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### Control Your Destiny Or Someone Else Will: The Value Of The GED

Elisabeth Salazar

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**CONTROL YOUR DESTINY OR SOMEONE ELSE WILL:**

**THE VALUE OF THE GED®**

By

**ELISABETH GRACE SALAZAR**

B.A., Psychology, University of New Mexico, 1990

M.A., Counseling, Webster University, 1992

DISSERTATION

Submitted in Partial Fulfillment of the  
Requirements for the Degree of

**Doctor of Education  
Educational Leadership**

The University of New Mexico  
Albuquerque, New Mexico

**December, 2015**

## **Dedication**

I give my gratitude to God for allowing me to pursue my doctorate, persevere, and complete it! Without His will and grace, this journey would be nonexistent. Most importantly, I must give honor and appreciation to my wonderful parents, Joe and Jennie Salazar; their love, support, and encouragement have been undeniably monumental! My father has always inspired me to do whatever I wanted to do and believed in me without question. My mother has always been my rock and pillar of strength.

None of this would have been possible without the love and patience of my family. My immediate family, my parents and brother, to whom this dissertation is dedicated to, have been a constant source of love, concern, support and strength all these years.

I must acknowledge as well the many friends, colleagues, and relatives who assisted, advised, and supported my research and writing efforts and helped me keep perspective on what is important in life. I thank you all for the encouragement and emotional support during the home stretch.

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**CONTROL YOUR DESTINY OR SOMEONE ELSE WILL:  
THE VALUE OF THE GED®**

**By**

**Elisabeth Grace Salazar**

B.A., Psychology, University of New Mexico, 1990  
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**ABSTRACT**

The purpose of this study was to explore the impact locus of control (LOC) had on the postsecondary achievement, as measured by self-reported GPA, of GED® recipients and traditional high school graduates (THSG) controlling for gender, race/ethnicity, and time in college. Data was collected from 767 GED® recipients and THSG enrolled in three postsecondary institutions in Northern New Mexico. LOC was assessed using the Adult Nowicki-Strickland Internal-External Control Scale (Nowicki & Duke, 1974). The majority of respondents were Hispanic/Latino (47.34%) and Caucasian (37.34%). Responses were analyzed using Pearson's *r*. Although LOC did not contribute significantly to academic achievement as measured by self-reported GPA of GED® recipients and THSG, the findings supported previous claims that higher internality is associated with higher academic achievement. Self-reported GPA was considerably above average for students with higher internality, regardless of type of degree, gender, race/ethnicity or time in college. This study holds power in removing the GED® stigma. Students who complete the GED® and display high internality are just as likely to succeed in college as THSG. Policy makers and

practitioners would be well advised to assess LOC and provide planned interventions to increase internality for students earlier in their school years. Future research may yield greater generalizability with a more representative sample size, consideration of multiple antecedents of locus of control, and collection of institutional data to confirm actual vs. self-reported GPA.

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## **Introduction**

The GED<sup>®</sup> is the most widely recognized form of alternative secondary certification in the United States; it is recognized and accepted by all 50 states and Canada (GED<sup>®</sup> Statistical Report, 2013). Yet, the millions of adults in America without a high school diploma or GED<sup>®</sup> represent a momentous social challenge that is exacerbated by society's demand for a more highly skilled and educated workforce. The 2010 U.S. Census indicated that more than 39 million adults in the United States age 16 and older or 18 % of the U.S. population lack a high school diploma. Taking the General Education Development GED<sup>®</sup> Tests is not a means to an end, but rather an alternative path to go on to college or postsecondary training. More than 60 % of GED<sup>®</sup> test-takers say they intend to further their education beyond the GED<sup>®</sup> program (GED<sup>®</sup> Statistical Report, 2013). Ninety-eight percent of U.S. colleges and universities recognize the GED<sup>®</sup> credential and accept it as equivalent to a traditional high school diploma (College Board, 2001). Although, the percentage of acceptance of the GED<sup>®</sup> credential is significant, there is a small portion of entities that will not accept the GED<sup>®</sup> credential. For example, as the former GED<sup>®</sup> Director, I am aware that the Army will not accept the GED<sup>®</sup> credential unless a recipient has completed 12 semester hours of college.

Before the GED<sup>®</sup> Series changed January 1, 2014, passing the GED<sup>®</sup> Tests with an average score of 500, for instance, put a person in the upper half (top 50%) in terms of class rank and let colleges know they had the skills and knowledge equivalent to applicants from traditional high schools (GED<sup>®</sup> Statistical Report, 2006). As for most employers, they no longer differentiate between a traditional high school diploma and a GED<sup>®</sup>. For example,

when applicants apply for a job, they are simply asked to provide verification of a GED® or High School Diploma (Rynes, S.L., Colbert, A.E., Brown, K.G. 2002).

For over 60 years, the GED® has provided a pathway to postsecondary education and employment for those individuals who did not complete high school. The purpose of the GED® Testing Program is to provide an opportunity for these individuals to have the learning acquired from such educational experiences evaluated and recognized. More specifically, the 2005 GED® Statistical Report stated, “The GED® Tests serve only one purpose—to certify a high school level of academic knowledge and skills” (p.1). The GED® Tests make it possible for qualified individuals to earn a high school credential by certifying their competencies, thus providing opportunities for hundreds of thousands of adults to pursue higher education, obtain jobs or promotions, and achieve personal goals. Every U.S. state and Canadian jurisdiction recognize the completed and passed GED® Test which demonstrates the knowledge and skills of a high school graduate. Even though the GED® is widely recognized, it does have some limitations. For example, the GED® is often stigmatized by its very nature. However, the GED® credential has served as an alternative for many individuals, young and old who may find themselves in precarious situations i.e., having to work to help support their family, physical or mental illness, etc. The question remains, how has this credential affected their lives and has it served as a pathway to be successful in the work place or in college? Do GED® recipients have the same chance as traditional high school graduates (THSG)?

Even though many studies have examined the college performance of GED® recipients, the existing literature does not present consistent results. This study will seek to

illuminate this problem, starting with where the tests came from, what they are, and what they measure.

### **Background**

To date, there have been four generations of the GED<sup>®</sup> test: the original GED<sup>®</sup> test released in 1942, the 1978 series, the 1988 series, and the series that my study is based on which was released in 2002. The 2002 series ran its course from 2002 until 2013. Even though a new test has been introduced in January 2014, the data derived from this new test is premature for this study. The number of students taking the 2014 GED<sup>®</sup> is very low and not all test sites have converted to the new test. The 2014 GED<sup>®</sup> Test meets the higher standards for high school completion as set by the College and Career Readiness Standards for Adult Education, the Common Core State Standards (CCSS), and standards used by Texas, Virginia, and other states (Technical Manual 2014 GED<sup>®</sup> Test, 2015). This new set of standards is aligned with CCSS and in its infancy; therefore, the data is not yet available.

GED<sup>®</sup> Testing Service (GEDTS) made the decision to overhaul the test and build a program from the ground up, specifically for adult learners to help solve the economic need by opening the doors for millions of adult learners to college courses, apprenticeships and job training—the pathway adults need to gain skills and knowledge, fill these jobs, and care for their families (Technical Manual 2014 GED<sup>®</sup> Test, 2015). The website states that it is the only nationally recognized high school equivalency test developed by experts with a 70-year history in high school equivalency; it is the only test aligned with current high school standards (including grade 12 standards) and college- and career-readiness (CCR) expectations; and is delivered exclusively on computer which provides a consistent testing experience nationwide with improved passing rates.

The 2014 GED<sup>®</sup> test offers two score levels: (1) GED<sup>®</sup> Passing Score of 150 at or higher than the minimum needed to demonstrate high school equivalency-level skills and abilities, (2) GED<sup>®</sup> Passing Score with Honors 170 at or higher than the minimum needed to demonstrate college-and career-readiness (GED Testing Service, 2014). This level of testing demonstrates a higher level of skills based on CCSS, a route that K-12 is pursuing. A large enough sample size is not yet available for this population. Therefore, the data for this test is premature and the focus of my study will be on the 2002 series of the test that ranges from 2002 to 2013.

While the academic content areas in which candidates are assessed—English language arts (reading/writing), social studies, science, and mathematics—have not changed, the priorities and assumptions by which proficiency in these areas is assessed have evolved. Currently, Adult Basic Education (ABE) and K-12 are evolving to CCSS and CCR. Since the GED<sup>®</sup> test assesses academic skills and knowledge typically developed in a four-year high school education program; it is of utmost importance to GED<sup>®</sup> Testing Service that the GED<sup>®</sup> test continues to evolve as secondary education evolves.

The GED<sup>®</sup> Tests were originally developed in 1942 to determine the skill levels of returning World War II (WWII) servicemen. The United States armed forces commissioned the American Council on Education (ACE) to assess the level of education and vocational goals of these servicemen with having to return to high school (Auchter, 1998). The GED<sup>®</sup> credential allowed veterans to pursue postsecondary education or secure gainful employment through the proposed GI Bill. The GED<sup>®</sup> tests have served a valuable role to support individuals in unique circumstances; but, just what are these tests and what do they measure?



Many adults who did not complete a traditional high school program of instruction continue to learn through a variety of experiences encountered in everyday life. The GED® acknowledges influences of life experiences on learning and education as well as offering an alternative to high school. The GED® Tests are rigorous and require skills and achievement. For example, GED® candidates must meet or surpass the performance of 40% of traditional graduating high school seniors. This standard is normed on graduating high school seniors (GED® Statistical Reports, 2002-2013). To earn a credential, a candidate must complete a battery of five tests, which entail math, science, reading, writing, and social studies. These tests measure skills in communication, information processing, problem solving and critical thinking. Furthermore, these tests are uniform meaning that after passing the GED® Battery; they represent the same test and format in every state in the United States, throughout Canada, and around the world.

Currently, more than 39 million adults in the United States lack a high school diploma (US Census, 2010). The GED®'s success relies not on replicating the K-12 experience, but on recognizing the utility of the credential as a passport for the individual and the acceptance of the credential by both academic and corporate organizations (Auchter, 1998). Regardless of the type of credential, the number of Americans without a high school diploma is soaring. This holds true for every state in the union including New Mexico (GED® Statistical Report, 2009).

### **Role of the GED® in New Mexico**

In New Mexico, 313,000 adults between the ages of 18 and 64 are without a high school diploma or a GED® credential (Kolkmeier 2004). This is compounded by the number

of undocumented aliens in the state, making more than 34 % of the population without a high school diploma or GED<sup>®</sup> credential (US Census, 2010).

In 2006, New Mexico ranked fifteenth in the nation for job growth (New Mexico Department of Labor, May 2006 to May 2007). Who is going to fill these new jobs? Given that 70 % of all new jobs require some education beyond high school and no less than 40 % require an associate's degree, it is apparent that adults in New Mexico are in need of education services (New Mexico Department of Labor, May 2006 to May 2007). According to the ABE Program in New Mexico, 400,000 adults are in need of basic adult education services and only 20,000 adult students are being served due to funding and accessibility. Adults aged 20 and older comprise 71% of New Mexico's total population (Bureau of Business and Economic Research statistics, University of New Mexico, 2012). Because more than 30% of adults in New Mexico do not have a high school diploma or a GED<sup>®</sup> credential and do not speak English fluently, it is imperative that these educational needs be addressed.

Twenty-four percent of New Mexico children live in a home where the head of household did not graduate from high school or earn a GED<sup>®</sup> credential and 19 percent of the school-age youth speak a language other than English in the home (The State of Higher Education in New Mexico, 2010). The best predictor of school success is parent education. According to the ABE Program, a considerable number of New Mexico adults lack basic skills (The State of Higher Education in New Mexico, 2010). Consequently, adult education is a viable force and very necessary.

Accountability has gained momentum as it pertains to education. Given the current economy, this includes demands for efficiency and better returns on governmental

investments. Figure 1 demonstrates a cost-benefit analysis on the return investment from a GED® /High school Diploma perspective which shows that adult education yields positive results in New Mexico.

**From a GED® /High School Diploma Perspective:**

\$7,400 added income annually per high school graduate

\$11,344,200 added income annually for 1533 GED® graduates (1,533 x \$7,400)

**\$2,268,840** additional tax revenue annually (\$11,344,200 x 20 percent)

*Figure 1: Perspectives. Source: NMHED/ABE*

Although adult education is making a positive impact, it is still only serving a fraction of those students without a GED® or High School Diploma. It should be noted that not all students who enroll in ABE programs are pursuing a GED®. Often times, these students are there to learn basic skills and English. Further, while enrollment in ABE programs by ethnicity remains steady annually, the age of the typical student is younger than in previous years. In 2006, there was a three percent increase in the number of students 16-18 years of age, with students 16-24 making up 40 % of total enrollment in New Mexico ABE programs. Student's age 16-24 have different needs than those 25 and older (Retrieved from The State of Higher Education in New Mexico, 3/23/2010). Younger students require separate materials and classrooms, which impacts teachers, instructional strategies, and classroom dynamics. And, why is this adult education group getting younger? One explanation is the dropout rate continues to rise.

The overall New Mexico statewide high school dropout rate increased from the previous school year (SY 2005-06) by .8 %. The numbers of dropouts reported for the school year (SY 2005-06) was 5,493; 6,612 dropouts were reported for the school year (SY

2006-07), an increase of 1,119 (NMPED Dropout Report, 2006-2007). In 2008, the overall statewide dropout decreased slightly to 3.6 percent, compared to 4.4 percent in 2007. From 2008 to 2010, the dropout rate increased and only slightly decreased in 2011 and 2012.

Figure 2 displays the results from school year 2004 to 2012, for School Year (SY) by Dropout percentage.

<b>SY</b>	<b>SY</b>	<b>SY</b>	<b>SY</b>	<b>SY</b>	<b>SY</b>	<b>SY</b>	<b>SY</b>
<b>2004–</b>	<b>2005–</b>	<b>2006–</b>	<b>2007–</b>	<b>2008–</b>	<b>2009–</b>	<b>2010–</b>	<b>2011–</b>
<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>
3.7	3.6	4.4	3.6	3.8	5.0	4.6	4.6

*Figure 2: School year by Dropout Percentage. Source: NMPED High School Dropout Report*

As shown in Figure 2, the report suggests that there was a significant increase in the dropout rate from school year (SY 2005-06 to 2006-07) and another significant increase from (SY 2008-09 to SY 2009-10). This appears to be a growing national trend that may not only be attributed to the usual factors according to the Bureau of Justice which includes: community issues, (crime, poverty, high unemployment rate); family issues (management problems, death, suicide abuse, conflicts for student), and school issues (poor teacher quality, crime, and failure in early grades or freshman year), but also to the 16 -18 year old students who aren't challenged by traditional high school and are college ready (Bureau of Justice, 2010).

The 2010 US Census indicates that 18 percent of the US adult population lacks a high school diploma. In 2013, more than 848,000 adults took all or part of the GED<sup>®</sup> Tests. Of that total, 743,000 completed the Battery and more than 560,000 (75.3%) earned a high

enough score to receive a GED<sup>®</sup> credential (GED<sup>®</sup> Statistical Report, 2013). It is notable that 16 -18 year old teenagers accounted for 30 percent of all candidates in the United States. Further, among all GED<sup>®</sup> passers in the United States, 34% were aged 16 to 18 (GED<sup>®</sup> Statistical Report, 2013). In New Mexico, the average age of a GED<sup>®</sup> recipient is 24 (DiplomaSender, *n.d.*).

### **Statement of the Problem**

Since the administration of the first GED<sup>®</sup> Test in 1942, researchers have questioned its efficacy. The value of the GED<sup>®</sup> as compared to a traditional high school diploma (THSD) has been investigated throughout the years. The information has been plentiful and conflicting. Some authors claim (Kroll, 1993; Rogers, 1977; Baldwin, 1995; Hamilton, 1998) that the GED<sup>®</sup> is of equal value to a high school diploma. Other studies indicate that GED<sup>®</sup> recipients perform as well or even better than THSD graduates (Banner, 1989; Kroll, 1993). Kroll (1993) presented an example of the disparity in antecedent literature. In a meta-analysis, she reviewed studies on GED<sup>®</sup> recipients and THSD graduates that focused on academic achievement. Some of the studies indicated that the GED<sup>®</sup> could be a predictor of college academic performance (Banner, 1989; Kroll, 1993). Further, studies by Rogers (1977), Baldwin (1995), and Hamilton (1998), showed that college student achievement was not related to the completion of a traditional high school program. Kroll also cited that both GED<sup>®</sup> recipients and Traditional High School Graduates (THSG) were similar in regards to college academic performance; she also indicated that GED<sup>®</sup> recipients fared better than THSG but also included studies that indicated that THSG were more successful academically. Kroll (1993) also warned that the studies were limited to single institutions and suggested mediating variables such as gender and motivation for future studies. Earlier

studies, done by Rogers (1977), Baldwin (1995) and Hamilton (1998), have scrutinized issues ranging from the comparison of GED<sup>®</sup> recipients and THSG's grade point average (GPA) to the relationships between GED<sup>®</sup> certification, academic achievement and enrollment in developmental coursework. Also, student demographic information such as marital and socio-economic status, gender and race, have all been considered as mediating variables (Ebert, 2002).

Another variable that warrants further investigation is Locus of Control (LOC). According to Thomas and Harvey (n.d.) and Findley and Cooper (1983), locus of control, one's perception of the degree to which he or she is in control of the outcome of his or her behavior has been shown to significantly affect academic achievement in elementary, secondary, and college students. Locus of control, according to Rotter's (1975) approach, can be divided into two separate sources of control: internal and external. People with an internal locus of control believe that they control their own destiny. They also believe that their own experiences are controlled by their own skill or efforts. An example would be "The more I study, the better grades I get" (Gershaw, 1989, p.2). On the other hand, people who tend to have an external LOC tend to attribute their experiences to fate, chance, luck or talent.

External LOC: If students attribute their successes or failures to having a bad day, unfair grading procedures on their teacher's part, or even God's will, they can be said to have a more external LOC. These students might say, "It doesn't matter how hard I study, the teacher just doesn't like me, so I know I won't get a good grade." These students generally don't learn from previous experience. Since they attribute both their successes and failures to luck or chance, (Gershaw, 1989) they tend to lack persistence and not have very high levels

of expectation. Moreover, research shows that people with perceptions of external LOC tend to have lower academic achievement than internals.

Similarly, like the academic performance of GED<sup>®</sup> students, the bulk of information on the construct of locus of control is just as elaborate (Carton & Nowicki, 1994; Hashway, Hammond, & Rogers, 1990; Thomas & Harvey, n.d.).

Nonetheless, research with the comparison of GED<sup>®</sup> recipients and THSG with regard to LOC and postsecondary academic performance is lacking and warrants further investigation. Therefore, the purpose of this study was to explore the impact LOC had on the postsecondary achievement (self-reported GPA) of GED<sup>®</sup> recipients and, (THSG) controlling for gender, race/ethnicity, and time in college.

Regardless of the abundance of research pertaining to the college performance of GED<sup>®</sup> recipients and THSG, the findings have presented an array of conflicting results. Contributing to the disparity of results in previous studies, Turner (1993) suggests that the GED<sup>®</sup> was not a suitable tool for predicting college performance. However, Turner concluded that GED<sup>®</sup> recipients should be given the same educational opportunities as THSG because no predictability existed. Coberly (1995), Hamilton (1998) and Schillo (1990), maintained that THSG was the most advantageous choice over the GED<sup>®</sup> for those students seeking a college education. These studies revealed that THSG performed significantly better, had higher retention rates, and took fewer developmental courses than their counterparts.

Because of the lack of consistency in previous studies, it is difficult to determine the comparability between the GED<sup>®</sup> credential and the THSD. The GED<sup>®</sup> has been stigmatized by not having the academic rigor needed for students to enter into college. These negative

connotations along with the discrepancies of past studies indicate the need for further investigation.

Past GED<sup>®</sup> research does not adequately address certain factors such as demographics to which academic achievement is significantly related, a large enough sample to ensure validity and generalizability, and an additional variable, locus of control of reinforcement and its relationship to academic achievement. Therefore, to try to illuminate this conundrum, more in depth research was conducted.

### **Purpose**

Due to the discrepancy of results in previous GED<sup>®</sup> research, additional factors were investigated to elucidate this problem. The purpose of this study was to explore the impact locus of control had on the postsecondary achievement (self-reported GPA) of GED<sup>®</sup> recipients and, (THSG) controlling for gender, race/ethnicity, and time in college.

