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THE TRANSPORTATION INDUSTRY: INVESTIGATING WOMEN AS AN
UNDERUTILIZED WORKFORCE IN A TRADITIONALLY MALE INDUSTRY

A Thesis

Presented to

The Faculty of Morgridge College of Education

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In Partial Fulfillment

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Master of Arts

by

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June 2014

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Advisor: Dr. Patrick Sherry, PhD.

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ABSTRACT

This study investigated women's interest in the transportation industry. Staffing shortages coupled with disproportionate gender distributions were cause for concern within transportation. Surveys were used to investigate occupational preferences, work values, sex-type identities, self-efficacy, and perception of barriers present among women. These findings were analyzed for significant correlations and predictive value resulting in a job profile for women that may be interested in transportation. Several predictors of interest were found to exist including age, self-efficacy, a value for challenges, and Conventional and/or Realistic occupational types.

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CHAPTER ONE: INTRODUCTION

Introduction

The transportation industry workforce is shrinking in size due to the gradual attrition of baby boomers. This decrease may potentially limit our Nation's economic vitality. Due to an aging workforce, half of all incumbents currently in the transportation industry are expected to reach retirement or otherwise leave the field by the year 2023, resulting in an expected loss of 900,000 employees (Sussman, 1999). With an approximated workforce size of 1,800,000 this projected loss will leave the field at half capacity. This rapid workforce loss coupled with a failure to recruit new employees at a rate high enough to compensate for the projected rate of loss will result in a staffing shortage on all levels of the industry.

The Bureau of Labor Statistics reported that women comprised 46.9% of the National Workforce at large in the year of 2010 and yet only 24.5 of the Transportation Industry that same year (Department of Labor [DOL], 2010). Again in the same year, a mere 5.2% of all women in the work force were employed in transportation, production, and/or material moving occupations. Additionally, the amount of females in the workforce is rising steadily and is expected to account for more than half (51%) of the National Labor Force by the year 2018 (Women's Labor Bureau, 2010). Of the 66 million women who were employed in America during 2009, nearly 75% of those women were full-time employees (Maloney & Schumer, 2010, pg. 4). That's a lot of potential

full-time employees and yet as we know, a very small percentage of those female workers were employed in Transportation. To be more specific, 43,000 female transportation workers were unemployed in 2008, which is more than 20% of the entire pool of unemployed transportation workers (DOL, 2010). The demographics of the transportation field are not reflective of what is happening at a National level. Given these numbers, it's logical to conclude that women are becoming an increasingly valuable asset to America's work force and the transportation industry needs to increase gender diversity in order to maintain vitality. With nearly three quarters of its workers being male despite the consistent growth of women in the National work force, it's clear that women are an underutilized resource for this industry as a whole.

Historically, the U.S. Department of Labor defines a job or industry as "non-traditional" if 25% or less of that industry is comprised of any given demographic (DOL, 2010) as such, the transportation industry has consistently been categorized as a non-traditional industry for women due to the proportions of men and women employed in the field. The lack of women in various industries, including Transportation, is so severe that it's warranted National attention and recent efforts have been made in addressing the problem. In 1992 the Women in Apprenticeship and Nontraditional Occupations (WANTO) Act was passed by the Department of Labor calling attention to the issue. Likewise, grant money has been made available to promote research efforts on women in traditionally male industries and initiatives designed to recruit young girls into science, math, and engineering fields have been put into action. While these efforts have proven fruitful in other previously male dominated industries, such as finances and law, the

transportation industry has failed to show noteworthy improvement.

The stagnant nature of gender equity in the transportation industry is cause for concern especially given the so-called “rail renaissance” in which billions of dollars worth of monetary investments related to businesses that result from and/or cater to oil and gas industries are said to be returning to America (Blackmon, 2014). This increase in domestic infrastructure will boost the American economy, but it will also require a larger workforce in order to succeed (Blackmon, 2014). Moreover, despite the positive efforts being made in other arenas for women’s workforce development there are still markedly few studies done specifically on women in the transportation industry. Thus, the purpose of this study was to investigate the vocational interests, occupational values, gender identities, and levels of self-efficacy of women currently employed in the U.S. workforce in attempts to develop a predictive model of female job seekers specific to the transportation industry.

Gender Distribution in the American Workforce

Women have certainly come a long way in the working world of America. Less than 100 years ago the majority of women were not expected to attend college or enter into professional careers and those that did were part of a minority. Generally speaking, women had societal expectations to get married and raise children and while there is always an exception to the rule, the overall trend was undeniable for the times. Great strides have been made since then, but gaps in gender equality are still very much present. Women are still paid on average less money than men. It was estimated that women earn about 77 cents on every dollar as compared to men, and this discrepancy

only increases as you expand to view women who identify with racial minorities (Jarrett & Tchen, 2012, pg. 3). This pay discrepancy can really add up over time. For example, based on this pay discrepancy between genders, a woman working full-time was estimated to lose \$138,000 by the time they are aged 35, and a whopping \$389,000 by the time they turn 65 (Jarrett & Tchen, 2012, pg. 2). While there has been an increase in the amount of women receiving their education and entering into the workforce women are now overrepresented in certain career fields that offer less pay than other industries typically associated with men. Specifically, women are grossly underrepresented in science, technology, engineering, and math (STEM) fields and these industries offer 33% higher pay than other fields that currently have an overrepresentation of women (Jarrett & Tchen, 2012, pg. 35).

While there are more women in the workforce, in fact nearly half of the American workforce is currently female, there are still blatantly biased distributions of women into respective career fields. In 2011 women comprised 68% of the Education Services field, 78% of the Health and Social Assistance field (Jarrett & Tchen, pg. 34), and an astounding 95.6% of speech-language pathologists (DOL, 2012). To break it down even further, in that same year nearly 82% of elementary/middle-school teachers and social workers respectively were female (DOL, 2012). In 2009 only 5.6% of women working full-time were employed in the Transportation Industry compared to 18.5% of men working-full time in the same industry (DOL, 2010) compared to the Administrative Support field, where 22.9% of women working full-time were a clear majority to the 6.8% of men working full-time in that same industry (DOL, 2010). These industries

where we see an overrepresentation of women (education, social work, administrative support etc.) are lower paying career options than STEM careers, high-level professional work, and even industries such as construction. This speaks to a disheartening trend where the amount of men and women present in the workforce has evened out, but the distribution of financial compensation has not.

Annual income of women is not only important for the women themselves but a body of research has cited the impact that this has on the American economy at large. In 2009 a total of 37.7% of women in married couples earned more money annually than their husbands (DOL, 2010) and from 1983-2008 married households with children in which the wife was not employed suffered an average annual decrease in their total income by .22% totaling a startling 6% of their total income of the course of 27 years (Maloney & Schumer, 2010). In sum, a financial need for both spouses to be earning income is highly suggested by this trend.

Women in STEM Occupations

The field of transportation is considered to be in the realm of science, technology, engineering, and mathematics (STEM) with several different types of engineering and mathematical degrees being relevant to future careers in transportation. In fact, an interest in mathematics and science has been shown to be associated with individuals who enter into engineering fields such as transportation (Hersh, 2000). As younger generations enter into the workforce, 8.5 million jobs are expected to become available in field of science, technology, engineering and mathematics over the course of the next ten years (Jarrett & Tchen, 52) but an overall lack of public knowledge concerning what

people in these fields (including transportation) actually do, is seen as detrimental to the progression of these areas (Hersh, 2000). While slightly more than half of college undergraduates are female, a mere 15% percent of female college freshman plan to pursue STEM related majors (Jarrett & Tchen, 52). Stereotypes are created in the absence of knowledge and this public lack of knowledge concerning STEM careers may leave room for the continuation of stereotypical gender roles and expectations as stated by Hersh in his 2000 study:

In some countries, such as the U.S. and the United Kingdom, engineers have relatively low status, and there is considerable misunderstanding about what they actually do, and confusion between the jobs of professional engineers and other technical personnel such as, for instance, car mechanics and electricians... engineering is still often seen as a dirty, heavy, manual occupation for (strong) men, and unsuitable for women. (p. 346)

Females that have entered into STEM fields reported being met with unsupportive academic and work environments rampant with male-centric dialogues, unfair expectations based on their gender, lack of job security, social isolation, less opportunities for advancement, discrimination and sexual harassment (Duncan & Zeng, 2005) (Hersh, 2000) (Philbrick & Sherry, 2004) (Sherry et al, 2011) (HBR, 2013). Studies have shown that men and women are both drawn to STEM careers for similar reasons, including abilities in mathematics and science, but that despite these core commonalities their consequent experiences in the field are vastly different from one another (Hersh, 2000). Even those who do enter into STEM majors initially are likely to switch programs and/or ultimately not pursue a job in a STEM related field. Academic environments are reported to be uninviting females and riddled with gender

discriminatory qualities (Hersh, 2000) (Duncan & Zeng, 2005). One example of this experience can be seen through female students that report being patronized, ignored during classes, or not taken seriously in the work environment (Hersh, 2000). Many questions marks remain as to the reasoning behind this trend, but it is likely that stereotypical understandings of STEM careers are a driving force beneath these issues. Self-efficacy, schedules that allow a work-life balance, and mentoring/social support have been most consistently found to be related to persistence among women that persist in STEM academic environments and pursue careers in STEM related fields.

Self-Efficacy in Minority Groups

“According to career self-efficacy theory, one’s extent of consideration of specific occupations can be predicted from one’s self-efficacy for the occupations” (Church et al., 1992, 503). Self-efficacy requires knowledge and self-confidence both of which can be hard to achieve for those in underrepresented groups because of a distinct lack of role models and subsequent limited exposure to the pursuits in question. Lower amounts of self-efficacy have been shown to decrease the likelihood that one will pursue that career or academic path (Church, Teresa, Rosebrook & Szendre, 1992). This can create a cycle in which members of minority groups continue to be underrepresented in any given context. In male-dominated industries, women are the minorities and this has been shown to affect their resulting self-efficacy levels. According to the Harvard Business Review, women experience subtle gender biases in the workplace because qualities associated with leadership are traditionally associated with males and this can make it difficult for women to “internalize a leadership identity” (HBR, 2013, 62). Developing

that sense of leadership ability comes from modeling the behaviors of a role model and continuing to try these new behaviors on until one sticks and becomes your personal leadership style (HBR, 2013), without women in leadership roles it is much more difficult for women to take get themselves into higher positions. Self-efficacy plays a big part in that. In a group of high school students, female students reported less willingness to consider employment in occupations that are composed of mostly males (Church et al., 1992). These same high school females displayed higher levels of self-efficacy when considering jobs associated with females (Church et al., 1992), possibly because of their increased exposure to the idea and the numerous amounts of female role models present.

Justification

The progression of women's rights and gender equality is vital to the stability of the American economy. The face of the American workforce has changed for the better and women are now an integral part of that vision, but the limitations of the past are not easily overcome and occupational equality is not yet a reality. Traditional gender roles still pervade both the higher levels of academia and the work place. Glass ceilings are still barring women from reaching the higher ranks and many career markets are still very unbalanced in terms of gender distribution, including the transportation industry. Career fields that involve caring for others (such as teachers, nurses, and counselors) contain disproportionate amounts women and career fields that are dominated by women are generally less lucrative than those associated with males. The issue is not monetarily based but more accurately it can be viewed as women are not currently reaching their full potential in the working world and, as discussed above, the specific job market central to

the transportation industry is running out of staffing resources. The solution involves recruiting and retaining more individuals into the field but recruiting can't be effective if it is done in the dark. There is a distinct lack of research done on the topic of women working in the transportation industry. Research must be conducted in order to gain insight into this issue. It is somewhat understandable, but not necessarily acceptable, that this is a new area of research as the rights of women have only begun to make progress in the last 100 years or so and the occupational equality of women is still a developing trend, but movement in the direction of equal rights and occupational equality has to begin somewhere. Therefore, it is the assumption of this researcher that this study will contribute knowledge to an uncharted territory and the knowledge generated will hope to add value to the staffing needs of the transportation industry, the economic growth of America, and the continued progression of gender equality.

Hypotheses

1. Conventional occupational interests will be significantly *positively* associated with interest in choosing or pursuing a career in the transportation industry.
2. Work values (e.g. Comfort, achievement, flexible work hours/schedules) will be significantly *positively* associated with level of interest in a career in transportation.
3. High levels of traditional sex-type identity will be significantly *negatively* correlated with the level of interest in a career in transportation.
4. Levels of self-efficacy will be significantly *positively* correlated with levels of interest in a career in transportation.

5. The combination of conventional vocational interests, work values, feminine gender identity, and career self-efficacy will be significantly associated with level of interest in choosing and pursuing a career in transportation.

Definition of Terms

The independent variables in this study are vocational interests, work values, sex-type identity, and self-efficacy including perception of barriers. The outcome variable is the degree to which one is interested in a career in transportation.

Occupational Interests. Occupational interests will also be referred to as vocational interests and occupational types. Occupational types are defined as personality traits specifically associated with work environments. Similar to general personality traits occupational types are considered to be stable qualities of an individual. Occupational types can be consistently measured and are highly correlated with career decision making and overall career satisfaction.

Self-efficacy. Self-efficacy is defined as the judgment of one's capability to organize and execute specific tasks within socially and environmentally appropriate standards of success. Self-efficacy is further defined as a person's belief that they can complete the tasks necessary for success in any given performance and is incorporated into career models as an integral piece of career decision-making (Brown, 2002). Self-efficacy is comprised of self-confidence, personal interests and resulting goal-oriented motivation and all of these qualities have been noted as predictors of female persistence in male-dominated academic environments (Duncan & Zeng, 2005).

Perception of Barriers. Perception of barriers is defined as the degree to which one believes specific barriers are present in the work place. Barriers have been shown to play an integral role in the development of self-efficacy, specifically barriers (or perception of barriers) are known to make developing self-efficacy less likely. Logically, if one believes that there are obstacles in their way then they are less likely to feel that success is attainable. Barriers are defined as any influential factor that is expected to make career development difficult or unlikely.

Work Values. Values are a set of important and enduring beliefs or ideals about what is considered good and desirable and what is not considered good or desirable in a particular culture or subculture. Values by definition refer to the relative worth, merit, or importance of a particular aspect of work or life. Values tend to be somewhat abstract concepts that can be applied to many different situations. Work values are related to basic values in the sense that they are a subset of basic values and believed to be highly correlated with basic values. Values are formed very early in an individual's life, are greatly impacted by one's cultural upbringing and current environment, and are so heavily ingrained that they operate largely out of a person's or a culture's awareness (Brown, 1992).

Sex-type identities. Refers to the attitudes and beliefs most commonly associated with persons of similar genders. These traits reflect beliefs, attitudes, and behaviors traditionally associated with males and females respectively. Sex-type identity is the extent to which an individual has internalized, and is motivated to fulfill, these gender-based expectations. For the purposes of this study, sex-type identities are defined as the

composite presence of masculinity and/or femininity on the basis that the presence of either quality indicates a lack of androgyny or gender neutrality.

CHAPTER TWO: REVIEW OF THE LITERATURE

Introduction

As previously noted, very little research had been conducted specifically on the phenomena of women in the transportation industry. This lack of information made the efforts of the University of Denver and The National Center for Intermodal Transportation all that more enlightening and helpful. For the purposes of this literature review, the few studies that had been conducted on this specific population were reviewed first. This was followed by an investigation into the classical theoretical foundations of vocational psychology and a complimentary review of a more modern vocational theory. Conceptual understandings of sex-type characteristics were then explored along with consequent barriers that women experience as a result of their gender, which moved the analysis into more specific experiences of women in traditionally male-dominated settings. Lastly, this review concludes by venturing into occupational characteristics of the transportation environment and the associated values of the current transportation workforce. In place of extensive research on the specific topic of women in the transportation industry, the above referenced topics were explored in relation to their implications on the topic of women in male-dominated settings. It is the knowledge that was gained from this body of research that was then used to guide the creation and design of this study.

A qualitative study conducted by Hanson and Murkami in 2010 sought to uncover what factors contributed to women's success in the Transportation Industry by interviewing a group of eight senior-level women currently working in the transportation field. The study reported that women with successful careers in Transportation considered flexible work schedules, part-time options, and access to mentors/social networks as determinant of their career success (Hanson & Murkami, 2010); likewise, the interviewees from this study also noted that educational outreach and mentorship to young girls was vital to continued professional growth and highly valuable. It was further noted that the limited number of women in the industry seemed to breed a continued lack of women in the industry by restricting the pool of available talent and reducing a sense of social support for females (Hanson & Murkami, 2010). Two women involved in the study achieved graduate degrees in engineering and recalled being either the only female in their entire academic class or one of a few (Hanson & Murkami, 2010). Thus the overwhelming message from these professional women regarding closing the gender gap present in transportation was to establish a network and expand said network to include younger generations.

In 2004, Philbrick and Sherry conducted a study that examined people's perceived attraction to careers in the transportation industry. The findings suggested that persons who are most interested in pursuing a career in the transportation industry are those that had conventional vocational interests and the following work values: employer fringe benefits, opportunities for career advancement, leadership, travel, job security, and supportive management (Philbrick & Sherry, 2004). This study also noted that

participants had limited knowledge regarding the transportation industry, which was seen as a significant barrier to successful recruitment and industry growth (Philbrick & Sherry, 2004). So conventional interests and specific work values were found to be positively associated with the likelihood that one would pursue a career in transportation and a lack of knowledge about the industry was suggested to be a barrier.

