early high school students. They surveyed almost 3000 students from multiple backgrounds from across the country. Specifically, they were interested in studying the extent of early college and career planning (specifically exploring the impact of parents, school staff and school experiences). They found that schools failed to provide the opportunities necessary to create college and career ready students and families. As a result, they call for college and career planning as early as 6th grade

in areas such as career inventories, exploration, curriculum, and early financial planning (Wimberly & Noeth, 2005).

Natal'ya Galliott and Linda Graham (2015) examined the impact of high school students' backgrounds and school experiences on career choice capability. They employed a cross-sectional survey of 706 secondary school students in Australia. They found that students who were unsure of their career were less likely to have been exposed to career education opportunities. Consequently, they argue that students developed a negative perception of school (Galliot & Graham, 2015).

Lastly, in an attempt to explain why up to 60 percent of college freshmen require remediation, Lombardi, Seburd, and Connely (2011) surveyed over 1000 high school students from 10 states. They found four factors that respondents claimed had the most leverage in creating college and career readiness: goal-driven behaviors, persistence, study skills, and self-monitoring.

2.3.2 Research Methodology: Mixed Methods (Surveys and Interviews)

Cori Stone-Johnson (2015) surveyed 1800 teachers and counselors to explore their perceptions of their role to implement college and career readiness curriculum. She then followed up with interviews to uncover a noteworthy disconnect between teachers and counselors in regards to their roles and responsibilities in delivering services. She reported that the result was a lack of college and career opportunities for all students (Stone-Johnson, 2015).

In similar fashion, Orndorff and Herr (1996) conducted a comparative study of declared and undeclared high school and college-aged students on career uncertainty. They surveyed 189 students and followed up with interviews as well. They found that undeclared students received

more services in career planning at the expense of the declared students. They go on to advocate for increased experiential career exploration opportunities for students to better clarify their perceptions of multiple occupations (Orndorff & Herr, 1996, p. 637).

Plank, DeLuca, and Estacion (2005) analyzed the National Longitudinal Survey of Youth (NLSY) data to track almost 9000 representatively sampled high school students from across the country who had dropped out of school for a period of time. They then interviewed a representative sample as they worked to uncover students' academic and career technical education experiences related to college and career readiness. Although they found a positive correlation between technical and academic experiences and college and career readiness, they warn that an aggressive dose to older students could result in higher dropout rates.

Finally, Byrd and MacDonald (2005) focused on a more finite subgroup when they interviewed a small group of first generation college upperclassmen. They were hoping to provide insight in establishing more meaningful college and career counseling for non-traditional students. Respondents claimed that skills in time management, goal focus, and self-advocacy were essential to their college and career goals. Researchers found that most of these skills were learned outside of their traditional academic programs. The authors, therefore, widened their definition of college and career readiness to "recognize nonacademic skills for advising and placement decisions, especially for first-generation students who might not be familiar with the college system" (Byrd & MacDonald, 2005, p. 34).

2.3.3 Research Methodology: Mixed Methods and Document Analyses

Urquiola et al. (1997) reviewed multiple school to work program descriptions and reports from the field. They followed up with interviews, collecting testimony from multiple participants.

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Their aim was to study the efficacy of college to career and vocational education programs to determine whether efforts have yielded lasting benefits for students. They found that more integration was needed to provide connectivity between vocational and academic programs (Urquiola et al., 1997).

In similar fashion, Fowler et al. (2015) completed a multi-tiered document analysis of current high school reform efforts and local, state and federal policy pertaining to college and career readiness. Their purpose was to uncover high school redesign efforts and policies focused on college and career readiness; hoping they might benefit students' Individualized Education Plans (IEPs). They found that high school reform efforts "directly affect the provision of secondary education and transition services for students with disabilities," and subsequently push for the implementation of college and career readiness programs in all schools (Fowler et al., 2015, p. 28).

Bryan et al. (2011) studied the efficacy of high school counseling programs. Specifically, they examined data from the Educational Longitudinal Study of 2002 (ELS, 2002; Ingels, et al., 2004) to find a correlation between school counselor contact and college application rates. Specifically, they found that contact with the school counselor by 10th grade provided a clear advantage for students, especially for those that are less affluent (Bryan et al., 2011, p. 196).

Finally, Ng et al. (2005) conducted a meta-analysis of 4 categories of predictors to career success for the purpose of challenging traditional theories of career mobility. They performed a comprehensive analysis of journal articles published since 2003 in prominent psychology journals. Two authors coded each article independently for inter-rater reliability. They found that human capital (number of hours worked, job tenure, work experience, education level, etc.) and socio-demographic predictors (education, relative income, ethnicity and gender) generally

displayed stronger relationships with objective career success. In addition, organizational sponsorship (supervisor support, training and skill development opportunities, organizational resources, etc.) and stable individual differences (conscientiousness, extroversion, proactivity, internal locus of control, cognitive ability, etc.) were generally more correlated to career success (Ng et al., 2005, p. 367).

2.3.4 Conclusion

Research methodologies for college and career readiness range from large-scale surveys, to interviews with teachers and students, to document and data analysis. This illustrates that a robust body of research exists with both quantitative and qualitative research methodologies. This research highlights career readiness efforts around the world and illustrates that school curriculum, school counselor contact, familial influence, authentic career education experiences, and early implementation and instruction are important factors to college and career readiness and student preparedness for the world of work. In addition, this body of work has direct impact on job shadowing, as job shadowing is an authentic college and career education experience that falls in line with what current research defines as best practice.

In the last five years, many states in the U.S. have created policy and designated resources to improve college and career readiness. In the next section, I will focus on Pennsylvania Code § 339.31 and its assumptions and implementation challenges. This state mandate has resulted in an outcropping of career readiness programs across the state (including many job shadowing programs).

2.4 PA CODE § 339.31: PENNSYLVANIA'S EFFORTS TO SUPPORT COLLEGE AND CAREER READINESS

To account for an unsaturated labor market, and knowing that "career guidance should encourage individuals to determine their role in, and their contribution to, the society of which they are part of" (Watts & Sultana, 2004, p. 121), the Pennsylvania legislature enacted Pennsylvania Code § 339.31. PA Code § 339.31 passed in 2008, requiring "a written plan approved by the local board of school directors for the development and implementation of a comprehensive and sequential program of guidance services for kindergarten through 12th grade students" (PA Code § 339.31). By law, this guidance plan must incorporate the Pennsylvania Career, Education and Work (CEW) standards across all grades and provide students with unique opportunities for career exploration, career acquisition, career retention, and entrepreneurship. The plan is to be created by school counselors, school staff, and administrators to be kept on file with the school's cooperating vocational (CTE) school (PA Code § 339.31). PA Code § 339.31 is the primary mechanism in Pennsylvania that mandates college and career readiness curriculum. As such, this very important mandate directly affects school programming, and subsequently, this study.

I have created a logic model illustrating the implied theory of action (Argyris & Schon, 1978) of the PA Chapter 339.31 mandate. I have included this in Figure 1. The figure first highlights the mandate's antecedents such as growing pressures (previously discussed) from the Pennsylvania labor market, underemployed workers, and the rise in tuition and debt. To account for these pressures, PA Code § 339.31 was created, requiring the implementation of a comprehensive and sequential program of guidance services for kindergarten through 12th grade students (PA Code § 339.31). This mandate requires that school counselors deliver relevant curriculum to students. The intended result of the k-12 guidance plan is that students are better

prepared for the labor market. This preparation, therefore, warrants a stronger coupling between students' high school experiences and their future employment. The idea, then, is that this stronger coupling will lead to incoming Pennsylvania employees being better equipped to meet the demands of the labor market. The code also assumes that college graduation rates will increase, middle class families save money, and students are less likely to work in jobs outside their areas of preparation.
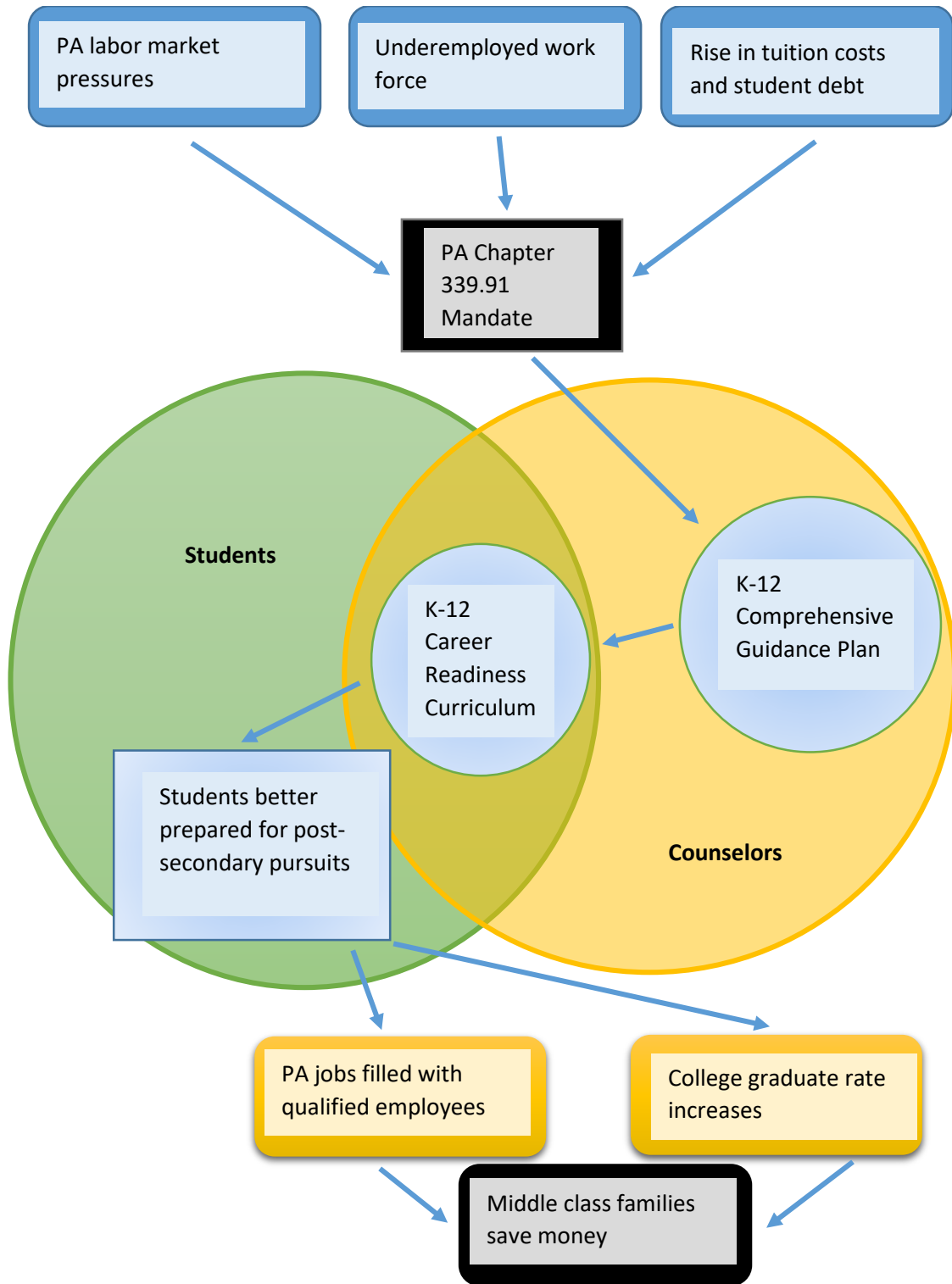
Figure 1. Logic model illustrating the implied theory of action for PA Code 339.31.

The result of PA Code § 339.31 is that most districts in Pennsylvania have devoted newfound attention to career exploration, acquisition, retention, and entrepreneurship. The Pennsylvania Department of Education (PDE) recently designated two experts to travel across the state to provide support and guidance in implementing the Chapter 339 plan in each district. As a result, many improvements have been made in schools to address the shortage of programming for college and career readiness across the State. Some of those improvements have led to job shadowing programs being indoctrinated by many school districts across the Commonwealth.

2.5   ADOLESCENT WORK EXPERIENCE: PROS AND CONS

According to the U.S. Department of Education, 3,811,000 ninth graders (47.1%) reported that they maintained jobs while in high school, and 11.7 percent of those jobs were in their future careers (NCES, 2009). Other researchers report much higher numbers, claiming that 70 to 90 percent of young people work during their high school years (D'Amico, 1984; Marsh, 1991). As I previously discussed, career related experiences improve college and career readiness, and adolescent jobs can be valuable in this regard. However, there can be deleterious effects of adolescent work as well. In this section, I will review the literature outlining the pros and cons of adolescent work, as well as the connection adolescent work has to job shadowing.

2.5.1 Research Outlining Possible Benefits of Adolescent Work Experiences

This section lays out the body of research in support of adolescent work, claiming profound advantages for young people. Overall benefits include a better awareness of life beyond high school, a more mature orientation to work, greater independence and autonomy, and improved college and career readiness (Creed, Patton & Prideaux, 2007; D'Amico, 1984; Mortimer, 2003; Staff & Mortimer, 2007; Steinberg et al., 1982). For many students who work in high school, earnings are enhanced, participation in the labor market is more seamless, and gainful post-secondary employment improve significantly (Carr, Meyer & Wise, 1982; Mortimer & Finch, 1986; Wright & Brody, 1996).

There are many studies that outline the benefits of adolescent work. According to a 2007 study by Creed, Patton and Prideaux (2007), a significant association exists between work experience and career maturity, resulting in a heightened development of reliability, perseverance, work values, work identity and career aspiration (p. 388). They go on to discuss the importance of more formal work experiences as an integral part of school programming (Creed, Patton & Prideaux, 2007, p. 289). According to Jeylan Mortimer (2003), adolescents report that work helped them develop a better sense of time management, talk more freely to adults, become more outgoing, handle money comfortably, and feel more like an adult. In addition, he writes that adolescents have a high rate of job satisfaction. D'Amico (1984) expounds by reporting that adolescent work has no negative influence on class rank (D'Amico, 1984).

Staff and Mortimer (2007) conducted a longitudinal study of over 1000 teenagers in a major metropolitan area, finding that a balance of work and school helped students better establish time management skills. Students reported that managing this confluence of work and

school prepared them well for college (as most of them were students that maintained part-time work throughout their college years). Staff and Mortimer (2007) go on to state that a healthy balance of school and work results in higher educational attainment. In addition, a higher percentage of students in their study achieved a 4-year degree. Finally, students who work are more likely to experience success in post-secondary employment (Marsh & Kleitman, 2005; Staff & Mortimer, 2007). Conversely however, they identified that the lower achieving students in high school were those that tended to work longer hours. These longer work hours impinged on the students' ability to manage their schoolwork appropriately (Staff & Mortimer, 2007).

Under the assumption that the quality of adolescent work experience has significant implications on adolescent psychological development, Mortimer and Shanahan (1994) surveyed the same 1000 students to study the effects of adolescent work on parent-adolescent relationships. They also interviewed over 1500 parents to add additional insight. They wanted to challenge Greenberger and Steinberg's (1986) previous findings that youth work (based on the intensity) had deleterious effects on parent-child relations. Mortimer and Shanahan (2007) found that although there was a slight increase in arguments between children and parents regarding work (especially that of 10th grade girls), there was no evidence to support that adolescent work had harmful effects on parent-child relationships. Conversely, they found that adolescent work enhanced the relationship between fathers and their 11th grade boys. There were also positive reports of children feeling (and parents perceiving) students to be more independent.

Staff and Uggen (2003) studied the effects of work intensity and delinquency on adolescents. They completed an ethnography on over 1000 students and found that the procurement of high school jobs resulted in a decrease in delinquency when they became adults (specifically, jobs that are autonomous, high paying, and high status). In addition, they found that

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"work provided more age-appropriate benefits to adolescents, such as learning opportunities and compatibility with educational roles, reduced problems in school, drinking, and arrest" (Staff & Uggen, 2003, p. 284). Ultimately, they argue that part-time jobs complement students' high school experience, and is ultimately a fruitful endeavor.