It should be noted that Boesel, Asalam, and Smith (1998) reported that the outcomes of previous GED<sup>®</sup> research may have been confounded by certain factors, such as demographics of subjects as well as the length of time students may have spent in postsecondary institutions. Thus, to ensure the quality of the research and to reduce extraneous variance or plausible rival hypotheses (McMillan & Schumacher, 2001) and per Kroll's (1993) recommendation, in addition to LOC, the intervening variables of gender, ethnicity, and time spent in college was considered as covariates in this study.

### **Significance of the Study**

Even though many studies have examined the college performance of GED<sup>®</sup> recipients, the existing literature does not present consistent results. The present study



helped to illuminate the problem by investigating locus of control, which has not been explored in sufficient depth between GED<sup>®</sup> recipients and THSG.

Locus of control and academic achievement have been closely linked (Findley & Cooper 1983; Kalecstein & Nowicki, 1997), and therefore, this study helped to solidify a theoretical perspective on GED<sup>®</sup> recipient college performance (self-reported GPA) and traditional high school students in college. Currently the number of GED<sup>®</sup> recipients pursuing postsecondary education in the United States is unclear. (Patterson, Zhang, Song, & Guison-Dowdy, 2010). This is based on the fact that large-scale national studies have not been done with GED<sup>®</sup> recipients. The American Council on Education has conducted a three-year longitudinal study that commenced in 2009 about the effect of the GED<sup>®</sup> in postsecondary enrollment, persistence, and completion with GED<sup>®</sup> examinees. This longitudinal study had never been done and sought to establish a baseline to measure the effectiveness of efforts to help adult students without a high school diploma transition to a more rigorous credential that ascertains that these students are college and career ready (Patterson et al., 2010).

The present study contributed to the existing body of knowledge that includes a comparison of the difference in academic achievement as measured by self-reported GPA between THSG and GED<sup>®</sup> recipients controlling for gender, ethnicity, time in college, and locus of control which is crucial in understanding the factors that lead to success and shortfalls.

### **Limitations**

The proposed study only included students enrolled in two community colleges and one university in northern New Mexico using self-reported GPA as a measure of academic

achievement. A longitudinal study was not conducted and therefore reduces generalizability of the results. Several demographics were obtained, but did not have much of an effect.

Age at the time of the study was not ascertained either.

GPA, a linear combination of assigned grades from different courses, is widely known to be an imperfect measure of academic achievement (Lei, Bassiri & Schultz, 2001)

### **Theoretical Framework**

This study followed Rotter's social learning theory from which the Locus of Control of Reinforcement model originated. Several authors have connected externality to conformity and internality to individual action (Crowne & Liverant, 1963; Kelman & Lawrence, 1972). Social learning theory allows for clear predictions to be made between the relationship of LOC and academic achievement (Kalechstein & Nowicki, 1997). Rotter's theory has four components: (a) behavior potential-BP, (b) expectancy-E, (c) reinforcement value-RV, and (d) psychological situation. These components combined yield the following predictive formula for behavior:

$$\text{BP} = f(\text{E} \ \& \ \text{RV})$$

This formula can be read as follows: behavior potential is a function of expectancy and reinforcement value. Or, in other words, the likelihood of a person exhibiting a particular behavior is a function of the probability that the behavior will lead to a given outcome and the desirability of that outcome. If expectancy and reinforcement value are both high, then behavior potential will be high. If either expectancy or reinforcement value is low, then behavior potential will be lower. A psychological situation is not a direct component of Rotter's behavior prediction formula. Rotter placed individual difference in his larger theory of social learning; he argued that locus of control stemmed from one's generalized

expectancy about the world. An individual whose efforts are consistently rewarded develops an internal locus of control. In contrast, people who do not succeed despite their efforts may acquire an external locus of control. Thus internals see a causal relationship between their behavior and rewards, whereas externals do not (Rotter, 1966). For example, college students with a strong *internal* locus of control may believe that their grades were achieved through their own abilities and efforts, whereas those with a strong *external* locus of control may believe that their grades are the result of good or bad luck, or to a professor who designs bad tests or grades capriciously; hence, they are less likely to expect that their own efforts will result in success and are therefore less likely to work hard for high grades. This has obvious implications for differences between internals and externals in terms of their achievement motivation, suggesting that internal locus is linked with higher levels of need for achievement. Due to their locating control outside themselves, externals tend to feel they have less control over their fate. People with an external locus of control tend to be more stressed and prone to clinical depression (Benassi, Sweeney & DuFour, 1988; cited in Maltby, Day & Macaskill, 2007). Internals were believed by Rotter (1966) to exhibit two essential characteristics: high achievement motivation and low outer-directedness. This was the basis of the LOC scale proposed by Rotter in 1966; although this was actually based on Rotter's belief that LOC is a one-dimensional construct. Since 1970, Rotter's assumption of one-dimensionality has been challenged, with Levenson (1974), for example, arguing that different dimensions of LOC, such as belief that events in one's life are self-determined, are organized by powerful others and are chance-based, must be separated. Weiner's early work in the 1970s, suggested that, more-or-less orthogonal to the internality-externality dimension,

we should also consider differences between those who attribute to stable causes, and those who attribute to unstable causes.

Rotter's model has had great impact on the literature of LOC. Additionally, much of the research has demonstrated that LOC and academic achievement has a positive causal relationship (Findley & Cooper, 1983; Kalechstein & Nowicki, 1997). Rotter's model served as a correlation between GED<sup>®</sup> certification and academic achievement (self-reported GPA) based on the student's locus of control. No single theory or framework has conceptualized this relationship.

### **Conceptual Model**

Rotter's predictive formula for behavior explicates the relationship between behavior potential, the measures of expectancy, and reinforcement value. Within this context, the following conceptual model (see Figure 3) for this study depicts academic achievement (behavior potential) as a function of multiple measures: (a) the student's LOC, the degree to which that achievement or reinforcement is expected to be contingent on one's own behaviors versus luck, chance, fate, or outside external forces; (b) the type of diploma received; and (c) the student's gender; (d) ethnicity; and, (e) time in college. McMillan and Schumaker (2001) suggested that potential moderating variables be included into the research design to reduce error.

Pearson's  $r$  was applied to analyze the data using side by side box plots, scatter plots, and density curves, supplemented with numerical summaries. The data was analyzed through software R. R is a language and an environment for statistical computing and graphics developed at Bell Laboratories by John Chambers and colleagues (Chambers, n.d.).

$$r_{yx} = \frac{\text{cov}(y, x)}{\sqrt{\text{var}(y) * \text{var}(x)}} = \frac{\sum (X_i - \bar{X})(Y_i - \bar{Y}) / N}{\sqrt{\sum (X_i - \bar{X})^2 \sum (Y_i - \bar{Y})^2 / N * N}} = \frac{\sum (X_i - \bar{X})(Y_i - \bar{Y})}{\sqrt{\sum (X_i - \bar{X})^2 \sum (Y_i - \bar{Y})^2}}$$

Where

Cov(y,x) = the covariance of y and x

Var(x)= the variance of x

Var(y)= the variance of y

*Figure 3: Pearson's r Algorithm.*

### **Research Questions**

The study explored the impact locus of control had on the postsecondary achievement (self-reported GPA) of GED<sup>®</sup> recipients and traditional high school graduates, (THSG) controlling for gender, race/ethnicity, and time in college at three colleges in northern New Mexico.

The following research questions were investigated:

1. Is there a meaningful difference between student's (self-reported) college academic achievement (GPA) as it relates to type of credential earned (GED<sup>®</sup> vs. Traditional) and locus of control (Internal vs. External)?
2. Is there a meaningful difference between (self-reported) college academic achievement (GPA) of GED<sup>®</sup> recipients and THS graduates controlling for gender?

3. Is there a meaningful difference between (self-reported) college academic achievement (GPA) of GED<sup>®</sup> recipients and THS graduates controlling for race/ethnicity.
4. Is there a meaningful difference between (self-reported) college academic achievement (GPA) of GED<sup>®</sup> recipients and THS graduates controlling for time in college?

Based on the preceding conceptual model, the following research hypotheses are considered:

- H1: A meaningful difference exists between student's (self-reported) college academic achievement (GPA) as it relates to type of credential earned (GED<sup>®</sup> vs. Traditional) and locus of control (Internal vs. External)?
- H2: A meaningful difference exists between (self-reported) college academic achievement (GPA) of GED<sup>®</sup> recipients and THS graduates controlling for gender.
- H3: A meaningful difference exists between (self-reported) college academic achievement (GPA) of GED<sup>®</sup> recipients and THS graduates controlling for race/ethnicity
- H4: A meaningful difference exists between (self-reported) college academic achievement (GPA) of GED<sup>®</sup> recipients and THS graduates controlling for time in college

### **Operational Definitions**

The operational definitions are as follows:

1. *Type of Diploma:*
  - a. GED<sup>®</sup>: A credential and/or transcript as a valid measure of five content areas of academic skills and knowledge for awarding a high school equivalency credential.

- b. Traditional High School Diploma (THSD):* A credential awarded by a state GED®
- Recipient: An examinee who has passed the five content areas of the GED® Tests but did not graduate from a traditional high school.
2. *Examinee:* A student who has taken one or all five components of the GED® Battery.
  3. *Traditional High School Graduate:* A student who has graduated from a locally accredited four-year high school.
  4. *Academic Achievement:* Students' college academic performance in a post-secondary as measured by self-reported GPA in Spring 2014, Fall 2014, and Spring 2015.
  5. *Locus of Control:* The extent to which individuals believe they control the outcome of events. Those individuals who have high internal locus of control believe they can control their events based on their actions or behaviors. Those who have low internal locus of control believe that their outcomes are determined by fate, chance, or luck and are beyond their control. This shall be measured by administering the Adult Nowicki-Strickland Internal-Locus of Control Scale to participants in the study (See Appendix B).
  6. *Gender:* The biological sex of the participant coded as female = 1 and male = 2.
  7. *Time in College:* The number of semesters the participant spent in college prior to the study.

## **Summary**

For over 60 years, the GED® has provided a pathway to postsecondary education and employment for those individuals who did not complete high school. Because of the lack of consistency in previous studies, it has been difficult to determine the equality or lack thereof

between the GED® credential and the THS diploma. This study sought to clarify the inconclusive evidence of academic preparedness of these students by investigating the relationship of multiple measures of student performance (self-reported GPA) including locus of control, gender, race and type of diploma.



## **Chapter II**

### **Review of the Literature**

The review of the literature includes information on the value of the GED<sup>®</sup>, comparison of the GED<sup>®</sup> and the THS diploma and relevant information regarding dropouts. This chapter presents a review of scholarly works that relate to the study conducted and will be divided into two major sections. The first section presents significant information about the value of the GED<sup>®</sup> and assessment including studies related to characteristics of age and gender of the GED<sup>®</sup> recipient. Comparisons between the GED<sup>®</sup> recipient and the THSG in relation to postsecondary achievement are also included. The second section demonstrates the construct of locus of control and its relationship to academic achievement. Factors relating to students enrolled in four-year, two-year and vocational/technical institutions are presented.

The presentation of the literature is separated into eight subsections: (a) the historical context, (b) GED<sup>®</sup> Tests, (c) dropouts specifically 16 to 18 year-old students in the U.S., focused in New Mexico, (d) reasons for pursuing the GED<sup>®</sup> Credential, (e) GED<sup>®</sup> recipients versus THSG in postsecondary achievement, (f) locus of control of reinforcement, (g) locus of control and academic achievement and (h) summary.

#### **The Value of the GED<sup>®</sup> Assessment**

**Historical context.** The GED<sup>®</sup> Tests were originally developed in 1942 to determine the skill levels of returning World War II (WWII) servicemen. The United States Armed Forces commissioned the American Council on Education (ACE) to assess the level of education and vocational goals of these servicemen without having to return to high school (Auchter, 1998). Initially, colleges and universities utilized the tests results for admission

purposes. Almost 90 thousand veterans enrolled in higher education after WWII and in 1945, under the GI Bill, over 2.2 million veterans attended college (Auchter, 1998). Preference was given to veterans over non-veterans in that era, due to the veterans' success and commitment to higher education. Even though studies of the results were a mixed bag, the GED<sup>®</sup> had successfully accomplished its mission, to assimilate veterans into the educational system and prevent pervasive unemployment. With the end of World War II, it was determined that the GED<sup>®</sup> Tests would be valuable to ordinary citizens who had not completed high school. In 1947, the state-sponsored diploma program was introduced; and New York, with combined efforts of other states, transformed a national program into a comprehensive high school credentialing entity (Auchter, 1998). ACE over time partnered with all 50 states and 11 Canadian Provinces and created a high school credential based on passing the GED<sup>®</sup> Battery. Now, the GED<sup>®</sup> Tests measure the major and lasting outcomes and concepts associated with a traditional four-year high school education (GED<sup>®</sup>, Statistical Report, 2002-2013).

The validity and credibility of the GED<sup>®</sup>, Testing Program can be measured based on the review of the test goals and specifications. Foremost, the fact that there have only been four series of tests since its inception in 1942 indicates its strength of the test specification and standard setting process (GED<sup>®</sup>, Statistical Report, 2002). To keep up with standards, the subject matter has remained constant, but the means by which individuals are assessed have progressed.

The first generation of tests developed in 1942 reflected an industrial era when a high school education was sufficient to obtain a good job. While some critics, such as Benjamin Bloom (1955) who had conducted a norming study for the GED<sup>®</sup>, Battery, complained that

the tests were normed too low and the curriculum was too limited, the GED<sup>®</sup> has shown steady growth.

To date, there have been four generations of the GED<sup>®</sup> test: the original GED<sup>®</sup> test released in 1942, the 1978 series, the 1988 series, and the series that this study was based on which was released in 2002. The 2002 series ran its course from 2002 until 2013. As stated previously, a new test has been introduced in January 2014; however, the data derived from this new test is premature for this study. The number of students taking the 2014 GED<sup>®</sup> is very low and not all test sites have converted to the new test. The 2014 GED<sup>®</sup> Test meets the higher standards for high school completion as set by the College and Career readiness Standards for Adult Education, the Common Core State Standards (CCSS), and standards used by Texas, Virginia, and other states, Technical Manual 2014 GED<sup>®</sup> Test, (2015). This new set of standards is aligned with CCSS and in its infancy; therefore, sufficient data is not yet available.

In January 2002, the General Education Development Testing Service (GEDTS) of the American Council of Education introduced a new series of GED<sup>®</sup> Tests. The aim of the redesigned tests, which had last undergone substantial revision in 1988, was to ensure that the content knowledge and thinking skills tested by the exam were consistent with the content knowledge and higher-order thinking skills expected to be mastered by high school graduates. The development of the 2002 series raised the minimum passing score based on the performance of a nationally stratified random sample of 15,000 graduating seniors (GED<sup>®</sup> Statistical Report, 2003). With the 1988 series, the passing score was raised in 1997 so that 37 percent of the graduating seniors would not pass the GED<sup>®</sup> Tests. For the 2002

series, this pass rate was raised to 40 percent and means that 6 out of 10 high school seniors cannot pass the GED® Tests (GED® Statistical Report, 2002).

In 2001, New Mexico had an astounding pass rate of 90.4 percent (GED®, Statistical Report, 2002). This was due in part because the new 2002 series would commence January 1, 2002. This meant that GED®, candidates had until December 31, 2001 to complete their testing because the 1988 Series of GED®, Tests could not be combined with the new 2002 Series. From direct mailings, to billboards and radio spots, individuals were alerted that they needed to complete their testing by the end of 2001. This resulted in over 9,000 GED® candidates in New Mexico (the largest number to date) and over 1 million individuals worldwide who took the GED® Tests in 2001 (GED® Statistical Report, 2002). Studies have not been conducted to understand why the GED® pass rate increased from 68 percent in 1999 to 90.4 percent in 2001. However, given my observation of the last 13 years as the GED® Director for New Mexico, it is perhaps because these individuals did not want to begin testing a new series of tests in 2002 that were considered to be more rigorous. Furthermore, the 1988 series could not be combined with the 2002 series and thus, would require them to take all five GED® Tests over if they did not pass.

The GED® pass rate in New Mexico is set at 65%t for the calendar year 2012, (GED® Statistical Report, 2012) down from the year 2011 which was at 70% compared to the national average of 69%. The national average also decreased from 71% in the year 2011.

The GED® Director for New Mexico, in 2007, began a campaign to combine efforts with the GED® Examiners and Adult Basic Education Directors to increase the pass rate. This resulted in a 5% increase in the pass rate from 2006 to 2007. Figure 4 displays the number of candidates who tested in New Mexico as well as at each GED® Testing Center.

Data was broken down by the number of candidates tested, the number of candidates who passed the GED<sup>®</sup> and the pass rate. The pass rate has fluctuated over the years but the number of testers continues to increase.

	2007	2007	2007	2006	2006	2006	2005	2005	2005	2004	2003
Test Center	Took Entire Battery	Tested and Passed	Pass Rate	Took Entire Battery	Tested and Passed	Pass Rate	Took Entire Battery	Tested and Passed	Pass Rate	Pass Rate	Pass Rate
<i>Entire State</i>	8462	6767	68%	8070	6634	63%	7972	6652	67%	67%	65%
NMSU-A	129	114	88%	87	79	91%	123	113	92%	87%	87%
CNM	1787	1112	62%	1945	1141	59%	2195	1439	66%	65%	62%
<i>NM Corrections</i>	325	281	86%	320	262	82%	289	256	89%	90%	91%
Foothill HS	40	22	55%	48	27	56%	20	15	75%	78%	56%
UNM Main	363	244	67%	394	245	62%	348	188	54%	58%	58%
<i>YDI</i>	495	288	58%				216	105	49%	N/A	N/A
UNM -Valencia	168	159	95%	132	109	83%	129	102	79%	77%	82%
NMSU- Carlsbad	64	59	92%	72	58	81%	81	71	88%	89%	92%
Clovis CC	229	149	65%	184	113	61%	221	145	66%	66%	64%
WNMU- Deming	62	30	48%	68	21	31%	73	36	49%	22%	13%
NNMCC	277	156	56%	296	158	53%	300	183	61%	63%	61%
San Juan College	431	295	68%	356	236	66%	335	223	67%	70%	66%
Sierra Blanca HS	4	1	25%								
UNM-Gallup	156	115	74%	134	91	68%	148	96	65%	73%	76%
NMSU-Grants	87	73	84%	84	71	85%	55	47	85%	95%	93%
NMJC Hobbs	129	90	70%	112	74	66%	131	100	76%	76%	79%
NMSU Las Cruces	512	371	72%	394	292	74%	284	212	75%	73%	67%

Figure 4: State of New Mexico GED® Statistics. Source: Lisa G. Salazar, GED® Director of New Mexico, 2008, Raw scores from Oklahoma Scoring Co., 2008

	2007	2007	2007	2006	2006	2006	2005	2005	2005	2004	2003
Test Center	Took Entire Battery	Tested and Passed	Pass Rate	Took Entire Battery	Tested and Passed	Pass Rate	Took Entire Battery	Tested and Passed	Pass Rate	Pass Rate	Pass Rate
<i>Entire State</i>	8462	6767	68%	8070	6634	63%	7972	6652	67%	67%	65%
JP Taylor	21	16	76%	20	18	90%	7	6	86%	88%	N/A
NMHU	148	79	53%	116	54	47%	118	66	56%	47%	43%
CCCC	42	29	69%	17	15	88%	19	12	63%	57%	68%
Raton	40	20	50%	47	26	55%	N/A	N/A	N/A	N/A	N/A
ENMU- Roswell	415	272	66%	391	241	62%	490	299	61%	66%	63%
ENMU- Ruidoso	101	81	80%	97	72	74%	70	50	71%	N/A	N/A
SFCC	330	266	81%				352	275	78%	78%	73%
Dine College	120	78	65%	106	55	52%	63	46	73%	77%	78%
WNMU Silver City	85	53	62%	55	34	62%	76	53	70%	66%	67%
Socorro	35	24	69%	27	18	67%	41	27	66%	62%	60%
UNM Taos	124	90	73%	97	64	66%	108	86	80%	67%	73%
Mesalands	38	28	74%	50	33	66%	41	32	78%	79%	92%
T or C	10	5	50%	23	14	61%	57	36	63%	51%	N/A
NM Boys' School				11	7	64%					

Figure 4: State of New Mexico GED® Statistics (Continued)

The pass rate from 2008 to 2013 has remained fairly consistent between 69% and 71% with number of testers increasing (GED® Statistical Report, 2008-2013).