Vocational Interests

In 1958 John Holland, presented a theory of person environment fit to explain vocational and occupational choice. He also developed the *Vocational Preference Inventory (VPI)*, which was designed to measure a person's preferences as they related to the topic of work. Holland's theory proposed that people's interests are trait qualities that can be organized into distinct categories (Anderson & Vandehey, 2006). Holland arranged these categories on a hexagon and further theorized that both work environments and individuals could be assessed for these occupational interests. Based on Holland's writings, the position of each category on the hexagon was considered meaningful. When a person or environment was shown to fit into one category it was likely that they also possessed qualities from the neighboring categories. When an individual (or work environment) showed high levels of occupational interests in neighboring categories it was considered to be consistent. In other words, according to Holland's theory, every occupational environment/person had qualities that fit into one or two sections located side by side on the hexagon and furthermore, that the opposite sides of the hexagon represented opposing qualities. This is similar in concept to a color wheel where purple and green have opposite color compositions and as a result are located on

opposite sides of the wheel from one another. When a person's occupational interests were found to be in opposing sections of the hexagon, it was considered to be "differentiated" and this idea of differentiation could be applied to both individuals and/or occupational environments. Occupations and/or individuals that were "differentiated" were considered to be more difficult to match with congruent environments or employees, but some groups suggested that differentiated people have an advantage in the workplace due to a variety of skills (Anderson & Vandehey, 2006). Holland further suggested that individuals are best utilized when they are in environments of other people who share their interests and vocational inclinations, a phenomenon that Holland referred to as congruence (Anderson & Vandehey, pg. 50, 2006). Holland theorized that understanding the degree of match between person and environment (congruence) would enable us to predict career choice and also job satisfaction, tenure and job performance (Andersen & Vandehey, 2006). He then went on to use this theory in his life's work and while doing so provided the psychological community with classical vocational theory. Holland's theory also states that both occupational environments and individuals can be categorized into six-distinct categories: realistic, investigative, artistic, social, enterprising and conventional or "RIASEC" for short (Holland, 1973). The theory further posits that people naturally seek out environments in which their abilities, interests, and preferences are valued and useful which suggests that there are identifiable qualities of individuals that match up with the qualities of certain environments (Holland, 1973). These psychological characteristics are referred to as a profile and the profiles generated by Holland's *Vocational Preference Inventory* are

considered to be innate and stable qualities of a person (Holland, 1973). This suggested that one can reliably measure these innate qualities of an individual and that they are not expected to change drastically over time. This indicated that there are distinct populations of people that match well with the environmental qualities of all industries respectively, including but not limited to, the transportation industry. Holland went on to further theorize that the more a person's personality profile matches his occupational environment the stronger the match between the two is considered to be (Anderson & Vandehey, 2006). Conversely, when a personality profile does not correspond with the work environment it is placed in, it is considered to be mismatched in which case neither the employee nor the work position will reach its full potential (Anderson & Vandehey, 2006).

Logically, if the characteristics of occupations traditionally viewed as male were only congruent to men, then women would not possess the same composition of vocational interests as measured by the *VPI* but we have seen that this is not the case. In 1973, Nancy Cole compared the dispersion of vocational interests of men to that of the vocational interests of women and found that there were no significant differences between the two groups, meaning that the same portion of both the male and female workforce populations respectively, possess interests present in each vocational category regardless of gender. In other words, many women have vocational interests similar to men. Thus, if there were no barriers, then most likely all other things being equal, we would expect to find the same number of men and women in various occupations. Despite the presence of societal forces that have for decades differentiated between

masculine jobs and feminine jobs, it has been found that both women and men have the same dispersion of occupational interests as each other (Cole, 1973). Therefore, the population of men with occupational profiles that fit well with the transportation industry is theoretically the same size as the population of women with that same occupational profile. Indicating that a male who works in transportation would have very similar occupational values as identified by Holland's *Vocational Preference Inventory* as would a female with the same interests regardless of their gender. Cole further states that this is an important finding because it allows interpretations of women's occupational interests to be better understood regardless of whether or not a specific career is considered to be traditionally male (Cole, 1973). If the proportion of males and females with transportation-congruent vocational profiles is equal, then logically one should expect to see equal proportions of gender demographic within that field, but it is known that this not the case. This means there is a distinct population of women that would fit well and enjoy working in the transportation industry, but as the numbers show, only a small portion of that demographic are currently employed in that industry. Furthermore, these findings suggested that there might be a portion of working women who are currently mismatched with their careers, because they possess the vocational interests that would more accurately align with the transportation industry.

It was also found that job hopefuls for any given occupation have vocational interests that very closely resembled the vocational interests of those already employed in that same field (Holland, 1990) which implies that you can further identify people who are likely to fit well with a career in transportation by identifying the vocational interests

of those who are already employed in the field. Based on this theory then, it is assumed that recruits with profiles that mirror those of people already in the field are assumed to also be well suited for the industry (Holland, 1990). Interestingly, of the six occupational interests posited by Holland, only conventional occupational interests were found to be present in individuals interested in the transportation industry (Philbrick & Sherry, 2004). It was hypothesized then that women likely to be interested in a career in transportation would have vocational interests similar to the scores of people currently in the field; specifically, it was hypothesized that women with high levels of conventional interests would be more likely to be interested in a career in transportation.

Occupational Values

A related theorist, Donald Super, conducted over a decade of work on the topic of career development and work values with his most notable contribution being the *Work Values Inventory (WVI)* which was created in 1957. Super theorized that work values were related to occupational choice and job satisfaction, in that the more one's occupational tasks reflect that person's self-view, the more satisfied they will be by their work (Andersen & Vandehey, 2006). He developed the *Work Values Inventory* in order to help people better understand their career decisions (Anderson & Vanhehey, 2006). The philosophy was that the more a person understands what they value, the better able they are to match themselves with a satisfying career. The *Work Values Inventory* measured the following 15 distinct work values within an individual: social, theory, art, mastery, economic-material, creativity, planning-supervision, variety, independence, conditions of work, associates, boss, security, prestige, and way of life (O'Connor &

Kinnane, 1961). These values were then dichotomized based on whether the motivation comes from within the individual (intrinsic values) or from outside of the individual (extrinsic values) which can also be thought of as a direct result of the work itself or a reward of some sort respectively (O'Connor & Kinnane, 1961).

In 2004, the National Center for Intermodal Transportation investigated the work values present in transportation workers in hopes to determine which of Holland's 15 work values may be associated with interest in the transportation industry. Of the 447 participants included in the study, over 80% of respondents reported that comfort (job security) and achievement (feeling of accomplishment) were very influential in their decision whether or not to pursue the transportation industry as a career (Philbrick, 2004). Qualitative research conducted with women currently employed in the transportation industry has reported that flexible schedules, part-time options, access to mentors, social support, opportunities for advancement and a sense of belonging contributed their overall sense of job satisfaction (Hanson & Murkami, 2010) (Sherry et al, 2011). As previously noted, these qualities are consistent with predictors of persistence found among women in engineering academic settings as well. Therefore it was hypothesized that the work values of comfort and achievement would prove significantly predictive of interest in a career in transportation.

Social Cognitive Theory

Derived from the foundational understanding of classical vocational theory, in 1986 social psychologist Albert Bandura, from the University of Iowa, proposed a theory that integrated the cognitive perspective into decision-making. While classical vocational

theory taught us that vocational interests are an innate quality and must be considered when choosing a career, Bandura's Social Cognitive Career Theory adds a cognitive component that places more emphasis on social learning (Bandura, 1986). Bandura suggests that self-efficacy, personal goals, and outcome expectations are the three main forces that motivate career development (Bandura, 1986). Self-efficacy is arguably the most widely accepted and talked about concept in current vocational theories and this concept has been included in most career development models. Self-efficacy is defined as a person's belief that they can complete the tasks necessary for success in any given performance and is incorporated into career models as an integral piece of career decision-making (Brown, 2002). Self-efficacy is more closely related to the cognitive skill of judgment rather than pure expectations (Bandura, 1986) and because self-efficacy involves judgment it requires a certain level of understanding about any given desired outcome and in the case of this study, an understanding of a collection of job tasks associated with a career in transportation. Using this understanding of how to complete a task, a person can then form concrete thoughts about the consequences of their attempting this task (Brown, 2002). These are referred to as outcome expectations and being able to form expectations of the outcome then allows an individual to develop interests, set goals, and attempt the task or tasks in question (Brown, 2002). In addition to evaluating past performances in a given arena, Bandura states that people also rely on social comparisons and external feedback from others in order to fully form a judgment of their own abilities (Bandura, 1986). Bandura also states that as the level of one's self-efficacy increases so does their confidence in their own ability to succeed at that given goal

(Bandura, 1986) which is a sentiment that has been proven in countless studies since that time.

Self-efficacy is comprised of self-confidence, personal interests and resulting goal-oriented motivation and all of these qualities has been noted as predictors of female persistence in male-dominated academic environments (Duncan & Zeng, 2005). Several academic majors can be attained on the pathway to a successful career in transportation including multiple types of engineering, logistics, supply-chain management and others. With roughly 10 percent of the engineering field currently comprised of women (DOL, 2010) it is also considered to be a non-traditional field for women and various engineering degrees can lead to a career in the transportation industry (Jarrett & Tchen, 2012). The attrition of females in engineering majors has been more than the average and has become a topic for research as a result. Women who complete their degrees in engineering were found to have three traits in common: a sense of social support, high self-efficacy and a strong belief that both men and women are equally capable of success (Duncan & Zeng, 2005, p. 17). The same predictive success factors may be applicable for women who pursue, accept, or continue with careers in the transportation industry. Keeping in mind that degrees in engineering are a stepping-stone to many career paths including careers in transportation. If true, then, self-efficacy and beliefs in gender equality were believed to greatly influence both choice and ultimately success in traditionally male work environments. And, by extension, self-efficacy is a concept that should prove fruitful in understanding and ultimately influencing efforts to recruit, retain, and promote more women into the transportation field. Therefore it was hypothesized

that high levels of self-efficacy would be associated with the level of interest one has in a career in transportation.

Gender Identity

The earliest published work/theories on gender differences suggest that there are biological and hormonal differences between sexes that lead to distinctly different abilities within each gender (Bussey & Bandura, 1999) however these are theoretical viewpoints that have been replaced with more sophisticated thinking and research. Evidence suggests that, contrary to previous thinking, socialization has more of an impact on gender difference than biological forces. Differences previously cited as a result of distinct genetic differences, such as mathematical abilities, have already been debunked as evidenced by work with identical twins and also by larger scale social trends that show an increase in female math achievements (Bussey & Bandura, 1999). Social influences and institutional forces have been noted as highly influential during gender identity development, particularly in the way that they provide information that can be used for social comparison and modeling during developmental phases of childhood (Bussey & Bandura, 1999). Likewise, during the identity formation stages of young adulthood society defines which opportunities are available to us, which then in turn drives our life path (Bussey & Bandura, 1999) and with stereotypical gender-roles still present in modern day society those opportunities are certainly affected by societal expectations. Bandura explained that these external forces become reflected in our internalized self-view which thus perpetuated the continuation of societally ascribed gender roles (Bussey & Bandura, 1999).

Enter Sandra Bem, best known for creating the *Bem Sex-Role Inventory (BSRI)* in 1974, a measure that is still popular and widely used in the field of gender identity research today. The *BSRI* is a checklist of traits traditionally associated with femininity, masculinity, and androgyny and in order to complete the measure test-takers simply indicated how applicable they believe that any one characteristic was to their internalized view of self. The resulting masculinity and femininity scores represent the degree to which an individual identifies with stereotypical standards of gender identity (Bem, 1974). Bem writes that she created the *BSRI* in hopes of prompting others to think critically about whether traditional gender roles are beneficial to society or not (Bem, 1974). She further postulated that individuals that exemplify traditional gender roles are merely reflecting society's gender expectations and that androgynous individuals should be further investigated as they seem likely to be more psychologically well rounded than those who limited themselves to society's standards of gender identity (Bem, 1974). In fact, a positive correlation has been found to exist between masculinity scores (as determined by the *BSRI*) and women's self-esteem, emotional intelligence, and leadership abilities (Ward, Popson, and DiPaolo, 2010). Thus providing further evidence that traditional gender roles have a limiting effect on performance and further suggests that movement away from traditional roles could prove more effective to women's career development.

Therefore, it was assumed that women who have internalized society's stereotypical gender roles are more likely to identify with those traditional gender role characteristics listed on the *BSRI*. Based on the knowledge gained from Bem's work on

the topic, it was expected that women with high degrees of stereotypical femininity as assessed by the *BSRI* would be more likely to engage in traditionally female pursuits and therefore show a low degree of interest in a career in the traditionally male transportation industry. In other words, it is hypothesized that high levels of female sex-type identity will prove to be predictive of low interest in a career in transportation.

Barriers in the Work Environment

Consistent with Holland's Person-Environment Fit Theory, characteristics of the work environment have been found to have a significant impact on career choice and satisfaction. For example, a study conducted in 2011 by the National Center for Intermodal Transportation explored the barriers and/or perceived barriers that kept women from entering into the transportation industry. Women employed in managerial positions were interviewed one on one by the researchers, and female non-management employees participated in a focus group (Sherry et al, 2011). Both managerial and non-managerial employees were also given a survey on the topic of being female in the transportation industry. Women reported that promotions were hard to obtain and guidance or sponsorship from a mentor was seen as necessary in order to be made aware of advancement opportunities (Sherry et al, 2011). Thus, it was suggested that a perception of barriers in the workplace could lead to lower self-efficacy and this has been shown to push more women towards careers that have been traditionally associated with females (Rivera, 2007). As previously mentioned, self-efficacy requires an understanding of what is needed to succeed. This understanding is usually based on the presence of role models through which social learning can occur. Through social

learning one is able to see what concrete and practical steps are necessary to succeed while also receiving support, which fosters a belief that achieving success is possible. Lack of education, and lack of role models in the transportation industry may also be acting as a barrier that keeps women from pursuing careers in the transportation industry because (generally speaking) ignorance makes achieving self-efficacy more difficult. Similar sentiments were heard in 2012 Summit Summary from the Council of University Transportation Centers [CUTC]:

Many students entering college and later the workforce are unaware of the transportation field as a potential career pathway and the best way to increase awareness and interest for the transportation field would be through early, persistent, and accurate outreach efforts. In addition to educating the younger generations there is a need to develop tools with which to educate parents, teachers and school counselors about the industry as well. [4]

Additional perceived barriers were reported by women in transportation including not wanting to do manual labor jobs, long hours, unpredictable work schedules and a “boy’s club” work environment (Sherry et al, 2011). Hanson and Murkami (2010) also noted that women in transportation value the ability to maintain a work-life balance and the option of flexible schedules. A flexible work schedule is defined as an environment in which the specific hours worked and/or number of hours worked are able to be changed when needed for hourly employees and for salaried employees productivity is not necessarily determined by number of hours worked but rather by quality of work, all in effort to help the employees maintain a healthy work-life balance (Council of Economic Advisors, 2010). In 2007 a report was published estimating that somewhere between 14.6% and 24.2% of all female workers with in the transportation industry

currently have flexible work schedules (McMenamin, 2007). Likewise, a report compiled in 2010 by the U.S. Council of Economic Advisors reported that with just under a quarter of employees allowed flexible work hours, the transportation industry currently ranks as one of the least flexible industries in the country (Council of Economic Advisors, 2010). It was noted in the same report that some industries would have more difficulty instituting new practices and policies that foster the idea of flexibility due to the shift-heavy nature of the work itself, but with tactics like job sharing, cross-training, shift-swapping, more vacation days, and small flexibility improvements regarding beginning and ending of scheduled shifts, significant improvements could still be made. (Council of Economic Advisors, 2010). The characteristics of work schedules, and/or the negative perception of work schedules, may be acting as a barrier to women pursuing careers in the transportation industry.

Women working in management roles in the transportation industry reported that their involvement with mentors early on in their careers was important to them and made a strong impact on their career growth and success (Hanson & Murkami, 2010). Mentoring can take on many different forms depending on the setting in which it begins. Informal mentoring requires that some sort of interaction occur between both the mentee and the mentor in which they both share thoughts and ideas and form a relationship (Mattei, 2001). Opportunities for informal mentoring may be limited for those who feel underrepresented within their organizations, resulting in reduced access to possible mentors for women in fields with a male majority (Mattei, 2001). Likewise, a 2005 study supported by The National Center for Engineering and Technology Education reported

that several forms of support were predictive of female academic persistence in the male-dominated field of engineering including formal and informal mentorships (Duncan & Zeng, 2005). The academic experience of women in engineering majors can be considered somewhat comparable to that of higher educational degrees for women in transportation careers such as logistics and supply chain management because of the core similarity of women in a setting that is traditionally male. Research on this topic has concluded that the all-male academic environment can indeed deter some women from staying in that concentration with noted barriers such as lack of social support from faculty, low female representation in the classroom, scrutiny from family/peers regarding career choice, and department environment (Duncan & Zeng, 2005). Conversely, this same study found that those who continued with engineering despite the barriers also shared the common characteristics of high self-efficacy, peer support, formal support programs, and successful role models (Duncan & Zeng, 2005).

The existence of actual or perceived barriers in the work environment constitute a significant source of information that can influence both self efficacy beliefs as well as choices to pursue or choose a career in transportation. Therefore, it was hypothesized that high levels of perceived barriers found in the work environment would negatively influence the choice of transportation as a vocation.

Summary

This chapter explored the most pertinent research related to effectively recruiting and retaining more women into the transportation industry. Results of the review showed that the transportation industry currently has the least amount of flexible scheduling for

both women and men and while the task may seem daunting, it is evident that there are improvements that can be applied to both shift and non-shift work, which could potentially improve the work experience of employees while also increasing the attractiveness of the industry to women. Additionally, support for both formal and informal mentorships were found to be effective in female career development both inside and outside of the classroom. However, these relationships can be difficult to establish and women often feel unsupported in these environments because of the low representation of women amidst traditionally male settings such as engineering and transportation.

Most importantly, certain personality characteristics have been established as highly correlated to certain occupational pursuits and women who enter into transportation are more likely to enjoy and remain in the industry if they have conventional occupational interests and high levels of self-efficacy. Consequently, it is suggested that transportation jobs with more flexibility in scheduling and available mentoring opportunities may be perceived as more attractive to prospective female incumbents and should be considered in future program/policy creation on the topic of recruiting women into transportation. Furthermore, it was established that individuals are most effective when there is a strong person-environment match and that people possess stable qualities related to occupational values/interests. Therefore, it was hypothesized that more flexibility, more mentoring, and a good fit between the person and the job would lead to an increased likelihood that a woman would pursue a career in transportation.

Taken together, this review suggests that these variables combined, including: vocational interests, work values, gender identity and self-efficacy, and various work barriers (as depicted in Figure 1) will be significantly associated with degree of choice and pursuit of a career in transportation.

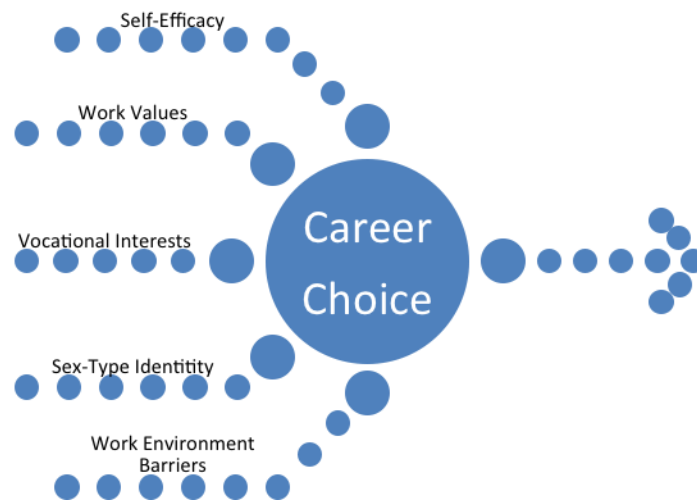


Figure 1. Proposed Model of Factors Influencing Interest in Transportation Careers.