2.5.2 Research Outlining Possible Risks of Adolescent Work Experiences

There is a significant body of research that links adolescent work to negative outcomes. Rocheleaua and Swisherb (2016) used data from the National Longitudinal Study of Adolescent to Adult Health (Add Health) to examine the relationship of adolescent work to binge drinking in a sample of 4,826 adolescents. They found that the correlation was higher for working adolescents from advantaged families. In other words, as work intensity rose, adolescents with higher socioeconomic status reported engaging in binge drinking. They found a significant correlation between longer hours and deleterious effects (Rocheleaua & Swisherb, 2016).

There have been numerous studies that have reported a strong correlation between adolescent work and deviant behavior as well (Apel et al. 2006; Bachman & Schulenberg, 1993; Mortimer 2003; Staff and Uggen 2003). Particularly, these researchers correlate work intensity to substance abuse. For instance, Bachman and Schulenberg (1993) conducted interviews on 135 high school students over a three-year period to find a correlation between work intensity and deviant behavior. They found that work intensity (working more than 20 hours) was "positively correlated with smoking cigarettes, drinking alcohol, using illicit drugs, interpersonal aggression, theft, victimization, trouble with police, arguments with parents, lack of sleep, and lack of exercise" (p. 230). They also found that students that did poorly in school were positively correlated to longer work hours; and intense working hours resulted in students being precocious

beyond their years. Their research closely aligns to Greenberger and Steinburg's (1986) work in which they challenge the notion that adolescent work is beneficial for students.

Shanahan et al. (1991) also used the Youth Development Study respondents to study the impacts of work-related stress on adolescents. They found that "work stress increases depressive affects among employed tenth-grade boys, while the feeling that one is accountable for things at work that are beyond one's control increases depressive affects among tenth-grade girls" (p. 313). In addition, they report that younger students have a more difficult time juggling the demands of school and work. They go on to report that work cuts into time that should be spent with parents and family. They ultimately conclude that the influence of family loses its efficacy as the intensity of adolescent work rises.

Helms and Ozcan (1995) surveyed 344 educators to study the effects of adolescent work on students' schooling from the perspective of teachers. Educators report that when teenagers engage in employment, they have less time to focus on their schoolwork and to participate in after school activities. As a result, they come to school tired. There are many studies that report adolescent work robs students of a stage of life that should be free from adult responsibilities, stress, and pursuits. They go on to say that adolescence should be a time of exploration, learning, and self-efficacy (Greenberger & Steinberg 1986; Steinberg & Cauffman, 1995; Steinberg & Dornbusch, 1991).

As stated earlier, researchers have identified that the lower achieving students in high school tended to work longer hours. These longer work hours impinged on the student's ability to manage their schoolwork appropriately (Staff & Mortimer, 2007). Adolescents that worked over 20 hours per week reported having less time to do homework and as a result, achieved lower test scores (D'Amico, 1984; March & Kleitman, 2005). In addition, students that work

more than 20 hours a week have a higher rate of absenteeism and drop out of school more than those that work more reasonable hours (D'Amico, 1984; Warren & Lee, 2003). Those same low-achieving students that work long hours are more likely to have poor orientations toward school, resulting in a sharp decrease in school performance and college attendance (Carr, Wright & Brody, 1996).

2.6   JOB SHADOWING

Blake and Stalsberg (2009) define job shadowing as "the process by which a trainee or researcher closely observes the work of an experienced employee over a period of time" (p. 243). The goal of a shadowing experience is to create an environment where a prospective employee (or in this case, a high school student) can observe a job setting to gather insight into their future career. McDonald (2006) argues that job shadowing is a viable research methodology by itself, claiming that "shadowing examines individuals in a holistic way that solicits not just their opinions or behavior, but both of these concurrently" (p. 457). Literature on job shadowing, however, is relatively scarce and has not been formally studied in the field of education. However, job shadowing is practiced in many schools throughout the country (Arrington, 2000; Lozada, 2001; Sanders & Lewis, 2005). In this section, I will discuss a few noteworthy studies on job shadowing and their impact on the field of education.

The medical field owns most of the studies that have been conducted, specifically in the area of nursing. Wild et al. (2015) set out to study the efficacy of a job shadowing program for pediatric residents and nurses. They studied a convenience sample of 14 first-year pediatric residents and 24 randomly selected pediatric nurses. Each pediatric resident anonymously

completed the Jefferson Scale of Attitudes Toward Physician-Nurse Collaboration scale (JSATPNC). They then completed a four-hour job shadowing experience with a seasoned pediatric nurse. Two months later, they were reassessed using the same scale. This reciprocal approach resulted in better communication and understanding of both roles, and was ultimately reported as a worthwhile venture for both the residents and seasoned nurses alike (Wild et al., 2015).

In an attempt to combat future predictions of job shortages for nurses in North Carolina, Porter, Edwards and Granger (2009) studied high school student perceptions of nursing as a career. They interviewed 16 students after a 30 to 40-hour shadowing experience to gain perspective from the high school students, and to ultimately recruit more judiciously. They state that "for all students, the experience of shadowing practicing nurses clarified their ideations of nursing and helped them identify the 'fit' of a nursing career with their own personal goals and desires" (p.232). They also found that experiential knowledge of nursing at the high school level is positively correlated to career decision-making on a broader scale. They used this data to improve future recruitment efforts into their field (Porter, Edwards & Granger, 2009).

A study was conducted at London's University of College and Medicine where researchers required all first-year medical students to shadow a junior doctor for a four-hour shift. The purpose of this was to gain a better understanding the demands of their work (Iwata & Gill, 2013). Over 680 students participated in the study, and 341 students completed questionnaires after their experience. Iwata and Gill (2013) reported that first-year residents and junior doctors alike described the experience as meaningful. Specifically, they state that most students "felt that the scheme helped them gain a glimpse into medicine and this included

appreciating the jobs of a junior doctor, familiarizing themselves with the clinical environment, applying knowledge learned to clinical scenarios, and seeing patients" (p. 636).

As an attempt to establish college and career readiness opportunities in Pennsylvania, job shadowing is practiced in many schools and communities to satisfy state mandates. The goal of the Department of Education is to create a tighter coupling between schools and work (Arrington, 2000; Lozada, 2001; Sanders & Lewis, 2005). Many school districts (such as Mountainside Jr-Sr HS) require students to spend a day with a local business or community member and reflect on their experiences. Top school districts in the state such as Tredyffrin/Easttown (T.E.), require a more intensive job shadowing experience. At T.E., some seniors can forego their last semester of high school to intern with a local business. Emily Patrick, a Conestoga Valley student (the high school located in T.E.), addressed more than 600 business leaders at a Lancaster County Chamber of Commerce meeting in 2016 saying the following: "By job shadowing, I got a chance to see how school relates to work. My job shadow experience gives me the confidence that my education has a purpose, and that *I* have a purpose" (CV, 2016). The school district touts their job shadowing program as one of their marquis opportunities to students; and one that has lasting positive effects.

In addition to school programming, job shadowing is a focus in many communities across the country. As a result of Colin Powell's challenge to the country at the Presidents' Summit for America's Future in 1997 (Hopkins, 2012), National Groundhog Job Shadow (NGJS) Day started by the NGJS Coalition comprised of the Association for Career and Technical Education, the Society for Human Resource Management, the U.S. Department of Education, and the U.S. Department of Labor (Hopkins, 2012; U.S. School To Work Office, 1999). According to Hopkins, "the program was modeled after the Groundhog Job Shadow Days conducted by the

Boston Private Industry Council in 1996 and BellSouth in 1997" (Hopkins, 2012). In 1998, over 125,000 students participated. The GJSD coalition developed a national website and a companion guide for school districts to follow that included preparation materials, on-site pre and post activity guides, an FAQ, and other materials that aided to the fidelity of implementation. Although GJSD day is still slated for Groundhog Day (February 2nd) each year, the initiative is no longer federally funded and has lost momentum (although many school districts still consider it as a part of their school activities and functions). However, over 100,000 businesses across the country still participate in some version of the event. This year's event was February 2, 2018, and marked the 20th anniversary of the initiative (Hopkins, 2012; U.S. School to Work Office, 1999).

2.7   CONCLUSION

In order to provide background to this study, I began by providing a brief overview of public and vocational education in regards to its responsibility for preparing students for the labor force. This not only provided a historical context, but also illustrated the political influence, community support, and labor market activities that have heavily influenced the educational preparation of students in the last century. However, this momentum significantly slowed at the onset of the 21st century with the passing of NCLB and the CCSS. College and career readiness initiatives were placed on the back burner to clear space for initiatives focused on academic rigor and closing the achievement gap. In the last five years, however, the Federal and State Departments of Education have aligned efforts to reemphasize the school-to-work pipeline. One of those Pennsylvania mandates discussed was PA Code § 339.31.

I then examined the literature on college and career readiness and found that school curriculum, school counselor contact, familial influence, specific career education experiences, and early implementation and instruction are important components toward creating more knowledgeable and self-efficacious students. Adolescent work and job shadowing are primary examples of those experiences (or instruction).

When I studied the pros and cons of adolescent work, I found that benefits included a better awareness of life beyond high school, a more mature orientation to work, greater independence and autonomy, and improved college and career readiness (Creed, Patton & Prideaux, 2007; D'Amico, 1984; Mortimer, 2003; Staff & Mortimer, 2007; Steinberg et al., 1982). However, when students began to approach 20 hours a week, they experienced a sharp decline in grades, limited time for schoolwork, a negative effect on their personal relationships and mood, and a greater proclivity for deviant behavior (Apel et al. 2006; Bachman and Schulenberg 1993; Carr, Wright & Brody, 1996; D'Amico, 1984; Mortimer 2003; Staff and Uggen 2003; Warren and Lee, 2003).

This finally led to my review of job shadowing. When I reviewed the literature, I found there were very few research studies in the field of education that focused on job shadowing specifically. I learned that the medical field is on the forefront of these studies, as they work to create authentic experiences for their aspiring nurses and doctors (Iwata & Gill, 2013; Porter, Edwards & Granger, 2009; Wild et al., 2015). The research reports these experiences as efficacious. I also show that despite the lack of research, job shadowing experiences are practiced in many schools throughout the country and in Pennsylvania (Hopkins, 2012; U.S. School to Work Office, 1999). The question remains as to whether these job shadowing experiences are efficacious in schools. As stated previously, this research provides insight as to

whether job shadowing experiences do what many think they do; and that is, to arm high school

students with a better ability to make decisions about their future.

3.0   METHODOLOGY

Job shadowing is a burgeoning practice in public schools created to provide opportunities that better match students to the current labor market (Arrington, 2000; Lozada, 2001; Sanders & Lewis, 2005). However, when I reviewed the literature, I found that most studies emerge from the medical field, as health professionals strive to find ways to provide meaningful experiences for aspiring nurses and doctors (Iwata & Gill, 2013; Porter, Edwards & Granger, 2009; Wild et al., 2015). Although some literature has documented extensive job-embedded experiences for students (Fielding, 2008; Martin, 2008), there is little research intently focused on the efficacy of job shadowing programs for high school students. This study, therefore, provides much needed insight and hopes to justify current practices at Mountainside Junior-Senior High School and countless other schools across Pennsylvania and the United States.

3.1   INQUIRY SETTING AND STAKEHOLDERS

The setting for this inquiry is Mountainside Junior-Senior High School, a pseudonym used for the actual junior-senior high school to uphold confidentiality in the study. Mountainside is a small public school district serving two small towns. The School District has experienced a 10% decline in enrollment since 2008. The two small towns consist of primarily small businesses within a small walking community. The students attend one of two neighborhood elementary

schools situated in each town. The two towns have very different socio-economic profiles. For instance, the poverty rate varies by 15%, median household incomes differ by over $25,000, and property values in one town is more than twice of those in the other. In 7th grade, all elementary students enter the Junior-Senior High School. The district has recently engaged in efforts to create a more focused junior high school concept within the secondary building. Students in grades 10-12 are currently required to complete a one-day job shadowing experience. This research will focus solely on the 2017-2018 incoming 9th grade students because they currently do not have a career shadowing graduation requirement. Numbers referring to this district were rounded to the nearest 10 to uphold confidentiality.

This research required the engagement of multiple stakeholders. These stakeholders shared a vested interest in high school students becoming more prepared and better aware of their post-secondary pursuits. The first set of stakeholders were the students, as they were the primary focus of the study. Specifically, their career decision making self-efficacy, knowledge of college and career entry requirements, and formulation of ideal job characteristics acted as dependent variables in the research design.

As most students in the study engaged in a job shadowing experience, local business owners in the two supporting towns and surrounding areas had an indirect stake in this research. These business owners hosted incoming students and worked collaboratively with the school to provide a valuable experience to the Mountainside students. Local business owners will continue to be crucial stakeholders, as there will be approximately 1.2 million jobs openings in Western Pennsylvania by 2020 (Daniels, 2014).

Parents are (and will continue to be) direct stakeholders. Most families go into debt to pay for college tuition and many of their children are underemployed. In addition, many families

spend a lifetime saving money to help their children attend a post-secondary college. Over the last decade (from 2004 to 2014) the share of graduates with debt rose from 65% to 69% while average debt at graduation rose at more than twice the rate of inflation (Reed & Cochrane, 2014). In addition, parents were responsible for helping their children find a job shadowing experience and attend.

Finally, the Mountainside Jr-Sr High School staff served as a primary stakeholder as well. Counselors, teachers, and staff members work collaboratively to prepare the students for their post-secondary pursuits. School employees provide K-12 experiences designed to prepare students for their prospective careers. In addition, many staff members helped students find job shadowing experiences that were meaningful to them, and were fully engaged in the process.

3.2   RESEARCH DESIGN AND INSTRUMENTATION

3.2.1 Randomized Control Trial

A Randomized Control Trial (RCT) is a scientific experiment designed to reduce bias when testing a treatment (Chalmers, et al., 1981; Rorty, 2009; Valentinuzzi, 2004). An RCT requires that participants be randomly placed into experimental groups; whereas some groups experience a treatment and other groups experience no treatment at all (or possibly a placebo). This randomization minimizes selection biases assuming that other variables are kept constant (Chalmers, et al., 1981; Rorty, 2009; Torgerson & Torgerson, 2016; Valentinuzzi, 2004). Carole and David Torgerson (2016) categorize this approach as a "true" experimental design, stating

specifically that "the RCT is the best design for demonstrating whether or not an innovative educational intervention is effective" (p. 417).

For this study, I conducted a Randomized Control Trial (RCT) with two conditions on the current 9th grade class at Mountainside Junior-Senior High School. The treatment was a one-day job shadowing experience of the students' choice; whereas the student closely observed the work of an experienced employee for the time of a typical school day (Blake & Stalsberg, 2009). The treatment group also received a one-hour curriculum intervention geared to college and career readiness and job shadow preparation. This particular class had a current enrollment of 65 students. All 65 of those students were given the opportunity to participate. Of the 65 that were asked to participate, 30 of those students provided the permission necessary to be included in the study. Therefore, the students represented a volunteer sample with a 46% participation rate.

After permission was granted, each volunteer was randomly assigned to one of two experimental groups. The control group completed the pretest and posttest and did not complete a job shadowing experience or curriculum intervention. The treatment group completed the pretest, was provided the curriculum intervention, participated in one day of a job shadowing experience, and subsequently completed the posttest.

The research design below illustrates the control and treatment groups. P_1 and P_2 represent the pretest and posttest (respectively), L_1 represents the lesson, and S_1 represents the treatment (a one-day job shadowing experience):

$$\textbf{Control:} \quad P_1 \qquad \qquad P_2$$

$$\textbf{Treatment:} \quad P_1 \quad L_1 \quad S_1 \quad P_2$$

In this study, the experimental unit is the student, since students are randomly assigned to a treatment. There is one treatment: whether or not the student received the job-shadowing and

curriculum interventions. There are two groups under study: a control group where nothing happened, and a treatment group who experienced both interventions. The sample sizes are:

- n = 30: Total number of students

- n_C = 10: Number of students in control group

- n_T = 20: Number of students in treatment group

Although the treatment and control groups were randomized, in small sample sizes there can still exist "unhappy randomization" (Kelly, 2016). To account for this, I analyzed the demographic information for randomization across the demographic questions of highest importance (sex, mother's highest level of schooling, poverty, and school attendance). Table 1 shows the results of that analysis. The randomization was either perfect or extremely close between the control and treatment groups. Therefore, I made the assumption that the initial randomization was generally effective in producing equivalent comparison groups.