As societal needs have continued to change, so have the GED® Tests. The GED® Tests have proven through four generations of tests that they are a rigorous instrument for testing and certify high school level of academic knowledge. The process is demanding and candidates must demonstrate competence in lifelong learning and critical skills such as solving problems, taking responsibility, learning through research, planning, reflecting and evaluating.

Over seventeen million GED® transcripts have been awarded since 1942; and in a typical year, 777,000 individuals attempt some portion of the GED® Test (GED® Statistical Report, 2009). On average, GED® examinees are 25 years of age and range from 16 to 90 years old. Most (71%) have completed the 10<sup>th</sup> grade and the majority cites educational reasons for taking the GED® Tests (GED® Statistical Report, 2009). But, just what are the GED® Tests and what do they look like?

**What are the GED® Tests?** Many adults who did not complete a traditional high school program of instruction have continued to learn through a variety of experiences. The GED® Tests provides an opportunity for these individuals to have the learning acquired from such educational experiences evaluated and recognized. More specifically, the 2005 GED® Statistical Report states, “The GED® Tests serve only one purpose—to certify a high school level of academic knowledge and skills” (GED® Statistical Report, p.1). The GED® Tests make it possible for qualified individuals to earn a high school credential by certifying their competencies, thus providing opportunities for hundreds of thousands of adults to pursue higher education, obtain jobs or promotions, and achieve personal goals. Every U.S. state



and Canadian jurisdiction recognize the completed and passed GED® Test which demonstrates the knowledge and skills of a high school graduate (GED® Statistical Reports, 2002-2013).

***What are the GED® Tests and what do they measure?*** The GED® Tests are rigorous and demand achievement. GED® candidates must meet or surpass the performance of 40 percent of traditional graduating high school seniors (GED® Statistical Reports, 2002 - 2013). To earn a credential, a candidate must complete a battery of five tests and they include math, science, reading, writing, and social studies. These tests measure skills in communication, information processing, problem solving and critical thinking. Furthermore, these tests are uniform; meaning after passing the GED® Battery, they represent the same test and format in every state in the United States, throughout Canada, and around the world.

Figure 5 provides a detailed description of each of the five tests of the 2002 Series GED® Battery.

Test	Items	Time Limit
Language Arts, Writing, Part I	50 Questions	75 Minutes
Language Arts, Writing, Part II	Essay	45 Minutes
Social Studies	50 Questions	70 Minutes
Science	50 Questions	80 Minutes
Language Arts, Reading	40 Questions	65 Minutes
Mathematics, Part I	25 Questions with optional use of a calculator	45 Minutes
Mathematics, Part II	25 Questions without a calculator	45 Minutes

*Figure 5: GED® Test Specifications. Source: American Council on Education GED® Testing Service, 2012.*

In order to maintain credibility, the GED® tests must align with the national, jurisdictional, and state standards (GED® Statistical Reports 2002-2013). Jurisdictions must be able to continue to award a valid credential from their respective state or province that validates a candidate's academic skills and, therefore, can also demonstrate to employers and/or institutions that this credential is valuable.

The 2002 Series GED® Test reflects current high school curriculum standards developed at the national and jurisdictional levels while including content relevant to the workplace and community. These recommendations were made by a panel of experts representing the core academic disciplines of English (language arts), mathematics, science and social studies (GED® Statistical Report, 2002). This panel of experts researched and developed the test specifications, a score scale, and a passing score for the 2002 Series. Each year thereafter, the GEDTS initiated a three-year process to develop three equated forms of the tests, which involve international committees of professional educators, subject matter experts, and test specialists in each content area (GED® Statistical Report, 2002-2013). The GED® Test questions progress through internal and external content by psychometric specialists. These questions are screened vigorously to ensure that the tests are as free as possible from material that may be beneficial or detrimental to certain groups of individuals, and to ensure the each question measures a candidate's knowledge and skills. Additionally, the questions are pre-tested on high school seniors before becoming a part of the GED® Tests. These tests are administered to a national stratified random sample of graduating seniors to set passing standards (GED® Statistical Report, 2002-2013). A GED® examinee must obtain a minimum score of 410 on each individual test with a minimum 450 average score. Therefore, a candidate must earn a standard score of 2,250 across all five tests.

Canada and the Virgin Islands require a minimum 450 on each test (GED® Statistical Report, 2002). New Mexico complies with the standard minimum score of 410 with a 450 average. These scores mean that the GED® candidates who meet this passing score are able to verify that they can compute, interpret information, and express themselves in writing at a level exceeding that of at least 40 percent of graduating high school seniors (GED® Statistical Report 2002-2013). What this means is that six of 10 graduating high school seniors are not able to pass the GED® Battery on their first attempt. Again, this demonstrates that the GED® Tests are demanding, rigorous, and valuable.

*How are the scores interpreted and how does it apply to class rank?* Coupled with the standard scores, the GED® Tests also report normative scores and percentile ranks that are based on a nationally representative, stratified random sample of graduating seniors tested in the Spring of their senior year (GED® Statistical Report, 2002-2013). According to the 2006 GED® Statistical Report the following table of percentile ranks of the 2002 GED® Series is based on the 2001 standardization and norming. Figure 6 depicts average standard scores and estimated national class rank.

GED® Tests Average Standard Score	Estimated National Class Rank
700	Top 1%
670	Top 2%
660	Top 3%
640	Top 5%
610	Top 10%
580	Top 15%
570	Top 20%
550	Top 25%
530	Top 33%
520	Top 40%
500	Top 50%
460	Top 55%
450	Top 60%

*Figure 6: GED® Tests, Average Standard Score and Estimated National Class Rank of Graduating U.S. High School Seniors: 2001. Source: GED® Statistical Report, 2006*

Figure 6 contains the following properties for high school seniors:

1. The median GED® standard score is 500 for all five tests.
2. The standard deviation is 100 points.
3. Those who scored at or below each standard score, the values are same for each of the five tests.
4. The percentile ranks provided on the Official GED® Transcript reflect graduating high school seniors, not GED® candidates.
5. A GED® candidate's national rank can be estimated based on the average standard score of all five tests (GED® Statistical Report, 2002-2013).

***What are the requirements to take the GED® Tests in New Mexico?*** Any

individual who is 16 years or older, whether or not a New Mexico resident, who has not

graduated from an accredited high school and who is not currently enrolled in an accredited high school is eligible to take the GED® Tests. This requires parental consent and approval of the local superintendent. However, with the new High School Redesign Act implemented in 2007 by the New Mexico Legislature, students are not allowed to drop out of high school until age 18. This has caused concern for students, parents and the community, in general.

While political savvy on the part of ACE as well as the collaboration of the state departments of education has allowed the GED® to develop, its successful progression has been dependent on other factors such as the identification of the dropout.

**The dropout.** As the GED® Director for the state of New Mexico, I have had the opportunity to watch a growing trend of 16 to 18 year old students want to start college at an early age. The changing demographic population of GED® test-takers, from the period of returning WW II veterans to today's youth, invites debate as to whether GED® instruction should utilize methods of adult education (Rachal & Bingham, 2004). Is it time for state educational departments to revise a new high school curriculum one that may not include four years of high school? In his most recent book *Megatrends*, John Naisbitt (1991), states, "In the last two decades, technological innovation has grown exponentially and the nature of technology has profoundly changed" (p. xiv). There has been a heightened awareness of the shift from an industrial to an information-based highway leading to an increased awareness of the potential impact of technology. Today's society and education professionals can no longer keep to the past if it is to grow and flourish.

The alignment of the new GED® Tests with rigorous state and national standards presents both challenges and opportunities for instructors. On the one hand, the alignment of the new test with rigorous state and national standards places greater demands on instructors,

who often have limited classroom resources, preparation time, and time allocated for professional development. On the other hand, because the new test places increased emphasis on content knowledge and higher order thinking skills, it allows GED® teachers to move beyond a traditional “skill and drill” approach to instruction, and provides more credibility for students of all ages with a GED® Diploma (Patterson, Zhang, Song, & Guison-Dowdy, 2010). But what does this mean for 16-18 year old students who want to begin college early and have college level entrance skills? Educational standards have become more rigorous, but are educational professionals addressing the right issues?

The educational standards movement has had a tremendous impact on GED® programs. Besides serving as the driving force behind the redesign of the test, it has also led many older adolescents, who have been told they are not going to meet state standards and pass high school exit exams, to drop out of school and enter GED® programs. Many of these students come to programs with enormous misconceptions about the ease of the GED® test, as well as with great resentment toward formal schooling. This emotional element compounds the challenges for GED® instructors. Not only do they need to re-envision their approach to curriculum and instruction, but they must also find ways to address a host of social and psychological issues they typically have not had to confront in classes comprised primarily of older adults. Kolkmeier (2004) in the New Mexico Adult Literacy Study indicates how the GED® has become the most popular alternative to remaining in school, causing concern locally and nationally and potentially promoting attrition for each age group (p 42). From 1999-2004, more than 10,000 16-18 year old New Mexico high school dropouts have entered into an adult basic education program and earned their GED® credential. This does not include those students who have earned their GED® without

preparation (Kolkmeier, 2004). In New Mexico, 272,275 people do not have a high school diploma. This is compounded by the number of undocumented aliens in the state making 34% of the New Mexico population without a high school diploma (U.S Census, 2010). As new jobs are brought into the state, will these individuals have the skills and education to fill them?

Furthermore, the dropout has not been seen in a positive light. The dropout rate increased from 2003 to 2007; but decreased from 2007 to 2009. The decrease was insignificant. The overall New Mexico statewide dropout rate increased from the school year (SY06) by .8 of one percent. The number of dropouts reported for the school year 2006 (SY06) was 5,493; 6,612 dropouts were reported for the school year 2007 (SY07), an increase of 1,119 (NMPED Dropout Report, 2006-2007). In 2008, the overall statewide dropout decreased slightly to 3.6%, compared to 4.4% in 2007. From 2008 to 2010, the dropout rate increased and only slightly decreased in 2011 and 2012 (see Figure 2 for results from school year 2004 to 2012).

It is apparent that there was a significant increase in the dropout rate from school year 2006 to 2007 and another significant increase 2009 to 2010. New Mexico students drop out for a variety of reasons and the data do not always capture the underlying causes. According to the 2007-2008 New Mexico Dropout Report, the top three reasons students dropout are: 1) did not re-enroll (19.6%); 2) invalid transfer (16.4%); and 3) intends to take GED<sup>®</sup> (14.2%). What are not reflected in the reported reasons are the social, health and economic stresses that can affect dropout rates. Students may leave school to help support their families. Poverty is often an underlying stress factor for students. For example, without adequate health care and nutrition, students may be absent more often from school due to poor health.

This appears to be a growing trend that may not only be attributed to the usual factors according to the Bureau of Justice (2010) which include: community issues, (crime, poverty, high unemployment rate); family issues (management problems, death, suicide, abuse, conflicts for student); and school issues (poor teacher quality, crime, and failure in early grades or freshman year) but, also to the 16 to 18 year old students who aren't challenged, by traditional high school and are college ready. The 2010 U.S Census indicates that more than 39 million adults in the United States aged, 16 and older, or 18% of the U.S. adult population lack a high school diploma. In 2013, more than 848,000 adults took all or part of the GED® Tests. Of that total, 743,000 completed the Battery and more than 560,000 (75.3%) earned a high enough score to receive a GED® credential (GED® Statistical Report, 2013). It is notable that 16 -18 year old teenagers accounted for 30 percent of all candidates in the United States. Further, among all GED® passers in the United States, 34% were aged 16 to 18 (GED® Statistical Report, 2013). In New Mexico, the average age of a GED® recipient is 24 (DiplomaSender, n.d.).

It should be noted that Hispanics are by far the highest percentage of individuals without a high school diploma at over 40%, compared to White/Non-Hispanic at 13%, African Americans at 21%, Native Americans at 24%, and Pacific Islanders and 14% (GED® Statistical Report, 2013).

Kitchen and Velasquez (1999) conducted dropout research with Hispanics and Native Americans; they emphasized socio-economics as the best predictor for dropouts. As researchers become more familiar with why students often drop out of school, such as poor teachers, safety, and the increasing lack of challenging work in school for 16 to 18 year-old students, the literature suggests that the dropout rate is so alarmingly high that further



research is warranted to look into further reasons and solutions and possibly a restructuring of the traditional four-year high school. The literature on dropouts is vast and is only presented here as it relates to the GED<sup>®</sup> recipient and the traditional high school student.

The presentation of the literature with regard to the historical context, the description of the GED<sup>®</sup> Tests, and dropouts thus far, leads to reasons individuals pursue the GED<sup>®</sup> Credential.

**Reasons for pursuing a GED<sup>®</sup> credential.** More than 17 million individuals have passed the GED<sup>®</sup> since 1942 (ACE, 2012). Approximately 60% of candidates cited educational reasons for taking the GED<sup>®</sup> Test, but many do not continue their education because of unfavorable or challenging life circumstances (ACE, 2009; Maralani, 2006; Reder, 1999; Tyler, 2005). Earlier research has shown that individuals choose to take the GED<sup>®</sup> to obtain better job skills (Boesel 1998; Boudett, Munrane & Willett, 1997). Given current economic and social conditions, postsecondary education is critical for an individual's survival in today's society. During a Joint Session of Congress (2009), President Obama declared:

In a global economy where the most valuable skill you sell is your knowledge, a good education is a prerequisite . . . By 2020, America will once again have the world's highest proportion of college graduates in the world (p. 2).

However, approximately 30% of U.S. adults remain “untouched by postsecondary education” (Council for Adult and Experiential Learning [CAEL] 2008, p. 7). CAEL (2008) noted that this country has not made an effort to encourage nontraditional adult learners, like those who pass the GED<sup>®</sup> Test, to pursue postsecondary education.

Annually, approximately 500,000 dropouts obtain a GED® credential (ACE, 2009). In a world of new technology, “as higher education became increasingly important for career preparation and economic viability in our society, the GED® credential has increasingly been seen not only as an alternative [producer] of a high school education, but now as a gateway to postsecondary education as well” (Reder, 2007, p. 3). Many research studies have suggested that participation in postsecondary education is necessary for GED® recipients to benefit financially. However, few studies focus on the process and pattern of GED® credential recipients’ participation in postsecondary education programs. Lofstrum and Tyler (2005) called for more research evidence-based studies to untangle the mystery of the GED® credential as a route to postsecondary education.

A better understanding of the population that participates in postsecondary education and patterns of participation among different adult groups, as well as factors influencing their participation, will allow educators and policy makers to develop effective strategies to move adults toward education and economic success. There is a sense of urgency to move more American adults into the postsecondary education pipeline. GED® credential holders are literally untapped and account for a huge percentage of adults who are overlooked as potential successful postsecondary students.

When investigating the overall patterns, specifically academic achievement, it is essential to consider what motivates these students to seek a GED® credential. Wayman (2001) estimated that 60% of high school dropouts return to attain a high school credential which hasn’t increased much as evidenced by the current GED® statistics (GED® Statistical Report, 2002-2012). Wayman only examined factors that influenced GED® attainment which include higher academic ability, socioeconomic status, and the presence of

children. The study did not indicate that these students had pursued postsecondary training, nor did the data indicate potential performance in this setting.

A study done by George and Schaefer (2002) which describes demographic information and GED<sup>®</sup> Test Battery performance of adult examinees who did not complete high school between the ages of 40 and 70, who lived in the United States, and took the GED<sup>®</sup> Test in 2002, reported the top reasons for not completing high school. Of the ten most frequently reported reasons, four were categorized under student performance, three were categorized under social issues, two were categorized under family issues and one was categorized under academic environment issues.

George and Schaefer (2002) reported that the reasons for not completing high school differed based on age with more 40 to 70-year-olds than pre-40-year-olds citing financial reasons such as getting a job (32% vs.18%) or needing money to help at home (23% vs. 7%). Student performance issues, such as excessive absences, dislike of and unhappiness with school, were reasons given most frequently by pre-40-year-old GED<sup>®</sup> candidates in 2002. Personal satisfaction and getting a better job were the two most frequently reported reasons adult candidates reported for taking the GED<sup>®</sup> Positive role modeling, likely related to personal satisfaction, was the third most reported reason for testing. Furthering education through either a technical/trade program or a 2-year college was also among the most frequently reported reasons for taking the GED<sup>®</sup> Tests. One noticeable difference in the motivation for taking the GED<sup>®</sup> Tests between post-40-year-olds and pre-40-year-olds was that older candidates were less likely to take the GED<sup>®</sup> Tests to enter a four-year college than were younger candidates.

The authors further reported that both home study and adult education classes taught at public schools were popular GED® Test preparation avenues for post-40-year-old candidates. However, older candidates were less likely than pre-40-year-olds to take advantage of preparation methods outside the home such as adult education classes offered at the public school or community college. Perhaps other commitments such as family and work prevent the post-40-year-old candidate from attending formal classes. The study also indicated that nearly 16% of the adult candidates reported spending no time preparing for taking the GED® Tests, while nearly 61% reported spending 11-99 hours in test preparation activities. Again, however, there was no indication if these students pursued post-secondary education or how they would perform in this setting.

A study conducted by George-Ezzelle, Zhang and Douglas (2002) explored the relationship between self-reported reasons for not completing school, institutional characteristics of the last school attended and the presence of high-stakes exit exams. The study consisted of examinees that tested in 2002, last attended school in the year 2001 or 2002, and indicated at least one reason for not completing school. The authors indicated that same five reasons are always ranked on top for not completing high school: Was absent too many times, Poor study habits, Did not like school, Was bored, and Wasn't happy in school. Subsequently, there was no testimonial significance of reasons by examinees for not completing high school regarding states with a high-stakes exit exam. Therefore, consistent with reports by Wayman (2001), George and Schaefer (2002), George-Ezzelle, Zhang and Douglas (2002), none of these studies indicated any relationship to post-secondary achievement; nor were other variables such as LOC or identifying antecedents of individual differences investigated.

**GED® recipients compared to traditional high school students.** While there are a number of studies that have been conducted regarding dropouts and the reasons chosen for pursuing the GED® as well as academic achievement of GED® recipients, there still appears to be inconsistent research on GED® recipients and (THSG) as they compare in post-secondary education.

Depending on the sources of data reviewed and whether enrollment or completion is estimated, percentages of participation differ across studies. Estimates of postsecondary enrollment rates vary: Approximately 15 to 30 percent of GED® recipients actually begin postsecondary education (CAEL, 2008; Maralani, 2006; Ou, 2008). Some states such as Kentucky and Utah report higher percentages, with up to half of GED® recipients enrolling in postsecondary education (Duke & Ganzglass, 2007; Hanni, 2008; National Commission on Adult Literacy [NCAL], 2008).

A large number of GED® recipients report that they pursue further education after completing the GED® (McElroy, 1990). Additionally, many research studies have sustained that GED® recipients, typically perform as well or even better than THSG in post-secondary education (Baldwin, 1995; Boesel, Asalam, & Smith, 1998). Comparisons between GED® recipients and THSG continue to be contradictory and more in-depth research is needed to get a gather more consistent data (Lofstrum & Tyler, 2005,).

Approximately 60% of GED® candidates cited educational reasons for taking the GED® Test (ACE, 2002-2012), but many do not continue their education due to adverse life circumstances or other barriers (Behal, 1983; Maralani, 2006; Reder, 1999; Tyler, 2005), even though participants in postsecondary experiences tend to show modest increases in earnings (Georges, 2001; Lofstrum & Tyler, 2005; Murnane, Willett, & Boudett, 1999; Song

& Hsu, 2008). Previous studies found that GED<sup>®</sup> credential recipients are more likely to enroll in postsecondary education than dropouts (Murnane, Willett, & Boudett, 1997), even with the availability of open admissions for both.

Individuals with GED<sup>®</sup> credentials need sufficient time after testing to make the decision and prepare to enroll in postsecondary programs (Boudette, Murnane, & Willett, 2000; Reder, 2007). GED<sup>®</sup> credential recipients may participate in a two-year program, but they also may delay enrollment in postsecondary education (Behal, 1983; Ou, 2008; Patterson, Song, & Zhang, 2009). Another important observation is that few 18 year-old enrollees complete the first year of postsecondary education or a degree program (Council for Advancement of Adult Literacy [CAAL], 2008; Duke & Ganzglass, 2007; Murnane, Willett, & Tyler, 2000; Patterson, Song, & Zhang, 2009; Reder, 1999; Reder, 2007; Tyler, 2003).