Proposed Hypotheses

The questions investigated are:

1. Conventional occupational interests will be significantly *positively* correlated with interest in choosing and pursuing a career in the transportation industry.
2. Work values (e.g. Comfort, achievement, flexible work hours/schedules) will be significantly positively correlated with level of interest in a career in transportation.
3. High levels of traditional sex-type identity will be significantly *negatively* correlated with the level of interest in a career in transportation.

4. Levels of self-efficacy will be significantly positively correlated with level of interest in a career in transportation.
5. The combination of vocational interests, work values, sex-type identity and self-efficacy will be significantly associated with degree of choice and pursuit of a career in transportation.

CHAPTER THREE: METHODOLOGY

Participants

Participants included males and females employed in or seeking employment in the United States of America. This sample consisted of people who were currently involved in the transportation industry and those who were not currently part of the transportation industry. For the purposes of this study employment in the transportation industry was defined as individuals who were currently holding any position or academic major directly related to the transportation industry. People considered outside of the transportation industry were defined as those that were not currently employed in the transportation industry, which can include but is not limited to unemployed, employed in other industries, and students that held academic majors not directly related to the field of transportation. While both men and women were included in the study, the female demographic was the focal group and it was expected that more women than men would complete the survey due to the research topic of women in transportation. Only the female respondents were of interest this study and surveys completed by males were not included in the analyses or write-up of this research. All racial backgrounds were accepted into the study because racial differentiation was not important to this study.

Based on a series of analyses using G*Power (a statistical program) various estimates of the number of study participants needed to achieve satisfactory statistical

power were obtained. To run the statistical analyses and power analyses a number of assumptions needed to be made. The first assumption was that a power of .80 would be acceptable. This level was consistent with the level thought to be typical for most studies (CITE). In addition, as is customary, an alpha level of .05 was also selected. Lastly, due to the fact that previous studies have demonstrated a significant correlation between vocational interests and occupational choices it was assumed that at least a moderate effect size would likely be found. Given all of these assumptions then, it was estimated that in order to achieve a moderate effect size a sample of $N=278$ would be needed.

It was estimated that a minimum of 278 participants would be required to reach satisfactory levels of statistical power during data analyses. This study was looking for information relevant to the degree to which job seekers were interested in a career in the transportation industry. The sample was selected through convenience sampling methods. Participants were approached and solicited at conferences and/or meeting areas relevant to the transportation industry, additional respondents were secured by reaching out to relevant organizations and seeking permission to allow their staff members to participate. The survey was posted online via SurveyMonkey.com (an online tool used to gather and organize data from participants) and physical copies of the survey were used in face-face interactions where possible. Participation was anonymous and voluntary and those who participated were offered a lottery ticket, a food item, or a Starbucks gift card worth five U.S. dollars as an incentive for participation. Those who worked for a company that agreed to participate in the study were sent the survey via an email from the researchers and upon completion of the survey those participants were sent personalized

thank you messages via that same email address. No additional rewards were given to those who participated via email. All incentive items were given to the participant upon completion of the survey packet. No other rewards aside from those previously listed were offered to participants.

Both the online and physical survey packets contained the same items consisting of modified versions of the same five self-report measures and a demographic section.

Instruments

A survey instrument was developed for use in the study. The instrument consisted of modified and original measures designed to assess vocational interests, work values, sex-type identity, perceived barriers in the work environment, and self-efficacy along with other relevant demographic information. Due to the time constraints and the venues used for data collection the instruments were constructed in order to be completed in a limited amount of time. General instructions were included on each page encouraging the participants to be as honest as possible and also to provide them with a limited understanding of why this study was taking place in hopes of motivating the participants to complete the entire survey packet.

Modified Vocational Preference Inventory (MVPI). (Philbrick & Sherry, 2004).

A modified version of the *Vocational Preference Inventory* (1978) was used in this present study. The 1978 short-form version of the *VPI* consisted of 42 questionnaire items and was considered to be superior to the first draft of the measure because it was designed to minimize sex differences in response trends (Lowman & Shurman, 1982). Each of the constructs used in the *VPI* were based on the six occupational categories

present in Holland's vocational theory. The six occupational categories presented in Holland's vocational theory are realistic, investigative, artistic, social, enterprising, and conventional (RIASEC). In the original measure, each occupational type consisted of a scale comprised of seven questionnaire items respectively (Lowman & Shurman, 1982). It should be noted that several versions of the *VPI* were created and implemented in research during Holland's career and the very first version of this measure included 160 occupational titles, or survey items. For the purposes of this study, the researchers chose to reference the 1978 short-form version because of its specific consideration given to gender based differences.

The *MVPI* was originally used in the Philbrick & Sherry (2004) study. The *MVPI* consisted of six questionnaire items that described the six main Holland categories of work related activities and interests (RIASEC) as they related to the transportation industry. Each item had a 5-point Likert-scale response format. This section included a directional statement that read, "To what degree do you prefer work activities that focus..." and this statement served as a stem for the six corresponding questionnaire items. Examples of the items used in this section include, "...practical hands-on problems and solutions" and "predictability, definite procedures, routine, data, details and organization." In these examples, the occupational types described are realistic and conventional respectively. The Likert-scale rating response style ranged from a value of 1 in numerical value, where 1 indicates "Little or No Degree" to a response of 5 in numerical value, where 5 indicates a "Very Great Degree" of interest in those types of work activities.

Reliability analyses for the six item instrument (see items Q27 to Q32 in Appendix A) were conducted and for the sample of N=725 respondents Cronbach's Alphas was found to be = .69 (Philbrick & Sherry, 2004). In addition, item validity was obtained in that significant correlations were found with career choice and four of the six items ranging from $r = .074$ for Enterprising, $r = .129$ for Realistic, $r = .193$ for Conventional, and $r = .189$ for artistic. Not surprisingly, non-significant correlations were found for two items: $r = .068$ for Social and $r = .066$ for Investigative. Thus, the *MVPI* items reflecting Holland's Theory were differentially correlated which was not expected with choice of transportation as a career.

Modified Work Values Inventory (MWVI) (Philbrick & Sherry, 2004). A modified version of the *Work Value Inventory* developed by Donald Super in 1957 was used in this present study. The original measure was designed to identify the values present within an individual thought to influence vocational aspirations and decision-making. The *WVI* (1957) consisted of 45 test items composed of simple statements representative of various intrinsic and extrinsic personal values related to work environments (Super, 1957). There were 15 work values reflected in the theory behind the *Work Values Inventory* (1957) which were as follows: social, theory, art, mastery, economic-material, creativity, planning-supervision, variety, independence, conditions of work, associates, boss, security, prestige, and way of life (Connor & Kinnane, 1961). These values were ultimately dichotomized into intrinsic values and extrinsic values where intrinsic values speak to a direct aspect of the work and extrinsic values describe rewards or consequences secondary to the work itself (Connor & Kinnane, 1961). An example of an

intrinsic work value would be altruism, or work that helps others, and an example of an extrinsic work value would be employer provided benefit packages like tuition reimbursement or wellness programs. Participants were given an inverted Likert-scale with responses ranging from 5 “Very Important” to 1 “Unimportant” (Super, 1957). This original measure was modified into the *MWVI*.

The *MWVI* was developed using a standard Likert-scale response format where 1 indicated a low-level of influence on the individual and a 5 indicated a high-level of influence in the values listed. This was done in order to establish consistency across the comprehensive instrument used in this study. The *MWVI* consisted of 15 questionnaire items, each of which represented each of the work values expressed above. The directions listed on the modified measure included in this study stated, “Please circle the number that indicates the extent to which the factor would affect your decision to take a job in transportation.” This provided the stem for each individual survey item. Examples of survey items from this section included, “...potential for significant financial reward” and “flexible hours/work schedules.”

Reliability of the fifteen-item *MWVI* was reported to be a Cronbach’s Alpha = .816 for a sample of N= 689 respondents. In addition, validity of the instrument was established in that significant correlations between the individual work values and choice of a career in transportation were obtained for the work values of: travel, opportunities for advancement, and financial reward. Non-significant correlations were obtained between choice of career in transportation and the other remaining values, thus demonstrating that the different values were reflective of differential choice. The

Modified Work Values Inventory (see items Q1 to Q15 in Appendix A.)

Bem Sex Role Inventory (BSRI) (1974). A modified version of the *BSRI* was developed to measure the amount of sex-role identity present as defined by traditional gender roles. Sandra Bem created the *BSRI* (1974) on the conceptual basis that certain personality characteristics were seen as more socially desirable for each gender respectively and further that the scores produced by the measure indicated the extent to which people have internalized these traits (Bem, 1974). The original measure consisted of 60 items, each listing one characteristic such as, “Affectionate,” “Ambitious,” and “Dominant” (Bem, 1974). Each characteristic was constructed to represent masculinity, femininity, or androgyny. Responses were indicated using a 7-point Likert-scale. Respondents placed a numerical value next to each word, where a response of 1 would have indicated a low sense of identification (“Never or Almost Never True”) to the listed characteristic word, and a 7 would have indicated a high sense of identification (“Always or Almost Always True”) with the listed characteristic. During the scoring process, the numerical responses were then written into columns on the lower portion of the measure. Each column was organized into feminine traits, masculine traits, or androgynous traits and numerical scores were calculated by adding the values of the numbers in each column respectively. Total numerical values of each category (Feminine, Masculine, Androgynous) were then compared to one another and the highest value was considered to be the test-taker’s identified sex-role.

For the purposes of this study a modified version was created and composed of 12 survey items (see items Q36-Q45, Q68, Q69 in Appendix A) consisting of statements

representative of the feminine and masculine qualities described in the *BSRI*. No androgynous characteristics were included. The instructions served as the stem for each following survey item in this section. The instructions were stated as, “To what degree do you agree, or disagree, with the following...” with corresponding items such as, “I find it easy to sympathize with others” and “I am willing to take risks in the workplace.” Responses were collected using a 5-point Likert-scale which ranged from 1 “Little or No Degree” to 5 “Very Great Degree.” The 5-point Likert-scale was used in place of the original 7-point Likert-scale in order to enable response-style consistency throughout the measure. The final two items used in this construct were self-rating items also designed to measure levels of internalized gender-identity. These two items (Q68 & Q69) were rated using a 10-point self-rating scale which ranged from 1 “Not Important” to 10 “Very Important.” Items in this section included, “On a scale of 1 to 10 how important is it to you to have a job traditionally associated with females” and “On a scale of 1 to 10 how feminine do you feel that you are?” The modified version of the *Bem Sex Role Inventory (BSRI)* has not yet been validated and the researchers acknowledge that this was a limitation of this study. This modified version of the *Bem Sex Role Inventory* can be found in Appendix A.

Gender Issues Survey (Sipe, Fisher & Johnson, 2009). Data on perceived barriers and levels of self-efficacy were collected using two modified measures, one of which was the Gender Issues Survey, a measure created by Sipe, Fisher, and Johnson (2009). This measure was designed to assess the degree to which individuals anticipated that barriers would affect the careers of women (Sipe et al., 2009). The scale consisted of nine-items

that described various barriers in relation to women's career development; Examples, of these items included, "Women will be paid less because of the gender," and "Women will face gender-specific biases or obstacles to their success" (Sipe et al., 2009). The instructions were stated as, "To what degree do you believe that..." and each corresponding item was responded to using a 5-point Likert-scale where responses ranged from 1 or "Little or No Degree" to 5 or "Very Great Degree." The Gender Issues Survey was shown to possess a coefficient alpha of .87 therefore meeting the minimum coefficient criterion requirement of .70 (Sipe et al., 2009). The Gender Issues Survey was pretested on one hundred individuals by the creators in 2006 before its final version was agreed upon (Sipe et al., 2009). This measure was used to gather data on how many barriers participants expected would affect women's career development. The gender issues items used in this study were included in Appendix A (see items Q54 to Q62).

Self-Efficacy in Transportation Items (SETI). For the purposes of this study, eight new and original items were developed for use in this study to be included in a scale designed to measure self-efficacy related to transportation careers and jobs. These items also used a 5-point Likert-scale ranging from 1 "Little to No Degree" to 5 "Very Great Degree." The instructions were listed as, "To what degree do you agree or disagree with the following..." and corresponding questions included "I am confident that I am an effective employee in my company," and "I have skills that are valuable to the transportation industry," and "Consider yourself to be sufficiently skilled to work in the transportation industry?" These questionnaire items were tailored to be specific to the transportation industry but have not yet been empirically validated. It is acknowledged

by the researcher that this lack of empirical validation was a limitation of the study. A total of 8 items (see items Q42 to Q46, Q50 in Appendix A) were combined to measure the Self-Efficacy construct present in the study.

Career Choice. Two single item measures were included to assess the extent to which survey respondents were likely to pursue (LTP) or likely to accept (LTA) a job in the transportation industry. Pursuit of and/or acceptance of a career in transportation were the dependent variables used in this study. The items had previously been used in the Philbrick & Sherry (2004) study and were considered to possess sufficient face validity to warrant inclusion in the present study. These items also used a 5-point Likert-scale ranging from 1 “Little to No Degree” to 5 “Very Great Degree.” The instructions were listed as, “To what degree do you agree or disagree with the following...” and corresponding questions included: “would you pursue a job in the transportation industry?” and also “would you accept a job in the transportation industry?” These two survey items (see items Q25 and q26) were included in Appendix A.

Demographic Section. Both the online and physical versions of the comprehensive measure included a demographic section with items related to the research topic. Demographic survey items included gender, age, race, number of years employed in their current field, highest level of education achieved, and whether or not their current job was management or non-management. This section was attached to the back of the physical survey and included on the last page of the online format. Both the physical and online survey indicated that completion of the demographic section was optional. *The demographic items used in this study were included in Appendix A.*

Procedure

Following approval from the University of Denver's Institutional Review Board several sampling efforts were made at various times over the course of 16 months. Data collection began during January of 2013 and continued until March 2014. During this time period the researcher attended conferences and networking events directly related to the transportation industry where two collection methods were implemented. First, individuals were informed of the research topic and purpose and then asked if they were interested in completing an online-formatted survey. In the event that they volunteered their participation, their email addresses were collected and a correspondence including a link to the online formatted survey via Survey Monkey was sent accordingly. The second approach implemented involved the administration of a paper and pencil survey to willing participants. This approach was used when the amount of potential respondents present at any given event were numerous to the point that individual emails would not have been effective.

Additional efforts were made to contact individuals employed in middle and upper management positions working with companies and/or organizations within the transportation industry. These individuals were briefly informed of the research topic/purpose and voluntary participation in the study was made available. Those who agreed to participate were given an email from the researchers (which included a brief description of the study and the link to the online formatted survey) and asked to send said email out to their female employees. The email informed possible participants that their completion of the survey was completely voluntary.

Finally, the researchers attempted to recruit participants who were members of women's organization or who were attending relevant conferences and/or seminars. For sufficient power a sample of at least 278 participants was sought. Given the limited resources and the exploratory nature of this research, a sample of convenience was obtained. Individuals solicited via this method of sampling were informed of the anonymous nature of the survey and strongly assured that their responses could not and would not be shared with their companies in any way shape or form. There was no identifying information present in the survey unless the participants chose to include their email for the purposes of receiving results.

All responses collected from participants were kept strictly confidential. In the event that a participant included their email address on the survey, in order to receive information on the results of the study, responses were maintained as confidential. No identifying data was shared with any single person outside of the researchers. Completion time of the online formatted survey was estimated to be between 10 and 15 minutes. Completion time of the paper and pencil survey was also estimated to be between 10 and 15 minutes.

Informed Consent

Due to the fact that this study was part of a larger study IRB approval was obtained by the National Center of Intermodal Transportation prior to the implementation of the study. Survey items being implemented have previously been approved by the IRB and the research was conducted under the supervision of Dr. Patrick Sherry at The University of Denver.

CHAPTER FOUR: RESULTS

The purpose of this chapter was to present the research findings derived from the data collected as outlined in Chapter 3. Several demographic questions (see Table 1) were asked in order to better understand the characteristics of the sample, however, only a subset of these data were necessary to conduct the analyses. A total of 363 people participated in the survey research; however, 89 of those individuals were males and 43 did not specify their gender. The remaining 231 participants were women. Only the female participants were included in statistical analyses because women were the target population for this study. The gender composition of all participants was listed in Table 1, but only respondents who indicated “Female” were included in any further descriptive, correlational, and/or regression analyses. Please refer to Table 1 for the descriptive statistics on the demographic items.

Data Analysis

Simple descriptive statistics, bivariate correlational analyses and a hierarchical regression analysis were conducted in order to examine the relationship between the independent variables, (Holland’s Occupational Types, Super’s Work Values, Amounts

Table 1

Descriptive Statistics for the Demographic Items

Variable		N	Percent
Gender	Female	231	63.6
	Male*	89*	24.5*
	Did Not Specify*	43*	11.8*
Age	18-29	80	34.6
	30-39	39	16.9
	40-49	41	17.7
	50-59	15	6.5
	60 and above	1	.4
Level of Position	Managerial	73	31.6
	Non-Managerial	87	37.7
	Did Not Specify	71	30.7
Time in Transportation Career	Less than 1 year	20	8.7
	1-5 yrs	83	35.9
	6-10 yrs	31	13.4
	11-15 yrs	18	7.8
	16-20 yrs	18	7.8
	21-25 yrs	15	6.5
	26-30 yrs	9	3.9
	31-35 yrs	8	3.5
	36 yrs or more	10	4.3
	Did Not Specify	19	8.2
Race	White	160	69.3
	Latino/Latina	18	7.8
	African-American	6	2.6
	Asian	24	10.4
	American Indian	3	1.3
	Pacific Islander	5	2.2
	Did Not Specify	15	6.5
Highest Level of Edu. Achievement	GED	1	.04
	H.S. Diploma	8	3.5
	Some College	21	9.1
	Vocational Degree	3	1.3
	Associates Degree	15	6.5
	Bachelors Degree	69	29.9
	Masters Degree	53	22.9
	Doctoral Degree	4	1.7
	Did Not Specify	57	24.7

*Note: *Not included in any further analyses.*

of BEM's Gender Identity, Work environment barriers, and Levels of Self Efficacy) as they relate to (degree to which one is likely to pursue or accept a job in transportation) the dependent variable(s). Subscales were created for all independent variables except for Occupational Preferences. Occupational Preferences were not separated into composite subscales due to the mutually exclusive nature of the theory. Sex-Type Identity was first examined as two subscales (Feminine and Masculine), but was ultimately combined into one scale referred to as Sex-Type Identity. Work values were composed into Intrinsic Values and Extrinsic Values subscales. Perceived barriers were combined into one composite Barriers Subscale, and Self-efficacy was also combined into one composite Self-efficacy score.

Holland's Occupational Preferences

The descriptive statistics for each occupational category were as follows: Realistic (x=4.05, SD=.921, N=231) Analytic (x=4.27, SD=.720, N=231) Artistic (x=3.24, SD=1.31, N=231) Social (x=4.22, SD=.931, N=231) Enterprising (x=3.93, SD=.993, N=231) Conventional (x=3.45, SD=1.15). The descriptive statistics for Occupational Preferences can be found in Table 2.