Table 1: Randomization summaries for demographic questions

Demographic Questions	Control	Treatment
Q4 – What is your sex?	40% Male 60% Female	40% Male 60% Female
Q11 – What is your mother's highest level of schooling?	0% Less than HS 10% HS 0% Post HS 50% College 40% Beyond College	5% Less than HS 5% HS 10% Post HS 55% College 25% Beyond College
Q16 – Did you get free or reduced school lunches during your 8th grade year (2016-2017)?	30% Yes 70% No	30% Yes 70% No
Q20 – How many days did you miss school in the last month?	20% None 50% 1 or 2 days 10% 3 or 4 days 20% 5 to 10 days	25% None 45% 1 or 2 days 25% 3 or 4 days 5% 5 to 10 days

3.2.2 Curriculum Intervention

The curriculum intervention consisted of four unique segments. The intervention began with a short lesson and video followed by a career interest profiler and career cluster exploration experience; and finally, a video montage from mentors in the students' fields of interest (See Appendix D). In the next section, I will discuss each of these components in greater detail.

3.2.2.1 Part I - Success in the New Economy

In 2012, Kevin Fleming wrote an article entitled *Success in the New Economy*. This editorial was designed to prepare students for the realities of the current labor market. Ultimately, he supports early career and self-exploration as well as a combination of rigorous academics and technical skills (Fleming, 2012). A year later, Bryan Marsh (2013) directed and illustrated a ten-minute video for the purpose of bringing Fleming's work to a broader audience. The video (with the same title) is used in guidance programs around the country and is spotlighted on YouTube's TedEd channel. The video has been viewed by almost a quarter of a million people. The Pennsylvania Department of Education is highlighting this video as a part of their new Pennsylvania Career Readiness Index. The curriculum intervention begins by showing this video to the treatment group for the purpose of educating the students on the realities of the current job market and the importance of early career exploration.

3.2.2.2 Part II - Career Key (CK) Assessment

A Holland Code is a three letter code that is made up of an individual's dominant personality types (out of six possible choices). A Holland Code refers to a "theory of careers and vocational choice (based upon personality types) that was initially developed by American

psychologist John L. Holland" (Holland Codes, n.d.). Holland believed that once individuals identified with one of the six codes, they could use the same system to identify with certain careers. Since 1990, the U.S. Department of Labor's Occupational Information Network (O*Net) has been categorizing assessments (like the Career Key assessment) into the vocations that the six Holland Codes represent.

During the second segment of the planned lesson, students were required to take the Career Key (CK) assessment. Designed by Lawrence K. Jones (1983), the Career Key (CK) Assessment asks respondents questions that correspond to the six Holland personality types (Holland, 1985a) and their respective environments. After the initial battery of questions, the assessment identifies which career clusters (clusters of occupations that correspond with the six Holland types) the students' choices aligned with. Students then determined which career clusters and occupations resonated with them and researched those occupations accordingly. The instrument took approximately 15 minutes, and students were then given 20 minutes to research their corresponding careers. Students read a general overview of each career, researched the knowledge, skills, tasks and activities necessary to acquire that career, viewed the credentials and schooling necessary to attain the career, and researched the wages that the career provides.

3.2.2.3 Part III - Naviance Road Trip Nation

Naviance is a college and career readiness program that helps districts and schools align student strengths and interests to postsecondary goals for the purpose of improving student outcomes. Naviance also serves as an online repository for student interest inventories, school assessments and transcripts, and online learning opportunities. Mountainside Junior-Senior High School has recently purchased this program for their students and families.

One distinct feature of Naviance is a video archive called Road Trip Nation. This 3,500 video collection contains 52 documented road trips and 366 interviews of influential leaders. Each video ranges from three to five minutes. The videos are then sorted into 48 themes and 29 interests. The treatment group had 15-20 minutes to watch videos that corresponded to the career clusters that their CK assessments determined. Road Trip Nation acted as the final teaching segment of the preliminary lesson that the treatment group encountered prior to their job shadowing experience.

3.2.2.4 Part IV - Job Shadowing Guiding Questions

The last 10 minutes of the lesson required that I highlight and explain the guiding questions for the treatment group's upcoming job shadowing experiences. These questions were carefully crafted, aligned with the pre and post survey instruments, and designed to provide structure to students prior to their job shadowing experiences (See Appendix C). The questions focused on the educational, training and work requirements for the jobs they were going to observe. The students were then required to bring the question sheets to their job shadowing experiences and use them as a guide to ask their job site managers targeted questions about their work.

3.2.3 Pre and Post Survey

I designed and implemented pre and post surveys to produce quantitative descriptions about aspects of my study's population (Fowler, 2013, p. 1). As previously mentioned, the sampling frame is the 65 current 9th graders enrolled at the Mountainside Junior-Senior High School. The purpose of this survey instrumentation was to better determine whether the job shadowing program at Mountainside Junior-Senior High School provides students with a more acute

awareness of career decision making self-efficacy, knowledge of college and career entry requirements, and formulation of ideal job characteristics.

3.2.4 Survey Design

In designing this survey, I took advantage of the research of others for the purpose of gaining reliability and validity. Using preexisting questions provided me access to multiple question banks and allowed for easy access to previous statistical data (Bulmer, Gibbs, & Hyman, 2006; Fowler, 2013; Groves et al., 2011). For this study, the dependent variables were students' career decision making self-efficacy, knowledge of college and career entry requirements, and formulation of ideal job characteristics. Therefore, the survey instrument was arranged into those distinct subsections (See Appendix A). Each subsection addressed one dependent variable.

3.2.4.1 Readability Analysis

After constructing the questions and enacting the survey design, readability scales were applied to the instrument to ensure that the readability was appropriate for 9th grade students. Although readability has been studied since the late 19th century, scales and formulas were not officially developed until the middle of the 20th century (Flesch, 1948). Since then, many different scales have been created to assess the readability of a text. Some of the most significant contributors to readability formulas include Robert Flesch (Flesch, 1948), Edgar Dale and Jeanne Chall (Dale & Chall, 1948), Robert Gunning (Gunning, 1969), Ed Fry (Fry, 1968), and Peter Kinkaid (Kincaid, 1975). Each scale varies slightly, but all measure various proportions of reading ease, length of text, average sentence length, syllables per word, and reading age (amongst others). Each scale calculates the average grade level and age range of a reader that can comfortably access the text.

There are now many websites that will apply these measurements to a text and provide an output of multiple scales.

To calculate the readability of the survey instrument (See Appendix A), I used two different Internet readability scales (Scott, 2003; WebPage FX, 2009). Both instruments used combinations of the Flesch-Kincaid Reading Ease Scale, the Flesch-Kincaid Grade Level Scale, the Gunning Fog Score, the Coleman Liau Index, the Automated Readability Index (ARI), the Simple Measure of Gobbledygook (SMOG), and the Linsear Write Formula. According to both online readability calculators, the readability of all survey instruments measured at a 9th grade reading level appropriate for 13-15 year-old students. Using these lenses, I then made minor revisions to the wording in the survey instrument and deleted a few age-inappropriate items.

3.2.4.2 Demographic Information

The first section of the instrument (see Appendix A) collected information about the Mountainside students' backgrounds. These questions were taken from the National Center for Educational Statistics (NCES) High School Longitudinal Study [HSLS] (Ingels, et al., 2011). The HSLS is a nationally representative longitudinal study of over 24,000 9th grade students from over 944 public, catholic, and private schools. I chose these demographic questions because the large sample of the HSLS was commensurate to the ages of my sample population at Mountainside Junior-Senior High School. The purpose of creating this subsection was to ensure randomization and provide additional information on potentially confounding factors.

3.2.4.3 College and Career Readiness

The second subsection in the survey (see Appendix A) required students to answer questions about their college and career readiness and previous career-related experiences. These were

novel questions focused on providing more specific data about the students' academic preparedness, college and career readiness, and job shadowing experience. The purpose of designing this set of questions was to gain a better understanding of what experiences students bring to the study. In addition, it was important to gather the students' perspective of how they felt their experiences affected their college and career readiness preceding the study.

3.2.4.4 Career Exploration and Decision Making Self-Efficacy

The third subsection (See Appendix A) is solely focused on career exploration and career decision making self-efficacy. Career decision-making self-efficacy is an "individual's degree of belief that he or she can successfully complete tasks necessary to making career decisions" (Betz & Hackett, 2006, p. 48). In 1983, Karen Taylor and Nancy Betz developed what most researchers consider the most widely accepted career decision self-efficacy measurements because they are based on relevant theory, demonstrate favorable psychometric properties, and are reliably linked to decisional outcomes (Choi et al., 2012; Lent et al., 2016). Betz, Klein & Taylor (1996) then developed a shorter (25 question) instrument that is now proprietary. In 2016, Robert Lent (2016) and his team developed, tested, and validated an even shorter form of the Career Decision Self-Efficacy Scale "with adequate internal consistency reliability estimates that relate strongly to an established measure of career decision self-efficacy" (Lent et al., 2016, p. 47). In an email dated on July 18, 2017, Dr. Lent granted me permission to use his scale for this research (See Appendix B). For this study, I removed one question and used the remainder of the scale to attempt to measure the career decision-making self-efficacy of Mountainside's 9th grade class.

3.2.4.5 O*NET Work Context Questionnaire and O*NET Education and Training Questionnaire

The fourth and fifth subsections of the survey (See Appendix A) borrow questions from the Department of Labor's Occupational Information Network's (O*Net) Work Context and Education and Training Questionnaire. The Work Context Questionnaire asks respondents to answer questions about the social interaction processes of a job (e.g., communication, responsibility for others), the physical work conditions of a job (e.g., work setting, environmental conditions), and structural job characteristics such as criticality of position, pace, and scheduling (Peterson et al., 2001, p.470; Strong et al., 1999). I included these questions to see if students came away with a better understanding of job structures after completing their job shadowing interventions.

The Education and Training Questionnaire assesses knowledge of the education and training necessary to secure ideal jobs. O*Net was granted approval by the Office of Management and Budget and has designated ample resources to data collection and management. In 2016, Michael Handel studied the O*Net surveys, stating in the aggregate that "48% of O*NET's four surveys using the Importance and Level format suggested reasonable criterion validity" (Handel, 2016, p. 16). Conversely, however, he states that the questions could be construed as "vague, overly complex, and jargon-laden" (Handel, 2016, p. 16). To account for this, I chose to eliminate redundant and confusing questions. I also chose to make the explanations and directions more relevant to 9th grade students. Finally, I analyzed the work context questionnaire for readability and arranged the questions into two columns where students identified how they felt the job structures "fit" their personality and how they perceived the

context to be relevant to what their job shadowing experiences and ideal jobs "required" (See Appendix A).

3.3   DATA ANALYSIS

As previously discussed, this study attempts to examine the effects of job shadowing interventions on the following dependent variables: students' career decision making self-efficacy (I refer to this as "confidence"), awareness of college and career entry requirements (I refer to this as "awareness"), and their formulation of ideal job characteristics (I refer to this as "job structure"). The survey instrument, then, was broken up specifically by each dependent variable. Each variable was measured using a set of questions with a Likert Scale or numerical range. The Qualtrics Survey System was used through the University of Pittsburgh, and the statistics programs *R* and *Excel* were then employed to find summary statistics (mean, standard deviations of treatment vs. control, posttest means) change scores, two-tailed t-tests, confidence intervals, and multi-comparison corrections.

For the six questions related to "confidence," a Likert Scale was used with a range of 1 ("Not confident"), 2 ("A little confident"), 3 ("Confident"), 4 ("Very confident"), and 5 ("Extremely Confident"). For the four questions related to awareness, numeric scales varied. For instance, Question 36 asks students how much school is needed to get your first job, with a numerical range of 1 ("Less than high school"), 2 ("High school"), 3 ("Some training after high school"), 4 ("Associate's degree"), 5 ("College degree"), and 6 ("Schooling beyond a college degree"). Question 39_1 asks respondents how much on-the-job training is required for their first full time job after school. These answers required respondents to choose between 0 and 12

months on a sliding scale. The other two questions ("How important would it be to get a certificate showing you finished a job-related experience" and "How important is it to finish an apprenticeship") used a traditional Likert Scale with a range of 1 ("Not important"), 2 ("A little important"), 3 ("Important"), 4 ("Very important"), and 5 ("Extremely important").

For the section related to "job structures," the instrument asks students how certain job contexts resonate with them (e.g., working on a team, public speaking, working with people, meeting deadlines), and uses a two-sided Likert Scale structure where one side asks "what the job requires," and the other asks "How this fits me." On both accounts, a Likert Scale range of 1 ("Never"), 2, 3 ("Sometimes"), 4, and 5 ("Always" and "Very Well") is used. Subsequently, these two questions (Q37 and Q38), were then divided into 19 individual response items focused specifically on job structures.

In regards to the data, however, I was uniquely interested in the change in survey responses before and after the job shadowing intervention for both the treatment and control groups. Therefore, a detailed analysis of summary statistics (mean, standard deviation of treatment vs. control, posttest mean) change scores, two-tailed t-tests, confidence intervals, and multi-comparison corrections were made to analyze these differences. Each set of analyses focused on each dependent variable specifically. Section 4 will highlight these analyses and begin to make sense of the results. Table 2 depicts the alignment of inquiry questions, the instrument descriptions, and the methods and analyses completed for the results section.

Table 2: Alignment of Inquiry Question, Instrument, and Methods/Analyses

Inquiry Questions	Instrument	Methods/Analyses
Q: How do job shadowing experiences affect students' career decision making self-efficacy,	Survey – pretest and posttest questions from Randomized Control Trial (RCT) - control and treatment groups (using the University of Pittsburgh Qualtrics software). **Career Exploration and Decision Self-Efficacy (CEDSE-BD)**	Summary statistics (mean, standard deviation of treatment vs. control)

Table 2 continued

| knowledge of college and career entry requirements, and formation of ideal job characteristics? | **"CONFIDENCE"**
Q29 How confident are you to figure out which jobs could be a *good fit for you?*

Q30 How confident are you to *pick the best-fitting job from a list* of ideal jobs?

Q31 How confident are you to learn about *jobs you might like*?

Q32 How confident are you to pick a job that fits your *skills, values, and likes*?

Q33 How confident are you in your ability to make a *good choice about for a job*?

Q34 How confident are you to *learn more about jobs* that may offer things important to you *(flexible schedules, good pay, benefits, travel, days off, etc.)*?

"AWARENESS"
Career Awareness (derived from the O*NET Education and Training Questionnaire)

Q36 How much school is needed to get *your first job after you finish school*?

Q37 To get your first full time job after finishing school, how important would it be to get a <u>certificate</u> showing you finished a related job experience?

Q38 To get your first job after finishing school, how important is it to finish an <u>apprenticeship</u> (a long-term job shadowing experience to learn about the job)?

Q39_1 How much <u>on-the-job training</u> (learning from a more skilled worker) would be needed for your first full time job after you finish school?