***Does obtaining a GED<sup>®</sup> credential help the recipients find better employment opportunities and earn higher wages?*** Among the studies on labor market outcomes of GED<sup>®</sup> credential recipients, the most influential was the 1993 study by Cameron and Heckman, which was based on the NLSY79 data and argued that GED<sup>®</sup> credential recipients are “nonequivalence of high school equivalents,” and that they are “indistinguishable in many relevant labor market dimensions” from an non-accredited high school (p.472).

Kroll (1993) stated that significant differences exist between the life status of recipients and THSG. GED<sup>®</sup> recipients are usually older, more likely to be married females, less likely to be in full time status, and more likely in need of financial assistance. Therefore, the adult responsibilities appear to conflict with that of the role of a traditional student/undergraduate.

Because of the comparison between GED<sup>®</sup> recipients and THSG, traditional undergraduate should also be defined. According to U.S. Department of Education, National Center for Education Statistics (NCES), (2002), Nontraditional Undergraduates, the traditional undergraduate is one who graduates from high school, attends college immediately after graduating, depends on parents for financial assistance, and may or may not work during the school year. This “traditional” undergraduate, however, is the exception rather than the rule. The report indicates that only 27% in 1999-2002 met all the cited criteria indicating that 73 percent of all undergraduates can be considered nontraditional. Moreover, NCES affirms that the undergraduate population is not the same as it was a generation ago. From 1970 to 2007, the undergraduate population increased from 7.4 million to 12.7 million; more students are enrolled part time (39% versus 28%) and at two-year colleges (44% versus 31%); females are the majority over males at 56%; and 39% of all college students were 25 years of age or older in 2007 compared to 28% in 1970.

Consequently, these factors that differentiate GED<sup>®</sup> recipients from THSG have been noted as risk factors for persistence and tend to cause attrition. Thus, according to Soltz (1996), the comparison of these two groups, introduces biases in favor of THSG if they are not studied over an extended period.

In contrast to Soltz, (1996), Klein and Grise (1988) conducted a study on GED<sup>®</sup> recipients’ success and how they compared to THSG. Ten institutions responded to a survey questionnaire that was mailed to 28 community colleges in the state of Florida. The average GPA for GED<sup>®</sup> recipients was average. GED<sup>®</sup> recipients took the same length of time (approximately six semesters) to graduate as THSG and 25 percent of GED<sup>®</sup> recipients completed degree programs. Florida’s community colleges did not have a tracking system at

that time for GED® recipients; therefore, the authors had difficulty gathering demographic information on GED® recipients and therefore, were not treated any differently than THSG. Klein and Grise (1988) concluded that the results of their finding should dispel any misconceptions that GED® recipients can't perform as well as THSG in post-secondary education, specifically community college settings.

At Kankakee Community College, McElroy, (1990) conducted a study to determine if a statistically significant difference existed between the GPA's of GED® recipients and THSG. The number of students enrolled at that time was 2,326, of which 126 were GED® recipients. The researcher randomly chose 50 students from each population. Using a post-test only control group design, McElroy found a statistically significant difference between the two groups. GED® recipients exhibited a slightly higher GPA (2.93) than that of THSG (2.76). She concluded that past research contrasted to her findings, since the literature indicated that a significant difference did not exist between GED® recipients and THSG or that THSG achieve a higher GPA.

A study at North Shore Community College was conducted by Turner, (1990) to determine which factors lead GED®, recipients to success at that particular community college. She surveyed 87 GED® recipients where the average age was 25. Even though, Turner indicated that age was not a significant factor in determining success, she found that these GED® recipients were older than 20 and self-directed; they were cognizant of college opportunities and had already decided to enroll in college before taking the GED® Tests. Further findings revealed that GED® Test scores could not be used to predict college GED®. Moreover, she found that working part-time had no effect while working full-time had a negative effect on a GED® recipient's GPA. In addition, Turner found that family, community support, and



consistent contact with a college advisor or counselor led to success in college for GED<sup>®</sup> recipients. Because these factors lead to success, Turner concluded and recommended: (1) that all GED<sup>®</sup> recipients receive reinforcement by college advisors, not just those with high GED<sup>®</sup> Test scores; (2) that college advisors employ suitable recruitment tools focused on GED<sup>®</sup> recipients and nontraditional students; and that (3) a connection be developed between GED<sup>®</sup> recipients and college campuses to familiarize and educate these students about postsecondary education expectations.

Contrary to the research on college success for GED<sup>®</sup> recipients, other research has argued that obtaining the GED<sup>®</sup> is not equivalent to receiving a traditional high school diploma and therefore GED<sup>®</sup> recipients are not as successful in postsecondary education (Shilo, 1990; Coberly, 1995; Hamilton, 1998; Ebert, 2002).

Hamilton (1998) conducted a study on the academic progress involving 276 GED<sup>®</sup> recipients 21 years and younger at Gainesville Community College from the fall semester of 1991 to the fall semester of 1996. Forty-two percent of total GED<sup>®</sup> population was included in this five year study period. Ninety-four percent of the students were Caucasian; 53% males and 47% females comprised the sample.

The study revealed that 85% of the GED<sup>®</sup> group required one or more developmental courses with 65 students requiring three developmental courses. It should be noted that in the past, other studies conducted at this college indicated that any student requiring three or more courses were flagged, as a risk for poor academic performance. Hamilton stressed that the average GPA of students in this study was below the average of all college students enrolled in Gainesville College as a whole. The average GPA for a GED<sup>®</sup> recipient was 2.14 compared to 2.60 GPA for students enrolled at Gainesville in any given academic year.

Hamilton indicated that one-year persistence rates for GED<sup>®</sup> recipients averaged, at 43% compared to 62% for the college as a whole. He also noted that some GED<sup>®</sup> recipients did not persist for the entire calendar year and that the 43% might be inflated. These results were consistent with the findings of Schillo (1990) and Coberly (1995).

In support of the aforementioned research, Ebert (2002) compared the GPAs and attrition rates of GED<sup>®</sup> recipients and THSG by conducting independent sample *t*- tests on enrollees at The University of Tennessee between 1988 and 1998. The GED<sup>®</sup> recipient sample consisted of 143 first-semester freshman and a randomly selected group of THSG respectively within the same time frame. The results revealed a significant difference in the mean GPA between the two groups. The mean GPA for GED<sup>®</sup> recipients was 1.98 compared the THSG of 2.51. Similarly, results in the second semester for both groups showed the same significant difference in GPA. The GPA mean for the GED<sup>®</sup> recipient was 1.85 and the GPA mean for the THSG was 2.40. Surprisingly though, the third and fourth semesters for both groups did not show a significant difference. Ebert (2002) concluded from this data that as GED<sup>®</sup> recipients persist, their GPAs improved.

Additionally, Ebert found that GED<sup>®</sup> recipients had a higher attrition rate than THSG which led to lower graduation rates. He also noted that GED<sup>®</sup> recipients completed fewer credit hours than THSG and also left the university more frequently due to poor performance. Ebert concluded that GED<sup>®</sup> recipients may not be college-ready based only on successful completion of the GED<sup>®</sup> Tests and should not assume that they are on the same level of preparedness as THSG. Almeida, Johnson, and Steinberg (2006) found that socioeconomic status is the biggest factor influencing dropouts' decisions to enroll in postsecondary education. They also reported that dropouts from the top two-fifths of the socioeconomic

ladder are more than twice as likely to enroll in college than those from the bottom one-fifth. The study further indicates that ethnicity also affects the type of institutions in which dropouts enroll, after controlling for socioeconomic status. Black, non-Hispanic students who drop out have significantly lower college enrollment rates compared with Caucasian and Hispanic dropouts. Only one-third of Black, non-Hispanic dropouts with a high school credential participate in postsecondary education programs, compared with half of white and Hispanic dropouts.

As for THS graduates who enter postsecondary education, researchers have examined both the timing and results of enrollment and persistence. Barth (2001) reported that 66% of high school graduates enrolled in postsecondary education institutions immediately following high school. Wirt, Choy, Rooney, Hussar, Provasnil, Hampden-Thompson, (2005) reported similar findings: Only 55% of students starting college in fall 1995 obtained a postsecondary education degree within six years.

Of freshmen at four-year colleges, 74% continued to their sophomore year, and only 55% of two-year freshmen continued to their sophomore year (Barth, 2001). Also, Barth reported “even at relatively selective (four)-year colleges and universities, only about half of college freshmen earn a bachelor’s degree within six years—and the success rates vary for different groups, with fewer than 40% of African-American and Latino undergraduates persisting to a degree, compared to two-thirds of (Caucasians) and Asians” (Barth, 2001), (p. 9).

Other study results revealed that there was a crucial time period (the first two years of college) for college student retention. Tinto, Russo, and Kadel (1994) found that 25% of the

college students dropped out of school after their first year; among all the dropout students, 75% left college in the first two years (Tinto, 1988).

Just as there are gaps in high school graduation rates based on gender and ethnicity, research also has shown that there are gaps in high school graduates' postsecondary education rates based on their socioeconomic and demographic status (Barth, 2001). Maralani (2006) found that age played a significant role in explaining the gap between college participation rates of high school graduates and GED<sup>®</sup>, Test passers, who take more time than traditional high school graduates to transition from secondary to postsecondary education.

Research indicates that several mediating factors, including one's own locus of control, have been noted as contributing issues in the persistence of college students. Parker, Hogan, Eastabrook, Oke, and Wood (2006) created a unified theory of college student retention, suggesting that it is highly related to their emotional and social competencies. Ethington (1990) found that college students' attitudes toward schools influenced their college retention.

As previously mentioned, based on the evidence reviewed, there are many inconsistencies in the performance between GED<sup>®</sup> recipients and THSG. Boesel et al. (1998) noted that many other factors should be evaluated as they may have an effect on academic performance other than the one fact that an individual is a GED<sup>®</sup>, recipient. Research indicates that other mediating factors may play a role in the success of academic performance, including locus of control (Thomas & Harvey, n.d.). Simply stated, LOC is the extent to which individuals believe they control the outcome of events. Further, Rakow &

Sterbin (1996) contended that LOC is a forceful construct and should be studied as a moderator variable in the studies of all student achievement.

Children's attitudes and behaviors are important factors in determining educational outcomes, and these may be largely formed by parental influence. Children with a higher level of expectations and aspirations invest more time and effort in academic achievement and thus may have a greater likelihood of higher educational attainment (Elliott, 2009; Mickelson, 1990; Reynolds & Pemberton, 2001). Similarly, children's self-esteem may have a positive effect on educational achievement because it promotes greater academic engagement and self-control (Liu, Kaplan, & Risser, 1992; Sterbin & Rakow, 1996). However, past research does not reveal any analysis on LOC as it pertains to the academic achievement of the GED<sup>®</sup>, recipient.

Even though GED<sup>®</sup> credential recipients who enrolled spent more time preparing for the GED<sup>®</sup> Test, it is unclear whether those with GED<sup>®</sup> credentials were fully prepared for post-secondary education and in which areas: math, science, etc., and what assistance was available to them as they made the transition to college. From the results of the study GED<sup>®</sup> Credentials and Postsecondary Educational Outcomes (Patterson, Zhang, Song, & Guison-Dowdy, 2010) inferred that more research on the educational background of single semester GED<sup>®</sup> credential holders, in contrast with those who continue, would be useful, as would a better understanding of the transition efforts provided by postsecondary institutions, especially those with programs of two years or less.

#### **Locus of control of reinforcement.**

*Theoretical framework. Social learning theory.* In his paper "Social Learning and Clinical Psychology" (1954), Rotter suggests that the effect of behavior has an impact on the

motivation of people to engage in that specific behavior. People wish to avoid negative consequences, while desiring positive results or effects. If one expects a positive outcome from a behavior, or thinks there is a high probability of a positive outcome, then he/she will be more likely to engage in that behavior. For example, a student who values a high grade will study for a test because they believe the high grade is contingent upon studying (an internal factor). The behavior is reinforced, with positive outcomes, leading a person to repeat the behavior. This social learning theory suggests that behavior is influenced by these environmental factors or stimulus, and not psychological factors alone.

A critical component in promoting achievement within educational environments is the perceived sense of control students have over their performance (Nunn & Nunn, 1993). Is fate predetermined? Do individuals decide their own fate or are there outside forces beyond a person's control that make that determination?

As far back as the 1950s, researchers discovered that the answers to these questions varied among individuals (Phares, 1957; Rotter, 1966). People who believe they are in control of their destinies have an internal locus of control (internals). Those who believe that luck and outside forces determine their fate have an external locus of control (externals). Rotter placed this individual difference within his larger theory of social learning (Rotter, Chance, & Phares, 1972); he argued that LOC stemmed from one's generalized expectancy about the world. For example, college students with a strong internal LOC may believe that their grades were achieved through their own abilities and efforts, whereas those with a strong external LOC may believe that their grades are the result of good or bad luck, or to a professor who designs bad tests or grades capriciously; hence, they are less likely to expect that their own efforts will result in success and are therefore less likely to work hard for high

grades. Or, that they are talented in a particular subject, or not. For example, an individual may excel at English, but perform poorly in math.

In developing his theory, Rotter (1954) believed that it was necessary to include a motivational component. He chose the law of effect as his motivating principle. The law of effect maintains that individuals are motivated to pursue positive stimulation and avoid negative or unpleasant stimulation (Mearns, 2003).

The fundamental theme in Rotter's social learning theory is that an individual's personality is indicative of the interactions a person has with his or her environment. Hence, to understand a person's behavior, one must first consider the person's experiences as well as his or her history of learning. Secondly, his or her environment including exposure to stimuli and responses to those stimuli must be considered. Moreover, the concepts of expectancy and reinforcement are vital in understanding which response will occur (Merriam and Caffarella, 1999). Expectancy and reinforcement are related in that expectancy is the anticipation of desired outcomes of behavior and reinforcement is those outcomes. Outcomes that have a highly desirable outcome have a high reinforcement value as with outcomes that are less desirable have a low reinforcement value. Rotter describes personality as a relatively stable set of potentials for responding to situations in a particular way. His predictive formula is as follows:

***Predictive formula.*** Behavior potential (BP), expectancy (E) and reinforcement value (RV) can be combined into a predictive formula for behavior:  $BP = f(E \ \& \ RV)$  (Rotter, 1966). Rotter sees personality and therefore, behavior, as always changeable. In essence, if we change the way the person thinks, or change the environment the person is responding to, then behavior will change. He does not believe there is a critical period after which

personality is set. But, the more life experience you have building up certain sets of beliefs, the more effort and intervention required for change to occur. Rotter conceives of people in an optimistic way. He sees them as being drawn forward by their goals, seeking to maximize their reinforcement, rather than just avoiding punishment (Rotter, 1966).

Historically, internal locus of control has been associated with high academic achievement and achievement motivation. Furthermore, Leftcourt (1980) has indicated that people with internality are more decisive, eager, and discerning when it comes to learning than people who are external. On the other hand, people who are external tend to lack motivation and have a negative self-concept (Chubb, Fertman, & Ross, 1997; Lefcourt, 1982; Nunn & Nunn, 1993). To provide a background on the relationship between LOC and academic achievement, the following studies were conducted using LOC as the primary factor in the academic achievement of students. Moreover, other variables including demographics and personality characteristics have been examined as mediators.

**Locus of control and academic achievement.** Locus of control has been mostly associated with personality and behavior outcomes. However, academic achievement and locus of control have been strongly linked through numerous studies conducted over many years (Kalsner, 1992). The correlation between LOC and academic achievement can be viewed in the studies conducted by Schonwetter, Menac, Struthers, Hechter and Perry (1993), Fagbeyiro (1995), and Rakow and Sterbin (1996). Schonwetter et al. investigated the effects of college students' actual perception of control together with expressive instruction as they relate to cognitive and emotional aspects of academic achievement. The subjects consisted of 228 male and female participants from the University of Manitoba. The Multidimensional Multi-attributonal Causality scale was used to assess students' LOC.



Each student was classified as either an Internal or External participant. Following this scale, the students were asked to rate on a 10-point scale their perceived control over their performance on an aptitude test manipulation. The students were then exposed to one of two types of lectures that involved low expressive instruction or high expressive instruction and then given a post-lecture achievement test and questionnaire. The study indicated that LOC had a significant effect on achievement outcomes. This study supports the research that people with high externality have lower academic achievement than those with high internality because the research in this study showed that the subjects classified as external with high perceptions of control performed poorly in both methods of instruction.

Fagbeyiro (1995) focused his study on the effects of learner characteristics involving learning achievement with developmental students including locus of control and computer feedback strategies with familiar and unfamiliar mathematic lessons. The independent variable (LOC) was assessed using the Rotter Internal-External LOC Scale. The dependent variable was academic achievement categorized by posttest performance. The null hypothesis was not supported with regard to LOC, which was that there would not be a significant interaction between students' LOC and feedback treatments in familiar and unfamiliar CBI lessons; meaning that students with high internality would not depict higher posttest scores and learning achievement when they received the learner control treatment. However, significant interaction effects existed between the variables, which revealed higher posttest, and achievement scores in both lessons for students with high internality. The findings of this are consistent with the research that supports the theory that students with internality exhibit higher academic achievement than those that are external.

The 1988 National Educational Longitudinal Study was the research sample (N = 21,188) used by Rakow and Sterbin (1996) to determine the effects of locus of control and self-esteem on student achievement as measured by standardized test scores. Students were given a series of questionnaires with items strategically placed measuring LOC and self-esteem. The sample size resulted to 12,260 students because only valid answers to all the items were accepted.

The study added further credibility to the notion that academic achievement is significantly related to LOC as it presented that LOC is significantly related to student achievement on standardized tests. The researchers conveyed that LOC is a compelling construct and should be used as a moderator variable in studies of achievement (Rakow & Sterbin, 1996).

Harper (1983) investigated college students' levels of cognitive development and LOC as predictors of academic achievement. He sought to identify variables that were significantly correlated with students' GPAs. At three northeast Texas state universities, 550 undergraduate subjects participated: one private university, one private college, and one junior college. The Levenson, Internal, Powerful Others, and Chance scales were administered with regard to LOC to categorize students as being internal, defensive external, and congruent external. To be more adequately conceptualized, externality was divided into two constructs: defensive externality, which serves as a defensive function to allow the external to project blame onto fate for incompetence or failure; while congruent externality refers to the individual's belief that reinforcement is not contingent upon his/her own behavior (Molinari & Khanna, 1981).

The subjects were grouped by gender. A stepwise regression analysis was calculated to determine which predictor variables exhibited the greatest proportion of variance in GPA. The results of the study pointed to LOC and GPA being highly correlated. Moreover, the study found that the higher the level of congruent externality the male achieved, the lower the GPA. Results also indicated that higher internality was associated with higher GPA in female subjects. Again, these results continue to support the idea that internal LOC is associated with higher achievement. Subsequently, the study concluded that that LOC could be used as a valid predictor of GPA for college students when it is combined with other variables.

In another study, Linder and Janus (1997) investigated the relationship of academic performance and LOC consisting of 145 students at the Medical College of Virginia. In this study, Rotter's I/E LOC scale was administered to the students enrolled in the dental program to measure students' control tendencies. The students' final grades from a preclinical course were used as a baseline of academic performance. ANOVA uncovered a significant relationship between LOC and course grades. Additionally, it specified that students who exhibited internality perform higher academically. This study continues to support the notion that higher internality is correlated with higher academic performance.

Findley and Cooper (1983) conducted a quantitative literature review of studies with regard to LOC and academic achievement (LOC-ACH). They sought to provide empirical validation to the LOC-ACH relationship. The examination consisted of 98 studies containing 275 tests of the hypothesis that higher internality was directly associated with higher academic achievement. Based on the evidence from the reviewed studies, they concluded that internality and academic achievement showed a positive relationship. Although the relationship was intermediate, Findley and Cooper suggested that there could be a

considerable reason for the variation of the two variables (generalized versus specific) mediated by age, gender, LOC measure, and (standardized test score versus teacher grades) the academic achievement measure.

Kalecstein and Nowicki (1997) conducted a study to increase the range of knowledge on the construct of LOC and to determine if the results provided by Findley and Cooper's meta-analysis could be replicated. Contrary to Findley and Cooper, Kalecstein and Nowicki used Rotter's social learning theory as the framework for their study. Findley and Cooper's study was atheoretical, not grounded in theory. Overall, Kalecstein and Nowicki's results of their meta-analysis were consistent with that of Findley and Cooper.