Table 2

Descriptive Statistics for Occupational Preferences (RIASEC)

	N	Mean	Std. Deviation
Realistic	231	4.0519	.92166
Investigative	231	4.2684	.72038
Artistic	231	3.2381	1.31199
Social	231	4.2208	.93190
Enterprising	231	3.9307	.99322
Conventional	230	3.4522	1.14643

Reliability of the Occupational Preferences Scale had a Cronbach's Alpha level of .634 among female respondents. There were six-items included in this scale and each item was vital to the conceptual basis of the occupational preferences theory; therefore, it was not possible to remove any items in order to increase the alpha level. The full reliability analysis can be found in Table 3 and Table 4.

Table 3

Reliability Analysis: RIASEC Occupational Preferences

<i>Case Processing Summary</i>			
		N	%
Cases	Valid	230	99.6
	Excluded	1	.4
	Total	231	100.0

Table 4

Reliability Statistics: Occupational Preferences

Cronbach's Alpha	N of Items
.634	6

Bivariate correlation analyses revealed that significant correlations exist between occupational preferences and the target dependent variables. The dependent variables were likely to pursue a job in the transportation industry (LTP) and likely to accept a job in the transportation industry (LTA). Of the Holland's Occupational Types significant correlations were found between Realistic type and LTP ($r=.479$, $N=231$, $p<.01$) and LTA ($r=.496$, $N=231$, $p<.01$), Investigative type and LTP ($r=.178$, $N=231$, $p<.01$) and LTA ($r=.165$, $N=231$, $p<.01$), Enterprising type and LTP ($r=.240$, $N=231$, $p<.01$) and

LTA ($r=.183$, $N=231$, $p<.01$), and finally Conventional type and LTP ($r=.319$, $N=231$, $p<.01$) and LTA ($r=.302$, $N=231$, $p<.01$). The bivariate correlations between RIASEC Occupational Preferences and the dependent variables can be found in Table 5. Interestingly, Artistic types and social types showed negative correlations with both dependent variables (LTP and LTA) although none were at statistically significant levels. The strong correlation between Realistic types and Conventional types and the dependent variables (LTP and LTA) were hypothesized to exist and are further supported by the negative correlations between the dependent variables (LTP and LTA) and the Artistic and Social occupational types as Artistic and Social preferences are on the opposing sides of Holland's hexagon. Based on previous research conducted in 2004 by Philbrick and Sherry, correlations between Conventional types and LTP/LTA were expected to be present and these findings support the proposed hypothesis that Conventional Interests would be significantly positively correlated with the likelihood that one would pursue or accept a career in transportation. Correlations between RIASEC Occupational Preferences and the dependent variables can be found in Table 5.

Table 5

Bivariate Correlations Between Occupational Preferences (RIASEC) and LTP/LTA

		Likely to Pursue N=231	Likely to Accept N=230
Realistic	Pearson Correlation	.479**	.496**
	Sig. (2-tailed)	.000	.000
Investigative	Pearson Correlation	.178**	.165*
	Sig. (2-tailed)	.007	.012
Artistic	Pearson Correlation	-.125	-.120
	Sig. (2-tailed)	.058	.069
Social	Pearson Correlation	.020	-.022
	Sig. (2-tailed)	.768	.745

Enterprising	Pearson Correlation	.240 ^{**}	.183 ^{**}
	Sig. (2-tailed)	.000	.005
Conventional	Pearson Correlation	.319 ^{**}	.302 ^{**}
	Sig. (2-tailed)	.000	.000

Note. ** $p < 0.01$, * $p < 0.05$

Correlational analyses were also conducted looking at the associations between all survey items. The table containing correlations between all items was included in Table 57 (Appendix B). For Holland's Occupational Types several of the occupational categories were found to be significantly associated with the dependent variables (LTP and LTA). Those categories were Realistic type ($r=.479$, $p<.001$, $N=231$), Investigative type ($r=.178$, $p<.01$, $N=231$), Enterprising type ($r=.240$, $p<.001$, $N=231$), and Conventional type ($r=.319$, $p<.001$, $N=230$). This means that Social types and Artistic types were not associated with either LTP or LTA. Likewise as the theory predicted, Realistic Interests held a significant association with Investigative ($r=.352$, $p<.001$, $N=231$), Enterprising ($r=.270$, $p<.001$, $N=231$), and Conventional Interests ($r=.385$, $p<.001$, $N=230$) but failed to show any significant relationship with Social and/or Artistic preferences. Five of the six types showed significant correlations with the Intrinsic Values Subscale (all but Conventional) while only four of the six categories showed significant associations with the Extrinsic Values Subscale (Artistic, Social, Enterprising, and Conventional). Only Social and Artistic types showed a significant correlation with the Barriers subscale, while interestingly every occupational type except Social and Artistic were found to have significant correlations with Self-efficacy. This finding suggests that, as outlined in the foundational theories, perception of barriers leads to a decrease in self-efficacy. Lastly, the Sex-Type Identity Scale was found to have

significant associations with Investigative, Social, Enterprising, and Conventional types. Generally speaking these findings are supportive of the expectations of this study. These results will be discussed further in Chapter Five.

Femininity, Masculinity, and Sex Type Identity

The Sex-Type Identity scale was first examined as two subscales (Feminine and Masculine) and then combined into one composite Sex-Type Identity score. Reliability analyses were run on both the Femininity subscale and the Masculinity subscale before creating the composite Sex-Type Identity subscale.

The Femininity Scale was made of seven-items in total including five Likert-format items and two self-rating items. The initial reliability of the seven-item femininity scale was .454 among female respondents (N=231). The reliability analysis of the seven-scale femininity subscale can be found in Table 6, Table 7, and Table 8. The reliability analysis was used to evaluate which items strengthened the reliability of the scale and which items weakened the reliability.

Table 6

Case Processing Summary: Seven-Item Femininity Subscale

		N	%
Cases	Valid	230	99.6
	Excluded ^b	1	.4
	Total	231	100.0

Table 7

Reliability Statistics: Seven-Item Femininity Scale

Cronbach's Alpha	N of Items
.454	7

Table 8

Item-Total Statistics: Seven-Item Femininity Subscale

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Social	26.256522	16.794	.297	.394
Sympathetic	26.400000	16.713	.359	.380
Conflict Resolution	26.291304	18.277	.164	.440
Empathetic	26.608696	17.121	.358	.389
Sensitive	26.221739	17.798	.283	.413
How important is it to you to have a job that is traditionally associated with females?	27.965217	11.501	.199	.484
On a scale of 1 to 10: How feminine do you feel that you are?	23.021739	13.200	.202	.443

The self-rating item, “How important is it to you to have a job traditionally associated with females” was shown to decrease the Alpha value and therefore was removed and the subscale was re-examined using the remaining six-items. The reliability analysis of the six-item femininity subscale was shown to have an alpha level of .475 (N=231). The reliability analysis of the six-item femininity subscale can be found in Table 9, Table 10, and Table 11.

Table 9

Case Processing Summary: Six-Item Femininity Subscale

		N	%
Cases	Valid	231	100.0
	Excluded ^b	0	.0
	Total	231	100.0

Table 10

Reliability Statistics: Six-Item Femininity Subscale

Cronbach's Alpha	N of Items
.475	6

Table 11

Item - Total Statistics: Six-Item Femininity Subscale

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Social	23.7532	9.030	.293	.406
Sympathetic	23.8918	8.975	.359	.382
Conflict Resolution	23.7835	9.936	.213	.446
Empathetic	24.1039	9.120	.405	.374
Sensitive	23.7143	9.327	.410	.382
On a scale of 1 to 10: How feminine do you feel that you are?	20.5368	6.415	.120	.652

The second self-rating item, “How feminine do you feel that you are” was shown to decrease the alpha level of the six-item subscale significantly and was removed as a result. The remaining five-items were included in the third reliability analyses of the Femininity Subscale. The resulting five-item Femininity scale was shown to have an alpha level of .652 among female respondents (N=231). The reliability analysis for the final five-item Femininity Subscale can be found in Table 12, Table 13, and Table 14. The value of .652 was the highest alpha level found among the Femininity Subscale and as a result the five-item Femininity Subscale was used during future analyses including the composition of the composite Sex-Type Identity Subscale.

Table 12

Case Processing Summary: Five-Item Femininity Subscale

		N	%
Cases	Valid	231	100.0
	Excluded	0	.0
	Total	231	100.0

Table 13

Reliability Statistics: Five-Item Femininity Subscale.

Cronbach's Alpha	N of Items
.652	5

Table 14

Item Total Statistics: Five-Item Femininity Subscale

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Social	16.3333	4.406	.307	.656
Sympathetic	16.4719	4.250	.427	.589
Conflict Resolution	16.3636	4.893	.300	.645
Empathetic	16.6840	4.234	.540	.538
Sensitive	16.2944	4.530	.499	.564

The two self-rating items were not included in the final Femininity subscale, but descriptive statistics for each self-rating item were included in Table 15. The range of responses possible for each self-rating item was 1 to 10 where 1 indicated a low degree and 10 indicated a high degree. The average score for the first self-rating item, “How important is it to you to have a job that is traditionally associated with females” was very low ($x=2.49$, $SD=2.29$) where as the second self-rating item had a higher average score ($x=7.41$, $SD=1.96$). This suggested that participants placed little value on the idea of

having a job that is traditionally associated with females, but that participants also considered themselves to be more feminine than average. This finding would prove useful in developing new tools to assess femininity and gender roles in traditionally male industries.

Table 15

Descriptive Statistics: Self-Rating Items

	N	Minimum	Maximum	Mean	SD
How important is it to you to have a job that is traditionally associated with females?	230	1.00	10.00	2.495	2.292
How feminine do you feel that you are?	231	1.00	10.00	7.419	1.965

Average response rates for the Femininity Subscale were as follows: social (x=4.20, SD=.912), sympathy (x=4.06, SD=.834), conflict resolution (x=4.17, SD=.737), empathy (x=3.85, SD=.737), and sensitive (x=4.24, SD=.673). Descriptive statistics for the Femininity Subscale can be found in Table 16. In order to further investigate the relationship between this subscale and the Masculinity Subscale, a total Femininity Score was calculated by adding up the five-items included in the Femininity Subscale.

Descriptive statistics for the total Femininity Score were included in Table 24 (Page 64).

Table 16

Descriptive Statistics: Femininity Subscale

	N	Mean	Std. Deviation
Social	231	4.2035	.91232
Sympathetic	231	4.0649	.83413
Conflict Resolution	231	4.1732	.73743
Empathetic	231	3.8528	.73720
Sensitive	231	4.2424	.67381

The Masculinity Subscale was comprised of five-items and was shown to have an initial Alpha level of .466 among the female respondents (N=231). A complete reliability analysis can be found in Table 17, Table 18, and Table 19. Items were assessed for the impact on the alpha level and those that decreased the reliability were removed. The analysis was run again after removing any items shown to decrease the alpha.

Table 17

Case Processing Summary: Masculinity Subscale

		N	%
Cases	Valid	230	99.6
	Excluded ^b	1	.4
	Total	231	100.0

Table 18

Reliability Statistics: Masculinity Subscale

Cronbach's Alpha	N of Items
.466	5

Table 19

Item Total Statistics: Masculinity Subscale

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Dominant	13.9522	5.583	.139	.477
Risk taking	13.3261	4.343	.385	.305
Willing to take a stand	13.5957	5.500	.082	.527
Defends own ideas	13.2913	4.941	.330	.360
Ambitious	13.7304	4.469	.334	.344

The “Willing to Take a Stand” item was shown to decrease the alpha level and was therefore removed from the masculinity scale. The new alpha level of the four-item masculinity scale was .527 among female respondents (N=231). The final Masculinity Subscale consisted of four-items. The reliability analysis for the final four-item Masculinity Subscale can be found in Table 20, Table 21, and Table 22.

Table 20

Case Processing Summary : Four-Item Masculinity Subscale

		N	%
Cases	Valid	230	99.6
	Excluded ^b	1	.4
	Total	231	100.0

Table 21

Reliability Statistics: Four-Item Masculinity Subscale

Cronbach's Alpha	N of Items
.527	4

Table 22

Item Total Statistics: Four-Item Masculinity Subscale

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Dominant	10.5739	4.045	.219	.530
Risk taking	9.9478	3.368	.332	.440
Defends own ideas	9.9130	3.835	.300	.469
Ambitious	10.3522	3.076	.416	.356

The four-item Masculinity Subscale was used during the creation of the composite Sex-Type Identity Scale. Despite the final Subscale including only four-items, the descriptive

statistics for all five masculine items were included in the report. Average responses for the five masculine items were as follows: Dominant ($x=3.02$, $SD=.841$), Risk Taking ($x=3.64$, $SD=.967$), Willing to take a stand ($x=3.37$, $SD=.986$), Defends Own Ideas ($x=3.68$, $SD=.830$), and Ambitious ($x=3.24$, $SD=.988$). Descriptive statistics for the Masculinity Subscale were included in Table 23. A composite Masculinity Score was created by adding up the four-items used in the Masculinity Subscale. Descriptive statistics for the Masculinity Score were included in Table 24.

Table 23

Descriptive Statistics: Masculinity Items

	N	Mean	Std. Deviation
Dominant	231	3.0216	.84156
Risk Taking	231	3.6407	.97619
Willing to Take a Stand	231	3.3723	.98683
Defends Own Ideas	230	3.6826	.83019
Ambitious	231	3.2468	.98893

Table 24

Descriptive Statistics: Femininity Subscale Total and Masculinity Subscale Total

	N	Range	Min	Max	Mean	SD	Variance
Femininity Score	231	16.00	9.00	25.00	20.5368	2.53277	6.415
Masculinity Score	230	12.00	8.00	20.00	13.5957	2.34511	5.500
Sex-Type Identity Score	230	26.00	21.00	47.00	37.5348	4.08385	16.678

In order to better understand the underlying Sex-Type Identity construct, the total Masculinity Score was compared to the total Femininity Score and the degree of correlational strength suggested that each subscale was measuring the same construct ($r=.268$, $N=230$, $p<.01$). Correlations between the two subscales were included in Table

25. As such the two scales were combined to create one scale referred to the Sex Type Identity Scale. The alpha level of the nine-item Sex Type Identity scale was .647 among the female respondents (N=231). Reliability analysis of the Sex-Type Identity Scale was included in Table 26, Table 27, and Table 28.

Table 25

Bivariate Correlations between Femininity, Masculinity, and Sex Type Identity Totals

		Femininity	Masculinity	Sex Type Identity
Femininity	Pearson Correlation	1	.209**	.663**
	Sig. (2-tailed)		.001	.000
Masculinity	Pearson Correlation	.209**	1	.736**
	Sig. (2-tailed)	.001		.000
Sex Type Identity	Pearson Correlation	.663**	.736**	1
	Sig. (2-tailed)	.000	.000	

Note. **. Correlation is significant at the 0.01 level N=230

Table 26

Case Processing Summary: Sex-Type Identity

		N	%
Cases	Valid	230	99.6
	Excluded ^b	1	.4
	Total	231	100.0

Table 27

Reliability Statistics: Sex-Type Identity

Cronbach's Alpha	N of Items
.647	9

Table 28

Item Total Statistics: Sex-Type Identity

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Dominant	31.1348	12.956	.215	.644
Risk taking	30.5087	11.290	.419	.594
Defends own ideas	30.4739	12.940	.225	.642
Ambitious	30.9130	11.861	.312	.624
Social	29.9522	12.369	.275	.632
Sympathetic	30.0826	12.216	.360	.611
Conflict Resolution	29.9826	12.672	.333	.618
Empathetic	30.3000	12.132	.447	.594
Sensitive	29.9043	12.724	.386	.610

A new composite variable was also computed in which all nine-items used in the Sex-Type Identity Scale were combined to create one total score. This new score was meant to represent the total amount of traditional gender characteristics possessed by each respondent. Values of the total Sex-Type Identity score ranged from 18 to 44 with a mean score of 34.1 among females (SD=3.86). Descriptive statistics on the composite Sex-Type Identity score were included in Table 24 (Page 64).

To further check for the validity of the Sex Type Identity (STI) scale, bivariate correlations were run between it and the two previous Femininity (FEM) and Masculinity (MAS) subscales. Significant associations were found to exist: STI and FEM ($r=.787$, $N=230$, $p<.01$), STI and MAS ($r=.759$, $N=230$, $p<.01$). This provided further support for the combined Sex Type Identity scale. Correlational statistics on these three scales were included in Table 25 (Page 65). The Sex-Type Identity Scale was included in the

correlational analyses that compared all the scales to the dependent variables (LTP and LTA). No significant correlation was found to exist between Sex-Type Identity and either dependent variable (LTP or LTA). Correlational analyses for all variables were included in Table 57 (Appendix B).

During correlational analyses several other significant associations were found to be present between the Sex-Type Identity Scale and the other variables. A statistically significant correlation was found between the Sex-Type Identity Scale and both the Intrinsic ($r=.421$, $p<.001$, $N=230$) and Extrinsic ($r=.254$, $p<.001$, $N=228$) Values Subscales. Significant associations were found between the Sex-Type Identity Scale and Investigative ($r=.251$, $p<.001$, $N=230$), Social ($r=.221$, $p<.001$, $N=230$), Artistic ($r=.161$, $p<.05$, $N=230$), and Enterprising ($r=.241$, $p<.001$, $N=230$) Occupational Types. Lastly, a significant relationship was found between the Sex-Type Identity Scale and Self-Efficacy ($r=.215$, $p<.001$, $N=227$). These findings were included in Table 57 (Appendix B) and were further discussed in Chapter Five.

Super's Work Values

Each of the fifteen items represented one work value. The fifteen-item Work Values Scale had a Cronbach's Alpha of .879 among female respondents ($N=229$). The reliability analysis for the fifteen-item Work Values Scale was included in Table 29, Table 30, and Table 31.