"JOB STRUCTURES"
Knowledge of Current Job Structures/Job Fit (derived from O*NET Work Context –Questionnaire - asks students how the following contexts fit with them, and what they think the job they are shadowing requires (Q37#1_1…11, Q37#2_1….11, Q38#1_1…. through Q38#1_1…8, Q38#2_1….8)

Contexts and how contexts fits are included below:
1. Work on/within a team
2. Public speaking
3. Talk on the telephone
4. Send and receive emails
5. Written communication | Change Score analyses of treatment vs control

Superimposed histograms analyzing size difference between treatment and control groups (to determine "normal distribution)

Two-tailed t-test to complete the pair-wise comparison of treatment vs control

Confidence interval analyses for t-test on all question items

Bonferroni correction for p-values for multiple comparisons

Brief analysis of usefulness for future consideration and research |

Table 2 continued

	6. Work with people 7. Lead others 8. Deal with conflicts 9. Work indoors 10. Work outdoors 11. Work in a vehicle (like a car, tractor, or truck) 12. Spend time sitting 13. Spend time standing 14. Use your hands to build things, handle tools, or manage controls 15. Freedom to make decisions without supervision 16. Meet strict deadlines 17. Have regular daytime hours 18. Have regular nighttime hours 19. Have irregular hours (different times on different days)	

4.0   RESULTS

This first analysis focuses on summary statistics for survey responses. Specifically, I calculate the mean and standard deviations of the change scores between pre and posttests for each individual question for the treatment and control group. In addition, I show standard deviations and posttest averages of each question for the control and treatment groups. Table 3 shows the summary statistics of the questions related to "confidence," Table 4 shows the summary statistics of the questions related to "job awareness," and Table 5 shows the summary statistics of the questions related to "job structures."

Table 3: Summary statistics for questions related to "confidence"

"Confidence" Questions	Control Mean of Change Scores (SD)	Control Post Test Averages (SD)	Treatment Mean of Change Scores (SD)	Treatment Post Test Averages (SD)
How confident are you to….				
Q25 - Figure out which jobs could be a good fit?	0.100 (0.568)	4.6 (.516)	0.600 (1.635)	4.1 (1.294)
Q26 - Pick the best-fitting job from a list?	0.000 (1.333)	4.4 (.966)	0.300 (1.261)	3.85 (1.348)
Q27 - Learn about jobs you might like?	−0.600 (0.843)	3.6 (1.265)	−0.300 (1.490)	4.2 (1.005)
Q28 - Pick a job that fits your skills, values, and likes?	0.400 (1.265)	4.4 (.966)	−0.053 (1.393)	4 (1.177)
Q29 - Make a good choice for a job?	0.000 (1.333)	4.6 (.843)	0.250 (1.682)	4.05 (1.234)
Q34 - Learn more about jobs that offer important things?	−0.400 (1.506)	4.2 (1.317)	−0.300 (1.976)	3.9 (1.165)

Table 3 continued

Total Averages	−.0833 (.952)	4.3 (.978)	−.0828 (1.573)	4.02 (1.203)

Are students confident in making decisions about their future? Table 3 reports the means and standard deviations of the change scores and posttest averages for the control and treatment groups. As previously mentioned, a Likert Scale was used for questions in this section with a range of 1 ("Not confident"), 2 ("A little confident"), 3 ("Confident"), 4 ("Very confident"), and 5 ("Extremely Confident").

Change score means were calculated for the control and treatment groups to analyze the difference between pre and posttest responses. The change score means ranged from −.6 to .6. For Q26 ("How confident are you to pick the best fitting job from a list?") and Q29 ("How confident are you to learn about jobs you might like?"), the control group change scores were calculated as 0, showing no change. The largest average change scores of .6 and −.6 occurred on Q27 ("How confident are you to learn about jobs you might like?") in the control group and on Q25 ("How confident are you to figure out which jobs could be a good fit?") in the treatment group. However, the distance from zero is still relatively close. Since the change scores are so closely clustered around zero, it seems that respondents answered the survey questions in a similar fashion between pre and posttests for both groups.

Posttest means ranged from 3.6 to 4.6. Overall, students in the control group felt the least confident in learning about jobs they might like (although they average a 3.6; almost halfway in between "Confident" and "Very confident"). Students in the treatment group felt more confident on the same question (4.2, slightly more than "Very confident"). Students felt the most confident in their ability to make a good choice about a job and finding the right fit for a job (4.6, almost halfway between "Very confident" and "Extremely confident"). The treatment group felt slightly

less confident than the control group across all survey questions in this section, although all groups on average rate themselves as "Very confident."

The standard deviations for the posttests are all very close to 1 (ranging from .516 to 1.348), showing limited variability. The highest variation occurs in the treatment group on Q26 when students were asked to rate how confident they were to pick the best fitting job from a list. It is important to note, however, that although the standard deviation scores the highest at 1.348, this number is only slightly higher than those on other questions.

Overall, most students reported feeling relatively confident in their ability to make decisions about their future. In addition, the summary statistics seem to suggest that respondents had little to no more career decision-making self-efficacy having received the study interventions.

Table 4: Summary statistics for questions related to "awareness"

"Awareness Questions"	Control Mean of Change Scores (SD)	Control Post Test Averages (SD)	Treatment Mean of Change Scores (SD)	Treatment Post Test Averages (SD)
To get your first full time job…				
Q36 - How much school is needed?	0.600 (1.075)	5.7 (.483)	−0.300 (.733)	4.6 (.995)
Q37 - How important is a certificate?	0.500 (1.269)	4.6 (.843)	−1.100 (1.889)	3.55 (1.504)
Q38 - How important is an apprenticeship?	−0.400 (1.430)	4.2 (.919)	−1.150 (1.872)	3.4 (1.353)
Q39_1 - How much on-the-job training is needed?	−1.300 (1.947)	8.1 (4.306)	0.050 (4.861)	6.32 (4.389)
Total Averages	−.15 (1.430)	5.65 (1.637)	−.625 (2.339)	4.47 (2.06)

Do students understand the educational preparation needed for the careers they desire? Table 4 reports the means and standard deviations of the change scores and posttest averages for the control and treatment groups. As previously discussed, questions in this subset were slightly different than those in other sections. For the four questions related to awareness, the numerical

scales varied. Question 36 asked students how much school is needed to get your first job, with a numerical range of 1 ("Less than high school"), 2 ("High school"), 3 ("Some training after high school"), 4 ("Associate's degree"), 5 ("College degree"), and 6 ("Schooling beyond a college degree"). Question 39_1 asked respondents how much on-the-job training is required for your first full time job after school. This question required respondents to choose between 0 and 12 months on a sliding scale. The other two questions ("How important would it be to get a certificate showing you finished a job-related experience," and "How important is it to finish an apprenticeship") used a traditional Likert Scale with a range of 1 ("Not important"), 2 ("A little important"), 3 ("Important"), 4 ("Very important"), and 5 ("Extremely important").

First, consider question 36, which asked, "How much school is needed to get your first job?" The change score means for the control and treatment groups were tightly clustered between —.3 to .6, demonstrating that the pre and posttest responses were very similar for both control and treatment groups. When analyzing posttest means, the control group averaged a 5.7 (more than halfway between "College Degree" and "Schooling beyond a college degree"). The treatment group averaged over a point lower at 4.6 (almost halfway between "Associate's Degree and "College Degree."). This shows that the treatment group felt that less schooling was needed to attain their first job after finishing school. This difference is worthy of further inquiry, as the treatment and control groups show some disparity. These differences are analyzed in more detail in the following section. Finally, when analyzing the posttest means, the control and treatment groups show very little variability with standard deviations ranging from .483 to .995, respectively.

Question 37 asked students, "How important is receiving a job-specific certificate to get your first full time job?" The change score means are also tightly clustered around zero (ranging

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from .5 in the control group to ─1.1 in the treatment group), illustrating that students made similar choices on pre and posttest responses (with a slightly elevated change in the treatment group). When analyzing posttest means, the control group averaged a 4.6 (more than halfway between "Very important" and "Extremely important"). The treatment group averaged over a point lower at 3.55 (approximately halfway between "Important" and "Very important"). This difference in control and treatment group responses is also worthy of further inquiry. Similar to the difference in posttest means, the standard deviations of the treatment change scores and posttest averages both show a relatively high variability (with standard deviations of 1.889 and 1.504, respectively). The variability in the treatment group is slightly higher than in the control group. These differences are also worth considering and could perhaps indicate an effect of the job shadowing interventions, but cannot be substantiated without the additional inferential statistical analyses discussed in the next section.

Question 38 asked students how important an apprenticeship was in getting their first job. Once again, the change score means of the control and treatment group are different, ranging from a ─.4 in the control to a ─1.150 in the treatment. This was interesting as treatment group respondents felt that an apprenticeship was slightly less important after the interventions took place. There was also a slightly higher variability in the treatment groups' change score mean (resulting in a standard deviation of 1.872). This is slightly higher than the standard deviations calculated for the control group, showing greater variability amongst respondents. When analyzing posttest means, the control group averaged a 4.2 (slightly higher than "Very important") and the treatment group averaged almost a point less at 3.4 (almost halfway between "Important" and "Very important"). This slight difference corresponds to the variation in change score means and could suggest that the intervention might have made an impact on the treatment

group. However, additional analysis is needed and will be discussed in the inferential statistics section to follow.

Finally, Question 39 asked students how much on the job training is needed to acquire their first job. As previously discussed, the scale for this particular question ranged from 0 to 12 (on a sliding scale). When analyzing the mean of the change scores, the control group averaged a −1.3. This showed that the control group answered the questions differently on pre and posttests. I found this peculiar since this group experienced no intervention. The mean change score for the treatment group was a .05, showing relatively no change between pre and posttests. However, this calculation coupled with a standard deviation of 4.861 requires further explanation. When analyzing a box plot graph of the scores, it shows that that many respondents had drastic variations in how they answered the question from pretest to posttest. For instance, one respondent answered 0 months on the pretest and 12 months on the posttest, and vice versa. The mean, then, was close to zero because the outliers averaged out on the positive and negative scales. This explains the high standard deviation coupled with a relatively small mean change score. This data shows that many of the students reported a substantial change in how much on the job training they felt was needed to acquire their first job. This is particularly true for the students that participated in the job shadowing exercise. Although there is no substantial evidence that this change equates to a greater accuracy in the students' understanding, it may be an indicator of a more acute awareness of this particular career dimension. When analyzing posttest means, the control group averaged 8.1 (slightly more than 8 months) and the treatment group averaged 6.32 (between six and seven months), showing an interesting difference between the two groups. It is also important to note that the standard deviations are higher for this

question because the range of choices are between 0 and 12, which is inherently different than all

other questions on the instrument.

Table 5: Summary statistics for questions related to "job structures"

"Job Structures" Questions	Control Mean of Change Scores (SD)	Control Post Test Averages (SD)	Treatment Mean of Change Scores (SD)	Treatment Post Test Averages (SD)
Answer the questions below about the job shadowing you have completed. If you were not chosen to job shadow, answer questions about the first full time job that you hope to have after finishing school.				
Q37#1_1 – Fit - Work on/within a team	−0.300 (.949)	3.5 (.85)	−0.050 (1.099)	4 (.795)
Q37#1_2 - Fit - Public speaking	0.500 (.707)	3.3 (.949)	0.400 (1.429)	3.35 (1.348)
Q37#1_3 - Fit - Talk on the phone	0.000 (1.155)	3.5 (.707)	0.100 (1.252)	3.7 (1.031)
Q37#1_4 - Fit - Email	0.400 (1.430)	3.8 (.789)	−0.050 (1.050)	3.9 (.968)
Q37#1_5 - Fit - Written communication	0.500 (1.841)	3.6 (.843)	0.105 (1.410)	3.5 (.895)
Q37#1_6 - Fit - Work with people	0.000 (.816)	4.1 (.876)	0.100 (.852)	4.45 (.686)
Q37#1_7 - Fit - Lead others	0.500 (.707)	4.2 (.789)	0.550 (1.191)	4.3 (.801)
Q37#1_8 - Fit - Deal with conflicts	0.300 (.675)	4.1 (.876)	0.526 (1.307)	4.05 (.78)
Q37#1_10 - Fit - Work outdoors	0.000 (.756)	4.25 (.886)	0.158 (1.015)	4.474 (.841)
Q37#1_11 – Fit - Work in a vehicle	−0.100 (1.287)	2.5 (1.434)	0.550 (1.605)	3.1 (1.294)
Q37#2_1 – Job - Work on/within a team	0.600 (.966)	3.8 (.789)	0.500 (.889)	3.95 (.759)
Q37#2_2 – Job - Public speaking	0.100 (.876)	3.1 (1.287)	0.500 (1.606)	3.25 (1.164)
Q37#2_3 – Job - Talk on the telephone	0.400 (1.075)	3.6 (.699)	0.300 (1.302)	3.7 (1.302)
Q37#2_4 – Job - Send and receive emails	0.500 (.850)	4 (.667)	0.150 (1.309)	4.2 (1.152)
Q37#2_5 – Job - Written communication	−0.500 (1.08)	3 (.816)	0.211 (1.228)	3.2 (1.228)
Q37#2_6 – Job - Work with people	0.100 (.568)	4.7 (.483)	0.300 (.923)	4.6 (.598)
Q37#2_7 – Job - Lead others	0.600 (.843)	4.1 (.738)	0.650 (1.040)	4.1 (.718)
Q37#2_8 – Job - Deal with conflicts	0.500 (.707)	4.5 (.707)	0.444 (1.042)	4.11 (1.278)
Q37#2_9 – Job - Work indoors	−0.200 (.422)	4.6 (.699)	0.500 (.946)	4.7 (.47)
Q37#2_10 – Job - Work outdoors	0.222 (.972)	2 (.707)	−0.550 (1.276)	1.9 (1.021)

Table 5 continued

Q37#2_11 – Job - Work in a vehicle	−0.300 (.483)	1.2 (.632)	0.050 (1.317)	1.85 (1.182)
Q38#1_1 - Fit - Sitting	0.111 (.782)	3.56 (.882)	0.105 (1.049)	3.74 (.933)
Q38#1_2 - Fit - Standing	−0.111 (.782)	3.89 (.601)	0.400 (.821)	3.8 (.834)
Q38#1_3 - Fit - Use your hands	0.200 (.632)	4.5 (.85)	0.600 (1.536)	3.4 (1.698)
Q38#1_4 - Fit - Freedom to make decisions without supervision	0.400 (.843)	4.4 (.843)	0.100 (1.294)	4.05 (1.05)
Q38#1_5 - Fit - Meet strict deadlines	0.200 (.789)	3.8 (.789)	0.300 (1.261)	4 (.795)
Q38#1_6 - Fit – Regular Hours	0.500 (.850)	4.6 (.699)	−0.100 (.718)	4.05 (1.05)
Q38#1_7 - Fit - Regular nighttime hours	−0.200 (.789)	2.9 (1.101)	0.250 (1.446)	3.35 (1.309)
Q38#1_8 - Fit - Irregular hours	−0.100 (1.101)	3 (1.491)	−0.050 (1.317)	3.35 (1.182)
Q38#2_1 - Job - Sitting	0.000 (.471)	3.1 (.876)	0.450 (.999)	3.9 (.641)
Q38#2_2 – Job - Spend time standing	0.100 (.568)	3.6 (.699)	0.450 (1.050)	3.5 (1.1)
Q38#2_3 – Job - Use your hands	0.000 (.471)	3.7 (1.252)	−0.150 (1.137)	2.5 (1.573)
Q38#2_4 – Job - Freedom to make decisions without supervision	0.600 (.843)	4.1 (.994)	0.450 (1.050)	4.1 (1.021)
Q38#2_5 – Job - Meet strict deadlines	0.100 (1.101)	4.1 (.738)	0.200 (1.105)	4.35 (.988)
Q38#2_6 – Job - Regular hours	0.200 (.632)	4.3 (.823)	−0.050 (1.146)	3.95 (1.05)
Q38#2_7 – Job - Regular nighttime hours	−0.400 (.699)	2.5 (1.354)	−0.211 (.976)	2.63 (1.3)
Q38#2_8 – Job - Have irregular hours	−0.200 (.919)	3.2 (1.687)	−0.100 (1.447)	3.1 (1.334)
Total Averages	.141 (.850)	3.65	.219 (1.174)	3.68

Do students understand job structures, and how those structures fit their likes and interests? As previously discussed, Q37 and Q38 asked students to respond to questions related to multiple job contexts (e.g., working on a team, public speaking, working with people, meeting deadlines) using a two-sided Likert Scale structure. One question bank asked, "What the job requires," and the other asked, "How this fits me." On both sets of questions, a Likert Scale range of 1 ("Never"), 2, 3 ("Sometimes"), 4, and 5, ("Always" for "What the job requires" and "Very Well" for "How this fits me") is used. Subsequently, questions Q37 and Q38 were divided into 19 individual response items focused specifically on job structures.