The sample consisted of 78 studies and 261 tests of the LOC-ACH relationship. They concluded that both generalized and specific control expectancy measures were related to academic achievement, but neither measure predicted achievement significantly more accurately than the other.

***Factors influencing the relationship.*** Rotter has written extensively on problems with people's interpretations of the locus of control concept. First, he has warned people that LOC is not a typology. It is not an either/or proposition. Second, because LOC is a generalized expectancy it will predict people's behavior across situations. However, there may be some specific situations where people, for example, who are generally external, behave like internals. That is because their learning history has shown them that they have control over the reinforcement they receive in certain situations, although overall they perceive little control over what happens to them (Rotter, 1966).

As evidenced by the preceding studies, LOC is a significant factor as it relates to academic achievement. Thomas and Harvey (n.d.) and Kalsner (1992) declared that LOC

responsibility, self-monitoring and achievement motivation are interrelated and play a significant role in academic performance. Thomas and Harvey (n.d.) indicated that that research has demonstrated that people with high internality have a tendency for higher academic achievement and have better coping strategies as well as a higher level of self-efficacy than do people who are classified with external LOC. With regard to the Kalecstein and Nowicki (1997) meta-analysis, the LOC-ACH relationship did not appear to be moderated by gender or LOC. On the other hand, age was a significant factor. Additionally, research suggested that future studies should consider the effects of specific mediating factors.

To focus on these certain mediating factors, Johnston (1999) sought to methodically examine the effects of specific variables on the LOC-ACH relationship as suggested by Kalecstein and Norwicki (1997). The study conducted at a major public university consisted of 222 students enrolled in undergraduate classes. Three indicators of LOC were obtained using Rotter's I/E scale and Adult Nowicki-Strickland Internal-External Control Scale (ANSIE). A significant relationship between the LOC-ACH was found but with certain limitations.

A multiple regression analysis was conducted to test the hypothesis that the LOC-ACH was significant and negative for males and females separately. The results indicated the ANSIE was the only significant predictor of academic achievement with regard to GPA. Further, this was only true for females in the study. But, high internality in females predicted high achievement as previous research has indicated. Race and instrumentation were also shown to have an effect on the LOC-ACH relationship as well.

Lending support to the notion that locus of control has an effect on academic achievement, Hoover (2000) sought to determine if several independent variables alone or together could accurately predict the achievement of 322 first semester university freshmen in a non-experimental study. General LOC, academic LOC, self-efficacy, academic achievement expectations, basic knowledge and aptitude were the independent variables. The ANSIE and the Academic LOC Scale for College Students (ALOC) were used. Both were derived from Rotter's original I/E LOC scale. The ANSIE, which is a general measure of LOC, indicated that these students primarily demonstrated an internal locus that has been correlated with higher achievement.

Ashton Trice developed the ALOC which was the second scale used in this study. The ALOC measures beliefs of personal control in academic settings for college students (Booth, Ogden, Stevens & Trice, 1987). Hoover (2000) stated that the majority of students also demonstrated internal LOC as well. Both scales purported a significant correlation with regard to college GPA, earned credit hours, and total quality points. Hoover maintains that LOC significantly influences a student's academic performance. Consistent with previous research, the results were in line with the notion that students with internality perform higher academically.

To determine if a relationship existed with academic performance, Wofford (1990) conducted a study with LOC as a contextual variable together with prior performance, environmental constraints and personal attribution. Wofford speculated that perceived effort, prior grade, study attribution and LOC affected the grade students would like to achieve. The study consisted of 108 undergraduates who were randomly assigned to one of two levels for each of the three treatment groups. The groups were as follows: (a) training/no training,

(b) goal setting/no goal setting, and (c) follow-up/no follow-up. The Rotter Internal/External LOC (Rotter I/ELOC) was used to evaluate LOC. Results were positive for people with internal LOC to set higher goals. Moreover, Woffard concluded that student's aspired grade was correlated with study attribution, prior grades, and internal LOC.

***Outcomes related to academic achievement.*** Parker (2003) conducted a study to test the theory that locus of control is significantly correlated with academic persistence. He also examined potential changes in LOC scores for students who took a course on-line for a semester. The study consisted of 95 participants enrolled in two 15-week sections (online or face- to- face) of the same class. The Rotter I/E scale was given at the beginning of the semester and the last week of the semester. Parker posited that LOC was a significant predictor of academic persistence and that LOC scores would increase and proceed toward internality over the course of a semester. The results were positive for LOC as a significant predictor for academic persistence and students with internal LOC were more likely to complete the course.

Boss and Taylor (n.d.) found related results that investigated the correlation between LOC and course completion in an adult basic education (ABE) program. A modification of the Rotter's I/E scale was used due to the participants' lower level reading skills. The subjects included 29 female and 33 male adults enrolled at a local community college ABE program. Results indicated that adult learners who completed the program exhibited internality in their belief of control of reinforcements. This result is consistent with previous findings where LOC is correlated with high academic achievement and achievement motivation.

Patterson et al. (2010-13 ACE), “*Crossing the Bridge*” a first-year report on the population of GED<sup>®</sup>, test-takers from a 2003 cohort of approximately one-half million candidates, indicated that nearly 78 percent of 2003 GED<sup>®</sup> Tests passers who entered postsecondary education enrolled in institutions of up to two years. This report follows up on the 2003 population of GED<sup>®</sup> Test passers, specifically a subpopulation of enrollees in institutions of up to two years, examining which passers enroll, their patterns of enrollment, and their graduation time and status. It also considers college attendance levels and compares GED<sup>®</sup> Test performance by postsecondary enrollment and graduation status for this subpopulation.

Patterson (2010-13) indicated that the underlying patterns of enrollment were extremely complex. The most common pattern was the one-semester enrollee, with 44% of all enrollees. Most single-semester enrollees entered within three years of passing the GED<sup>®</sup> Tests. Single-semester enrollment was the most common *short-term* pattern for postsecondary graduates and non-graduates with GED<sup>®</sup> credentials, but more non-graduates (48%) than graduates (10%) enrolled for a single semester. The most common *long-term* pattern was long-term consecutive enrollment of at least four semesters, but graduates (51%) tended to follow long-term consecutive enrollment patterns more frequently than non-graduates (12%) (Patterson, 2010-2013). Approximately 12% of students with GED<sup>®</sup> credentials in institutions of up to two years graduated, and generally did so within two years and nine months of enrolling. Although this study is crucial to determine persistence and attrition, the study does not examine the relationship with LOC and academic achievement with GED<sup>®</sup> students.



## **Summary**

For over 60 years, the GED<sup>®</sup> has provided a pathway to postsecondary education and employment for those individuals who did not complete high school. A review of the literature indicated that conflicting results have been reported with regard to certain characteristics that might pre-dispose GED<sup>®</sup> recipients to achievement or failure. This was presented in the first section of the literature review on the academic achievement of GED<sup>®</sup> recipients. On the other hand, much research has purported that a significant relationship between LOC and academic achievement exists. The last section of the literature review described LOC and its relationship to academic achievement. It is only logical that this variable was investigated as a factor in GED<sup>®</sup> recipient performance.

Because of the lack of consistency in previous studies, it has been difficult to determine the equality or lack thereof between the GED<sup>®</sup> credential and the THS diploma and how these students succeed. This study sought to clarify the inconclusive evidence of academic preparedness of these students by investigating the relationship of multiple measures of student performance including locus of control, gender, race/ethnicity, and time spent in college. The following chapter describes a detailed discussion of the sample, instrumentation and techniques of data analysis.

## **Chapter III**

### **Methodology**

The purpose of this study was to explore the impact locus of control had on the postsecondary achievement (self-reported GPA) of GED<sup>®</sup> recipients and traditional high school graduates, (THSG) controlling for gender, race/ethnicity, and time in college. Group comparisons and estimates of the magnitude of the relationship between the variables of locus of control, type of diploma, gender, race, and time spent in college were made. This chapter focuses on the methods and procedures that were used to execute the study which includes the research design, the sample, the instrumentation, and the data analysis techniques.

#### **Mode of Inquiry**

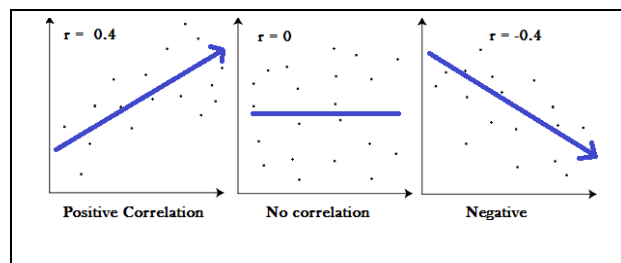
The method of choice for this study was strictly quantitative. Quantitative research is the systematic empirical investigation of observable phenomena via statistical, mathematical or numerical data or computational techniques (Aliaga, 2000). The objective of quantitative research is to develop and employ mathematical models, theories and/or hypotheses pertaining to phenomena. The process of measurement is central to quantitative research because it provides the fundamental connection between empirical observation and mathematical expression of quantitative relationships. Quantitative data is any data that is in numerical form such as statistics, percentages, etc. In layman's terms, this means that the quantitative researcher asks a specific, narrow question and collects a sample of numerical data from observable phenomena or from study participants to answer the question. The researcher analyzes the data with the help of statistics. The researcher hoped the numbers would yield an unbiased result that could be generalized to some larger population.

Therefore a quantitative study was suitable in this study to collect data to answer the question of the impact locus of control has on college academic achievement (self-reported GPA) between GED<sup>®</sup> recipients and THSG.

## Research Design

The present study employed Pearson's  $r$  to analyze the data using side by side box plots, scatter plots, and density curves, supplemented with numerical summaries. The data was analyzed through software R. R is a language and an environment for statistical computing and graphics developed at Bell Laboratories by John Chambers and colleagues (Chambers, n.d.). R provides a wide variety of statistical techniques such as linear and nonlinear modeling, classical statistical tests, time series analysis, classification and several others. One of the main features of R is the ease with which well-designed publication plots can be produced in an environment within which statistical techniques are implemented.

Correlation coefficients are used in statistics to determine how well the variables are related. The Pearson's correlation coefficient is a measure of linear correlation between the two given variables. The range of Pearson's correlation coefficient lies between -1 to +1. Where, 1 is total positive correlation, 0 is no correlation, and -1 is total negative correlation.



*Figure 7: Example of plots. Wehrung, B, Wakefield, B., Meisel, B. & Sundberg, S. (2008). Pearson's correlation measures the linear relationship between two interval/ratio level variables.*

## Sample

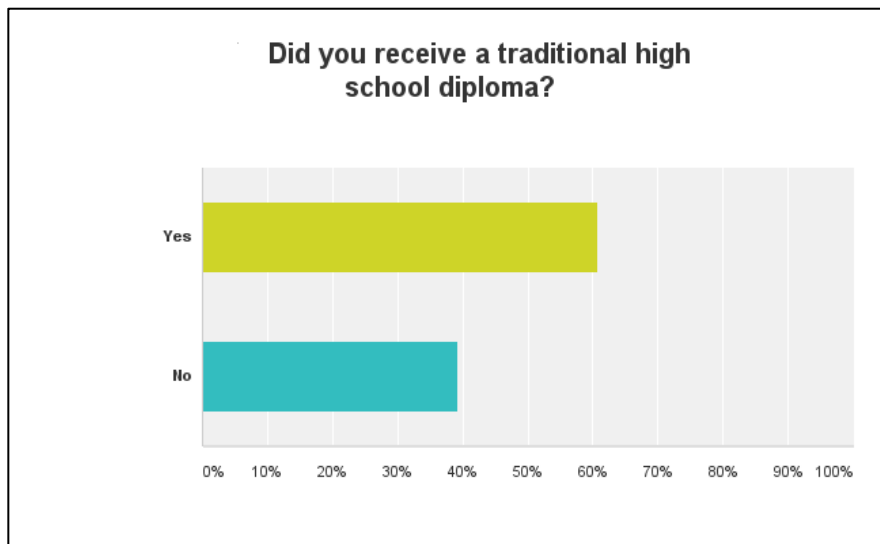
**Institutional background.** The sample for this study was typical of major institutions in northern New Mexico including one university and two community colleges during the Spring and Fall of 2014 as well as the Spring of 2015. The University of New Mexico (UNM) in Albuquerque, Central New Mexico Community College (CNM) and the Santa Fe Community College (SFCC) were selected. In essence, the study compared GED® recipients and THSG on college academic achievement (self-reported GPA).

The sample for this study targeted GED® recipients and THSG enrolled at these three postsecondary institutions (one university and two community colleges). A total of 5068 email requests were sent to students, of which 2787 were sent to UNM students, 2008 to CNM students, and 273 to SFCC students. A total of 745 responses were received from students at all three institutions. This response rate provided a degree of confidence in the accuracy of the survey results for the population, resulting in a 95% level of certainty +/- 3.5%, as obtained using a standard response rate calculator (Van Bennekom, 2004). The two community college sub-populations were aggregated together as there is a probability that students enrolled in community colleges in NM are not systematically different from each other and would likely respond in a similar way to the questions on the survey. The number of THSG respondents from the university and community colleges were relatively comparable, with a little more than half of the respondents (.55) from the community colleges and a little less than half (.45) from the university.

A total of 3213 emails were sent to GED® recipients. The ratio of GED® respondents from the university and community colleges was undetermined; this is because the email invitation was sent to the entire population of GED® recipients rather than separately by

institution. Therefore it was not possible to disaggregate the GED® respondents by institution due to the anonymity of survey responses

In the aggregate, 60.69% of the respondents were THSG and 39.31% were GED® recipients as presented in Figure 8.



*Figure 8:* Distribution of GED® Recipients and THSG.

Founded in 1889, The University of New Mexico (UNM) occupies over 600 acres along the Old Route 66 in the largest city in New Mexico, Albuquerque, with a population of over 700,000 people. As a Hispanic-Serving Institution, UNM represents a cross-section of cultures and backgrounds and is accredited by the Higher Learning Commission of the North Central Association of College and Schools. In Fall of 2013, 28,644 students attended main campus with another 7,609 students at branch campuses and education centers. UNM has six satellite campuses which includes the nationally renowned UNM Cancer Center. The University is the state’s flagship research institution offering more than 210 degree and certificate programs, 94 bachelor’s degree programs, 74 master’s degree programs and 40 doctoral programs. The requirements for admission to UNM are as follows:

- official High School transcript(s); or official GED® scores,
- official transcripts from all accredited colleges and university attended (if applicable),
- official ACT or SAT scores.

Traditional applicants are entering freshmen (and transfer applicants with fewer than 24 transferable credits) who are graduates of a regionally accredited high school or a school accredited by the New Mexico Public Education Department (PED). The Office of Admissions considers an applicant's total high school record including grades, curriculum and standardized test scores. Applicants are considered for admission using the grade point average and curriculum or GPA and standardized test scores. Typically, a student with a solid college preparatory curriculum and a 2.50 grade point average will be offered admission. The average academic profile of admitted freshmen is a 3.2 GPA, 22 ACT or 1080 SAT (Critical Reading and Mathematics only). The University provides options for admission for those applicants (minimum age 16) who have been home-schooled or attended non-accredited high schools. Although not required, applicants who have attended a non-accredited high school or home-school are encouraged to submit GED® scores. UNM's enrollment for the 2011 school-year was over 24,000 undergraduate and graduate students.

Central New Mexico Community College, (CNM) is nationally recognized as a progressive community college. Their mission statement is "to create educational opportunities and community partnerships while pursuing a level of community college excellence that is worthy of local and national recognition." Authorized by the New Mexico Legislature in 1963, CNM was approved by district voters in 1964 to provide adults with skills necessary for success in the world of work. CNM was accredited by the North Central Association of Colleges and Schools in 1978. Degree granting power was approved for

CNM by the Legislature in 1986, beginning the transition to a community college. With an enrollment of approximately 30,000, CNM is the second largest postsecondary institution in New Mexico with five satellite campuses and several off-site campuses. CNM offers programs leading to certificates and associate degrees in a variety of areas, in addition to courses for transfer and non-credit. Requirements for enrollment are as follows:

- submit ACT/SAT scores for proper placement,
- submit official high school transcripts or GED<sup>®</sup>, and
- in lieu of ACT/SAT scores, placement testing is provided.

Students may enroll at CNM without a high school diploma or GED<sup>®</sup>, but must obtain a GED<sup>®</sup> in order to receive a degree.

Santa Fe Community College, (SFCC) established in 1983, has grown rapidly, both in enrollment and geographically. Today, the college serves more than 8,000 students in any given semester in its credit, noncredit and adult basic education programs. The college's campus is situated on 366 acres and located in the state's Capitol, Santa Fe. The SFCC serves more than 15,000 students per year in its credit, noncredit and adult basic education programs offering more than 100 degrees in a first-class, state-of-the-art learning environment with modern classrooms, technologically smart labs and other specialized spaces.

SFCC has a mandatory assessment and placement policy. Students wishing to enroll in English or math or in any course, in which English or a math course is a prerequisite, must participate in assessment. New students seeking degrees or certificates at SFCC must fulfill the college success course requirement within their first 12 college credit hours or within their first two semesters of enrollment, whichever comes first.

## **Participants**

An important criterion for participation in the study is that the participants be enrolled in the Spring and Fall 2014 and Spring 2015 semesters. This is important because all three semesters were compared for academic achievement (self-reported college GPA).

As stated previously, the sample for this study targeted GED® recipients and THSG enrolled at these three postsecondary institutions (one university and two community colleges). After receipt of an approved Human Subjects Exemption form (see Appendix A), and approval of each Institutional Review Board (IRB) from officials at UNM, CNM, and SFCC, the researcher was provided with student email addresses for each respective institution. As the state GED® Director, the researcher had access to all GED® data for the state of New Mexico and was able to target GED® recipients from each respective institution.

UNM, CNM, and SFCC GED® recipients were identified and targeted in the study. Each participating institution identified prospective GED® recipients and THSG from the institutions database. The institution provided the researcher with a list of student emails. The researcher contacted each prospective student requesting participation in an anonymous survey conducted through Survey Monkey. The survey included a demographic form that specifically requested that each participant be a minimum age of 18. Several other demographics were collected as well along with the Adult Nowicki-Strickland Internal-External Control Scale (ANS-IE).

## **Instrumentation**

**Adult Nowicki-Strickland Internal-External Control Scale.** The Adult Nowicki-Strickland Internal-External Control Scale (ANS-IE) developed by Stephen Nowicki and Marshall P. Duke (1974), was used to assess locus of control (see Appendix B). The ANS-IE



was adapted from the original LOC scale developed by Julian Rotter. In terms of achievement, the ANS-IE was chosen for this study because it has been shown that the locus of control-academic achievement relationship is more consistent with social learning theory when locus of control is measured by the ANS-IE than by the Rotter scale (Duke & Nowicki, 1974; Johnston, 1999). Furthermore, the ANS-IE is easier to understand and is designed so that it is suitable for use with individuals with a fifth-grade reading ability (Duke & Nowicki, 1974).

The ANS-IE contains 40 items that require a yes or no response. The minimum score possible on the ANS-IE is zero and the maximum is 40. The answer-key for the ANS-IE was scored in the external direction in that the score received represents the degree of externality and higher scores indicate higher externality (or lower internality).

The ANS-IE was derived for the original Nowicki-Strickland Locus of Control Scale for children was based on Rotter's original LOC scale. It was established that the instrument was psychometrically sound and reliable based on the data gathered from 766 subjects in 12 separate studies. Additionally, based on the results of the studies, it was found that the ANS-IE compared favorably to the Rotter scale in predicting behavior on the basis of social learning theory (Duke & Nowicki, 1974). Construct validity was established through significant positive correlation between the Nowicki-Strickland and the Rotter I/E Locus of control Scale (Duke & Nowicki, 1974) [ $r=.68$ ,  $df=47$ ,  $p<.01$ ;  $r=.48$ ,  $df=37$ ,  $p<.01$ ;  $r=.44$ ,  $df=33$ ,  $p<.05$ ]; (Hoover, 2000; Lefcourt, 1982). Furthermore, the ANS-IE has been shown reliably predict achievement behavior. Permission to reprint and use the preceding instrument was requested by the researcher and obtained from the author (see Appendix C).

**Demographic and high school credential.** In order to gather demographic information as well as type of high school diploma received, the researcher included the demographic form (see Appendix D) which separated GED<sup>®</sup> recipients and THSG on the survey prior to administering the scale. The demographic form did not include identifiable information. The survey was anonymous. Even though the researcher sent emails to the prospective students, the researcher did not know which student participated in the survey because the student was directed to Survey Monkey for participation in the study.