Table 29

Case Processing Summary: Fifteen-Item Work Values Scale

		N	%
Cases	Valid	229	99.1
	Excluded	2	.9
	Total	231	100.0

Table 30

Reliability Analysis: Fifteen Item Work Values Scale

Cronbach's Alpha	N of Items
.879	15

Table 31

Item-Total Statistics: Fifteen-Item Work Values Scale

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Challenges	52.6681	85.407	.517	.873
Creativity	52.7336	85.714	.467	.875
Flexible hours/work schedules?	53.0262	83.254	.504	.873
Achievement	52.3886	83.572	.662	.867
Altruism	52.9476	81.585	.591	.869
Autonomy	52.8646	85.460	.474	.874
Comfort	52.6114	82.861	.646	.867
Safety	52.7467	82.523	.629	.868
Status	53.2140	81.309	.577	.870
Travel opportunities	53.4672	85.399	.324	.884
Competitive fringe benefits	52.8559	80.712	.665	.866
Geographic location	52.7860	84.415	.495	.874
Financial reward	52.8297	84.458	.517	.873
Social environment	53.3231	83.193	.501	.873
Stability	52.7686	82.372	.562	.870

The descriptive statistics for each of the fifteen-items were: Challenges (x=3.99, SD=.916), Creativity (x=3.93, SD=.969), Flexible Schedules (x=3.64, SD=1.136), Achievement (x=4.27, SD=.880), Altruism (x=3.70, SD=1.138), Autonomy (x=3.80, SD=.979), Comfort (x=4.04, .963), Safety (x=3.90, SD=1.002), Status (x=3.44, SD=1.182), Career Stability (x=3.89, SD=1.111), Financial Gain (x=3.82, SD=1.005), Travel Opportunities (x=3.19, SD=1.316), Competitive Fringe Benefits (x=3.80, SD=1.094), Geographic Location (x=3.88, SD=1.046), and Social Environment (x=3.34, SD=1.145). Descriptive statistics on the fifteen-items included in the Work Values Scale were included in Table 32. No composite score was created using all fifteen-items simultaneously, but instead these items were divided into two subscales used in further analyses.

Table 32

Descriptive Statistics: Work Values Scale

<i>Work Value</i>	<i>Mean</i>	<i>SD</i>
Challenges	3.99	0.916
Creativity	3.93	0.969
Flexible Schedule	3.64	1.13
Achievement	4.27	0.88
Altruism	3.7	1.13
Autonomy	3.8	0.979
Comfort	4.04	0.963
Safety	3.9	1
Status	3.44	1.18
Stability	3.89	1.11
Financial Reward	3.83	1

Travel Opp.	3.19	1.31
Fringe Benefits	3.8	1.09
Location	3.88	1.04
Social Environment	3.34	1.14

Note. N = 231

These 15-items were categorized into two distinct subscales: Intrinsic Values and Extrinsic Values. This categorization was included in the theoretical foundations of Super's vocational theory. Intrinsic values were values that were considered to be internally rewarding as opposed to the extrinsic values that consisted of an external reward such as money. The six work values considered to be intrinsic were challenges, creativity, achievement, altruism, autonomy, and social environment. While social environment sounds extrinsic in nature due to the inclusion of the word environment, social inclination was ultimately considered to be internally rewarding and therefore placed in the intrinsic category. Naturally, the extrinsic values were the remaining nine values: status, safety, comfort, flexible schedules, geographic location, competitive fringe benefits, travel opportunities, financial reward, and stability. Again while comfort sounds intrinsic it was specifically referring to physical conditions of the work environment, thus it was categorized as extrinsic. These subscales were used during further statistical analyses.

A reliability analysis was conducted on the six-item Intrinsic Work Values Scale and an alpha level of .769 was found to exist (N=231). The reliability analysis of the Intrinsic Work Value Scale was included in Table 33, Table 34, and Table 35. Based on

the theoretical foundations of Super's Work Values, it was considered highly important to include all six of the Intrinsic Work Values during analysis; therefore, no items were removed from the subscale as a result of the reliability analysis.

Table 33

Case Processing Summary: Intrinsic Work Values Scale

		N	%
Cases	Valid	231	100.0
	Excluded ^b	0	.0
	Total	231	100.0

Table 34

Reliability Statistics: Intrinsic Work Values Scale

Cronbach's Alpha	N of Items
.769	6

Table 35

Item-Total Statistics: Intrinsic Work Values

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Challenges	19.0606	12.292	.612	.713
Creativity	19.1212	12.411	.544	.728
Achievement	18.7792	12.286	.648	.706
Altruism	19.3506	11.672	.526	.733
Autonomy	19.2554	12.913	.453	.750
Social environment	19.7143	12.796	.360	.780

A composite score was created using the six-items in the Intrinsic Work Values Subscale. Descriptive statistics for the Intrinsic Work Values Subscale composite score were included in Table 36. A reliability analysis of the Extrinsic Work Values Scale was

also conducted and an alpha level of .825 was found to be present (N=231). The reliability analysis of the Extrinsic Work Values Scale was included in Table 37, Table 38, and Table 39. Identical to the process used with the Intrinsic Subscale, a composite Extrinsic Subscale value was created using the nine-items included in the subscale. Descriptive statistics on the Extrinsic Values Subscale were included in Table 36.

Table 36

Descriptive Statistics for Intrinsic and Extrinsic Work Values Subscales

	N	Range	Min	Max	Mean	SD	Variance
Intrinsic Values	231	24.00	6.00	30.00	23.0563	4.13062	17.062
Extrinsic Values	229	36.00	9.00	45.00	33.6288	6.39197	40.857

Table 37

Case Processing Summary: Extrinsic Work Values Subscale

		N	%
Cases	Valid	229	99.1
	Excluded ^b	2	.9
	Total	231	100.0

Table 38

Reliability Statistics: Extrinsic Work Values Subscale

Cronbach's Alpha	N of Items
.825	9

Table 39

Item - Total Statistics: Extrinsic Work Values Subscale

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Financial Reward	29.7991	33.030	.590	.801
Travel Opportunities	30.4367	34.387	.307	.838
Competitive fringes	29.8253	31.040	.705	.786
Geographic location	29.7555	34.414	.436	.817
Flexible schedules	29.9956	33.794	.436	.818
Comfort	29.5808	33.148	.617	.798
Status	30.1834	32.300	.533	.806
Safety	29.7162	32.625	.629	.796
Stability	29.7380	32.168	.588	.800

All of the fifteen work value items were also measured against the dependent variables (LTP and LTA) for significant bivariate correlations. Correlations were expected to exist between certain work values specifically and the dependent variables, thus correlational analyses were first run using all fifteen-work values. The correlation analysis between the fifteen-work values and the dependent variables (LTP and LTA) was included in Table 40. The following seven items had significant bivariate correlations with LTP (likely to pursue): Challenges ($r=.365$, $N=231$, $p<.01$), Creativity ($r=.224$, $N=231$, $p<.01$), Achievement ($r=.217$, $N=231$, $p<.01$), Autonomy ($r=.212$, $N=231$, $p<.01$), Career Stability ($r=.206$, $N=231$, $p<.01$), Travel Opportunities ($r=-.202$, $N=231$, $p<.01$), and Social Environment ($r=-.195$, $N=231$, $p<.01$). The same seven items were found to have significant correlations with LTA (likely to accept): Challenges, ($r=.368$, $N=230$, $p<.01$), Creativity ($r=.246$, $N=230$, $p<.01$), Achievement ($r=.270$, $N=230$, $p<.01$), Autonomy ($r=.249$, $N=230$, $p<.01$), Career Stability ($r=.224$, $N=230$,

p<.01), Travel Opportunities (r=-.202, N=230, p<.01), and Social Environment (r=-.135, N=230, p<.01). Worth noting are the two work values that were shown to possess negative associations with the dependent variables (LTP and LTA): Travel Opportunities and Social Environment. These statistics suggested that women who enjoy social work environments, or women who desire to travel, would not be likely to pursue or accept a job in the transportation industry. The findings also suggested that women were more likely to be interested in pursuing and/or accepting a job in transportation if they enjoy challenges, enjoy being creative, seek a sense of achievement, enjoy being autonomous, and seek a stable career path.

Table 40

Bivariate Correlations Between Work Values and LTP & LTA

Work Values		Likely to Pursue N=231	Likely to Accept N=230
Challenges	Pearson Correlation	.365 ^{**}	.368 ^{**}
	Sig. (2-tailed)	.000	.000
Creativity	Pearson Correlation	.224 ^{**}	.246 ^{**}
	Sig. (2-tailed)	.001	.000
Flexible Schedules	Pearson Correlation	-.016	-.001
	Sig. (2-tailed)	.814	.987
Achievement	Pearson Correlation	.217 ^{**}	.270 ^{**}
	Sig. (2-tailed)	.001	.000
Altruism	Pearson Correlation	-.086	-.032
	Sig. (2-tailed)	.194	.634
Autonomy	Pearson Correlation	.212 ^{**}	.249 ^{**}
	Sig. (2-tailed)	.001	.000
Comfort	Pearson Correlation	.079	.129
	Sig. (2-tailed)	.233	.051
Safety	Pearson Correlation	.097	.115
	Sig. (2-tailed)	.143	.083
Status	Pearson Correlation	-.037	.008
	Sig. (2-tailed)	.575	.905
Stability	Pearson Correlation	.206 ^{**}	.224 ^{**}
	Sig. (2-tailed)	.002	.001

Financial Reward	Pearson Correlation	.033	.057
	Sig. (2-tailed)	.622	.391
Travel Opp.	Pearson Correlation	-.202**	-.202**
	Sig. (2-tailed)	.002	.002
Fringe Benefits	Pearson Correlation	.037	.069
	Sig. (2-tailed)	.579	.296
Location	Pearson Correlation	.038	.082
	Sig. (2-tailed)	.565	.213
Social Environment	Pearson Correlation	-.195**	-.135*
	Sig. (2-tailed)	.003	.041

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Bivariate correlations were also run between the Intrinsic Values Subscale, the Extrinsic Values Subscale, and the two dependent variables. Correlational analyses between the Intrinsic Work Values Subscale and the Extrinsic Work Values Scale were included in Table 41. Significant correlations were found to exist between the internal values subscale and both LTP ($r=.152$, $N=231$, $p>.01$) and LTA ($r=.211$, $N=231$, $p<.01$). No significant correlations were found to exist between the Extrinsic Values Subscale and the dependent variables (LTP & LTA). These findings suggested that women who valued internally rewarding work were more likely to pursue and more likely to accept jobs in the transportation industry. These findings also suggested that women who valued external rewards were less likely to pursue and less likely to accept jobs in the transportation field. These subscales were not included in the hypotheses, but the findings were still considered to be insightful.

During the correlational analyses conducted between all variables present, significant associations were found to exist between the Intrinsic Work Values Subscale and all of the Occupational Types except for Conventional. Likewise, the Extrinsic Work

Values Subscale was found to have significant associations with Artistic ($r=.199$, $p<.01$, $N=229$), Social ($r=.135$, $p<.05$, $N=229$), Enterprising ($r=.230$, $p<.001$, $N=229$) and Conventional types ($r=.150$, $p<.05$, $N=228$). The Extrinsic Work Values Subscale also had statistically significant associations with the Barriers Scale ($r=.177$, $p<.05$, $N=172$), the Sex-Type Identity Scale ($r=.254$, $p<.001$, $N=228$), and Self-Efficacy ($r=.147$, $p<.05$, $N=226$). There were no significant relationships found between the Extrinsic Subscale

Table 41

Bivariate Correlations: Work Values and LTP & LTA

		Internal Values N=231	External Values N=229
Likely to Pursue (LTP)	Pearson Correlation	.152*	.028
	Sig. (2-tailed)	.020	.677
Likely to Accept (LTA)	Pearson Correlation	.211**	.069
	Sig. (2-tailed)	.001	.298
*. Correlation is significant at the 0.05 level (2-tailed).			
**. Correlation is significant at the 0.01 level (2-tailed).			

and either dependent variable (LTP or LTA). The Intrinsic Work Values Subscale did show significant associations with both LTP and LTA. The Intrinsic Subscale also held significant associations with the Barriers Scale ($r=.248$, $p<.01$, $N=174$), Sex-Type Identity ($r=.421$, $p<.01$, $N=230$), and Self-Efficacy ($r=.314$, $p<.01$, $N=228$). These two subscales were also highly correlated with one another ($r=.700$, $p<.01$, $N=229$). The complete table of correlations for all variables are in Table 57 (Appendix B).

Barriers

There were eight-items related to perception of barriers. Descriptive statistical analyses for these eight items were as follows: Biases ($x=3.49$, $SD=1.144$, $N=175$), Parental Leave ($x=3.00$, $SD=1.290$, $N=174$), Networking ($x=2.41$, $SD=1.185$, $N=175$), Mentoring ($x=2.33$, $SD=1.167$, $N=175$), Advancement ($x=2.57$, $SD=1.141$, $N=175$), Time to Devote ($x=2.25$, $SD=1.166$, $N=175$), Pay ($x=2.88$, $SD=1.249$, $N=175$), and Expectations from Others ($x=2.32$, $SD=1.165$, $N=175$). These eight-items were combined to create the Barrier Subscale. The eight-item Barrier Subscale had a Cronbach's Alpha of .869 among female respondents ($N=231$). Reliability analyses were included in Table 42, Table 43, and Table 44. A composite score was calculated by summing the values for each of the eight-items together. The total Barriers Subscale value had a possible range from 8 to 40 possible points, but the actual range of scores on the scale was from 8 to 38 points. The average score was 21.27 with a standard deviation of 6.88 ($N=174$). Descriptive statistics on the Barriers Scale were included in Table 45.

Table 42

Case Processing Summary: Barriers Scale

		N	%
Cases	Valid	174	75.3
	Excluded ^b	57	24.7
	Total	231	100.0

Table 43

Reliability Statistics: Barriers Scale

Cronbach's Alpha	N of Items
.869	8

Table 44

Item-Total Statistics: Barriers Scale

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Women will face gender-specific biases or obstacles to their success.	17.7759	38.186	.557	.859
Parental leave will interfere with a women's promotion or professional opportunity.	18.2701	36.129	.619	.853
Women will have less opportunity for networking because of their gender.	18.8506	36.532	.657	.849
Women will have less opportunity for mentoring because of their gender.	18.9368	36.002	.714	.842
Women will have less opportunity for advancement because of their gender.	18.7011	35.945	.738	.840
Women will have less time to devote to their careers because of their gender.	19.0230	38.578	.513	.864
Women will be paid less because of their gender.	18.3851	37.117	.570	.859
Women's colleagues will have lower expectations of them because of their gender.	18.9483	37.217	.618	.853

Table 45

Descriptive Statistics: Barriers Scale

	N	Range	Minimum	Maximum	Mean	Std. Deviation	Variance
Barriers Scale Total	174	30.00	8.00	38.00	21.2701	6.88397	47.389
Valid N (listwise)	174						

Bivariate correlational analyses were run that examined the eight-item Barrier Scale in relation to the two dependent variables (LTP and LTA). Seven of the eight items had negative associations with the dependent variables, LTP and LTA. Of those seven items only one, “Women will have less time to devote to their careers because of their gender,” had a statistically significant association with LTP ($r=-.154$, $N=175$, $p<.05$) and LTA ($r=-.155$, $N=174$, $p<.05$). The only item that had a positive association with LTP and LTA was, “Women will face gender-specific biases or obstacles to their success.” Both correlational values between this item and the dependent variables LTP ($r=.150$, $N=175$, $p<.05$) and LTA ($r=.166$, $N=174$, $p<.01$) were statistically significant. Bivariate correlations were included in Table 46.

Table 46

Bivariate Correlations: Barriers Scale Items and LTP & LTA

		Likely to Pursue N=175	Likely to Accept N=174
Women will face gender-specific biases or obstacles to their success.	r	.150*	.166*
	p<	.048	.029
Parental leave will interfere with a women's promotion or professional opportunity.	r	-.047	-.038
	p<	.537	.616
Women will have less opportunity for networking because of their gender.	r	-.088	-.083
	p<	.249	.275
Women will have less opportunity for mentoring	r	-.069	-.066

because of their gender.	p<	.365	.386
Women will have less opportunity for advancement because of their gender.	r	-.041	-.024
	p<	.595	.751
Women will have less time to devote to their careers because of their gender.	r	-.154*	-.155*
	p<	.041	.042
Women will be paid less because of their gender.	r	-.125	-.118
	p<	.099	.121
Women's colleagues will have lower expectations of them because of their gender.	r	-.070	-.058
	p<	.360	.446
*. Correlation is significant at the 0.05 level (2-tailed).			

The relationship between the Barriers Scale and the dependent variables was also examined for significance. No statistically significant relationships were found to exist between the barriers subscale and either LTP or LTA. A table detailing the correlations between the Barrier Scale total value and the dependent variables were included in Table 47. These findings suggested that the perception of barriers was not significantly influential over whether women would be interested in pursuing or accepting a job in transportation; however, the association was negative albeit not statistically significant. This suggested that if one perceived barriers to be present they would be slightly less likely to pursue or accept a job in transportation. These findings were expected to occur based on the theoretical implications of barriers as a construct. Also in previous literature, barriers are referenced as a limiting factor that decreased the likelihood that women would pursue any given career path (Church et al, 1992).

Table 47

Bivariate Correlations: Barriers Scale Totals and LTP & LTA

Likely to Pursue	Pearson Correlation	-.081
	Sig. (2-tailed)	.289
Likely to Accept	Pearson Correlation	-.070
	Sig. (2-tailed)	.362

Note. N=174

The Barriers Scale was also included in the comprehensive correlational analysis between all variables used in the study. Statistically significant associations were found to exist between the Barriers Scale and Artistic ($r=.151$, $p<.05$, $N=174$) and Social ($r=.165$, $p<.05$, $N=174$) Occupational types. The correlation between Barriers and Intrinsic Work Values ($r=.248$, $p<.001$, $N=174$) was stronger than that between Barriers and Extrinsic Values ($r=.177$, $p<.05$, $N=172$) although they were both statistically significant. This suggested that women who are internally motivated were more likely to perceive barriers to their success. Likewise, these findings suggested that women with Artistic or Social inclinations were likely to have slightly more intrinsic work values than extrinsic work values. Worth mentioning, these findings also suggested that women who are externally motivated (i.e. motivated by external rewards) were slightly less likely to perceive barriers to their success, however only to a slight degree. These results were discussed further in Chapter Five. No significant associations were found between the Barriers Scale and either LTP or LTA. Bivariate correlations between all items were included in Table 57 (Appendix B).

Self-Efficacy

The Self-Efficacy Scale consisted of eight-items. The eight-item self-efficacy scale had a Cronbach's Alpha of .864 among female respondents (N=231). The reliability analysis for the Self-Efficacy Scale was included in Table 48, Table 49, and Table 50.