Mean change scores for both treatment and control groups clustered tightly around 0. Specifically, no change score was calculated higher than .65, with the average change scores for all responses being .141 for the control group and .219 for the treatment group, respectively. This suggests that both the control and treatment groups provided similar responses on pre and posttests. In addition, there is little variability in how students responded. For instance, in the control group, standard deviations clustered tightly around 1, reporting the smallest variability at .471 (The first full time job I seek/job shadow experience "spends time sitting" and the first job I seek/job shadowing experience "spends time using your hands to build things, handle tools, or manage controls"). The most variability occurs at 1.841 ("Written communication" in my job "fits me"). However, it is important to note that the 1.841 standard deviation is significantly higher than most others for the control group (with an average of .850). For the treatment group, standard deviations also cluster around 1 (with an average of 1.174). The minimum standard deviation is .718 ("Having regular daytime hours fits me"), and the most variation occurs on Q37#1_11 with a standard deviation of 1.606 ("Working in a vehicle fits me"). Overall, most respondents answered questions similarly.

When I analyzed posttest means, there were particularly interesting results in how students felt certain job structures "fit" them (Q37#1, Q38#1). For instance, students in both control and treatment groups rated working in a vehicle the lowest, with scores of 2.5 (halfway in-between "2" and "Sometimes") and 3.1 (slightly more than "Sometimes"), respectively. There were also relatively low scores for students in regards to working regular nighttime (2.9, 3.35) and irregular hours (3, 3.35). In addition, students in the control group rated sitting while at work relatively low (3.1). Conversely, students in both control and treatment groups rated working outdoors (4.4, almost halfway in-between "4" and "Very Well"), working with people (4.1,

4.45), leading others (4.2, 4.3), having freedom to make decisions without supervision (4.4, 4.05), and working regular daytime hours (4.6, 4.05) the highest. According to this information, students seem to be drawn to fields that offer autonomy, leadership opportunities, and regular daytime working hours. These fields must also provide opportunities for students to get outdoors and work with others.

When analyzing data about what students felt their job shadow or ideal job "required" (Q37#2, Q38#2), the results are also interesting. The range for control group scores were from 1.2 (slightly more than "Never") to 4.7 (slightly lower than "Always"). Control group respondents rated working in a vehicle (1.2), working outdoors (2), and working regular nighttime hours (2.5; halfway between "2" and "Sometimes") the lowest. Conversely, control group respondents rated working with people (4.7), working indoors (4.6), dealing with conflicts (4.5), and working regular daytime hours (4.3) the highest. For the control group, this data represents job structures that students deem important for their ideal job. This may speak directly to student interest. This data closely matches the job structures students chose when they were asked to provide information on what "fit" them (minus "dealing with conflicts"). This may suggest that students are most interested in jobs that require working with others, spending a majority of time indoors, managing some conflicts, and working regular hours.

For the treatment group, when students were asked what job structures were required in the job shadowing they had completed, they rated working in a vehicle (1.85, more than halfway between "Never" and "2"), working outdoors (1.9), using their hands (2.5; halfway between "2" and "Sometimes"), and working regular nighttime hours (2.63) relatively low. This was surprisingly similar to the control group. Conversely, students rated working indoors (4.7, more than halfway between "4" and "Always"), working with people (4.6), sending and receiving

emails (4.2), and meeting strict deadlines (4.35) relatively high. Since these responses represent structures that students experienced in their job shadowing interventions, this may suggest that students chose sites that closely matched the job structures they identified with the most. This not only reveals important information about their interests (although there are many confounding factors to consider such as proximity of the sites, parental influence, weather, family dynamics, previous experiences, cultural and peer influences, etc.), but also the careers that students of this age may gravitate toward. Further study is required to uncover the motivations for these job structures.

4.1   INFERENTIAL STATISTICS

This next section outlines the inferential statistical analyses comparing the mean change scores from treatment and control groups for each variable. Large positive or negative values of the t-test provide evidence that the treatment interventions changed the survey responses. The t-test statistics and p-values are shown in Tables 6, 7, and 8. It is important to note that the t-test assumes change scores in the treatment and control groups are normally distributed. In small sample sizes, this can be of particular concern. Therefore, in order to check for normality, I created and analyzed histograms superimposing change scores in treatment and control groups. These figures illustrated that the normality assumption is reasonable.

Table 6: T-test statistics for questions related to "confidence"

"Confidence" Questions	T-Statistic	P-Value	Lower 95 %CI	Upper 95 %CI
Q25 - How confident are you to figure out which jobs could be a good fit for you?	−1.228	0.231	−1.337	0.337
Q26 - How confident are you to pick the best-fitting	−0.591	0.562	−1.369	0.769

Table 6 continued

job from a list of ideal jobs?				
Q27 - How confident are you to learn about jobs you might like?	−0.703	0.488	−1.175	0.575
Q28 - How confident are you to pick a job that fits your skills, values, and likes?	0.884	0.387	−0.615	1.520
Q29 - How confident are you in your ability to make a good choice about for a job?	−0.442	0.662	−1.421	0.921
Q34 - How confident are you to learn more about jobs that may offer things important to you (flexible schedules, good pay, benefits, travel, days off, etc.)?	−0.154	0.879	−1.443	1.243

In Table 6, I analyzed the p-values against the traditional .05 significance level. In accordance with my previous discussion of the summary statistics, there are no p-values below (or anywhere near) the .05 significance level, showing statistically insignificant results. P-values ranged from .231 for Q25 to .879 for Q34. When analyzing these results, it seems that the treatment interventions had little to no effect on the students' survey responses.

Table 7: T-test statistics for questions related to "awareness"

"Awareness" Questions	T-Statistic	P-Value	Lower 95 %CI	Upper 95 %CI
Q36 - How much school is needed to get your first job after you finish school?	2.385	0.033	0.087	1.713
Q37 - To get your first full time job after finishing school, how important would it be to get a certificate showing you finished a related job experience?	2.746	0.011	0.401	2.799
Q38 - To get your first job after finishing school, how important is it to finish an apprenticeship (a long-term job shadowing experience to learn about the job)?	1.217	0.236	−0.524	2.024
Q39_1 - How much on-the-job training (learning from a more skilled worker) would be needed for your first full time job after you finish school?	−1.081	0.289	−3.912	1.212

In Table 7, I report the inferential statistical results that match the summary statistical results in previously discussed. This tables shows that the p-values for Question 36 and Question 37 are below the .05 significance level. This provides evidence that the treatment interventions

had a significant effect on the students' responses. This showed that respondents in the treatment group felt they needed less schooling and less certification for their job than the control group. P-values ranged from .011 in Q37 to .289 in Q 39_1. However, when I corrected for multiple comparisons, there existed no statistically significant p-values. This phenomenon will be discussed in more detail in the next section.

Table 8: T-test statistics for questions related to "job structures"

"Job Structure" Questions	T-Statistic	P-value	Lower 95 %CI	Upper 95 %CI
Q37#1_1 – How this fits me - Work on/within a team	−0.645	0.526	−1.057	0.557
Q37#1_2 - How this fits me - Public speaking	0.256	0.800	−0.699	0.899
Q37#1_3 - How this fits me - Talk on the telephone	−0.217	0.830	−1.061	0.861
Q37#1_4 - How this fits me - Send and receive emails	0.883	0.392	−0.643	1.543
Q37#1_5 - How this fits me - Written communication	0.593	0.562	−1.027	1.817
Q37#1_6 - How this fits me - Work with people	−0.312	0.759	−0.772	0.572
Q37#1_7 - How this fits me - Lead others	−0.144	0.887	−0.764	0.664
Q37#1_8 - How this fits me - Deal with conflicts	−0.615	0.544	−0.981	0.529
Q37#1_10 - How this fits me - Work outdoors	−0.446	0.661	−0.903	0.588
Q37#1_11 - How this fits me - Work in a vehicle (like a car, tractor, or truck)	−1.198	0.244	−1.775	0.475
Q37#2_1 – What the job requires - Work on/within a team	0.274	0.787	−0.670	0.870
Q37#2_2 – What the job requires - Public speaking	−0.882	0.385	−1.329	0.529
Q37#2_3 – What the job requires - Talk on the telephone	0.223	0.825	−0.829	1.029
Q37#2_4 – What the job requires - Send and receive emails	0.881	0.387	−0.467	1.167
Q37#2_5 – What the job requires - Written communication	−1.605	0.124	−1.632	0.211
Q37#2_6 – What the job requires - Work with people	−0.731	0.471	−0.762	0.362
Q37#2_7 – What the job requires - Lead others	−0.141	0.889	−0.784	0.684
Q37#2_8 – What the job requires - Deal with conflicts	0.167	0.868	−0.629	0.740
Q37#2_9 – What the job requires - Work indoors	−2.800	0.009	−1.212	−0.188
Q37#2_10 – What the job requires - Work outdoors	1.789	0.089	−0.128	1.672

Table 8 continued

Q37#2_11 – What the job requires - Work in a vehicle (like a car, tractor, or truck)	−1.055	0.301	−1.031	0.331
Q38#1_1 - How this fits me - Spend time sitting	0.016	0.987	−0.732	0.744
Q38#1_2 - How this fits me - Spend time standing	−1.604	0.128	−1.186	0.164
Q38#1_3 - How this fits me - Use your hands to build things, handle tools, or manage controls	−1.007	0.323	−1.215	0.415
Q38#1_4 - How this fits me - Freedom to make decisions without supervision	0.763	0.453	−0.509	1.109
Q38#1_5 - How this fits me - Meet strict deadlines	−0.266	0.793	−0.873	0.673
Q38#1_6 - How this fits me - Have regular daytime hours	1.917	0.074	−0.065	1.265
Q38#1_7 - How this fits me - Have regular nighttime hours	−1.102	0.280	−1.287	0.387
Q38#1_8 - How this fits me - Have irregular hours (different times on different days)	−0.110	0.914	−0.997	0.897
Q38#2_1 - What the job requires - Spend time sitting	−1.676	0.105	−1.000	0.100
Q38#2_2 – What the job requires - Spend time standing	−1.184	0.246	−0.956	0.256
Q38#2_3 – What the job requires - Use your hands to build things, handle tools, or manage controls	0.509	0.615	−0.454	0.754
Q38#2_4 – What the job requires - Freedom to make decisions without supervision	0.422	0.677	−0.587	0.887
Q38#2_5 – What the job requires - Meet strict deadlines	−0.234	0.817	−0.996	0.796
Q38#2_6 – What the job requires - Have regular daytime hours	0.769	0.448	−0.416	0.916
Q38#2_7 – What the job requires - Have regular nighttime hours	−0.602	0.553	−0.839	0.460
Q38#2_8 – What the job requires - Have irregular hours (different times on different days)	−0.230	0.820	−0.994	0.794

In Table 8, I report the inferential statistics that match the summary statistics previously discussed. At first glance, it seems there is statistical significance on Q37#2_9 (p-value = .009). This initially provides statistical evidence that the job shadowing interventions had an effect on the student responses for "working indoors." However, with the correction for multiple comparisons (that I discuss in the next section), it seems that this result is random noise, and

lacks the statistical evidence previously thought to be significant. P-values ranged from .009 on

Q37#2_9 to .987 on Q38#1_1. The results for questions on this variable are underwhelming,

showing little to no effect in student responses.

As an additional interpretive effort, confidence intervals were calculated to provide a

visual representation of the results of the t-statistics. (See Figure 2 on the following page.) A

common interpretation of these figures checks if the confidence intervals overlap with 0. The

group of questions with the largest effects at the .05 significance level are the questions that

pertain to "awareness." As discussed earlier, Question 36 ("How much school is needed to get

your first job after school?") and Question 37 ("To get your first full time job after finishing

school, how important would it be to get a certificate showing you finished a related job

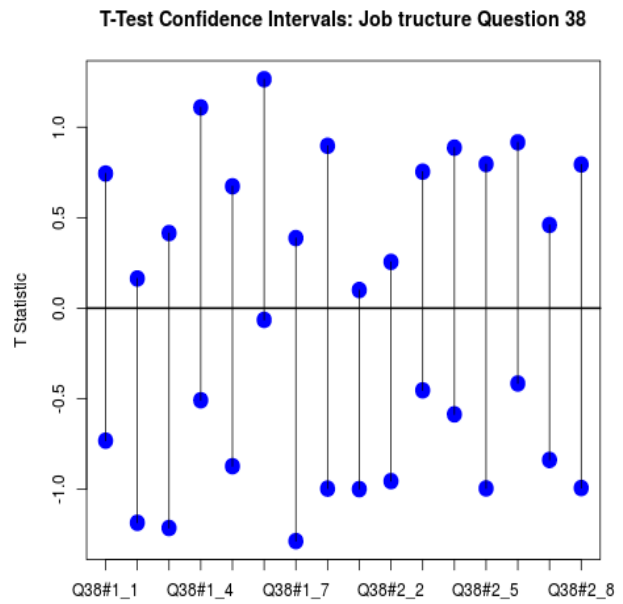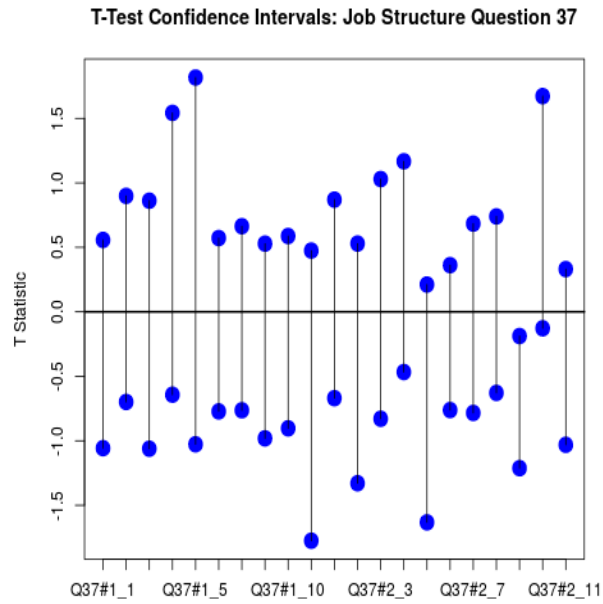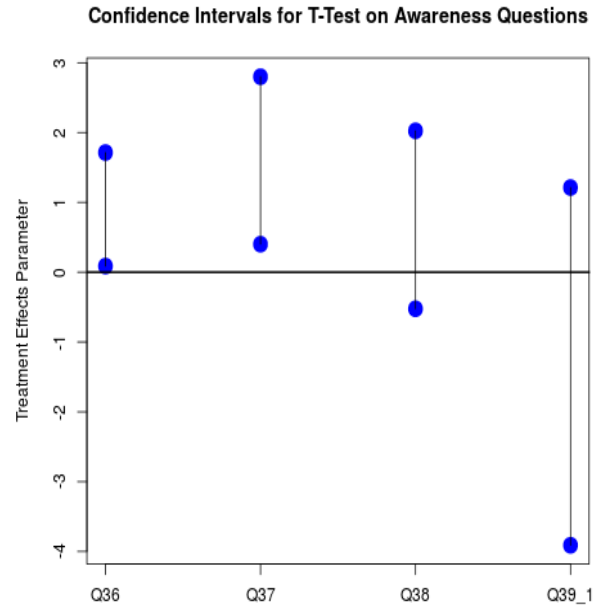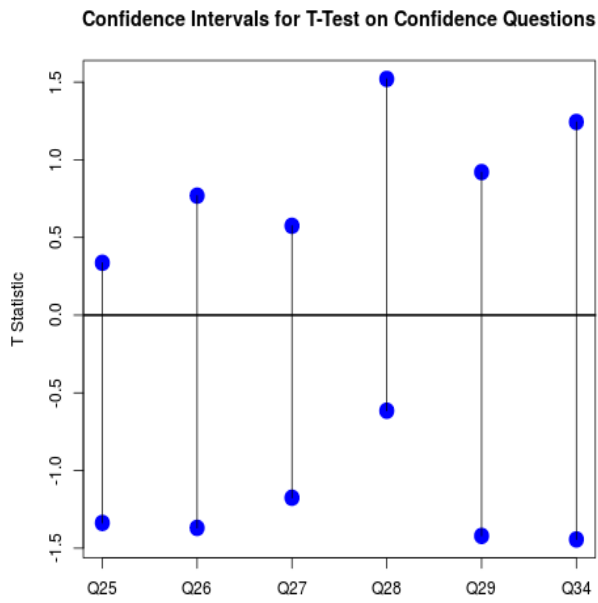experience?") reported the largest effects.