### **Data Collection Procedures**

This study used a purposeful sampling technique called intensity sampling (Mertens, 1998). In purposeful or theoretical sampling, sampling size depends on what can be done within existing constraints. Samples were obtained based on the purpose of the study. Purposeful sampling can be quite valuable, especially as a device for exploring potential issues or characteristics of interest. The main goal of purposive sampling is to focus on particular characteristics of a population that are of interest which best enabled the researcher to answer the research questions.

A data collection packet that consisted of a letter of informed consent (see Appendix E), the demographic survey, and the ANS-IE was administered to students via Survey Monkey. The letter of informed consent provided a detailed explanation of the current study, information to be collected, the risks involved, and the participant's rights. Additionally, contact information for the principal investigator as well as contact information for each IRB institution was provided. Upon approval of consent, targeted students from each campus were directed to Survey Monkey to complete the demographic form and the ANS-IE.

With the purposeful sampling technique, a group of GED® recipients was targeted. From the group of traditional high school graduates, a random sample was selected.

### **Null Hypotheses**

Pearson's  $r$  was conducted to test each of the following null hypotheses:

- H01: No meaningful difference exists between student's (self-reported) college academic achievement (GPA) as it relates to type of credential earned (GED® vs. Traditional) and locus of control (Internal vs. External).
- H02: No meaningful difference exists between (self-reported) college academic achievement (GPA) of GED® recipients and THS graduates controlling for gender.
- H03: No meaningful difference exists between (self-reported) college academic achievement (GPA) of GED® recipients and THS graduates controlling for race/ethnicity.
- H04: No meaningful difference exists between (self-reported) college academic achievement (GPA) of GED® recipients and THS graduates controlling for time in college.

### **Data Analysis**

As stated previously, Pearson's  $r$  was applied to analyze the data using side by side box plots, scatter plots, and density curves, supplemented with numerical summaries. The data was analyzed through software R. R is a language and an environment for statistical computing and graphics developed at Bell Laboratories by John Chambers and colleagues (Chambers, n.d.). R provides a wide variety of statistical techniques such as linear and nonlinear modeling, classical statistical tests, time series analysis, classification and several

others. One of the main features of R is the ease with which well-designed publication plots can be produced in an environment within which statistical techniques are implemented.

## Research Model

Pearson's correlation measures the linear relationship between two interval/ratio level variables. The algorithm appears in Figure 9.

$$r_{yx} = \frac{\text{cov}(y, x)}{\sqrt{\text{var}(y) * \text{var}(x)}} = \frac{\sum (X_i - \bar{X})(Y_i - \bar{Y}) / N}{\sqrt{\sum (X_i - \bar{X})^2 \sum (Y_i - \bar{Y})^2 / N * N}} = \frac{\sum (X_i - \bar{X})(Y_i - \bar{Y})}{\sqrt{\sum (X_i - \bar{X})^2 \sum (Y_i - \bar{Y})^2}}$$

Where  
Cov(y,x) = the covariance of y and x  
Var(x)= the variance of x  
Var(y)= the variance of y

*Figure 9: Algorithm of Pearson's Correlation. Wehrung, B, Wakefield, B., Meisel, B. & Sundberg, S. (2008).*

Pearson's r is symmetric. The correlation between x and y is the same as the correlation between y and x. Pearson's r is also referred to as the bivariate correlation coefficient or the zero-order correlation coefficient. It should be noted that the correlation coefficient assumes that the relationship is linear (Stigler, 1989).

## Summary

The researcher attempted to execute the study in a logical and concise manner. The plan for selecting potential subjects, the research locations and the data collection and analysis procedures are exhibited. The sampling technique provided a typical sample of northern New Mexican GED<sup>®</sup> recipients and THSG for participation in the study. The intention of this chapter was to further clarify the purpose of this study. The following chapter provides a precise description of the data analysis results.

## **Chapter IV**

### **Results**

This chapter presents the results of data analysis. The purpose of my study was to explore the impact locus of control (LOC) had on the postsecondary achievement (self-reported GPA) of GED® recipients and traditional high school graduates (THSG) controlling for gender, race/ethnicity, and time in college in three postsecondary institutions in northern New Mexico. Each institution provided a random sample of email addresses of GED® recipients and THSG who were enrolled in either Spring, 2014, Fall 2014, or Spring 2015. Potential students were contacted requesting their participation in an anonymous survey conducted through Survey Monkey. Consenting students were surveyed using the Adult Nowicki-Strickland Internal-External Control Scale (ANS-IE).

#### **Explanation of Statistical Method**

Data points were analyzed using Pearson's  $r$  to examine side-by-side box plots, scatter plots, and density curves, supplemented with numerical summaries. Software R was used to analyze the data. R is a language and an environment for statistical computing and graphics developed at Bell Laboratories by John Chambers and colleagues (Chambers, n.d.). R provides a wide variety of statistical techniques such as linear and nonlinear modeling, classical statistical tests, time series analysis, classification and several others. As stated in Chapter III, one of the main features of R is the ease with which well-designed publication plots can be produced in an environment within which statistical techniques are implemented (refer to Figure 7 in Chapter III). Pearson's correlation measures the linear relationship between two interval/ratio level variables. The algorithm appears in Figure 10.

$$r_{yx} = \frac{\text{cov}(y, x)}{\sqrt{\text{var}(y) * \text{var}(x)}} = \frac{\sum (X_i - \bar{X})(Y_i - \bar{Y}) / N}{\sqrt{\sum (X_i - \bar{X})^2 \sum (Y_i - \bar{Y})^2 / N * N}} = \frac{\sum (X_i - \bar{X})(Y_i - \bar{Y})}{\sqrt{\sum (X_i - \bar{X})^2 \sum (Y_i - \bar{Y})^2}}$$

Where  
Cov(y,x) = the covariance of y and x  
Var(x)= the variance of x  
Var(y)= the variance of y

*Figure 10: Algorithm of Pearson's Correlation. Original source: Wehrung et al., 2008.*

Pearson's r is symmetric. The correlation between x and y is the same as the correlation between y and x. Pearson's r is also referred to as the bivariate correlation coefficient or the zero-order correlation coefficient. It should be noted that the correlation coefficient assumes that the relationship is linear (Stigler, 1989).

### **Descriptive Statistics**

As stated in Chapter III, the research design was a purposeful sampling of major institutions in northern New Mexico including one university and two community colleges for Spring 2014, Fall 2014, and Spring 2015. The University of New Mexico (UNM) in Albuquerque, Central New Mexico Community College (CNM), and the Santa Fe Community College (SFCC) were selected as representative of the population.

5,268 email requests were sent to THSG students, of which 2,787 were sent to enrolled university students and 2,281 to enrolled community college students. Of the 2,281 requests to community college students, 2,208 were CNM students and 273 were SFCC students. Each institution also provided a random sample of email addresses for GED® recipients. A separate invitation was sent to 3,213 GED® recipients, of which 94 were enrolled university students and 3,119 were enrolled community college students. Of the 3,119 requests to community college students, 2,552 were CNM students and 567 were SFCC students.

A total of 767 responses were received, providing a 95% confidence level at  $\pm 3.5\%$ , as obtained using a standard response rate calculator (Van Bennekom, 2004). When the responses of the two community college sub-populations were grouped together, the balance of THSG respondents from the university and community colleges was relatively comparable, with a little more than half of the respondents (.55) from the community colleges and a little less than half (.45) from the university. The ratio of GED<sup>®</sup> respondents from the university and community colleges was undetermined; this is because the email invitation was sent to the entire population of GED<sup>®</sup> recipients rather than separately by institution. Therefore it was not possible to disaggregate the GED<sup>®</sup> respondents by institution due to the anonymity of survey responses.

Type of Diploma	Population Size (Number of Requests Sent)	Enrollment in Postsecondary Institutions	Number of Responses Received	Ratio of Responses by THSG and GED <sup>®</sup>
THSG	2787	The University of New Mexico	228	.45
	2208	Central New Mexico Community College	277	.55
	273	Santa Fe Community College		
GED <sup>®</sup> Recipients	94	The University of New Mexico	262	Undetermined
	2552	Central New Mexico Community College		
	567	Santa Fe Community College		
<b>Totals</b>	<b>8481</b>		<b>767</b>	

*Figure 11: Population Size by Type of Diploma, Institution, Number and Ratio of Responses.*

Figure 12 presents the distribution of responses by type of degree; 60.69% of the respondents were THSG and 39.31% were GED<sup>®</sup> recipients.

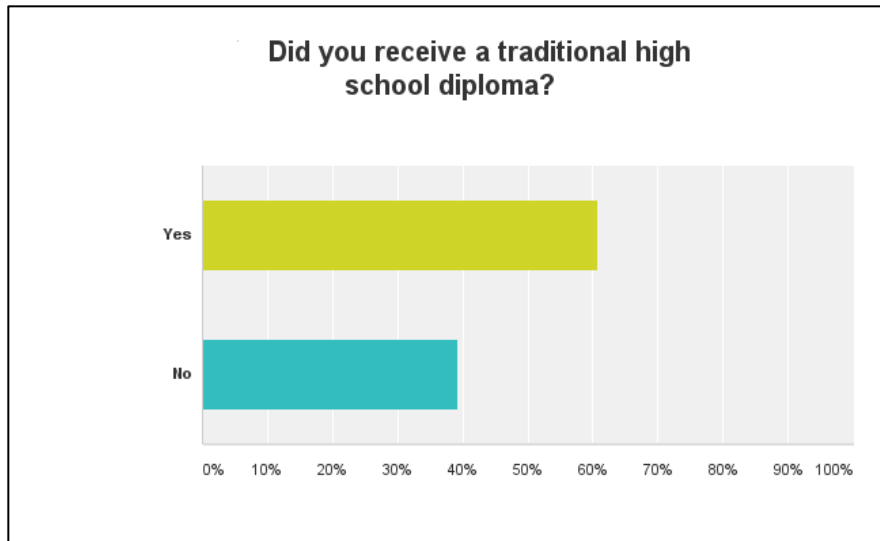


Figure 12: Distribution of GED<sup>®</sup> Recipients and THSG.

The respondents were predominantly composed of females 67.13%, versus males at 32.87%, as seen in Figure 13.

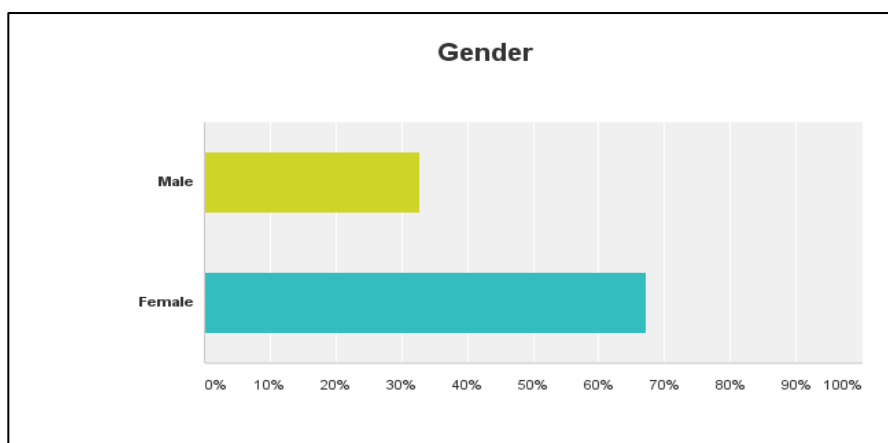
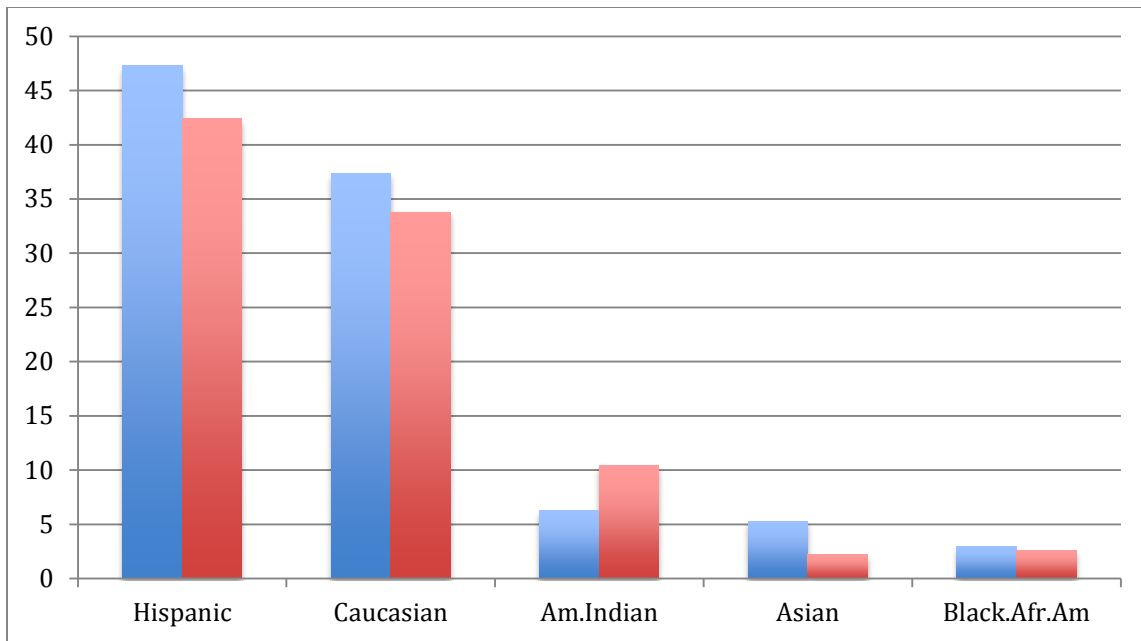


Figure 13: Distribution by Gender.

The majority of respondents were Hispanic/Latino (47.34%) followed by people who identified as Caucasian (37.34%). The remainder of respondents was distributed ethnically as noted in Figure 14.





*Figure 14: Distribution by Race/Ethnicity compared to Fall 2014 enrollment in all New Mexico Postsecondary Institutions.*

Respondents were fairly typical of the enrollment in all postsecondary institutions in NM, with 47.34% Hispanic/Latino in the study compared to 42.42% Hispanic in the state, and 67.13% Female in the study compared to 56.5% Female in the state. The age of all respondents was over 18. Respondents were not asked to report a specific age, but only asked to confirm that they were age 18 or older.

### **Statistical Analysis**

Figure 15 displays the matrix plot of the data in box plots and density curves of GED<sup>®</sup> and traditional high school graduates (THSG) by locus of control and self-reported GPA. THSG is abbreviated in the Figure 15 as HSD (high school diploma.).

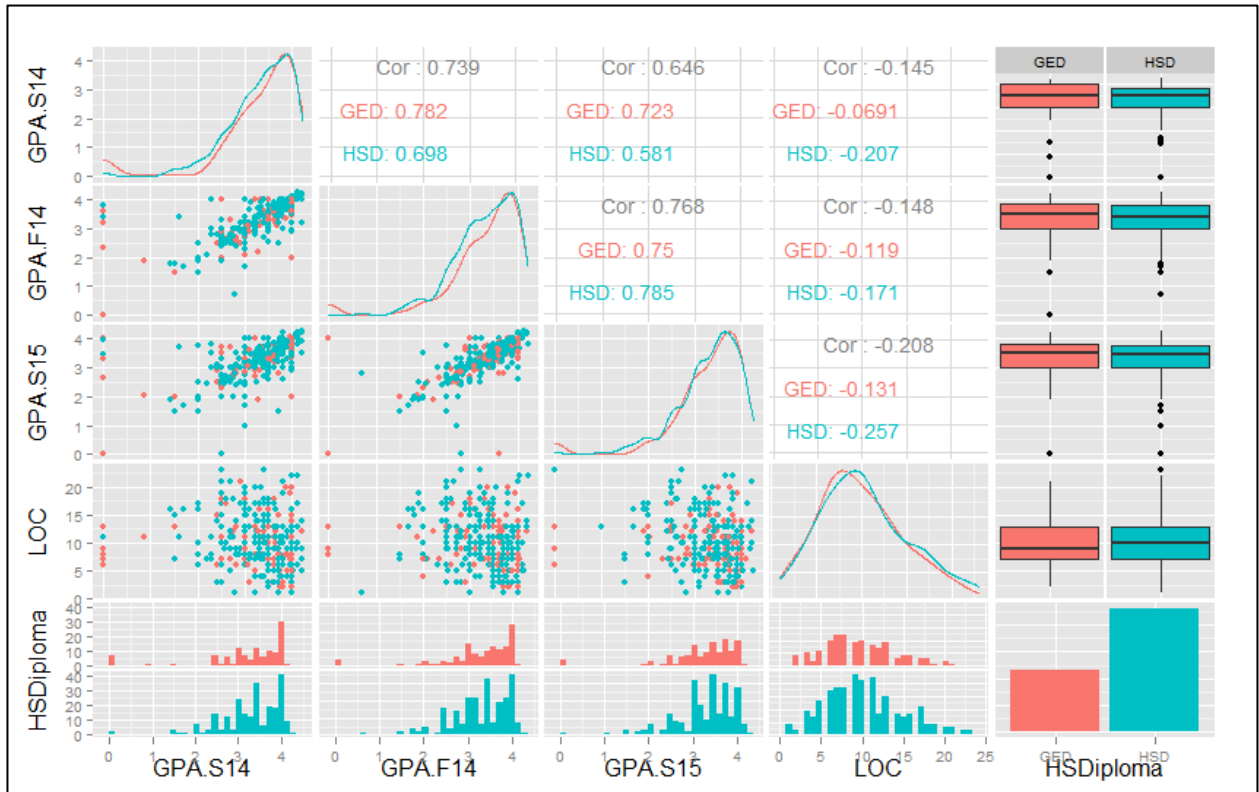


Figure 15: Matrix Plot of the Data.

The following analysis provides a specific breakdown of each box plot. The box plots and density curves in Figure 16 suggest that the distribution of self-reported GPA for GED<sup>®</sup> recipients and THSG is virtually indistinguishable for each of the three semesters comparing the self-reported GPA of the distributions of THSG vs. GED<sup>®</sup> recipients. This suggests that possession of a GED<sup>®</sup> should not be the deciding factor of performance expected from this group. GED<sup>®</sup> recipients in the sample were just as capable of successful performance in postsecondary institutions as THSG.