Table 48

Case Processing Summary: Self-Efficacy Scale

		N	%
Cases	Valid	228	98.7
	Excluded ^b	3	1.3
	Total	231	100.0

Table 49

Reliability Analysis: Self-Efficacy Scale

Cronbach's Alpha	N of Items
.864	8

Table 50

Item Total Statistics: Self-Efficacy Scale

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
I am (or will be) as good, or better, at my job as men who hold the same position.	27.8289	33.438	.434	.865
I have skills that are valuable to the Transportation Industry.	28.1535	29.893	.636	.845
I am confident I will succeed in Transportation	28.1360	30.233	.603	.849
I am confident that I am (or will be) an effective employee in the Transportation Industry	28.1667	29.355	.595	.850
Be likely to take a job in a field dominated by members of the opposite gender?	28.2763	28.685	.708	.837
Be comfortable in a job dominated by the members of opposite gender?	28.4474	27.808	.677	.840
Consider yourself sufficiently skilled to work in a field dominated by the opposite gender?	28.3026	28.873	.580	.852
Consider yourself interested in working in a field dominated by the opposite gender?	28.6842	27.406	.684	.839

A variable was computed that combined these eight items into one composite Self Efficacy value for further analyses. The range of Self Efficacy scores for females ranged

from 16 to 40 with a mean score of 32.28 and a standard deviation of 6.14. When the descriptive statistics were run for each individual item used in the self efficacy scale the highest mean response ($\bar{x}=4.45$, $SD=.777$) was found on, “I am (or will be) as good, or better, at my job as men who hold the same position,” while the lowest mean score ($\bar{x}=3.60$, $SD=1.228$) was calculated for, “Consider yourself interested in working in a field dominated by the opposite gender.” All other average scores for the items on the Self Efficacy scale fell between these two mean values. The descriptive statistics for the individual Self-Efficacy items were included in Table 51. The descriptive statistics for the composite Self-Efficacy Scale was included in Table 52, and a histogram displaying the distribution of the composite Self-Efficacy Scale scores was included in Table 53.

Table 51
Descriptive Statistics: Individual Self-Efficacy Items

	Min	Max	M	S D
I am confident that I am (or will be) an effective employee in the Transportation Industry	.00	5.00	4.1087	1.12588
I am as good, or better, at my job as men who hold the same position.	1.00	5.00	4.4459	.77760
I have skills that are valuable to the Transportation Industry.	1.00	5.00	4.1174	1.00616
I am confident I will succeed in Transportation	.00	5.00	4.1348	1.02122
Be likely to take a job in a field dominated by members of the opposite gender?	1.00	5.00	4.0130	1.04873
Be comfortable in a job dominated by the members of opposite gender?	1.00	5.00	3.8355	1.19373
Consider yourself sufficiently skilled to work in a field dominated by the opposite gender?	1.00	5.00	3.9827	1.19042
Consider yourself interested in working in a field dominated by the opposite gender?	1.00	5.00	3.6061	1.22856

Note. N=231

Table 52

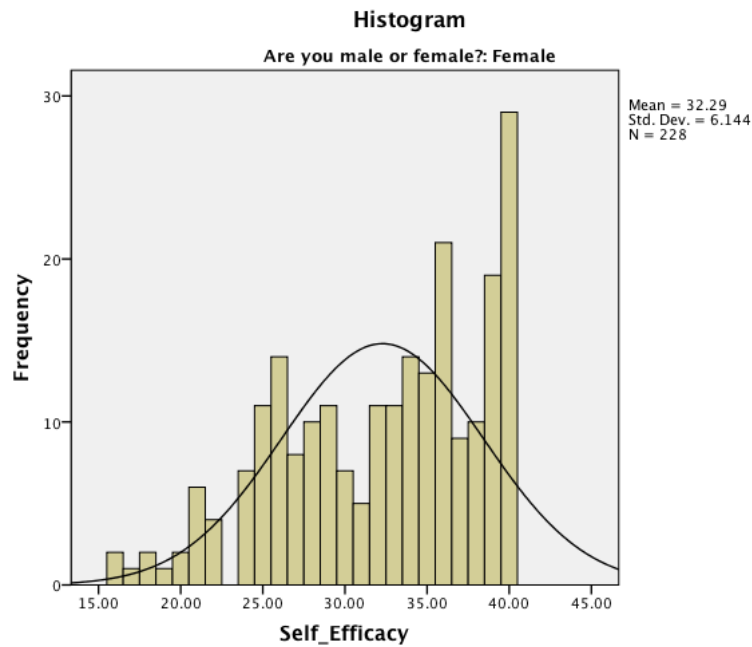
Descriptive Statistics: Self-Efficacy Scale

	Minimum	Maximum	Mean	SD
Self-Efficacy Score	16.00	40.00	32.2851	6.14382

Note. N=228

Table 53

Frequency Distribution: Self-Efficacy Scale



Statistically significant correlations were found to exist between the composite Self Efficacy value and both dependent variables: LTP ($r=.636$, $N=228$, $p<.01$), and LTA ($r=.627$, $N=228$, $p<.01$). Correlations between the Self-Efficacy scores and the dependent variables (LTP and LTA) were included in Table 54.

Table 54

Bivariate Correlations: Self-Efficacy Scores and LTP & LTA

		Self-Efficacy
Likely to Pursue	Pearson Correlation	.636 ^{**}
	Sig. (2-tailed)	.000
	N	228
Likely to Accept	Pearson Correlation	.627 ^{**}
	Sig. (2-tailed)	.000
	N	228
<i>Note.</i> ** p < 0.01 level		

Self-efficacy was also included in the comprehensive correlational analyses of all variables used in the study. Self-efficacy was found to have significant associations with four of the six Occupational Types. Those types were Realistic ($r=.418$, $p<.001$, $N=228$), Investigative ($r=.297$, $p<.001$, $N=228$), Enterprising ($r=.317$, $p<.001$, $N=228$), and Conventional ($r=.163$, $p<.05$, $N=227$). A significant correlations was also found between Self-Efficacy and both Intrinsic ($r=.314$, $p<.001$, $N=228$) and Extrinsic ($r=.147$, $p<.05$, $N=226$) Work Values. Sex-Type Identity was also significantly associated with Self-Efficacy ($r=.215$, $p<.001$, $N=227$). Lastly, this scale was significantly correlated with both LTP ($r=.636$, $p<.001$, $N=228$) and LTA ($r=.627$, $p<.001$, $N=228$). These statistics were included in Table 57 (Appendix B) and were further discussed in Chapter Five.

Regression Analysis

A hierarchical regression was conducted in order to explore the predicative qualities of the independent variables on the two dependent variables in question: Likely to Pursue a Job in Transportation (LTP) and Likely to Accept a Job in Transportation (LTA). For the purposes of the regression the independents variables were entered in

blocks arranged by level of theoretical importance. The composition and order of blocks used from analyses was as follows: demographic items (Block 1), Holland's Occupational Types (Block 2), Super's Work Values (Block 3), Self-Efficacy (Block 4), Perceived Barriers (Block 5), and Sex-Type Identity (Block 6). This order was determined on that basis that Holland's Occupational Types and Super's Work Values have the most extensive empirical validation in support of their theoretical implications. Specifically, both theories have been widely accepted by scientific communities associated with career theory such as career counseling, industrial/organizational psychology, and business administration. Self-efficacy has also been found as significantly associated with career decision-making, thus the decision to include Self-Efficacy in the third block. Perceived Barriers were considered an environmental characteristic and in general aspects of the environment have been found to be at least just as influential as gender identity if not more so (Sipe, Johnson, & Fisher 2009) thus the decision to include this construct in the 5th block. Lastly, Sex-Type Identity is a construct that has subject to the changing times and evolution in societal trends. While the *BEM Sex-Type Inventory* (Bem, 1974) is a respected measure, the entire concept of gender roles is one that has been the topic of controversies as of late. With women taking a larger role in the National Workforce and contributing more to household income, several SME's have suggested alternative gender roles and a core shift in the understanding of gender-identity (HBR, 2013). Also, the modified version of the *BEM* used for the purposes of this study failed to include Androgyny and this detracts from the theoretical strength of the construct (Bem, 1974). Due to the aforementioned reasons, it

was decided to include the Sex-Type Identity in the last block of the regression analyses.

Results of the regression analysis revealed that in relation to LTP the following variables were found to be significant in the regression model: age ($p < .001$), race ($p < .001$), Level of Education ($p < .05$), Social Occupational Interests ($p < .05$), and Self-Efficacy ($p < .001$). Out of these items, the only variable that was expected to be significant during regression analyses was Self-Efficacy. Thus contrary to what was predicted the level of Social Occupational interests was significantly associated with likelihood that they would pursue a career in transportation. Both the unstandardized and standardized beta values for the Social Occupational type and LTP were negative in value (-.251 and -.133 respectively). These values indicated that the more preference women had for Social Occupations, the less likely they were to pursue a career in transportation. It was not expected that the Social Occupational Type would prove to be significant in the LTP regression analysis. This finding will be discussed further in later sections of the report. The impact of age, race, and level of education was also not expected. Worth noting, the race variable was entered according to a coding system and was not considered to be ordinal; therefore, its impact in the regression analyses is somewhat irrelevant. A table detailing the regression analysis for the final block of the variables on to LTP was included in Table 55. The complete regression analysis is displayed in table 58 in Appendix B.

Table 55

Regression Analysis (Final Block): Likely to Pursue

Regression Analysis: Likely to Pursue					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-2.519	1.174		-2.146	.034
Age	.056	.009	.441	6.198	.000
Race	.274	.078	.211	3.505	.001
Education Level	-.127	.064	-.120	-1.998	.048
Realistic	.142	.114	.086	1.247	.215
Investigative	.006	.139	.003	.044	.965
Artistic	-.072	.078	-.053	-.915	.362
6 Social	-.251	.118	-.133	-2.131	.036
Enterprising	.188	.109	.112	1.723	.088
Conventional	.148	.097	.099	1.530	.129
Intrinsic Values	.009	.035	.025	.261	.795
Extrinsic Values	-.014	.020	-.061	-.729	.468
Self-Efficacy	.091	.020	.335	4.460	.000
Barriers	.012	.015	.046	.807	.422
Sex-Type Identity	.029	.026	.067	1.122	.265

Similarly, for the other dependent variable in question (LTA) the following variables were found to be significant in the regression model: age ($p < .001$), race ($p < .001$), Realistic Occupational Type ($p < .001$), and Self-Efficacy ($p < .001$). In other words, a combination of age, realistic occupational interests, and higher levels of self-efficacy were associated with a higher likelihood of accepting a position in the transportation industry. Age was not expected to be influential with regards to one's likelihood to accept a job in transportation. Also worth noting, race was entered in using a coding system and it was not considered ordinal; therefore, its impact is considered to be irrelevant. The impact of Realistic Occupational preferences was expected to be

associated with the likelihood that one would accept a job in transportation based on previous research (Philbrick & Sherry, 2004). Based on previous research self-efficacy was also expected to be influential in the likelihood that one would accept a job in transportation (Bandura, 1986) (Rivera et al, 2007). A table detailing the regression final block of variables for the analysis for LTA was included in Table 56. The full analysis is reported in Table 59 in Appendix B. These findings were also discussed in more detail later in the report.

Table 56

Regression Analysis (Final Block): Likely to Accept

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-1.905	1.139		-1.672	.098
Age	.036	.009	.318	4.154	.000
Race	.282	.076	.241	3.727	.000
Educational Level	-.109	.062	-.113	-1.755	.082
Realistic	.223	.110	.150	2.026	.045
Investigative	-.087	.135	-.044	-.644	.521
Artistic	-.102	.076	-.083	-1.340	.183
6 Social	-.174	.114	-.102	-1.521	.131
Enterprising	.116	.106	.077	1.093	.277
Conventional	.149	.094	.111	1.589	.115
Intrinsic Values	.032	.034	.098	.942	.349
Extrinsic Values	-.012	.019	-.055	-.607	.545
Self-Efficacy	.092	.020	.374	4.632	.000
Barriers	.003	.014	.015	.244	.808
Sex-Type Identity	.023	.025	.059	.913	.363

Summary

Descriptive statistics were calculated for all scales and subscales. Bivariate correlations were also examined. The strongest positive and/or negative

correlations were identified and conclusions were drawn from those that proved to be statistically significant. Lastly, using a hierarchical regression analysis, the relative contributions of the independent variables to the occurrence of the dependent variables were determined. The demographic variables of age, race, education, and level of education were entered in as the first block in the regression analysis. The second block consisted of the occupational types as defined by Holland. The third block was created using the Internal and External Values Subscales. The fourth block was created using the Self-Efficacy Subscale, followed by the fifth block (Barriers Subscale) and finalizing with the Sex-Identity Subscale in block six. The resulting regression was an attempt to identify the variables that were most closely associated with the likelihood that a participant will pursue and or accept a career the transportation industry.

The results indicated that age, race, level of education, Social occupational type and self-efficacy were found to be associated with the likelihood that one would pursue a career in the transportation industry. These findings suggested that the older one was the more likely they were to pursue the industry, the more educated they were the less likely they were to pursue the industry, the greater the amount of social interests one had, the less likely they were to pursue the industry, and the more self-efficacy they had the more likely they were to pursue the industry. These results indicated that older, more confident, slightly-introverted women with less educational attainment would be likely to pursue the field of transportation.

For the other dependent variable, age, race, Realistic occupational types and self-efficacy were found to be predicative of likelihood with accepting a job in transportation.

These findings indicated that the older one was the more likely they would be to accept a career in the industry, the more interested they were in realistic occupational tasks the more likely they were to accept a career in the industry and the more self-efficacy they had the more likely they were to accept a job in the field as well. These results indicated that older, more confident women who enjoy rational and logical problem solving would be more likely to pursue a career in transportation.

CHAPTER FIVE: DISCUSSION

Chapter Five begins with a concise summary of the study. Following the summary, this section included a discussion of the overall findings associated with each of the four research hypotheses and their implications. Exploring the hypotheses was followed by a discussion of the limitations of the study and recommendations for future research. This section concluded with a brief recapitulation of the entirety of Chapter Five.

Summary of the Study

This study sought to investigate the qualities of women associated with level of interest in the transportation industry. The specific qualities investigated were occupational types, work values, perception of barriers, sex-type identity, and levels of self-efficacy. The level of interest in the transportation industry was defined as likelihood to pursue and/or likelihood to accept a job in transportation. Researchers created and distributed a survey meant to measure the aforementioned variables. Participants included 231 women. Statistical analyses included descriptive statistics, bivariate correlations, and hierarchical regressions. The regression analyses were used to determine the predictive qualities of any independent variables that may exist.

Specific Findings and Implications for Hypotheses

This study investigated five hypotheses in hopes of better understanding women's career choices with regards to the transportation industry.

Hypothesis 1

Conventional occupational interests will be significantly positively associated with interest in choosing or pursuing a career in the transportation industry.

The first hypothesis was that conventional occupational interests would be significantly positively correlated with levels of interest in choosing or pursuing a career in transportation. As expected results indicated that statistically significant positive correlations existed between conventional occupational interests and one's likelihood to pursue ($r=.319$, $p<.001$, $N=230$) and/or accept ($r=.302$, $p<.001$, $N=229$) a job in transportation; therefore, this hypothesis was supported by the results. The correlation between Conventional occupational interests and likely to pursue (LTP) were slightly stronger than the correlation between Conventional interests and likely to accept (LTA) but only by a slight degree. The correlations can be found in both Table 5 and Table 57. These results indicated that females who enjoy conventional job tasks were more likely to pursue or accept a job in the transportation field. Conventional interests were also associated with interest in transportation in the 2004 study by Philbrick and Sherry. This consistent finding suggested that Conventional Interests are strongly linked to level of interest in the transportation industry and further suggested that both men and women with Conventional Interests are interested in the field. In addition to Conventional

interests, Realistic interests, Enterprising interests, and Investigative interests (Table 5) (Table 57) were found to have statistically significant correlations with LTP and LTA. This indicated that women who possess hands-on, rational, logical, empirical interests and show an ability to be self-sufficient were more likely to pursue and/or accept a job in transportation.

The implications of these findings could be taken into account when developing recruiting programs to attract new people into the industry and also when creating educational outreach programs for younger generations. For example, when presenting information to children, high school aged, or college students one may want to include a section about personality characteristics that were found to be associated with the field of transportation. Informing students that women working in transportation sometimes enjoy logical, practical, and scientific pursuits may allow individuals with those interests to consider learning more about their own career options in the transportation industry while also allowing those who do not enjoy those types of activities to think more critically about whether or not the transportation industry is the right option for them. These findings would also assist recruiting professionals in better understanding what populations would be most receptive to their attempts to attract people into the field. Understanding that highly artistic and/or social populations are not typically associated with the qualities found in transportation professionals can prevent wasted resources being spent on trying to attract poorly suited individuals. By improving recruiting practices one would also improve the chances of retaining employees once recruited into the field. In other words, by better understanding what personality characteristics women

interested in transportation possess, both recruiting and retaining practices could become more efficient because these staffing efforts could be tailored to a better suited population.

Hypothesis 2

Certain work values (e.g. Comfort and Achievement) will be significantly positively associated with level of interest in a career in transportation.

The second hypothesis was that certain work values (comfort and achievement) would possess a statistically significant positive correlation with one's level of interest in pursuing/accepting a job in transportation. As expected a statistically significant positive correlation was found to exist between several work values and the dependent variables, although no significant correlation was found to exist between comfort and either dependent variable. Details regarding the correlations between specific work values and both dependent variables were included in Table 39. The work values that were found to possess significantly positive correlations with LTP were challenges ($r=.365$, $p<.001$, $N=231$), creativity ($r=.224$, $p<.001$, $N=231$), achievement ($r=.217$, $p<.001$, $N=231$), autonomy ($r=.212$, $p<.001$, $N=231$), and stability ($r=.206$, $p<.01$, $N=231$). Contrary to this hypothesis, travel opportunities ($r=-.202$, $p<.01$, $N=231$) and social environment ($r=-.195$, $p<.01$, $N=231$) were shown to have statistically significant negative correlations with LTP. Likewise, the same work values were found to have significantly positive correlations with LTA: challenges ($r=.368$, $p<.000$, $N=230$), creativity ($r=.246$, $p<.000$, $N=230$), achievement ($r=.270$, $p<.000$, $N=230$), autonomy ($r=.249$, $p<.000$, $N=230$), and

stability ($r=.224$, $p<.001$, $N=230$). The same two work values were also found to have a negative association with LTA: travel opportunities ($r=-.202$, $p<.01$, $N=230$) and a social environment ($r=-.135$, $p<.05$, $N=230$).

The result of achievement being positively correlated with both LTP and LTA to a significant degree was supportive of the proposed hypothesis and met expectations; however, the lack of significance between comfort and both LTP and LTA did not support the hypothesis and did not meet expectations. These findings suggested that while participants in the 2004 Philbrick and Sherry study were shown to have a high value for comfort, the participants in this study did not possess the same level of interest in comfort. Possible reasons behind this discrepancy could have been a difference in sampling demographics used for each study respectively; specifically, the 2004 study included both men and women and as such the results represented the values of both genders. Conversely, the analyses performed in this study only examined the responses of female participants and it is possible that females interested in the transportation industry were less interested in comfort than their male counterparts. These findings further suggested that the differing levels of interest in comfort as a work value between males and females in the transportation industry might prove worth evaluating in further research efforts. The results of this study also found that women who value challenges are more likely to pursue a career in the transportation industry. This suggested that women who are likely to pursue the field enjoy challenging themselves to attain new goals and/or accomplish difficult tasks. This is useful as it contributes to the overall job profile that women likely to pursue this field are self-sufficient, rational, scientifically

minded women who enjoy engaging in complicated goals.