Figure 2. Confidence interval analyses for the t-statistics in all question groups

4.2   MULTIPLE COMPARISONS CORRECTION

Assuming the t-tests are accurate, an important consideration in this analysis is the multiple comparisons issue. Multiple comparisons occur when researchers are testing more than one hypothesis at the same time. Even if the data was random noise, one would expect to find significant results "by chance" 5% of the time (assuming a significance level of .05). The common solution to multiple comparisons is adjusting the significance level to something lower than .05. A well-known method for significance level correction is the Bonferroni correction (Weisstein, 2004). This correction simply divides the significance level (.05) by the number of tests (Q = 47). Applying the Bonferroni correction provides an adjusted significance level of approximately .001. Under the Bonferroni correction, then, I find that no change score fell below the .001 level and therefore was statistically insignificant (although three questions are close to the threshold, as previously discussed, and worth considering).

Finally, although not analyzed comprehensively due to the lack of pretest responses, I asked the students in the treatment group the following question: "How useful was your job shadowing experience to you?" Most students considered the experience either "Very Useful," or "Extremely Useless." This bimodal response shows that students felt very strongly on both ends of the spectrum. These extremes are interesting. Although half of the treatment group reacted negatively toward the experience, the concept of "usefulness" is one worthy of further inquiry. Having worked with this age group extensively over the last decade, I wonder if students claimed the experience was not useful if the experience did not perfectly align to what they wanted to do in the future. In my experience, this age group tends to speak in "all or nothing" terms. This thought will be discussed in more detail in Chapter 5. A histogram of this phenomenon is provided in Figure 3.

How useful was your job shadowing experience to you?
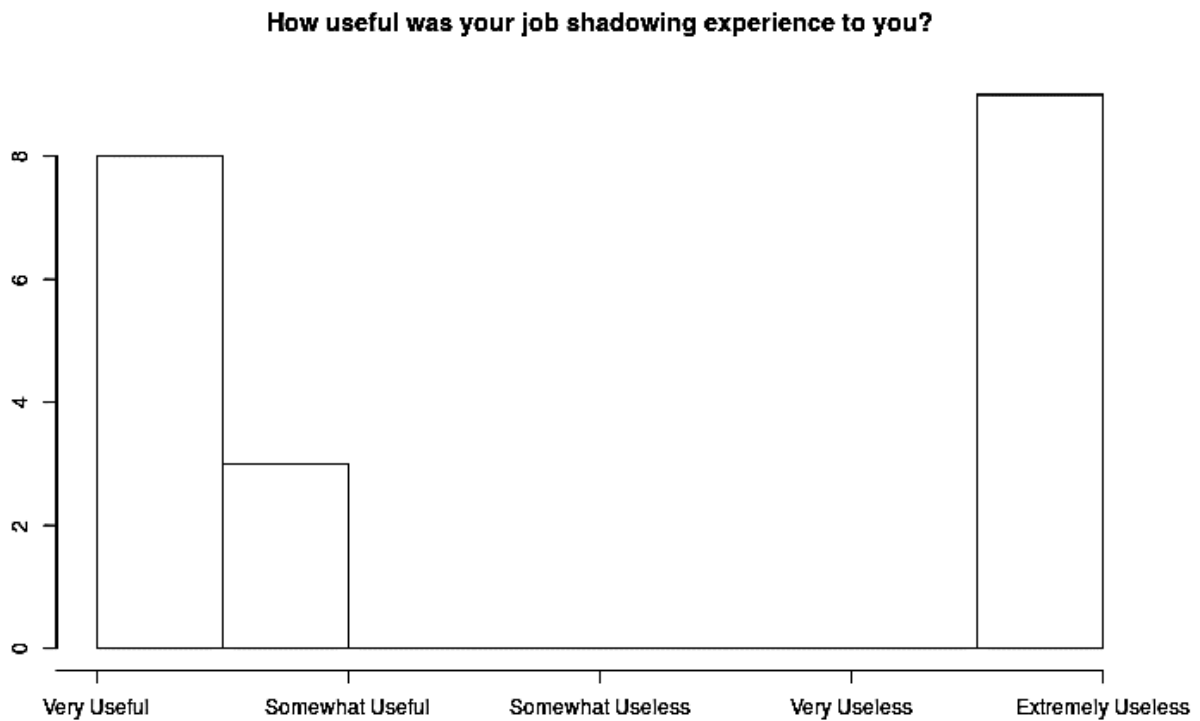
Figure 3. Treatment group responses to the question, "How useful was your job shadowing experience to you?"

4.3   SUMMARY OF SURVEY DATA ANALYSIS

As previously discussed, the research question asked was the following: How do job shadowing experiences affect students' career decision making self-efficacy, knowledge of college and career entry requirements, and formulation of ideal job characteristics?

In both summary and inferential statistical analyses (under the Bonferroni correction), no statistically significant difference exists between the treatment and control group change scores in students' career decision making self-efficacy, knowledge of college and career entry requirements, and formation of ideal job characteristics. As a result, I recommend against making any claim that job shadowing interventions "caused" changes in survey responses.

However, my anecdotal perspective as the researcher who supported and supervised student job shadowing experiences is that the intervention was meaningful to students in ways that we have not yet quantified. These discussions will be delineated in Chapter 5.

5.0   CONCLUSIONS AND RECOMMENDATIONS

As previously discussed, the purpose of this research was to gain insight as to whether the job shadowing program at Mountainside Junior-Senior High School provides students with a heightened sense of career decision making self-efficacy ("confidence"), a deeper knowledge of career entry requirements ("awareness"), and a more mature understanding of ideal job characteristics ("job structures"). More broadly, however, the hope was to better determine whether job shadowing experiences do what many think they do; and that is, to arm high school students with a better ability to make career-related decisions in regards to their post-secondary educational and career-centered pursuits.

Chapter 2 provided a detailed review of literature by outlining the history of public and vocational education in regards to its responsibility for preparing students for the labor force. This analysis provided historical context and a backdrop to the political influence, community support, and labor market activities that have heavily influenced the educational preparation of students in the last century. I then highlighted the changes that occurred at the onset of the 21st century with the passing of NCLB and the CCSS, placing college and career readiness initiatives on the back burner to clear space for greater academic rigor and the closing of the achievement gap. Finally, I discussed the momentum reversal in the last five years with the Federal and State Departments of Education aligning efforts to reemphasize the school-to-work pipeline.

The chapter then examined the literature on college and career readiness, finding that school curriculum, school counselor contact, familial influence, specific career education experiences, and early implementation and instruction are important factors in creating more knowledgeable and self-efficacious students. Research methodologies are highlighted to show a robust body of quantitative and qualitative research. In addition, the research suggested that adolescent work and job shadowing are authentic, relevant, and impactful career readiness activities that should be implemented to students at an early age.

The review goes on to analyze the pros and cons of adolescent work, finding that benefits of adolescent work include a better awareness of life beyond high school, a more mature orientation to work, greater independence and autonomy, and improved college and career readiness for students (Creed, Patton & Prideaux, 2007; D'Amico, 1984; Mortimer, 2003; Staff & Mortimer, 2007; Steinberg et al., 1982). Conversely, however, when students began to approach 20 hours of work per week, they experienced a sharp decline in grades, limited time for schoolwork, a negative effect on relationships and mood, and a greater proclivity for deviant behavior (Apel et al. 2006; Bachman & Schulenberg 1993; Carr, Wright & Brody, 1996; D'Amico, 1984; Mortimer 2003; Staff and Uggen 2003; Warren and Lee, 2003).

I concluded this chapter by reviewing the literature pertaining to job shadowing itself, finding very little research in the field of education. However, I specifically highlighted research from the medical field focusing on the unique value of job shadowing experiences for aspiring nurses and doctors (Iwata & Gill, 2013; Porter, Edwards & Granger, 2009; Wild et al., 2015) while documenting the widespread use of job shadowing in schools across the country.

In Chapter 3, I described Mountainside Junior-Senior High School's setting and stakeholders to give context to the study. More importantly, however, I outlined the parameters

of the study and the applied inquiry plan. Specifically, I provided the details of the Randomized Control Trial (RCT). I also delineated the two conditions on the current 9th grade class at Mountainside Junior-Senior High School. The treatment was a one-day job shadowing experience of the students' choice; where the student closely observed the work of an experienced employee for the time of a typical school day. The treatment group was also provided a curriculum intervention geared toward college and career readiness and job shadow preparation. Since I required permission from each student and their parent, the sample population was defined as a "volunteer sample" with a 46% participation rate (Trochim, 2006). The chapter goes on to provide the details of the survey instrument, the validity and sources of the questions asked, and the lesson plans and readability analyses conducted on the instruments.

Chapter 4 provided a detailed analysis of student responses on three sets of questions related to career readiness before and after the job shadowing interventions for both the treatment and control groups. Detailed tables of summary statistics and results of statistical significance tests for each question of interest were provided. The data was then carefully laid out to explain the results carefully. After these detailed analyses, it was found that the largest effects were related to "job awareness." Specifically, I found an effect on the questions: "How much school is needed to get your first job after you finish school?" and "To get your full time job after finishing school, how important would it be to get a certificate showing you finished a related job experience?" Both questions demonstrated that the treatment group felt they needed less schooling or certification in order to obtain their first job after finishing school. The other interesting finding was that students considered the job shadowing intervention either "Extremely Useful" or "Very Useless," perhaps implying that job shadowing was a "hit or miss." This idea of "usefulness" may be a springboard for future research. While these findings are

interesting, there are many caveats that must be considered as confounding factors toward the analyses in this research study. These limitations will be discussed in the next section.

5.1   LIMITATIONS

There are several important caveats that must be considered when discussing results. I will refer to these caveats as limitations. Each of the items listed below present confounding factors to the data.

1. **Blinding**. This experiment is not "blinded." This implies that both the experimenter and experimental units know which group they are part of. In many RCTs, blinding is used to facilitate causal inference. Although it would be hard to blind this study, non-blinding opens the door to potential confounding factors instead of simply the job shadowing treatment alone (e.g. treatment students knew they were part of a study and wanted to please, or perhaps undermine, the experimenter).

2. **External validity**. Students represented a volunteer sample with a 46% participation rate. Therefore, the students who volunteered may be either more or less likely to have knowledge of the job market. For example, a possible explanation could be that students who come from supportive families may be more likely to participate, or students who were anxious about finding work volunteered disproportionately. This lack of a true randomized sample means I cannot generalize this sample to a specific population.

3. **Sequential treatments**. There are two treatments: the lesson (L_1) and the shadow (S_1). Since the surveys are administered before and after both of these events, I cannot distinguish between the effects of the curriculum intervention and those of the job shadowing. More research would be necessary to isolate the effects of the lesson from those of the job shadowing experience itself.

4. **Construct validity**. How does the survey responses map into the overall goal, which might be: Does job shadowing lead students to more successful careers? If this is the case, then it would be useful to think about whether the survey responses truly measure this. It may be useful, then, to conduct a longitudinal study, where I might follow the students and analyze their matriculation into the work force.

5. **Generalization**. To truly define the population mean, I would need a randomized sample that targets a parameter in a population of interest. Only then can I generalize results from sample to population. Therefore, I need to understand the population I am trying to generalize to before making statistical statements using the p-values. This study aimed to generalize results to 9th grade students (or at least to 9th grade students at Mountainside Junior-Senior High School), and then to high school students in general. This analysis falls well short of this goal as the volunteer, or convenience sample limits the generalizability.

6. **Maturity of respondents.** The respondents in this study are still very young (12-13 years old). As a result, their maturity level and sense of self have varying degrees of resolve. Research shows that the rational part of the adolescent brain does not fully develop until the age of 25 or beyond (Packard, 2018), and students of this age are highly influenced by emotional and social factors (Blakemore & Robbins, 2012). As an

educator that has worked with this population for over almost two decades, I can attest to these realities. This presents confounding factors. For example, considering respondents received no interventions, I would expect to find similar responses in the control group on the pre and posttest. This was not always the case. On the questions related to "awareness," for instance, students averaged change scores between -.4 and -1.3. It would be expected that the mean change scores would cluster tightly around 0.

7. **Job site variability.** There was no vetting process to determine job shadow sites. I made this choice in order to mirror the study to how most high schools conduct their job shadowing programs. Therefore, most of the job sites were arranged by the parents of the respondents. For those students with limited support at home, the counselors and I helped to arrange the job sites. This led to substantial variation in the experiences of the students. For example, some site managers were experienced in handling high school students, and for others this was their first time hosting a young person at their place of employment. Therefore, each job site manager had varying degrees of experience teaching and/or working with students of this age.

8. **Sample size**. Although I analyzed distributional assumptions and did not find substantial departures from normality, the small sample size presents a problem. Statistically, a larger sample size would lead to more precise results (e.g., narrower confidence intervals and lower standards of error).

9. **Lack of prior research.** As discussed earlier, this study in the field of education is seemingly the first of its kind. In more comprehensive fields of study, many of the obstacles and pitfalls would have been previously determined, providing a more focused path of inquiry. The groundbreaking nature of this study posed unique

difficulties because I had no age ranges, prior survey questions, study parameters, or inquiry plans to consider. Therefore, multiple iterations of the survey design, questions, and focus areas would be necessary to establish newfound inquiry questions and determine more significant results.

10. **Ambiguous interpretation of observed change.** Although I set out to measure whether students gained a more acute awareness of career decision making self-efficacy, knowledge of career entry requirements, and ideal job characteristics, a fundamental limitation is the ambiguous interpretation of the observed change. As previously discussed, student responses on Q39_1 ("How much on-the-job training is needed for your first full time job after you finish school?") showed noteworthy variability. The same students who chose a short amount of time on the pretest, reported a lengthier amount of time on the posttest, and vice versa. Some may interpret this data as "good," others will see this as "bad," and perhaps others as somewhere in-between. This presents confounding factors and leaves ambiguity in interpreting the results. Since the questionnaire did not contain actual knowledge assessments that had definitive answers (e.g. "How much education does one need to become a lawyer?"), this phenomenon exists.

5.2   DISCUSSION

Are students confident in making decisions about their future? In the section related to "confidence," there is very little data to support that the treatment interventions had a significant effect on students. However, I gleaned important information when I analyzed the posttest

means. Specifically, the treatment group reported feeling slightly less confident than the control group across all questions (although the treatment group still felt "Confident" to "Very Confident"). This variation in the data might suggest that the job shadowing interventions had a "deflationary effect" on the students. In other words, after learning about jobs in more detail, students may have found that they were not as confident as originally reported, or perhaps there was more to learn than they had previously realized. Perhaps this "deflationary effect" was a much needed calibration of their career decision-making self-efficacy (although they still reported as feeling "Confident") To put this into perspective, almost all 9th grade students rated their confidence level as "Very confident" or "Extremely confident" in their ability to make decisions about their future. Considering both anecdotal evidence and research that states a third of all students change their majors at least once (Leu, 2017), baby boomers changed jobs almost 12 times between the ages of 18 and 48 (BLS, 2012), and that brains at this age are still developing (Blakemore & Robbins, 2012; Packard, 2018), it is hard to imagine that the ability of a 12-13 year-old to make decisions of this magnitude is keenly developed (although I do believe that their perception of being "Very confident," or "Extremely confident," is both truthful and legitimate from their perspective). These ideas are certainly worthy of future inquiry.