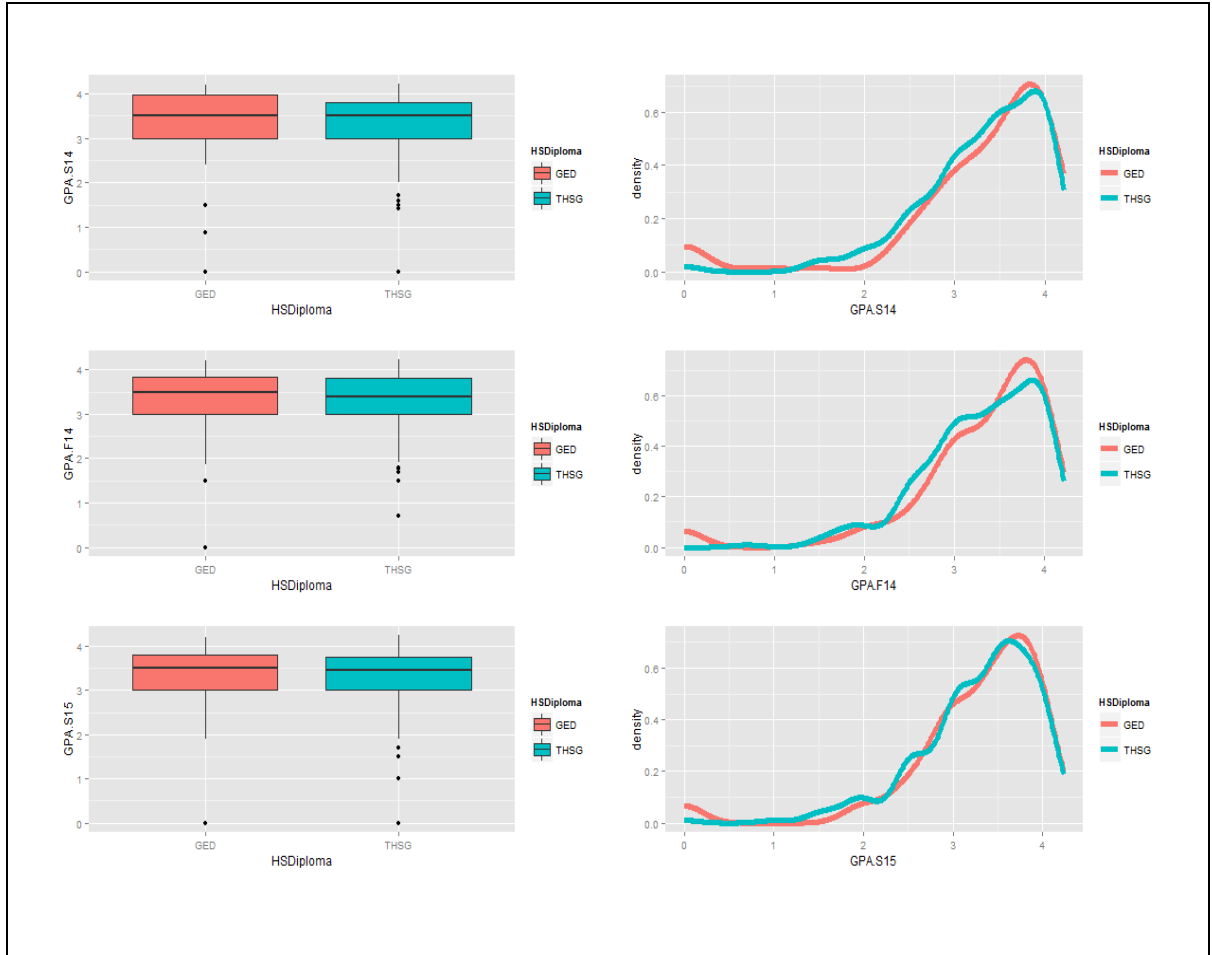
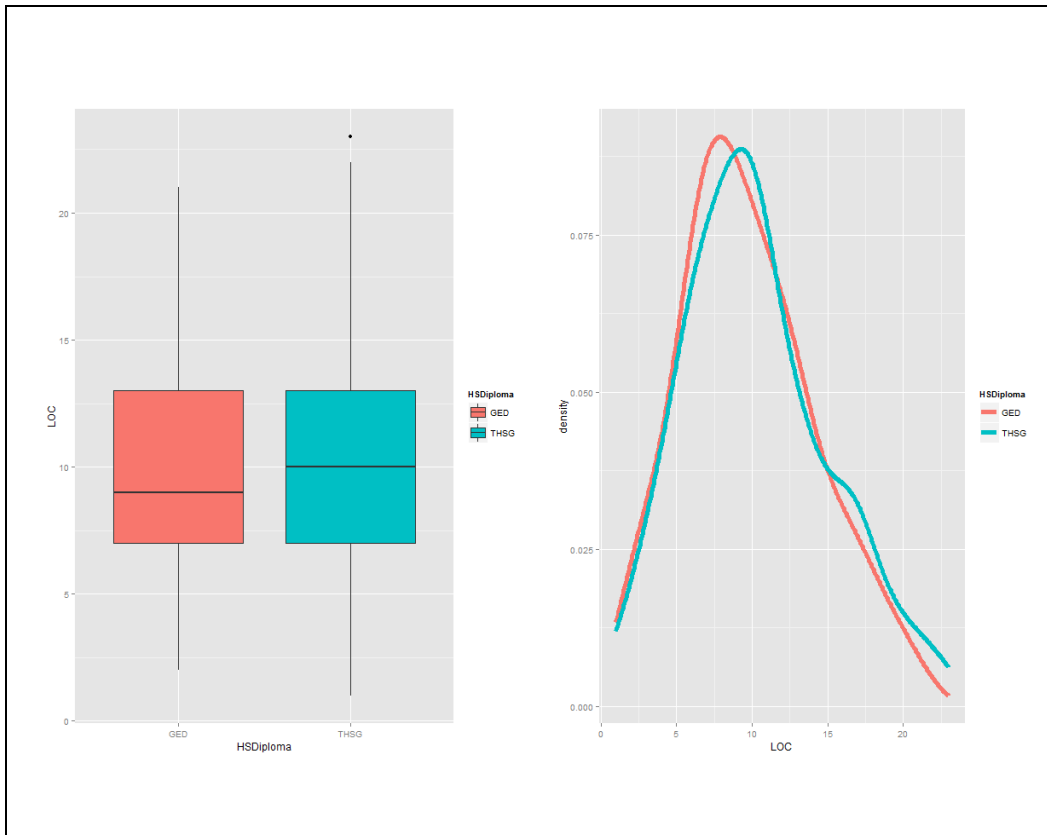


Figure 16: Distribution of Self-Reported GPA of GED® Recipients and THSG.

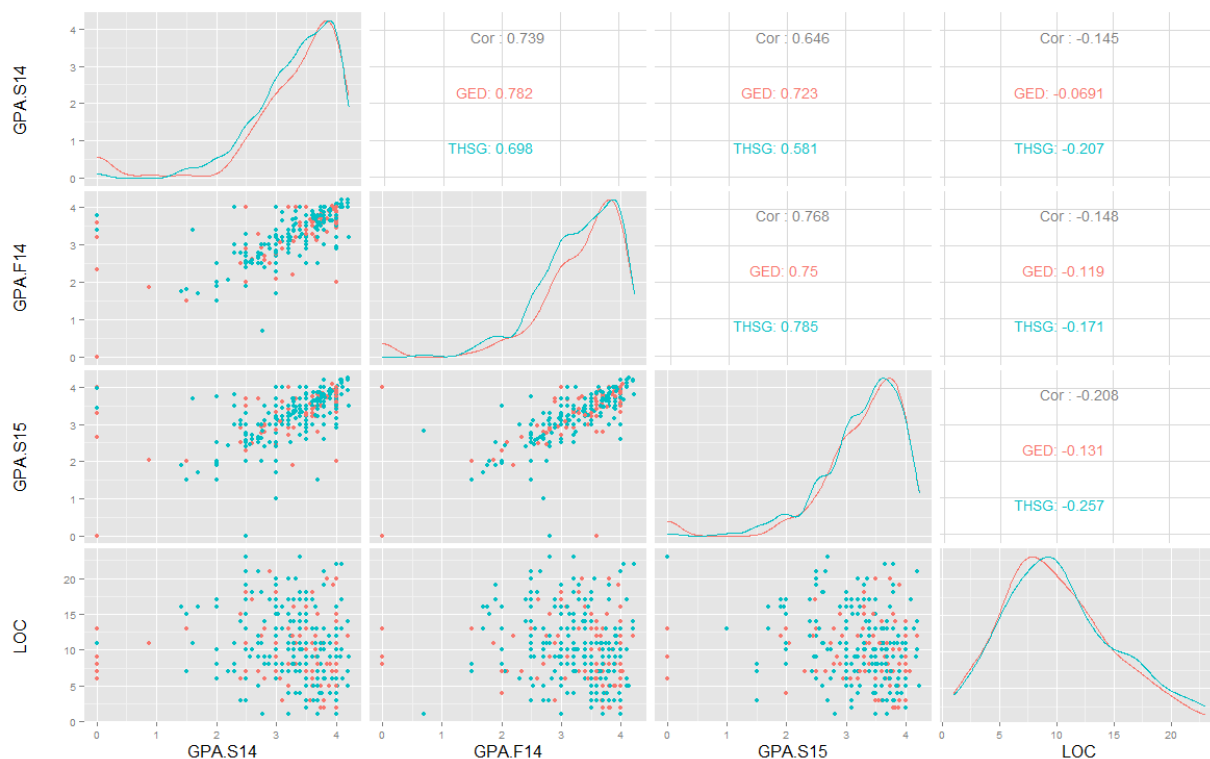
In regard to locus of control, the box plots in Figure 17 represent almost identical distributions. THSG and GED® recipients exhibit a similar range of values (based on the interquartile range). It appears that those individuals receiving a GED® have a slightly lower median score, meaning that typical GED® recipients may tend to believe they have marginally more control over their lives based on the ANS-IE.



*Figure 17: Distribution of LOC.*

### **Pairwise Comparisons**

Between both groups, pairwise comparisons, as expected, exhibited strong positive linear relationships between self-reported GPA Spring 2014 (S14), GPA Fall 2014 (F14), and GPA Spring 2015 (S15). Participants that tended to score well in S14 tended to score well in F14; those that scored well in F14 tended to score well in F15. Basically, if students did well they continued the trend to do well. Figure 18 displays the strong positive linear correlation between self-reported GPA for the three semesters.



*Figure 18: Distribution of Self-Reported GPA, LOC Over All Three Semesters.*

Some of the outliers depicted in Figure 18 displayed conditions that skewed the data. As an example, the individual who reported 0.0 GPA in S14 but a 4.0 GPA in S15 likely didn't start school until after S14. Furthermore, the individual who reported a 2.5 GPA in S14 but a 0.0 GPA in S15 more than likely dropped out of school. Simplifying this data set to its averages would tend to overlook the skewness of the data set.

With respect to each variable, self-reported GPA scores tend to be left skewed and unimodal, with most students in the 3.0-4.0 GPA range. Locus of control is somewhat right skewed, with most people falling in the 5-15 range. The LOC distribution is nearly identical for GED® recipients and THSG, which indicates no meaningful differences exist between these two groups.

Figure 18 also looks at the bivariate relationship between self-reported GPA and LOC. There tends to be a weak negative linear correlation between LOC and GPA. Scores on the ANS-IE can range from 0 to 40 scored to the external direction. The score on the ANS-IE is representative of the respondent's externality. This means that the higher the score on the ANS-IE, the higher the externality of the respondent and vice versa. More specifically, the higher the score the more individuals tend to believe that outside forces control their outcome.

According to the results, both GED<sup>®</sup> recipients and THSG tended to have a lower self-reported GPA if they scored high on the ANS-IE which is indicative of students feeling that their low GPA was attributed to outside forces. Interestingly, the negative linear relationship is twice as strong for THSG than GED<sup>®</sup> recipients, which may suggest that THSG believe that they have a fairly strong belief that events are beyond their control. As discussed, this means that they are relatively less likely than others to take credit for their successes or to take the blame for their failures. The large difference may be attributed to the age and maturity of these two groups. Although each participant was over the age of 18 at the time of the study, GED<sup>®</sup> recipients, on average tend to be older than THSG when entering college and therefore more mature.

Figure 19 depicts the same plot broken down further by gender.

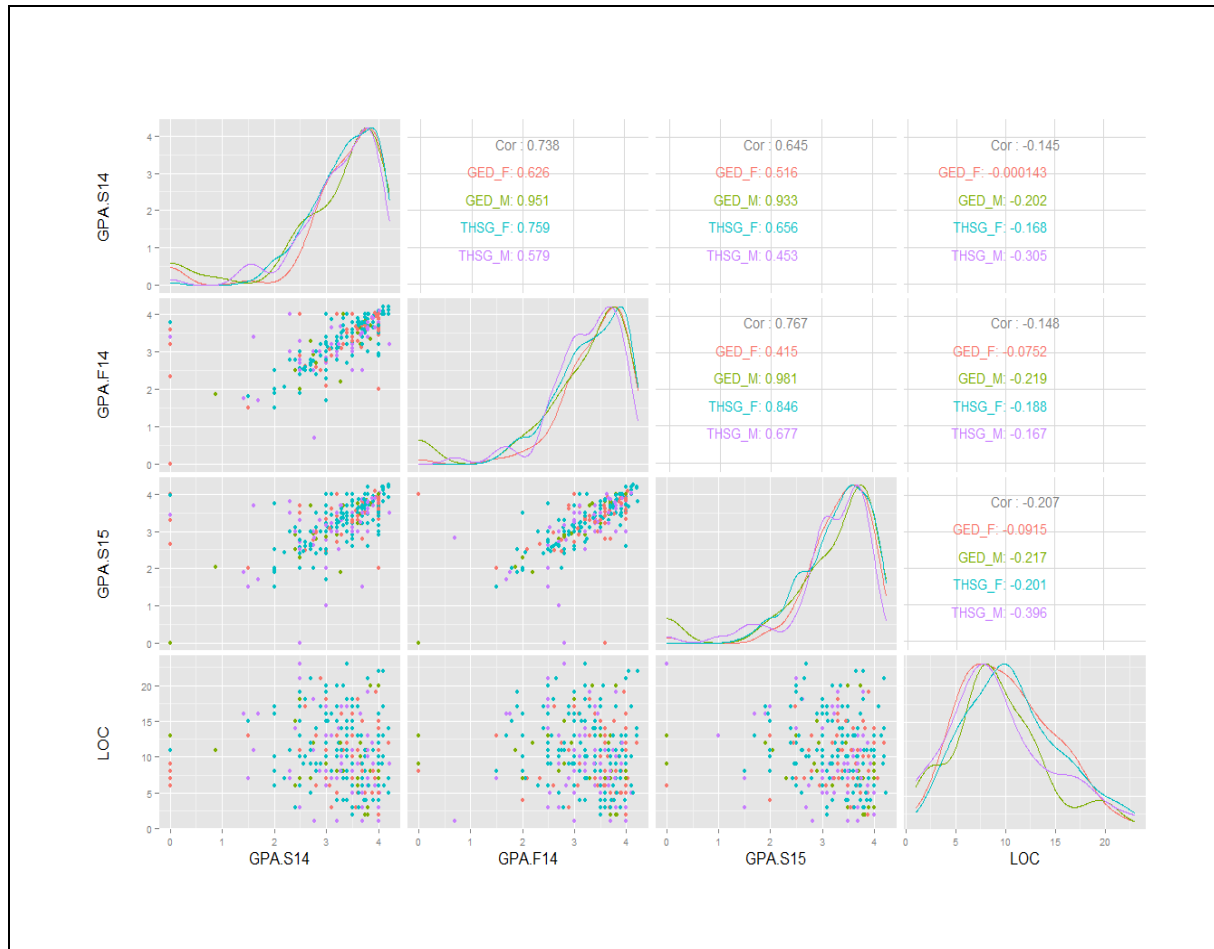


Figure 19: Distribution of Self-Reported GPA, LOC Over all Three Semesters by Gender.

The above plot depicts a similar range of values and is virtually indistinguishable between males and females for both GED<sup>®</sup> recipients and THSG.

## Discussion of Results

Pearson's  $r$  was conducted to test each of the following null hypotheses:

H01: No meaningful difference exists between student's (self-reported) college academic achievement (GPA) as it relates to type of credential earned (GED<sup>®</sup> vs. Traditional) and locus of control (Internal vs. External).

The data indicates that GPA's between both groups was virtually indistinguishable. Both GED<sup>®</sup> recipients and THSG exhibited an internal locus of control. After examining the relationship between LOC and GPA, for the GED<sup>®</sup> students, a very weak negative linear association between LOC and GPA across the three semesters was exhibited. However, for THSGs, this negative association was more pronounced, appearing weak to moderate. The table below displays 95% confidence intervals showing that the correlations (Pearson's r) are statistically significant at the  $\alpha=0.05$  level (since the 95% confidence intervals do not include 0):

Correlation	Lower Confidence Limit	Upper Confidence Limit
S14.Overall	-0.2471609	-0.03915078
F14.Overall	-0.2498375	-0.04199875
S15.Overall	-0.3066471	-0.10325500
S14.THSG	-0.3273304	-0.07718372
F14.THSG	-0.2937699	-0.04016786
S15.THSG	-0.3739457	-0.12976872
S14.GED	-0.2490949	0.11543390
F14.GED	-0.2960074	0.06516805
S15.GED	-0.3066432	0.05351118

H02: No meaningful difference exists between (self-reported) college academic achievement (GPA) of GED<sup>®</sup> recipients and THS graduates controlling for gender. Figure 20 depicts a similar range of values and is virtually indistinguishable between males and females for both GED<sup>®</sup> recipients and THSG.



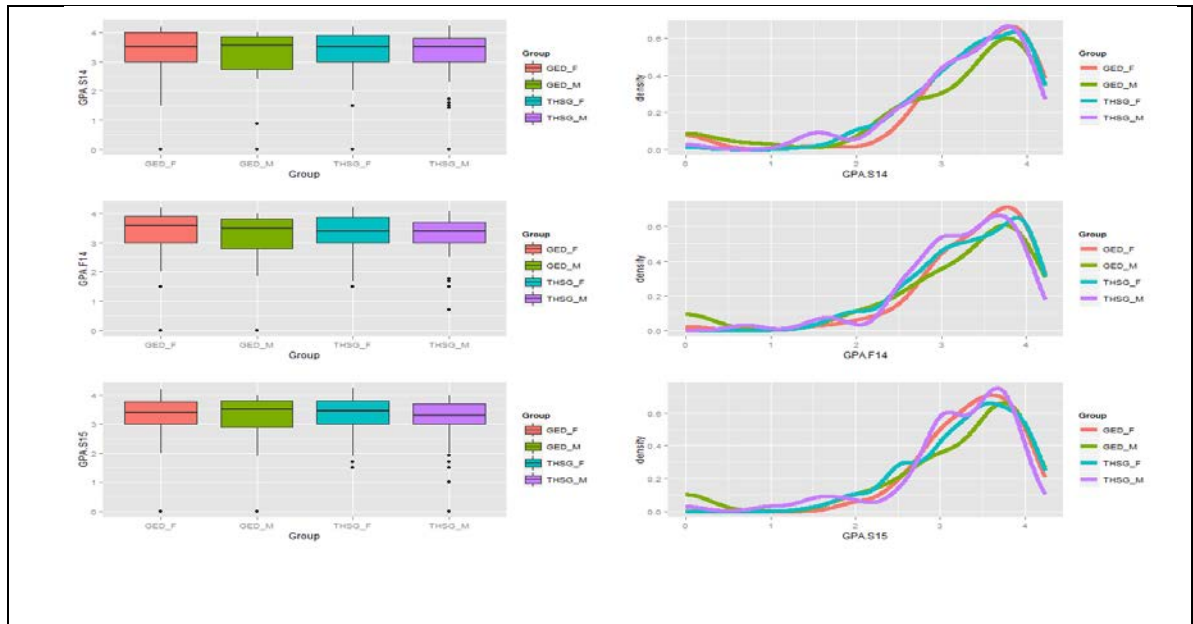


Figure 20: Distribution of Self-Reported GPA, LOC Over All Three Semesters by Gender.

H03: No meaningful difference exists between (self-reported) college academic achievement (GPA) of GED<sup>®</sup> recipients and THS graduates controlling for race/ethnicity. Since the majority of respondents were Hispanic/Latino (47.34%) followed by Caucasians (37.34%), Figure 21 depicts a similar range of values between these two races for both GED<sup>®</sup> recipients and THSG. The remainder of respondents was less than 7%, and therefore, not representative.