Statistically significant negative correlations were found to exist between a value for travel opportunities and a value for social environments and both LTA and LTP respectively. These findings suggested that women who are likely to pursue and/or accept a career in transportation are not necessarily interested in travelling around for work and do not necessarily need a social setting at work either. This finding contributed to the overall picture of women who would fit well with transportation as self-sufficient and autonomous individuals. The negative association with social environments specifically contradicts the traditional perspective of females as highly social and talkative members of the workforce and instead suggests that society's ideas of females in the workplace should be reevaluated. Specifically, this finding undermines the department of labor statistics that reveal highly social industries as dominated with females in the U.S. (i.e. teaching, social work, administrative assistants) and instead support the idea that women have various career interests and would make valuable members of industries typically thought of as non-social (transportation, engineering, mathematics, science).

One implication of this particular finding would prove helpful in future research aimed at investigating the evolving face of women in the American workforce. The negative association with an interest in travel opportunities was unexpected given the nature of the transportation industry; however, the findings suggested that women who are interested in entering the field value stability. The negative association with travel opportunities suggested that women most interested in the transportation field are

focused, stable, and hard-working women that would be most interested in staying put and excelling at the work in front of them. This finding, while not expected, supports the idea that women interested in transportation are rational, logical, and dependable women. An understanding of what types of female populations are not well-suited for outreach and/or recruiting efforts begins to develop when also considering the personality characteristics that showed no significant correlations with interest in transportation (Artistic and Social) in combination with the work values shown to be negatively associated with interest in the field (travel opportunities and social environments). These findings suggested that highly artistic extraverts with a passion for travelling are not likely to be interested in pursuing or accepting a job in the transportation industry and this conclusion seems to make sense when comparing it to those characteristics that were found to be associated with interest in the field.

Hypothesis 3

High levels of traditional sex-type identity will be significantly negatively correlated with the level of interest in a career in transportation.

The third hypothesis was that high levels of traditional sex-type identity would have a statistically significant negative correlation with one's likelihood to pursue or accept a job in transportation. No significant correlations were found to exist between composite sex-type identity and either dependent variable; however, a significant positive correlation was found to exist between masculinity and likelihood to pursue and accept a job in transportation. In other words, the higher one scored on the masculine items the

more likely they were to show interest in pursuing and/or accepting a job in the transportation industry. These results indicated that higher levels of sex-type identity in general do not necessarily have an influence on whether or not a woman is going to show interest in pursuing or accepting a job in the transportation industry, however the results regarding the masculinity items had several interesting implications. First of all, these findings indicated that the qualities used in the masculinity items were somewhat associated with one's likelihood to pursue or enter this industry. Secondly, these qualities could be reevaluated for their gender associations in general, meaning that they were possibly just qualities associated with work life competence in general as opposed to being associated with a gender role. In other words, associating these qualities with masculinity may have been an outdated idea.

The reliability analyses suggested that masculinity and femininity were both correlated with one another and both were respectively highly correlated with sex-type identity overall. These findings supported the underlying assumption that sex-type identity represents the absence of androgyny or in other words, the presence of a gender identity. No statistically significant correlations were found to exist between sex-type identity and either LTP or LTA. This suggested that while there were slight correlations between masculinity and LTP/LTA the overall sex-type identity of individuals is seemingly not associated with their level of interest in the transportation industry. In other words, whether or not people identify with traditional gender roles was not found to be associated with their likelihood to pursue or accept a job in transportation.

The implications of these findings were mainly that the traditional views of

gender roles are likely outdated and can't easily be applied to a modern day work environment. These findings also suggested that traditionally masculine qualities might be more evident among women that enter into traditionally male industries; however, because of the high correlation found between both the feminine and masculine qualities and the dependent variables the results were not strong enough to take it one step further and suggest that only "masculine women" enter into male-dominated industries. In sum, the hypothesis was not supported by the results of this study and the results of this study failed to meet expected outcomes.

Hypothesis 4

Levels of self-efficacy will be significantly positively correlated with levels of interest in a career in transportation.

The fourth hypothesis was that self-efficacy would possess a statistically significant positive correlation with the dependent variables. This hypothesis was supported by the results and results of this study met the expectations. A statistically significant positive correlation was found to exist between self-efficacy and likelihood to pursue ($r=.636$, $p<.000$, $N=228$) and/or accept ($r=.627$, $p<.000$, $N=228$) a job in transportation (Table 57). These findings aligned with the aforementioned findings that Entrepreneurial occupational interests are associated with LTP and LTA because self-efficiency, being self-motivated, and a sense of independence are all included in the Entrepreneurial personality type and high levels of self-efficacy are needed in order to be autonomous in that manner. Also interestingly, self-efficacy levels were found to have

significant correlations with all of the Occupational types except Social and Artistic types and these two types were also the only occupational types to have a strong association with the barriers scale. These findings suggested Social and Artistic types were the most likely to perceive barriers between them and success and also the least likely to have high levels of self-efficacy. An association between barriers and self-efficacy was expected to occur based on past research (Rivera et al, 2007) (HBR, 2013) (Church et al, 1992).

Also these findings reinforce the importance of educating young women not only on the possibility of a career in the transportation industry but also on the specific job tasks associated with a job in transportation. With a better understanding of the industry women will be better able to formulate an expectation of what is needed for them to become successful. Understanding what success looks like specifically and having access to role models was considered vital to the formulation of self-efficacy (Brown, 2002) (Holland, 1973). These findings also suggested that women who enjoy working with other people to a high degree and working with design/patterns were not likely to feel confident that they would succeed in the transportation industry. These results support the theoretical foundations of this study and also support the proposed hypothesis that self-efficacy would be correlated with likelihood of choosing or pursuing a career in transportation.

Table 53 depicts the range of composite self-efficacy scores across female respondents. These findings were interesting because the distribution does not follow a normal curve and the standard deviation was quite high meaning that there was a large amount of variance among responses. This suggested that women are either very

confident that they will succeed or not very confident at all that they will succeed, with few people feeling moderately confident that they will succeed. Possibly increased educational efforts aimed at informing the public about career opportunities available in the transportation industry could contribute to more predictable levels of self-efficacy among females with regards to the field. In other words, the abnormal distribution of self-efficacy totals might have been explained by the general ignorance among members of society regarding employment opportunities in the transportation field and increased educational efforts may contribute to an overall better understanding of what success looks like in transportation. A better understanding of what is necessary to succeed would allow more women to develop a belief that they would be able to succeed in the field. Another way of stating this is that the abnormal distribution of self-efficacy levels among females in relation to transportation may be representative of a lack of knowledge about the industry in general.

Hypothesis 5

The combination of conventional vocational interests, work values, feminine gender identity, and career self-efficacy will be significantly associated with level of interest in choosing and pursuing a career in transportation.

The final hypothesis referred to the regression model, as determined by way of hierarchical regression. It was found that self-efficacy, Social Occupational Interests age, race and level of education were significantly predictive of one's level of interest in

pursuing a job in the industry. Slightly fewer variables were found to be significantly predictive of one's level of interest in accepting a job in transportation. Self-efficacy, Realistic Occupational Interests, race and age were found to be significant in the predictive model for likelihood to accept a job in transportation.

These findings suggested that as women age they become more likely to accept or pursue a job in transportation. There could be several reasons for this finding. A couple of possible reasons could be that women become more aware of the transportation field as a career option as they age and/or women become increasingly open to different career opportunities as they get older. Other interpretations are that the sample of younger women included in this study are not currently associated with the transportation field and the sample of women included in this study that are already associated with the transportation industry are somewhat older. Social and Realistic Interests were found to be predicative of one's likelihood to pursue or accept a job in transportation and these findings supported the theoretical belief that peoples occupational types are predicative of what fields they will be likely to enter. Specifically, the association of Social Types and likelihood that one will pursue a job in transportation was negative. This meant that the more one was interested in Social Occupations the less likely one was to pursue a job in the transportation field. For the other dependent variable, the findings suggested that conventional interests, the predicted work values, and sex-type identity do not play a role in the likelihood that one would accept a job in transportation as predicted. Neither regression model met the specific expectations included in this hypothesis; however the findings were supported by some of the foundational theories. This was discussed in the

paragraph below.

Previous research stated that individuals in the transportation field were likely to hold Realistic, Investigative, and Conventional interests (Anderson & Vandehey, 2006) and the regression models in this study also found that Realistic Interests were found to be associated with one's likelihood to accept a job in transportation. Using deductive reasoning, it was concluded that the negative association between Social Interests and likelihood to pursue the field, suggests that the opposing preferences (Realistic, Conventional, and Investigative) would be more common among individuals who do pursue the field. These findings supported the previously stated conclusions that people outside of any given field are likely to possess the same occupational preferences as those currently employed within that same field regardless of whether they are male or female (Cole, 1973) because large amount of engineers have been found to have lower Social Occupational Interests and higher Investigative Occupational Interests (Anderson & Vandehey, 2006). These findings also supported the idea that women possess similar occupational preference profiles as males (Cole, 1973) despite the lack of gender equality among various types of industries. This conclusion was reached when considering that the vocational categorization of Holland's types as applied to the U.S. workforce was calculated using research that mainly consisted of men during a time when the U.S. workforce did not include women, nor were women included in the initial research conducted on occupational preferences (Holland, 1973). In other words, these regression models supported the idea that people outside of the field have similar occupational profiles to those inside of the field, and that women have the similar types of

occupational profiles as men in the workforce. With such large gender discrepancies present in many industries today, one can further conclude that some women currently employed in the U.S. are not working in industries best suited to their vocational interests. This further suggested that increased outreach efforts may assist younger generations of females in seeking careers in industries better suited to their preferences.

Summary of Study Implications

The findings of this study suggested that there is a distinct population of women who would be interested in pursuing and/or accepting a job in the transportation field and further that this population possessed certain shared qualities. As an under-investigated population, the findings of this study contributed to a scientific blind spot. Results suggested that slightly older women with realistic occupational interests, low levels of social occupational interests, and high levels of self-efficacy would be more likely to pursue and/or accept a job in the transportation industry. Referring back to Holland's Career Theory, the results of this study suggested that women who pursue this industry enjoy working with their hands, are mechanically inclined, self-sufficient, and are generally interested in fixing or creating things (Anderson & Vandehey, 2006). Some examples of the occupations associated with Realistic types were engineers, agriculture, machine repair, technicians, and computer operations (Anderson & Vandehey, 2006). Realistic preferences was directly opposite from Social preferences on Holland's occupational hexagon and Holland's theory states that it is less likely for people to possess preferences from opposing hexagonal areas (Anderson & Vandehey, 2006). The findings of this study are consistent with this theoretical understanding of vocational

theory because lower levels of Social preferences were found to increase the likelihood that one would pursue this field, and higher levels of Realistic interests were found to increase the likelihood that one would accept a job in this field. The findings of this study with regards to occupational interests were consistent with Holland's occupational theory.

Sex-type identity was not found to be impactful during statistical analyses aside from a moderate correlation between the items designed to represent masculinity and the level of interest in pursuing or accepting a job in transportation. This finding suggested that characteristics typically associated with masculinity may be associated with traditionally male industries; however, correlations were also found to exist between the masculinity items and the femininity items and this suggested that the two concepts are measuring the same construct and/or neither group of items is measuring their respective construct effectively. In other words, the associations found between the masculine and feminine items suggested that the items were measuring the same quality, people possess both masculine and feminine traits to the same degree, or these items failed to measure anything accurately. These findings suggested that the ideas of gender identity as defined by Sandra Bem are outdated and/or not effective tools for measuring levels of sex-type identity among modern day women.

Based on previous research done on the topic of women in engineering fields, and employees in the transportation field, it was hypothesized that the work values of comfort and achievement would prove to be significantly associated with one's level of interest in the transportation field. The findings of this study did not support the hypothesis that

comfort was a significant work value in relation to women's level of interest in the transportation industry. The correlations found between comfort and both dependent variables were not statistically significant. This study did find that achievement was significantly positively correlated with both dependent variables (likely to pursue/likely to accept). The additional work values that were found to have significant correlations with one's level of interest in the industry were congruent with other aspects of this study, specifically, the qualities associated with the two occupational types found to be associated with interest in the industry (conventional and realistic) are similar to four of the work values found to be significant in this study: challenges, achievement, autonomy, and career stability. Creativity was a work value that was found to have a significant correlation with level of interest in the transportation industry and this was an unexpected result based on theoretical foundations. Also surprising was the significantly negative correlation that was found to exist between the dependent variables and two work values (travel opportunities and a social environment). A disinterest in travel opportunities seemed counterintuitive because of the nature of the transportation industry but made sense when considering this result in relation to other results yielded from this study. When viewing the results in a holistic manner a picture of female populations that may be interested in working in the transportation field begins to form and likewise a distinct image of populations of women that are not likely to be interested in the field also begins to take shape. Highly artistic and extraverted women interested in travelling are less likely to be interested in this field and would likely not be best suited for outreach or recruiting efforts.

The perceptions of barriers were not found to be impactful in relation to the likelihood of pursuing or accepting a career in transportation. Upon individual analysis, only two barriers were found to be significantly correlated with LTA and LTP and no barriers were found to be significant during regression analyses (Table 45). Furthermore, the composite barrier score was not found to be significantly associated with either dependent variable.

Women that expected gender-specific biases or obstacles to their success were also likely to pursue or accept a job in transportation (Table 45). This finding suggested that women who value challenges were more likely to pursue a career in transportation. It is possible that women interested in pursuing transportation were also interested in challenging situations and welcome the chance to succeed in the face of biases or obstacles. These findings supported the finding that women who value a sense of achievement are likely to be interested in pursuing or accepting a job in transportation. These findings all contribute to the idea that women likely to enter into this field are tough individuals that accept new challenges willingly and are not dissuaded by adversity. Conversely, during individual analysis, the only barrier found to have a statistically significant negative association with the LTP and LTA was that women would have less time to devote to their careers because of their gender. This suggested that women interested in transportation are less likely to believe that women have less time to focus on work because of their gender. The fact that there were few barriers viewed as significantly associated with the dependent variables is supportive of the idea that women interested in entering this field are not likely to view themselves as less

capable of career success because of their gender. This finding also makes sense when viewing it in relation to the high association between self-efficacy levels and level of interest in the industry. One who views many barriers to their success and/or does not believe they will succeed would also be likely to exhibit low levels of self-efficacy as a result because it is difficult to form a sense of self efficacy without a belief that success is possible (Rivera, 2007). This finding supported the overall profile of women interested in transportation as strong and confident women.

The results of this study also suggested that women with higher levels of self-efficacy were more likely to pursue and/or accept a job in transportation (Table 54) (Table 55). These findings had interesting implications in that fostering a sense of self-efficacy in females may increase the likelihood that they would pursue/accept a job in transportation, but role models and education are necessary to cultivate self-efficacy (Bandura, 1986). People needed information from past performances, social comparisons, and external feedback in order to develop a sense of self-efficacy (Bandura, 1986) and without a wealth of examples of women working in the industry it was more difficult for females to determine whether or not they can be effective. Likewise, a distinct lack of education existed among both males and females with regards to the transportation industry as a career option and this widespread lack of awareness also diminished the opportunity for females to form a sense of self-efficacy with regard to working in transportation (Sussman, 1999). Despite the limitations to cultivating self-efficacy in females, this study did find that higher amounts of self-efficacy were significantly associated with the level of interest in the industry and also predictive of

pursuit/acceptance into the field. These findings supported the proposed hypothesis that self-efficacy would be significantly positively correlated with level of interest in the transportation industry.

Study Limitations

This study had many limitations including an outdated and/or possible ineffective measure for quantifying sex-type identities. The theory behind sex-type identities proposed by Sandra Bem included androgyny and this study failed to include any questionnaire items related to androgyny. In retrospect, a more accurate research approach may have been to measure the level of androgyny in participants and then look for correlations between levels of androgyny and level of interest in the transportation industry. Including androgyny would have also contributed to a better understanding of the impact of the masculine/feminine questionnaire items by illuminating a middle ground between the two concepts. Bem's idea behind her research was to provide empirical evidence to society that androgynous people are more effective than highly masculine or highly feminine people because they are less restricted by their sense of sex-type identity (Bem, 1974) and not including androgyny in this study restricted the thorough understand of sex-type identity. Newer perspectives on sex-type identity may have been more applicable to this study because it examined a modern workplace in which traditional gender roles may not be as present as was initially expected. Perhaps a theory or measure that has been created and validated on women working in the U.S. within the last 10 years would have been more versatile and insightful than the theories presented by Sandra Bem in the 1980's. That being said, Bem's sex-type identity

measure is one of the more commonly used measures in gender role research in the psychological community even if it is only used as a benchmarking tool for more updated measures. More research into business research and measures designed for business settings specifically could have proven helpful during the creation phases of this study.

The largest limitation of this study was the use of measures that were not yet empirically validated. Portions of the comprehensive measure used in this study were comprised of modified versions of validated measures, however, due to the modifications the new measures were not yet considered empirically validated. The use of non-validated measures was one of the largest limitations to the generalizability and overall validity of the results because we have no empirical evidence that some of the measures actually measure that which we intended to measure. The portions of the survey that were not yet empirically validated in their current form were the sex-type identity items and some of the self-efficacy items. While both the self-efficacy items and the sex-type identity items were technically validated items, the wording was modified ever so slightly when creating the measure used in this study, and this little modification affected the generalizability of the results.

Ignorance and misinformation regarding the true nature of the transportation industry may also have been a limiting factor as far as the longstanding generalizability of the results of this study. It is possible that these results were indicative of the current reputation of the transportation field as opposed to the true nature of the field, meaning that the findings of this study are very helpful in better understanding the types of women that would be interested in the field, but the responses may be based on people's

stereotypical perceptions of the field. These findings may have been a completely accurate representation of what type of female is not interested in pursuing a career in this field, but these findings may also have represented a general lack of knowledge held by the public regarding the transportation field. That is to say that these findings suggested that women do not think that this field is social in nature, but that may or may not be the case and more research conducted on the specific job tasks included in various aspects of the field should be conducted.

This study was also limited by the logistics of some of the sampling procedures. Portions of respondents were approached during networking events and/or conferences and completed surveys on site. These people may have also been distracted by other aspects of the environment such as other people talking to them or pending events/speeches and their responses may have been rushed as a result. This could be viewed as a limitation on the accuracy of their responses. Also the fact that some participants were approached during conferences and others were solicited via email may have contributed to some inconsistencies in the responses as well. There may have been an observer impact for those who completed physical surveys in person while the researchers were in the same room, they may also have felt a time constraint when completing the measure in person, and/or been more motivated to complete the entire survey because the researchers were near by. Conversely, those that completed surveys in the privacy of their own offices or homes may have been less motivated to complete the entire survey and/or a positive effect may have been that those who completed the virtual format were able to take more time to think through each question and answer

honestly because there were no researchers near by. The impact of the physical version survey versus the virtual format survey can't truly be understood but differences in the sampling methods and resulting survey style may have existed. This inconsistency in procedure was a limitation for the overall validity of the study.