Do students understand the educational preparation needed for the careers they desire? The largest effects I found were embedded in the survey questions related to job awareness. Specifically, the questions: "How much school is needed to get your first job after you finish school?" and "To get your first full time job after finishing school, how important would it be to get a certificate showing you finished a related job experience?" showed more significant effects. Responses to both questions imply that the treatment group felt they needed less schooling or certification in order to obtain their first job. This may suggest that the job shadowing experience

allowed for questioning that provided students with a more acute understanding of the preparation required to attain the job. The guiding questions provided to the treatment group as a part of the lesson intervention required students to specifically ask job site managers about the educational and vocational preparation needed to acquire the job. These inquiries seemed to have an effect on student responses. When analyzing posttest means, I also believe there was a "deflationary effect" that occurred here as well. Specifically, students in the treatment group averaged over a point lower than those in the control group. As previously mentioned, this may suggest that when students were able to spend time with job site managers, they developed a more realistic and grounded understanding of the preparation needed for the jobs they were observing.

Do students understand job structures, and how those job structures fit their likes and interests? Once again, there is no data to support that the interventions provided to the treatment group had any significant effects on students, nor did the mean change scores show that the students answered questions differently between pre and posttest responses. However, I was able to glean important information about job structures with which students at this age most identified. I learned that students seem to be drawn to fields that offer autonomy, leadership opportunities, regular daytime working hours, the ability to get outdoors, and the opportunity to work with others. Realistically, however, students report that job shadowing experiences and future jobs will require them to work with others, spend a majority of time indoors, manage some conflicts, and work regular daytime hours. I wonder whether this is because of the limitation of job shadow sites, inexperience, lack of school programming in providing students with a more comprehensive understanding of work, or perhaps a result of cultural or generational preferences. This data is also fodder for future inquiry.

A last interesting finding was that respondents reported that their job shadowing experience was either "Extremely Useful" or "Very Useless", implying that job shadowing had a "hit or miss" effect. I would argue that this bimodal distribution of responses might suggest that the experience (either positive or negative) made an impact on the students. I would also argue that any impact as a result of authentic learning (either positive or negative) is, in fact, positive because students are either ruling out or identifying with structures or experiences that match their profiles, likes, and interests. This exercise should help students to find a better match to their future college and career pursuits (this phenomenon is specifically discussed by a job site manager's quote later in this section).

Ultimately, I recommend against claiming that the job shadowing intervention "caused" the changes in survey responses. I also recommend against generalizing these finding to a larger population (e.g., all high school students). In addition (as previously discussed), it is important to note that the ambiguous interpretation of the observed changes present confounding factors that would make statements of causality extremely difficult. I can say, however, that several students who underwent the job shadowing experience summarized it as extremely useful, and I did find a large difference in the treatment group concerning the preparation required for their first job. These are interesting hypotheses to test in future experiments.

5.3   PROCESS EVALUATION

As the primary investigator in this process, I designed and witnessed the job shadowing experience from start to finish. As a result, I was responsible for sending emails to parents, responding to questions and concerns, visiting job shadow sites, and talking to students, parents,

and job site managers directly about their experiences. Parents emailed me directly regarding what shadowing sites their kids were attending and when they were attending them. This section will provide anecdotal accounts of the job shadowing experience from the perspective of the stakeholders previously mentioned. I will then speak in more general terms in regards to the research process at Mountainside Jr-Sr High School.

I chose 9th grade students because they were not required to complete a job shadowing experience at Mountainside Jr-Sr High School. Although the research supports the implementation of authentic experiences at a younger age, the 9th graders were old enough to understand the benefits of the experience and seemed to take the research process seriously. They completed their tasks within the given time allotment and responded to survey questions meticulously. They asked thoughtful clarifying questions and seemed to work collaboratively with their parents and job site managers throughout the process. As a result, students in the treatment group chose to observe a host of employers such as lawyers, pilots, musicians, veterinarians, nurses, computer programmers, writers, graphic designers, actuaries, and many more. It seemed that many of the jobs that students chose aligned with the job structures that they felt "fit" them. For instance, many of the jobs observed offered autonomy, leadership opportunities, regular daytime working hours, the ability to get outdoors, and the opportunity to work with others. This alignment may give fodder for future inquiry. When I asked students if they enjoyed the experience, they reported positively, saying that it was "fun, interesting, and better than school." In addition, I observed a handful of the job shadow sites and witnessed students asking questions, touring facilities, discussing the realities of the work, and fully engaging with the job site managers. All of the students I observed in the field brought their

guiding question forms provided to them in the curriculum intervention. The guiding questions seemed to help students stay calm and ask more specific questions of employers.

Parents reported that the experience was positive as well, stating that, "the experience was great for my child," and that "my child really enjoyed it." Another parent stated that "it really benefitted him (her son) in talking to someone that was working in an area (coding) he was thinking about." The same parent also stated that "it was beneficial for my son to do it (complete the job shadowing experience) before the other high school students, because, why not? If he can learn more about what he wants, there's no downside!" Overall, the parents were diligent in helping their children to acquire shadow experiences. They communicated with me in a timely fashion and worked within the constraints of the time allotted. When parents could not arrange sites, the counselors and myself took on the responsibility. This required meeting with students, analyzing their Career Key assessments, and making connections between them and the job site managers when their parents could not.

Job site managers stated that they were "most impressed with the quality of students" at Mountainside, and that it was a "fun learning experience for all of us and we were flattered to be included." I observed a law office that worked to exonerate wrongfully accused convicts. The cooperating lawyer arranged for two students to shadow her practice. After the experience, she was quoted saying the following:

> I think it's a great idea to get students out in the field for experiential learning. Even though they (the two students who observed her) didn't want to be lawyers, it's important for students to have enough information to make an informed decision upon choosing a career path. To make this organization run, I oversee numerous interns, and I know that professional schools do not teach students the day to day of what you do in the field. For instance, my daily requirements of being a lawyer is a majority of research and writing. Understanding what you do not like is just as important as finding what you do like.

Therefore, in terms of anecdotal evidence, I believe this experience will be one that students will remember well after high school has ended and the process was one that yielded positive results. Furthermore, job shadowing seems to strengthen the bonds between high schools and local businesses, and can possibly open up new opportunities to students (such as jobs or partnerships on future school initiatives).

Although I did not find results that are statistically significant, it is difficult to imagine that observing a seasoned employee at their place of work would not be an experience that is impactful to young people. I contest, therefore, that the experience may have been more impactful had I asked different questions. It seems as if the questions regarding "awareness" had some effect on students, but not enough of an effect to deem it statistically significant. However, the data might suggest that when students spent time with job site managers, they developed a more acute awareness of the preparation necessary to procure that job. This seems to be a logical assumption. In addition, the instrument format (a 47-question survey) may have influenced student responses negatively. Perhaps a shorter instrument followed by an interview might provide more significant results. For instance, follow up interviews may have clarified the bimodal distribution pertaining to "usefulness" that occurred in Figure 3. This concept is certainly worthy of additional study. If I were to define "usefulness" as providing students with a better ability and confidence to pinpoint careers that match their strengths, then I could design survey questions that match that definition. I could then construct a short, 5-10 question survey and follow up interview that focuses solely on this construct. This will allow me to study this phenomenon and unpack the concept in more detail.

As I previously highlight, college and career intervention is important to begin at an early age. However, studying young people poses unique obstacles. Students' abilities to self-assess,

reflect, be introspective, and internalize new learning are still developing and thus creates a moving target. Therefore, it is important to continue to refine the survey to find the right set of questions that resonate with students of this age. This may yield more meaningful data. However, whether there are significant results or not, I still purport that the experience is valuable to students. Even if students fail to see the direct effects of these interventions immediately, I believe that authentic learning may provide some of the benefits of adolescent work without the deleterious effects. Further research can begin to provide answers to some of these questions. Furthermore, it is important to note that the definitive goal is for job shadowing experiences to better prepare students for colleges and careers, and therefore a longitudinal study might allow the ability to gather information on the efficacy of this experience when students enter the work force, and beyond.

Finally, it is important to understand that this study is seemingly the first of its kind. There is a need for more research. The hope is that this study provides a solid foundation and acts as a gateway for additional research on job shadow practices across the country. This research process was certainly meaningful to Mountainside Jr-Sr High School stakeholders, my current place of employment, and to me.

5.4   RECOMMENDATIONS AND IMPLICATIONS FOR FUTURE RESEARCH

This study provides a solid foundation for future research on job shadowing programs. However, more research is needed in order to find statistical significance and to show causality. The following are recommendations for future research:

1. **A narrow and more informed study focus.** I found that the questions related to "awareness" and "usefulness" seemed to resonate with students. Therefore, a new survey design should focus on these topics specifically. Perhaps a focus on defining and testing the idea of "usefulness" would be a reasonable follow-up research study to consider.

2. **Refine the survey instrument.** Considering the Bonferroni calculation for multiple comparisons, it may be prudent to truncate the instrument into more manageable subsets. As the number of questions rise, the confidence intervals grow thinner due to multiple comparisons. I would recommend a focused survey instrument with 5-10 questions at the most.

3. **Vetting job sites.** To ensure that all job sites are supportive and meaningful to students, it may be beneficial to create a system for vetting sites and job site managers. This will ensure the experience is appropriate and meaningful for high school students. Perhaps a training session or a set of documents can be created to ensure that each site gets equal attention. This may provide greater validity to the research as well.

4. **Expand the survey.** To create more consistency and to be able to generalize the results in more meaningful ways, I would expand the research study to all high school students. This will allow for more students to be involved and should help to make the data more reliable and generalizable. It will also open the survey instrument to more mature young people, possibly producing more consistent and meaningful results.

5. **Post-Interviews.** To answer questions that arise from the quantitative analyses, follow up interviews might be appropriate upon completion of the interventions. Interviews may provide anecdotal evidence that may give fodder to more detailed explanations of the phenomena uncovered through the research process.

5.5 RECOMMENDATIONS FOR IMPLEMENTING JOB SHADOWING

As previously discussed, the purpose of this research was to determine whether students gained a more acute awareness of career decision making self-efficacy, knowledge of career entry requirements, and ideal job characteristics. More broadly, however, this study attempted to determine whether job shadowing experiences help students to make better career-related decisions about their future. Although this study provides a foundation for future inquiry, it does not provide significant evidence that job shadowing bolsters students' ability to make better decisions about their future. Therefore, in this section I will make recommendations for future research and the careful reevaluation of current job shadowing experiences at the local level. I will also provide recommendations and structure for school districts that currently have job shadowing programs in place and are looking to enhance their efficacy.

Since this study showed no significant improvements after only one day of a typical job shadowing experience, I formally recommend that school districts reevaluate current programming in an attempt to create more efficacious experiences for students. If formal job shadowing programs currently exist, I would recommend that the administration and school counseling staff consider a number of steps that may help to bolster the program and provide better results. These steps will be discussed in the next section of this document.

First, administrators and counselors might consider creating mechanisms to vet local job shadow sites to ensure that the experience is safe and meaningful to students. Schools can create short surveys for businesses that delineate the minimum requirements necessary to host a student and to determine the experience level of mentors and job site managers. This will enhance safety mechanisms, allow for the dissemination of school-specific information, and provide greater purpose to job site managers. I would also recommend that schools develop specific lessons and a set of resources to give to parents and local businesses to better prepare them for the job shadowing experience, explain the greater purpose, and educate them on the realities of the current labor market.

I would also recommend programs that require students to determine the careers that may "fit" their likes and interests (using a program similar to the one previously mentioned) prior to engaging in a job shadow experience. I believe that the curriculum intervention in this study provided a foundation and a focus for students that was essential. For instance, students first took the Career Key (CK) assessment, which asked students specific job-related questions. The CK then offered job suggestions to students based on how they answered those questions. The students were then asked to research the jobs that the CK recommended. Many of the students then chose experiences that directly related to the CK results. I believe this intervention is vital to providing a much needed booster shot to the job shadowing mechanism and I would recommend this as a necessary step prior to job shadowing being implemented with any degree of efficacy.

Although the research supports the implementation of authentic experiences at a younger age, I would recommend more formal job shadowing experiences at the high school only. High school students seemed old enough to understand the benefits and seemed to take the research process seriously. They completed their tasks within the given time allotment and responded to

survey questions meticulously. They asked thoughtful clarifying questions and seemed to work collaboratively with their parents and job site managers throughout the process. Ultimately, high school students are more mature and will be able to reflect on the experience with greater acuity. However, I might recommend discussing and observing jobs "virtually" as early as Kindergarten. This can be done through various software programs or other technology assisted devices (or as easy as watching Mr. Roger's Picture Factory Tours). If the job shadowing programs are productive and well received, high schools may want to consider a more intensive job shadowing experience that requires students to engage with local businesses in more profound ways. This is common practice for many college programs and has been effective for high schools as well (Feilding, 2008; Martin, 2008).

Finally, it is important to collect data from all stakeholders to assess the efficacy of each experience. Schools rarely collect data to determine efficacy and to reflect on current programming; they should. Students, parents, and businesses should be asked to provide feedback on their experiences. This will provide insight to administrators and counselors, and allow for schools to continue to improve and provide the best experience to the students. This will also allow for job shadowing programs to adjust to the needs of the students and stakeholders simultaneously.

Although additional research is needed to provide evidence for the efficacy of job shadowing, I would recommend these steps for Mountainside and high schools across the country. These recommendations might allow schools to improve and continue to reevaluate and enhance current programming. With careful attention to data analysis, confounding factors, and additional research in the field, schools can continue to design authentic experiences for students that may deliver the benefits of adolescent work without the deleterious effects. This research

provides a foundation for future inquiry, and hopefully gives fodder for schools to create experiences that might arm students with a better ability to make decisions about their future and to avoid the common pitfalls of college and career matriculation.

Although it is important for schools to compete academically, we must implement curriculum that requires our young people to explore, acquire, and retain future jobs. If schools were created in William Penn's vision, we should stay true to that vision by providing a rigorous academic experience while simultaneously preparing our young people for the labor force. As a father raising young children, I would hope that my children's schools provide as much preparatory programming as they can muster while also considering the costs and benefits of each endeavor. Although the cost and benefit analysis of job shadowing is currently under study, this research provides a significant body of work in assessing its efficacy, and a valuable document for all schools to consider.