Recommendations for Future Research

Further investigation on sex-type identity may be beneficial to research on women in transportation. More modern measures designed to quantify sex-type identity and further investigation into work environments present in industries that are comprised of mostly males may prove useful in the future. Gaining a better understanding of what typically male work environments are like on a more detailed basis may also assist in guiding future research designs. Developing a more specific definition of the transportation industry and investigating those areas separately in relation to female incumbents would be a useful direction for future research, especially when it comes to researching management positions versus non-management or operational positions. The qualities of women in engineering or women with higher levels of education may be different than those of women who enter into operational and/or hourly positions and these differences may prove vital in creating effective recruiting and training practices. Now that there is a beginning of understanding with regards to characteristics of women that would be interested in pursuing or accepting a career in transportation, future research efforts could be made to examine these same qualities in relation to length of time in the industry and/or satisfaction with the industry. Basically future research efforts can be made more specific and focused on career development.

Future recruiting efforts could take into account the solid findings presented in this study regarding Holland's occupational types. Specifically, recruiting efforts could be targeted at women with realistic interests. Educational outreach efforts should be considered vital to the progression of the transportation field, because self-efficacy was found to be the most influential variable in the level of interest in the field. Education is the quickest route to increased self-efficacy as understanding what success looks like is vital in the formation of confidence in one's ability. Access to mentors and role models for younger women entering into the workforce would also be a positive direction for this field, and future research could examine the specific qualities of training and mentoring programs across various companies associated with transportation. Future research could also examine the characteristics of recruiting programs that are currently in place, and the efficacy of these items could be evaluated using the knowledge generated from this study. Examining what types of information is included in recruiting efforts and the types of populations targeted may prove useful in improving the success rate of said programs.

As always, the measure used in this study could be applied in future studies in order to continue further validate the survey. This study could be recreated in different locations and among different types of populations in order to strengthen the generalizability of the results. This would also offer more insight into the various types of populations of women that may be interested in pursuing or accepting a career in the transportation field.

Conclusion

This study intended to investigate the qualities and characteristics present among

women that have a high degree of interest in the transportation industry. The specific qualities and characteristics investigated were Occupational Preferences, Work Values, Sex-Type Identity, Self-Efficacy, and Perception of Barriers. These qualities were included in the study after a thorough review of previously established research on related topics. While research on the specific topic of women in the transportation industry was limited, several other areas of research were investigated including Holland's classic vocational theory, Super's vocational theory, Bem's theories of sex-type identity, Bandura's social learning and self-efficacy theories, and modern investigations of gender discrimination in the workplace. This study hoped to contribute new research to a previously unexamined area. Using these theoretical bases a questionnaire was created. Data were collected from women using an online and physical formatted survey. Data was then analyzed using simple descriptive statistics, bivariate correlations, and regression analyses.

Results indicated that significant correlations did exist between several variables and the level of interest in the transportation field. High levels of Realistic Occupational Interests and lower levels of Social Occupational Interests were found to be influential on the level of interest in the transportation field. Age and level of education were found to be influential on level of interest in the field as well. The strongest influencing variable on level of interest in the field was self-efficacy and it was concluded that higher levels of self-efficacy was associated with higher levels of interest in the transportation industry.

This study created a clear vision of the types of women interested in the transportation field. Slightly older, autonomous, and confident, women with realistic

interests were most likely to be interested in transportation . These findings only begin to shed light on the phenomenon of women in the transportation field and contribute to the small (but growing) body of literature on women in traditionally male industries.

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APPENDIX A

Research Questionnaire.

This study is designed to identify the main factors that influence career choices. Please circle the number that indicates the extent to which the factor would affect your decision to take a transportation job:

	1	2	3	4	5
	Little or No Degree	Slight Degree	Moderate	Very	Very
1. ... career stability, security, & a well-defined career path?			1 2 3 4 5		
2. ... potential for significant financial reward?			1 2 3 4 5		
3. ... travel opportunities?			1 2 3 4 5		
4. ... competitive fringe benefits (health, tuition, & retirement)?			1 2 3 4 5		
5. ... geographic location of company?			1 2 3 4 5		
6. ... leadership opportunities?			1 2 3 4 5		
7. ... challenges (solving problems, variety in work			1 2 3 4 5		
8. ... creativity (thinking outside the box & using new approaches)			1 2 3 4 5		
9. ... flexible hours/ work schedules?			1 2 3 4 5		
10. ... achievement (feeling of accomplishment & full use of			1 2 3 4 5		
11. ... altruism (helping others & working in a friendly, non-			1 2 3 4 5		
12. ... autonomy (work on your own, make decisions)?			1 2 3 4 5		
13. ... comfort (job security & good working conditions)?			1 2 3 4 5		
14. ... safety (supportive management, predictable, stable work			1 2 3 4 5		
15. ... status (potential for advancement, leadership, & prestige)?			1 2 3 4 5		
<i>To what degree would _____ influence you to take a</i>					
16. ... financial assistance to complete your degree & work in			1 2 3 4 5		
17. ... employee assistance, wellness, and fitness programs?			1 2 3 4 5		
18. ... labor/management relations?			1 2 3 4 5		
19. ... opportunities for career advancement & leadership?			1 2 3 4 5		
20. ... competitive salary			1 2 3 4 5		
21. ... competitive fringe benefits			1 2 3 4 5		
22. ... a clear path to a higher management position			1 2 3 4 5		
23. ... do you have a job in the transportation industry			Yes No		
24. ... would you consider working in the transportation industry?			1 2 3 4 5		
25. ... would you pursue a job in the transportation industry?			1 2 3 4 5		
26. ... would you accept a job in the transportation industry?			1 2 3 4 5		
<i>To what degree do you prefer work activities that focus on:</i>					
27. ... practical hands-on problems and solutions?			1 2 3 4 5		
28. ... ideas, thinking, and problem solving?			1 2 3 4 5		
29. ... artistic and creative use of forms, design, and patterns?			1 2 3 4 5		
30. ... helping, teaching, providing service, or working with people?			1 2 3 4 5		
31. ... leading people, directing projects, making decisions?			1 2 3 4 5		
32. ... predictability, definite procedures, routine, data, details, &			1 2 3 4 5		
<i>To what degree do you agree, or</i>			1 2 3 4 5		
33. I am happy to see and talk to my coworkers each day.			1 2 3 4 5		
34. I prefer for people to see it my way at work.			1 2 3 4 5		

35. I find it easy to sympathize with others.	1 2 3 4 5
36. I am willing to take risks in the workplace.	1 2 3 4 5
37. I try to resolve conflicts with coworkers as soon as possible.	1 2 3 4 5
38. It does not bother me if others disagree with me at work.	1 2 3 4 5
39. I can easily understand my co-workers thoughts and feelings.	1 2 3 4 5
40. I will defend my ideas at work even if no one else agrees at first.	1 2 3 4 5
41. I try to be sensitive to people's feelings in the workplace.	1 2 3 4 5
42. I will put in extra time to get my way at work.	1 2 3 4 5
43. I am confident that I am an effective employee in my company.	1 2 3 4 5
44. I am as good, or better, at my job as men who hold the same	1 2 3 4 5
45. I have skills that are valuable to the Transportation Industry.	1 2 3 4 5
46. I am confident that I will succeed in a job in the Transportation	1 2 3 4 5
47. Be likely to take a job in a field dominated by members of the	1 2 3 4 5
48. Be comfortable in a job dominated by the members of opposite	1 2 3 4 5
49. Consider transportation to be a field dominated by the opposite	1 2 3 4 5
50. Consider yourself sufficiently skilled to work in a field	1 2 3 4 5
51. Consider yourself interested in working in a field dominated by	1 2 3 4 5
52. Consider pursuing a job in a field dominated by the opposite	1 2 3 4 5
53. Consider transportation a male dominated field?	1 2 3 4 5
<i>To what degree do you believe that...</i>	
54. Women will face gender-specific	1 2 3 4 5
56. Women will have less opportunity for networking because of	1 2 3 4 5
57. Women will have less opportunity for mentoring because of	1 2 3 4 5
58. Women will have less opportunity for advancement because of	1 2 3 4 5
59. Women will have less time to devote to their careers because of	1 2 3 4 5
60. Women will be paid less because of their gender.	1 2 3 4
62. Women will encounter sexist remarks or behavior.	1 2 3 4
61. On a scale of 1 to 10 how important is it to you to have a job that is traditionally associated with females? (Not Important) 1 2 3 4 5 6 7 8	
63. On a scale of 1 to 10, how feminine do you feel that you are? (Not Feminine) 1 2 3 4 5 6 7 8 9	
64. Are there any other considerations that would cause you to NOT consider taking a	
65. Are there any other considerations that would cause you to FAVORABLY consider	
Age: (in years) _____ Race: (specify) _____	
Are you currently a student: Yes _____ No _____	
Education: (degree) : _____ Major: _____	
Sex: Female ___ Male _____	
Job Title: (specify) _____ Management vs Non- _____	
Years in the field: (total number of years in a transportation job) _____	

APPENDIX B

Table 57

Bivariate Correlations: All Variables

	R	I	A	S	E	C	Intrinsic Values	Extrinsic Values	Barriers	Sex-Type Identity	Self-Efficacy	LTP	LTA
I	.352**	1	.222**	.281**	.397**	.137*	.237**	.092	-.011	.251**	.297**	.178**	.165*
A	.072	.222**	1	.245**	.270**	.108	.230**	.199**	.151*	.161*	-.077	-.125	-.120
S	.083	.281**	.245**	1	.388**	.185**	.226**	.135*	.165*	.221**	.053	.020	-.022
E (N=230)	.270**	.397**	.270**	.388**	1	.233**	.307**	.230**	.082	.241**	.317**	.240**	.183**
C	.385**	.137*	.108	.185**	.233**	1	.013	.150*	-.059	-.062	.163*	.319**	.302**
Internal Values	.173**	.237**	.230**	.226**	.307**	.013	1	.700**	.248**	.421**	.314**	.152*	.211**
External Values	.123	.092	.199**	.135*	.230**	.150*	.700**	1	.177*	.254**	.147*	.028	.069
Barriers Scale (N=174)	-.069	-.011	.151*	.165*	.082	-.059	.248**	.177*	1	.133	.027	-.081	-.070
Sex-Type Identity	.094	.251**	.161*	.221**	.241**	-.062	.421**	.254**	.133	1	.215**	.111	.129
Self-Efficacy (N=228)	.418**	.297**	-.077	.053	.317**	.163*	.314**	.147*	.027	.215**	1	.636**	.627**
LTP	.479**	.178**	-.125	.020	.240**	.319**	.152*	.028	-.081	.111	.636**	1	.936**
LTA (N=230)	.496**	.165*	-.120	-.022	.183**	.302**	.211**	.069	-.070	.129	.627**	.936**	1

Table 58

Regression Analysis: Likely to Pursue

Regression Analysis: Likely to Pursue						
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	
	B	Std. Error	Beta			
1	(Constant)	1.753	.681		2.576	.011
	Age	.081	.009	.637	9.153	.000
	Race	.186	.081	.143	2.302	.023
	Highest level of education	-.219	.074	-.206	-2.954	.004
2	(Constant)	.154	.913		.168	.867
	Age	.066	.009	.523	7.404	.000
	Race	.119	.076	.092	1.570	.119
	Education Level	-.141	.068	-.133	-2.071	.041
	Realistic	.273	.120	.166	2.270	.025
	Investigative	.121	.148	.055	.820	.414
	Artistic	-.119	.083	-.087	-1.433	.155
	Social	-.298	.121	-.158	-2.455	.016
	Enterprising	.326	.112	.195	2.910	.004
Conventional	.157	.102	.105	1.534	.128	
3	(Constant)	.051	.976		.052	.959
	Age	.065	.009	.510	7.119	.000
	Race	.129	.077	.099	1.685	.095
	Education Level	-.151	.068	-.143	-2.213	.029
	Realistic	.266	.120	.162	2.209	.029
	Investigative	.115	.148	.052	.777	.439
	Artistic	-.140	.084	-.102	-1.663	.099
	Social	-.344	.125	-.182	-2.756	.007
	Enterprising	.288	.115	.172	2.496	.014
Conventional	.186	.104	.125	1.785	.077	
4	Intrinsic Values	.053	.035	.147	1.522	.131
	Extrinsic Values	-.019	.021	-.080	-.878	.382
	(Constant)	-1.657	.970		-1.709	.091
	Age	.054	.009	.425	6.228	.000
4	Race	.282	.078	.217	3.624	.000
	Education Level	-.117	.063	-.110	-1.851	.067
	Realistic	.143	.113	.087	1.258	.211

	Investigative	.025	.137	.011	.182	.856
	Artistic	-.074	.078	-.054	-.944	.347
	Social	-.238	.117	-.126	-2.040	.044
	Enterprising	.185	.108	.111	1.716	.089
	Conventional	.137	.096	.092	1.431	.156
	Intrinsic Values	.025	.032	.070	.774	.441
	Extrinsic Values	-.016	.020	-.067	-.804	.423
	Self-Efficacy	.093	.020	.340	4.557	.000
	(Constant)	-1.819	.996		-1.827	.071
	Age	.056	.009	.440	6.174	.000
	Race	.281	.078	.216	3.608	.000
	Education Level	-.117	.063	-.110	-1.854	.067
	Realistic	.143	.114	.087	1.260	.210
	Investigative	.031	.137	.014	.227	.821
5	Artistic	-.073	.078	-.054	-.936	.351
	Social	-.249	.118	-.132	-2.113	.037
	Enterprising	.194	.109	.116	1.781	.078
	Conventional	.136	.096	.091	1.408	.162
	Intrinsic Value	.020	.033	.055	.597	.552
	Extrinsic Values	-.015	.020	-.064	-.757	.451
	Self-Efficacy	.091	.020	.335	4.461	.000
	Barriers	.011	.015	.043	.750	.455
	(Constant)	-2.519	1.174		-2.146	.034
	Age	.056	.009	.441	6.198	.000
	Race	.274	.078	.211	3.505	.001
	Education Level	-.127	.064	-.120	-1.998	.048
	Realistic	.142	.114	.086	1.247	.215
	Investigative	.006	.139	.003	.044	.965
	Artistic	-.072	.078	-.053	-.915	.362
6	Social	-.251	.118	-.133	-2.131	.036
	Enterprising	.188	.109	.112	1.723	.088
	Conventional	.148	.097	.099	1.530	.129
	Intrinsic Values	.009	.035	.025	.261	.795
	Extrinsic Values	-.014	.020	-.061	-.729	.468
	Self-Efficacy	.091	.020	.335	4.460	.000
	Barriers	.012	.015	.046	.807	.422
	Sex-Type Identity	.029	.026	.067	1.122	.265

Table 59

Regression Analysis: Likely to Accept

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.363	.675		3.499	.001
	Age	.065	.009	.570	7.452	.000
	Race	.187	.080	.160	2.329	.022
	Educational Level	-.197	.073	-.206	-2.688	.008
2	(Constant)	.763	.900		.848	.399
	Age	.048	.009	.420	5.435	.000
	Race	.117	.075	.100	1.558	.122
	Educational Level	-.121	.067	-.126	-1.794	.076
	Realistic	.363	.119	.244	3.058	.003
	Investigative	.025	.146	.012	.170	.866
	Artistic	-.134	.082	-.109	-1.642	.104
	Social	-.215	.120	-.126	-1.795	.076
	Enterprising	.285	.110	.189	2.582	.011
Conventional	.154	.101	.114	1.525	.130	
3	(Constant)	.391	.948		.412	.681
	Age	.046	.009	.407	5.274	.000
	Race	.136	.074	.116	1.833	.070
	Educational Level	-.135	.066	-.141	-2.031	.045
	Realistic	.347	.117	.234	2.971	.004
	Investigative	.021	.143	.011	.146	.884
	Artistic	-.169	.082	-.137	-2.072	.041
	Social	-.275	.121	-.162	-2.270	.025
	Enterprising	.221	.112	.146	1.968	.052
	Conventional	.188	.101	.140	1.861	.066
	Intrinsic Values	.069	.034	.214	2.050	.043
Extrinsic Values	-.015	.021	-.072	-.734	.464	
4	(Constant)	-1.311	.937		-1.399	.165
	Age	.036	.008	.313	4.281	.000
	Race	.288	.075	.246	3.841	.000
	Educational Level	-.100	.061	-.105	-1.649	.102
	Realistic	.224	.110	.151	2.048	.043
Investigative	-.069	.132	-.035	-.520	.604	
Artistic	-.103	.076	-.084	-1.368	.174	

	Social	-.169	.113	-.100	-1.504	.136
	Enterprising	.118	.104	.078	1.133	.260
	Conventional	.140	.093	.104	1.508	.135
	Intrinsic Values	.041	.031	.128	1.325	.188
	Extrinsic Values	-.012	.019	-.058	-.647	.519
	Self-Efficacy	.092	.020	.376	4.700	.000
	(Constant)	-1.352	.964		-1.402	.164
	Age	.036	.009	.317	4.144	.000
	Race	.288	.075	.246	3.821	.000
	Educational Level	-.101	.061	-.105	-1.643	.104
	Realistic	.225	.110	.151	2.040	.044
	Investigative	-.067	.133	-.034	-.504	.615
5	Artistic	-.103	.076	-.084	-1.360	.177
	Social	-.172	.114	-.101	-1.510	.134
	Enterprising	.120	.105	.080	1.142	.256
	Conventional	.139	.093	.104	1.495	.138
	Intrinsic Values	.040	.032	.124	1.247	.215
	Extrinsic Values	-.012	.019	-.057	-.631	.529
	Self-Efficacy	.092	.020	.374	4.641	.000
	Barriers	.003	.014	.012	.199	.843
	(Constant)	-1.905	1.139		-1.672	.098
	Age	.036	.009	.318	4.154	.000
	Race	.282	.076	.241	3.727	.000
	Educational Level	-.109	.062	-.113	-1.755	.082
	Realistic	.223	.110	.150	2.026	.045
	Investigative	-.087	.135	-.044	-.644	.521
	Artistic	-.102	.076	-.083	-1.340	.183
6	Social	-.174	.114	-.102	-1.521	.131
	Enterprising	.116	.106	.077	1.093	.277
	Conventional	.149	.094	.111	1.589	.115
	Intrinsic Values	.032	.034	.098	.942	.349
	Extrinsic Values	-.012	.019	-.055	-.607	.545
	Self-Efficacy	.092	.020	.374	4.632	.000
	Barriers	.003	.014	.015	.244	.808
	Sex-Type Identity	.023	.025	.059	.913	.363