Q3
What is your study ID code?
Q4
What is your sex?
Q5
Are you Hispanic or Latino/Latina?
Q6
What is your race? You may choose more than one.
Q7
What was the first language you spoke?
Q8
How many children are there in your family?
Q9
How old are you?
Q10
Tell us about your mother's job.
Q11
What is your mother's highest level of schooling?
Q12
Tell us about your father's job.
Q13
What is your father's highest level of schooling?
Q14
Where do you live? - Selected Choice
Q14_6_TEXT
Where do you live? - Other (Please explain}: - Text
Q15

	About how many books are in your home?
Q16	
	Did you get free or reduced school lunches during your 8th grade year (2016-2017)?
Q17_1	
	Who lives with you in your home? Select one answer choice in each row. - Mother
Q17_3	
	Who lives with you in your home? Select one answer choice in each row. - Foster mother or other female mother figure
Q17_4	
	Who lives with you in your home? Select one answer choice in each row. - Father
Q17_5	
	Who lives with you in your home? Select one answer choice in each row. - Stepfather
Q17_6	
	Who lives with you in your home? Select one answer choice in each row. - Foster father or other male father figure
Q19	
	What was your Grade Point Average (GPA) in your 8th grade year (2016-2017)?
Q20	
	How many days did you miss school in the last month?
Q21	
	How do you feel your school has prepared you for college or a job after your schooling ends?
Q22	
	How much have you looked into colleges and jobs in school?
Q23	
	How much have you looked into colleges and jobs at home?
Q25	
	How confident are you to figure out which jobs could be a good fit for you?
Q26	
	How confident are you to pick the best-fitting job from a list of ideal jobs?
Q27	
	How confident are you to learn about jobs you might like?
Q28	
	How confident are you to pick a job that fits your skills, values, and likes?
Q29	
	How confident are you in your ability to make a good choice about for a job?
Q34	
	How confident are you to learn more about jobs that may offer things important to you (flexible schedules, good pay, benefits, travel, days off, etc.)?
Q32	
	What do you hope to be your first full time job after you finish school? Please type your answer below.
Q37#1_1	

Answer the questions below about the job shadowing you have completed. Â If you were not chosen to... - How this fits me - Work on/within a team
Q37#1_2
Answer the questions below about the job shadowing you have completed. Â If you were not chosen to... - How this fits me - Public speaking
Q37#1_3
Answer the questions below about the job shadowing you have completed. Â If you were not chosen to... - How this fits me - Talk on the telephone
Q37#1_4
Answer the questions below about the job shadowing you have completed. Â If you were not chosen to... - How this fits me - Send and receive emails
Q37#1_5
Answer the questions below about the job shadowing you have completed. Â If you were not chosen to... - How this fits me - Written communication
Q37#1_6
Answer the questions below about the job shadowing you have completed. Â If you were not chosen to... - How this fits me - Work with people
Q37#1_7
Answer the questions below about the job shadowing you have completed. Â If you were not chosen to... - How this fits me - Lead others
Q37#1_8
Answer the questions below about the job shadowing you have completed. Â If you were not chosen to... - How this fits me - Deal with conflicts
Q37#1_9
Answer the questions below about the job shadowing you have completed. Â If you were not chosen to... - How this fits me - Work indoors
Q37#1_10
Answer the questions below about the job shadowing you have completed. Â If you were not chosen to... - How this fits me - Work outdoors
Q37#1_11
Answer the questions below about the job shadowing you have completed. Â If you were not chosen to... - How this fits me - Work in a vehicle (like a car, tractor, or truck
Q37#2_1
Answer the questions below about the job shadowing you have completed. Â If you were not chosen to... - What the job requires - Work on/within a team
Q37#2_2
Answer the questions below about the job shadowing you have completed. Â If you were not chosen to... - What the job requires - Public speaking
Q37#2_3
Answer the questions below about the job shadowing you have completed. Â If you were not chosen to... - What the job requires - Talk on the telephone
Q37#2_4
Answer the questions below about the job shadowing you have completed. Â If you were not chosen to... - What the job requires - Send and receive emails

Q37#2_5	
Answer the questions below about the job shadowing you have completed. Â If you were not chosen to... - What the job requires - Written communication	
Q37#2_6	
Answer the questions below about the job shadowing you have completed. Â If you were not chosen to... - What the job requires - Work with people	
Q37#2_7	
Answer the questions below about the job shadowing you have completed. Â If you were not chosen to... - What the job requires - Lead others	
Q37#2_8	
Answer the questions below about the job shadowing you have completed. Â If you were not chosen to... - What the job requires - Deal with conflicts	
Q37#2_9	
Answer the questions below about the job shadowing you have completed. Â If you were not chosen to... - What the job requires - Work indoors	
Q37#2_10	
Answer the questions below about the job shadowing you have completed. Â If you were not chosen to... - What the job requires - Work outdoors	
Q37#2_11	
Answer the questions below about the job shadowing you have completed. Â If you were not chosen to... - What the job requires - Work in a vehicle (like a car, tractor, or truck	
Q38#1_1	
Answer the questions below about the job shadowing you have completed. Â If you were not chosen to... - How this fits me - Spend time sitting	
Q38#1_2	
Answer the questions below about the job shadowing you have completed. Â If you were not chosen to... - How this fits me - Spend time standing	
Q38#1_3	
Answer the questions below about the job shadowing you have completed. Â If you were not chosen to... - How this fits me - Use your hands to build things, handle tools, or manage controls	
Q38#1_4	
Answer the questions below about the job shadowing you have completed. Â If you were not chosen to... - How this fits me - Freedom to make decisions without supervision	
Q38#1_5	
Answer the questions below about the job shadowing you have completed. Â If you were not chosen to... - How this fits me - Meet strict deadlines	
Q38#1_6	
Answer the questions below about the job shadowing you have completed. Â If you were not chosen to... - How this fits me - Have regular daytime hours	
Q38#1_7	
Answer the questions below about the job shadowing you have completed. Â If you were not chosen to... - How this fits me - Have regular nighttime hours	
Q38#1_8	

Answer the questions below about the job shadowing you have completed. Â If you were not chosen to... - How this fits me - Have irregular hours (different times on different days)	
Q38#2_1	
Answer the questions below about the job shadowing you have completed. Â If you were not chosen to... - What the job requires - Spend time sitting	
Q38#2_2	
Answer the questions below about the job shadowing you have completed. Â If you were not chosen to... - What the job requires - Spend time standing	
Q38#2_3	
Answer the questions below about the job shadowing you have completed. Â If you were not chosen to... - What the job requires - Use your hands to build things, handle tools, or manage controls	
Q38#2_4	
Answer the questions below about the job shadowing you have completed. Â If you were not chosen to... - What the job requires - Freedom to make decisions without supervision	
Q38#2_5	
Answer the questions below about the job shadowing you have completed. Â If you were not chosen to... - What the job requires - Meet strict deadlines	
Q38#2_6	
Answer the questions below about the job shadowing you have completed. Â If you were not chosen to... - What the job requires - Have regular daytime hours	
Q38#2_7	
Answer the questions below about the job shadowing you have completed. Â If you were not chosen to... - What the job requires - Have regular nighttime hours	
Q38#2_8	
Answer the questions below about the job shadowing you have completed. Â If you were not chosen to... - What the job requires - Have irregular hours (different times on different days)	
Q36	
How much school is needed to get your first job after you finish school?	
Q37	
To get your first full time job after finishing school, how important would it be to get a certificate showing you finished a related job experience?	
Q38	
To get your first job after finishing school, how important is it to finish an apprenticeship (a long-term job shadowing experience to learn about the job)?	
Q39_1	
How much on-the-job training (learning from a more skilled worker) would be needed for your first full time job after you finish school? - None	
Q41	
Did you job shadow?	
Q42	
Please tell us about your job shadowing.	
Q43	
How useful was your job shadowing experience to you?	

Q44

Please tell us why your job shadowing experience was useful, or not useful?

APPENDIX B

DR. ROBERT LENT'S APPROVAL TO USE THE CEDSE-BD SCALE

On Tue, Jul 18, 2017 at 8:00 AM, Neil English <nenglish@rsd.k12.pa.us> wrote:

Dr. Lent,

My name is Neil English. I am currently engaged in my dissertation in practice (EdD) research at the University of Pittsburgh and am studying the efficacy of job shadowing. I was reading your research (cited below), and found survey questions on your CEDSE-BD instrument. I am conducting a Randomized Control Trial, studying 9th grade students' pre and post job shadowing experiences. I know that your instrument is copyrighted, but I would love to use some questions from this instrument as a method of studying career decision-making self-efficacy for my cohort of students. Any help or guidance would be greatly appreciated.

Sincerely,

Neil English, Instructional Principal, Mountainside Junior-Senior High School

First On Jul 18, 2017, at 10:51 AM, Robert W. Lent <boblent@umd.edu> wrote:

Permission granted to use the CEDSE-BD or any of its questions in your research.

Best wishes,

Bob Lent, Ph.D.
Professor, Counseling Psychology
Department of Counseling, Higher Education, & Special Education
3214 Benjamin Building
3942 Campus Dr.
University of Maryland, College Park, MD 20742

GUIDING QUESTIONS FOR JOB SHADOWING

What is the job that you are shadowing? _____

What is the date? _____

1. How often do you work on a team?

2. How often do you work indoors? Outdoors?

3. How often do you have to speak in public?

4. Do you have to work in your car? If so, how often?

5. How often do you talk on the telephone?

6. How much do you spend sitting? Standing?

7. How often do you have to send/receive emails?

8. How much freedom do you have to make decisions without supervision?

9. How often do you have to communicate with other in writing?

10. Do you have to meet strict deadlines? How often?

11. Do you lead others? If so, who?

12. What hours do you work?

13. How often do you have to deal with conflicts?

14. How much schooling is required for your job? Please explain.

15. How often do you use your hands to build things, handle tools, or manage controls?

16. Did your job require any certification?

17. Did you need an apprenticeship to get your job? Please explain

18. Did your job need any on the job training?

JOB SHADOWING FORMAL LESSON PLAN

Principal Investigator: Neil English

Grade Level: 9

Content Standards

PA Career Education and Work Standard 13.1.11.
    A. Relate careers to individual interests, abilities, and aptitudes.
    B. Analyze career options based on personal interests, abilities, aptitudes, achievements and goals.
    C. Analyze how the changing roles of individuals in the workplace relate to new opportunities within career choices.
    D. Evaluate school-based opportunities for career awareness/preparation n, such as, but not limited to: job shadowing
    E. Justify the selection of a career.
    F. Analyze the relationship between career choices and career preparation opportunities, such as, but not limited to:
PA Career Education and Work Standard 13.2.11.
    B. Apply research skills in searching for a job.
    E. Demonstrate, in the career acquisition process, the application of essential workplace skills/knowledge,
PA Career Education and Work Standard 13.3.11.
    A. Evaluate personal attitudes and work habits that support career retention and advancement

Placement of Lesson within Broader Curriculum/Context: The current 9th grade students have had numerous experiences in 7th and 8th grade. They have completed a few small self-exploration inventories and have completed some job awareness activities. They have no formal

job shadowing experience, nor have they engaged in formal career exploration activities. This lesson will precede a formal job shadowing experience (except for those students in the control group)

Objective(s) for Lesson:

Students will be able to (SWBAT) relate careers to individual interests, abilities, and aptitudes.
SWBAT analyze career options based on personal interests, abilities, aptitudes, achievements and goals.
SWBAT recognize the current demands of the PA and national job market
SWBAT justify the selection of a career from a list of viable careers.
SWBAT analyze the relationship between career choices and career preparation opportunities, such as, education and training experiences
SWBAT

Assessment:

The assessment for these lesson objectives will be the post test. The hope is that the pre-job shadow curriculum and the job shadowing experience will results

Materials/Resources:

- Laptop Computer Carts
- Projection screen
- Naviance Career Key Assessment
- Naviance Career Cluster Analysis
- Success in the New Economy 10 minute video
- Job Shadowing Questions and Observation Sheet

Lesson Development/Instructional Strategies

10 Minutes – Viewing of Success in the New Economy
5 Minutes – Short Debrief of the Movie
15 Minutes – Career Key Assessment
15 Minutes – Career Cluster Exploration
15 Minutes – Naviance Road Trip Nation
5 Minutes – Job Shadowing Guiding Questions

Instructional Strategies:

Video Presentation
Direct Instruction
Guided Inquiry

GUIDING QUESTIONS and/or OBSERVATIONS FOR JOB SHADOWING

What is the job that you are shadowing? _____

What is the date? _____

1. How often do you work on a team?

2. How often do you work indoors? Outdoors?

3. How often do you have to speak in public?

4. Do you have to work in your car? If so, how often?

5. How often do you talk on the telephone?

6. How much do you spend sitting? Standing?

7. How often do you have to send/receive emails?

8. How much freedom do you have to make decisions without supervision?

9. How often do you have to communicate with other in writing?

10. Do you have to meet strict deadlines? How often?

11. Do you lead others? If so, who?

12. What hours do you work?

13. How often do you have to deal with conflicts?

14. How much schooling is required for your job? Please explain.

15. How often do you use your hands to build things, handle tools, or manage controls?

16. Did your job require any certification?

17. Did you need an apprenticeship to get your job? Please explain

18. Did your job need any on the job training?

APPENDIX E

LIST OF JOB SHADOW SITES FOR THE TREATMENT GROUP

1. Lawyer
2. Music Instruction – Symphony Orchestra
3. Mechanic
4. Graphic Designer
5. Writer
6. Bank Accountant
7. Hair Dresser
8. Pilot
9. CPR instructor
10. Juvenile Defense Attorney
11. Veterinarian
12. Electrician
13. Actuary
14. Park Naturalist
15. Health Care Business
16. Federated Business
17. Nursing
18. Lawyer (PA Innocence Council)
19. Lawyer (PA Innocence Council)
20. Computer Programmer

IRB APPROVAL FOR SUBMISSION AND MODIFICATION TO THE STUDY

	500 Fifth Avenue
	Ground Level
University of Pittsburgh	Pittsburgh, PA 15213
Institutional Review Board	(412) 383-1480
	(412) 383-1508 (fax)
	http://www.irb.pitt.edu

Memorandum

To:	Neil English
From:	IRB Office
Date:	1/18/2018
IRB#:	MOD17070517-01 / PRO17070517
Subject:	The efficacy of job shadowing as a mechanism for college and career readiness

The University of Pittsburgh Institutional Review Board reviewed and approved the requested modifications by expedited review procedure authorized under 45 CFR 46.110 and 21 CFR 56.110.

Modification Approval Date: 1/18/2018
Expiration Date: 10/19/2018

For studies being conducted in UPMC facilities, no clinical activities that are impacted by the modifications can be undertaken by investigators until they have received approval from the UPMC Fiscal Review Office.

Please note that it is the investigator's responsibility to report to the IRB any unanticipated problems involving risks to subjects or others [see 45 CFR 46.103(b)(5) and 21 CFR 56.108(b)]. Refer to the IRB Policy and Procedure Manual regarding the reporting requirements for unanticipated problems which include, but are not limited to, adverse events. If you have any questions about this process, please contact the Adverse Events Coordinator at 412-383-1480.

The protocol and consent forms, along with a brief progress report must be resubmitted at least one month prior to the renewal date noted above as required by FWA00006790 (University of Pittsburgh), FWA00006735 (University of Pittsburgh Medical Center), FWA00000600 (Children's Hospital of Pittsburgh), FWA00003567 (Magee-Women's Health Corporation), FWA00003338 (University of Pittsburgh Medical Center Cancer Institute).

Please be advised that your research study may be audited periodically by the University of Pittsburgh Research Conduct and Compliance Office.

<table>
<tr><td>

University of Pittsburgh
Institutional Review Board

</td><td>

3500 Fifth Avenue
Pittsburgh, PA 15213
(412) 383-1480
(412) 383-1508 (fax)
http://www.irb.pitt.edu

</td></tr>
</table>

<u>**Memorandum**</u>

To: Neil English

From: IRB Office

Date: 10/20/2017

IRB#:   PRO17070517

Subject: The efficacy of job shadowing as a mechanism for college and career readiness

---

The University of Pittsburgh Institutional Review Board reviewed and approved the above referenced study by the expedited review procedure authorized under 45 CFR 46.110 and 21 CFR 56.110. Your research study was approved under:

45 CFR 46.110.(7)

This study has been approved under 45 CFR 46.404 for the inclusion of children. The IRB has determined that the written permission of one parent is sufficient.

The risk level designation is Minimal Risk.

Approval Date: 10/20/2017
Expiration Date: 10/19/2018

For studies being conducted in UPMC facilities, no clinical activities can be undertaken by investigators until they have received approval from the UPMC Fiscal Review Office.

Please note that it is the investigator's responsibility to report to the IRB any unanticipated problems involving risks to subjects or others [see 45 CFR 46.103(b)(5) and 21 CFR 56.108(b)]. Refer to the IRB Policy and Procedure Manual regarding the reporting requirements for unanticipated problems which include, but are not limited to, adverse events. If you have any questions about this process, please contact the Adverse Events Coordinator at 412-383-1480.

The protocol and consent forms, along with a brief progress report must be resubmitted at least one month prior to the renewal date noted above as required by FWA00006790 (University of Pittsburgh), FWA00006735 (University of Pittsburgh Medical Center), FWA00000600 (Children's Hospital of Pittsburgh), FWA00003567 (Magee-Women's Health Corporation), FWA00003338 (University of Pittsburgh Medical Center Cancer Institute).

Please be advised that your research study may be audited periodically by the University of Pittsburgh Research Conduct and Compliance Office.

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