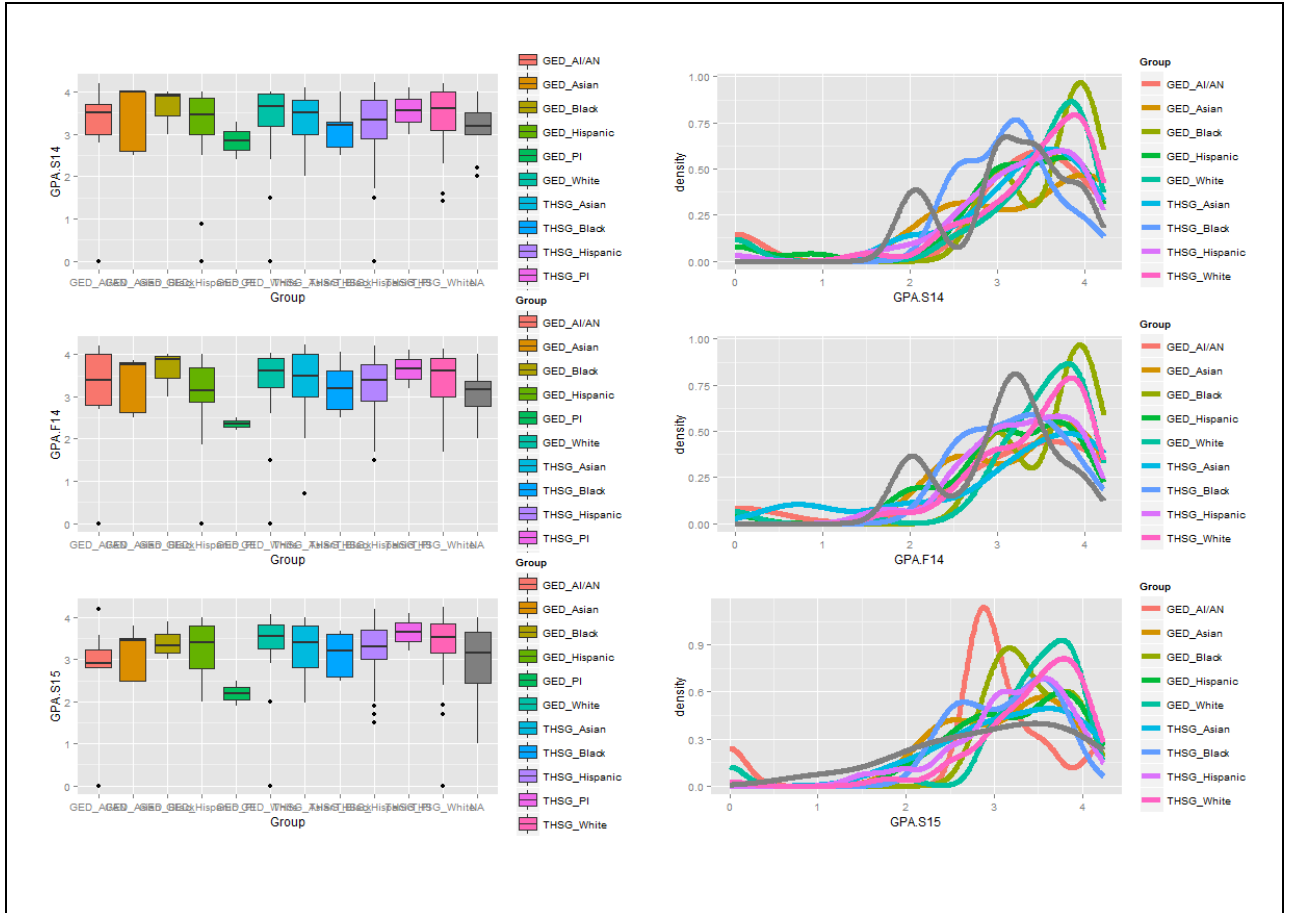


Figure 21: Distribution of Self-Reported GPA, LOC, and Race/Ethnicity.

H04: No meaningful difference exists between (self-reported) college academic achievement (GPA) of GED<sup>®</sup> recipients and THSG controlling for time in college. Between both groups, pairwise comparisons, as expected, exhibited strong positive linear relationships between GPA Spring 2014 (S14), GPA Fall 2014 (F14), and GPA Spring 2015 (S15). People that tended to score well in S14 tended to score well in F14; those that scored well in F14 tended to score well in F15. Basically, if students did well they continued the trend.

## **Summary**

With respect to type of diploma earned, there was not a meaningful difference with regard to self-reported GPA between GED<sup>®</sup> recipients and THSG in the study. Results of the data analysis also indicated that there was no meaningful difference in locus of control for the participants in the study with regard to academic achievement (self-reported GPA) between the two groups. Data analysis also revealed no meaningful differences between the two groups with regard to gender. Race/ethnicity did not have a meaningful difference with regard to academic achievement (self-reported GPA). The majority of respondents were Hispanic/Latino (47.34%) and Caucasians (37.34%). The remainder of respondents was less than 7%, and therefore, not representative. Finally, time spent in college did not play a meaningful role in the adjustment of self-reported GPA. If a student did well in the first semester, then the student tended to do well throughout the other two semesters.

## **Chapter V**

### **Discussions and Recommendations**

The primary purpose of this study was to explore the impact locus of control had on the postsecondary achievement (self-reported GPA) of GED<sup>®</sup> recipients and traditional high school graduates, (THSG) controlling for gender, race/ethnicity, and time in college. In the previous chapter, the results of the data analysis were presented. In general, the results indicated that although LOC did not contribute significantly to academic achievement (self-reported GPA) of GED<sup>®</sup> recipients and THSG, the trend that higher internality is associated with higher academic achievement was supported with respect to self-reported GPA. Therefore, this study confirmed some, but not all of the previous works, because the GPA was unconfirmed in this study. The relation of the findings to the research questions and hypotheses along with implications of the results are presented in this chapter. Limitations of the study and suggestions for future research are presented as well.

#### **Research Question 1**

The first question to be addressed dealt with whether or not there was a meaningful difference between students' academic achievement as it relates to type of diploma earned (GED<sup>®</sup> vs THS) and locus of control (internal vs. external). This study suggests that there was no meaningful difference in the academic achievement (self-reported GPA) of locus of control for the two groups of students. Both groups of students self-reported an above average GPA. This finding is contrary however, to results found by previous researchers such as Ebert (2002) and Rogers (1977). In those studies, THSG had significantly higher GPA's than GED<sup>®</sup> recipients as confirmed by their records. Conversely, this study was consistent with studies conducted by Baldwin (1995) and Rose (1999); academic

achievement (self-reported GPA) did not appear to be a function of type of diploma. Insofar as the inference is valid, this study suggests that possession of a GED<sup>®</sup> does not indicate lack of college preparedness nor does possession of a GED<sup>®</sup> predict academic performance.

Results showed there was no meaningful difference with regard to LOC. Both groups displayed an internal orientation. In previous studies conducted by Kalecstein and Nowicki (1997) and Linder and Janus (1997), results revealed students who had higher internality also had higher academic achievement. However, despite the fact that LOC was not shown to have an independent effect, Pearson's  $r$  ( $r = -0.208$ ) indicated a weak negative linear correlation between LOC and self-reported GPA; i.e., the higher the externality the lower the self-reported GPA for both groups and almost twice as strong for THSG. Therefore, THSG tended to be more external than GED<sup>®</sup> recipients. Analysis of the median LOC for the sample indicated that the group tended towards internality and the sample median GPA was above average as well. Jointly, these results support previous claims that higher internality is associated with higher academic achievement.

Although results of data analysis showed no meaningful interaction of diploma type and LOC, there are implications for professionals in higher education. It appeared the GED<sup>®</sup> recipients in the sample were just as capable of successful performance in postsecondary institutions as THSG evidenced by the comparability of self-reported GPAs. Possession of a GED<sup>®</sup> should not be the deciding factor of performance expected from this group.

## **Research Question 2**

The second research question dealt with whether or not there was a meaningful difference between the academic achievement of GED<sup>®</sup> recipients and THSG as it relates to

gender. Data analysis revealed no meaningful differences between the two groups with regard to gender.

### **Research Question 3**

The third research question dealt with whether or not a significant difference existed between academic achievement of GED® recipients and THSG as it relates to race/ethnicity. Race/ethnicity did not have a meaningful difference with regard to academic achievement. The majority of respondents were Hispanic/Latino (47.34%) and Caucasians (37.34%). The remainder of respondents was less than 7%, and though important, not representative. Too often ethnic groups in small numbers are discounted in quantitative research because of the numbers.

### **Research Question 4**

The final research question dealt with whether or not a meaningful difference existed between academic achievement of GED® recipients and THSG and controlling for time in college. Time spent in college did not play a meaningful role in GPA attainment. If a student did well in the first semester, the student tended to do well throughout the other two semesters. Further, from the results of the study GED® Credentials and Postsecondary Educational Outcomes (Patterson, Zhang, Song, & Guison-Dowdy, 2010) inferred that more research on the educational background of single semester GED® credential holders, in contrast with those who continue, would be useful as would a better understanding of the transition efforts provided by postsecondary institutions, especially those with programs of two years or less.

## **Conclusion**

Based on the results of the data analysis several generalizations can be made with reasonable confidence. With regard to academic achievement, no meaningful difference existed between GED<sup>®</sup> recipients and THSG. Both groups of student GPAs were considerably above average. Therefore it can be concluded that type of diploma (GED<sup>®</sup> or THS) is not a valid predictor of performance. Further, results of the present study indicated that possession of a GED<sup>®</sup> does not indicate that an individual is not capable or appropriately prepared for postsecondary education. Although both GED<sup>®</sup> recipients and THSG reported above average GPA's, results indicated that gender did not play a role in academic achievement of either group.

With regard to LOC, no meaningful difference existed between GED<sup>®</sup> recipients and THSG. Both groups exhibited an internal orientation. Although there was no meaningful difference between the two groups of students, LOC did appear to be related to academic achievement. Regardless of the type of diploma, respondents with lower (internal) scores on the ANS-IE had higher GPA's and vice versa. The results of this study support previous claims that higher internality is associated with higher academic achievement.

Race/ethnicity did not have a meaningful difference with regard to academic achievement. The majority of respondents were Hispanic/Latino (47.34%) and Caucasians (37.34%). The remainder of respondents was less than 7%, and though important, not representative. Time spent in college did not appear to impact academic achievement. Regardless of type of diploma or number of semesters completed prior to data collection, time spent in college was not an influential factor in the academic performance of

participants. If a student did well in the first semester, the student tended to do well throughout the other two semesters.

### **Implications for Further Study and Practice**

The findings of this study indicate that specific demographic factors including gender and ethnicity/race did not have an impact on academic achievement among GED<sup>®</sup> recipients and THSG in northern New Mexico. These are factors that cannot be manipulated in any way; however, respondents with an internal locus of control were found to have higher self-reported academic achievement than those students exhibiting higher externality. It is an important finding that locus of control appears to be a factor that can be modified over time.

Locus of control, a personality construct that is grounded in Rotter's social learning theory (1966), is shown to be of great significance to academic achievement (Duke & Nowicki, 1974). This suggests that, because higher internality is consistently associated with higher academic achievement, it may be beneficial to include an assessment of LOC upon entering into college as a freshman.

Further study may reveal whether or not students would be better served by assessing LOC even earlier as a freshman in high school. If high school students have high externality, then they might be guided to modify their thoughts to be more internal since higher internality is associated with higher academic achievement. Research on early assessment of LOC among high school students could provide evidence-based best practices about the placement of students and the development and implementation of programs for college and career readiness. Additionally, courses stressing study and adjustment skills can raise grade point averages and influence LOC towards greater internality (Feldman & Poirier, 2005).



According to the College Success Factors Index (2001), responsibility and control are two of the eight factors essential to academic performance. This is a process requiring gradual increase in student responsibility and acceptance by which the student has increasing control over his or her academic success that can influence academic achievement. Consequently, researchers may find it useful to explore the impact that conventional classroom activities have on developing student responsibility for learning. Taking responsibility appears to be an integral part of taking control. It has been posited that when students take responsibility and this process is intrinsic, scholastic aptitude increases (Swing, 2004).

Further research is needed to anticipate and measure the personal attributes of LOC. It has been asserted that the ideal attribution is when “both success and failure are attributed to effort because of its internal causation, instability, and controllability characteristics” (Grantz, 1999, p.8). Moreover, Leftcourt (1982) explained that “without an expectation of internal control and without persistence despite imminent failure,” an individual might not take steps necessary to ensure success (p.81).

Since LOC is a personal attribute, further investigations on the value of attribution training may be of particular importance. Attribution training focuses on amplification or strengthening of the student’s internal LOC (Grantz, 1999). Further research is needed to examine how different teaching strategies, including persuasion strategy, antecedent attribution strategy and reinforcement strategy, relate to students’ internal LOC. Dykeman (1993) found that anticipatory intervention could assist first-time at-risk college students in adjusting to the stress, anxiety and demands of a new university environment. He asserted that an ideal intervention program should focus on self-assessment, planned intervention, and

self-monitoring. These strategies, combined with counseling, may enable students to have a strengthened internal locus of control and a sense of confidence to develop study and test-taking skills successfully. Incorporating evidence-based practices in support programs and services may assist GED® recipients and THSG to achieve a higher level of internality and higher level of academic success.

Although gender did not show a meaningful difference within the present study, further study may be needed to determine the influence of role models on achieving a higher degree of internal LOC. Howard (1996) suggested identification of role models played a significant role in influencing locus of control with female students. In her study of first-time female college students, Howard found that LOC was a changeable variable. Female students who identified role models had stronger internal LOC than the subjects who did not identify role models. For the students who had role models, internal LOC increased over the first year of college, but the opposite occurred in those students without role models. With this in mind, further research is required to clarify how role-model identification and mentoring may assist students in achieving a higher degree of internal LOC. Agreement on the indicators that constitute internal LOC is needed before testing possible interventions that may increase internality and ultimately contribute to an increase in academic performance.

### **Recommendations for Further Study**

The present study was limited to a small sample size in northern New Mexico. If a more representative sample size were conducted outside of New Mexico, there may have been an appearance of greater variability between the two groups of students. A longitudinal study across the country would increase generalizability of results. Future studies of the academic achievement of LOC relationship in GED® recipients and THSG should strive to

achieve a more representative sample. In addition, as GPA was unconfirmed in this study, further work should collect institutional data to confirm actual GPA.

Antecedents should be carefully considered in future studies. Carton and Nowicki (1994) asserted, as Rotter acknowledged, the importance of identifying antecedents of individual differences in LOC. These antecedents might include amount of stress, belief systems, upbringing, and an individual's degree of autonomy. Identification of these factors could provide insight into the personality of participants.

When attempting to assess the relationship of LOC to academic achievement, it is important to take into consideration multiple measures of achievement. The present study was limited in that it did not examine age, course load, developmental vs. non-developmental courses, academic major or instructor quality. To provide more definitive answers to research questions, future research should focus on additional factors, including type, level of difficulty and the numbers of courses participants have taken and are taking at the time of the study. In addition, personal factors such as age, the amount of stress experienced, belief systems, upbringing, and degree of autonomy achieved when the student was a child should be examined. Future studies may clarify which factors are most significantly related to LOC and academic achievement.

### **Implications for Policy Makers**

This study holds broad implications for policy makers and practitioners. The study provides policy makers with a clear case for the critical role of higher education in providing support for incoming students. For example, age and maturity are factors in college success. Incoming university students are typically younger and more dependent on their teachers (Bickel & Howley, 2000; Zimmerman & Schunk, 2011) and thus tend to have a higher

externality. Policy makers would be well advised to focus on evidence-based best practices about the placement of students and the development and implementation of programs for college and career readiness.

Use of the new 2014 GED® assessment targets may provide additional direction for policy makers. The new test was derived from the Common Core State Standards (CCSS) and similar college and career readiness standards. The new assessment targets are informed by research that suggests a clear and elegant set of essential skills necessary for success in a credit-bearing postsecondary course, as well as in job training programs. The targets are clear, understandable and consistent, include rigorous content and require applications of knowledge through a range of levels of cognitive complexity, and are based on evidence (GED® Statistical Report, 2013). The new GED® assessment demonstrates rigor and the test is normed on graduating high school seniors. It is widely known that four out of ten graduating high school seniors cannot pass the GED®; however, the current graduation rate in New Mexico is 67%. This discrepancy provides policy makers in secondary and higher education institutions with information that can be used to establish an early warning system for identification of students needing additional supports. Further studies might investigate the rigor between the GED® and the high school competency exams.

### **Implications for Practitioners**

For practitioners, the implications of this study provide tools to refocus training of pre-and-in-service instructors. This study holds power in removing the GED stigma. Students who complete the GED and display high internal validity are just as likely to succeed in college as THSG.

This study confirmed previous studies that locus of control changes over time (Rotter, 1996). This means that the work instructors do with high externality students may yield positive results. Practitioners might do well to focus support as early as the freshman year in high school to help students find the strengths to combat boredom and other barriers that keep them from graduating high school.

Faculty in higher education would also be well advised to connect students to female role models, support in study skills and metacognitive strategies in self-regulation, peer mentors, and other strength-based approaches to unleash the assets of students who come with diverse learning styles and backgrounds. The work on attribution theory might be a good place to start; attribution theory presumes students who attribute success to hard work and effort will do better in college (Marzano, 2003).

Curricular and instructional changes that engage high school graduates are long overdue and may assist with decreasing the dropout rate. Utilizing research-based high-probability teaching strategies to reinforce internality may help narrow the gap (Marzano, 2003). Today's schools are not normally designed to prepare students for the knowledge economy or its "demand for outcomes over process" (Jorgenson, 2006). As Jorgenson asserts, "the traditional model of teachers dispensing discrete, disconnected bodies of information (curricula) presented in isolation from the other subject areas is increasingly obsolete as a way to prepare children for our world" (Jorgenson, 2006). He concludes it is a daunting task to recognize shifting dynamics, decide how to address them, and then implement sustainable changes (Jorgenson, 2006).

## Summary

The purpose of this study was to determine if there was a meaningful relationship in factors related to the academic achievement (self-reported GPS) of GED<sup>®</sup> recipients and THSG enrolled in three northern New Mexico colleges. The factors investigated were type of diploma, received (GED<sup>®</sup> THSD), locus of control (internal vs. external), gender, race, and time spent in college prior to participation in the study. A secondary purpose was to investigate LOC as a determining factor in the performance of these students. In general, the results of the study indicated that there was no meaningful relationship in the self-reported academic performance of GED<sup>®</sup> recipients and THSG. Data analysis also revealed no meaningful differences between the two groups with regard to gender. Race/ethnicity did not have a meaningful difference with regard to academic achievement (self-reported GPA). The majority of respondents were Hispanic/Latino (47.34%) and Caucasians (37.34%); the remainder of respondents was less than 7%.

Practitioners may find it beneficial to incorporate locus of control assessment, attribution training, and other strategies for increasing internality starting in the freshman year in high school. Future research directions on the relationship of locus of control and academic achievement were suggested in Chapter 5. Finally, future research may yield greater generalizability with a more representative sample size, consideration of multiple antecedents of locus of control, and collection of institutional data to confirm actual vs. self-reported GPA.

## **Appendices**

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## **Appendix A**

### **Human Subjects Exemption Approval Letters**

**University of New Mexico**

**Central New Mexico Community College**

**Santa Fe Community College**



Please note that University of New Mexico (UNM) IRB Main Campus has published the following Board Document on IRBNet:

Project Title: [714158-2] Control Your Destiny or Someone Else Will: The Value of the GED® Principal Investigator: Sheri Williams, Ph.D.

Submission Type: Response/Follow-Up  
Date Submitted: March 25, 2015

Document Type: Exempt Letter  
Document Description: Exempt Letter  
Publish Date: April 24, 2015

Should you have any questions you may contact Heather Savage at [hsavage@unm.edu](mailto:hsavage@unm.edu).

Thank you,  
The IRBNet Support Team

[www.irbnet.org](http://www.irbnet.org)



NOTICE OF IRB REVIEW AND APPROVAL

March 31st, 2015

The project identified below, for which you requested review and approval by the CNM Institutional Review Board for the Protection of Human Subjects in Research, has now been reviewed and approved. This approval is based on the assumption that the materials you submitted to the CNM IRB contain a complete and accurate description of all the ways in which human subjects are involved in your research.

As the principal investigator of this study, you assume the following responsibilities:

1. You will conduct the research according to the plans and protocol you submitted
2. You will immediately inform the IRB of any injuries to subjects that occur in the course of your research.
3. You immediately inform the IRB of any problems that arise in the course of your research
4. You will immediately inform the IRB of any changes that you make in the protocol of the research.
5. You will give each person who signs the consent document a copy of that document, if you are using such documents in your research.
6. You will retain all signed consent documents for at least three years after the termination of the research.

Failure to comply with these conditions will result in the withdrawal of this approval.

**Principal Investigator:** Lisa G. Salazar

**Title of Project:** Control Your Destiny or Someone Else Will: The Value of the GED vs. the Traditional High School Diploma

CNMIIRB#: SALAZAAR

---

A handwritten signature in black ink that reads "Jessica H. Craig".

Jessica H. Craig, Co-chair

A handwritten signature in black ink that reads "Heather A. Fitzgerald".

Heather A. Fitzgerald, Co-chair

CNM Institutional Review Board  
525 Buena Vista Blvd, SE Albuquerque, New Mexico 87106

Hi Lisa,

SFCC IRB has approved your survey research for your dissertation, "Control Your Destiny or Someone Else Will: The Value of the GED ". The next step is for you to provide us with the list of students you wish to contact for this survey. We will need either a social security number, institutional ID number (Banner ID), or their first name, last name, and date of birth to identify the student's email addresses. Please use a secure method to transfer this information to us and feel free to contact me should you have any questions.

Sincerely,

Yash Morimoto

Assistant Vice President

Office of Planning and Institutional Effectiveness

Santa Fe Community College

(505) 428-1765



*Empower Students, Strengthen Community.*  
*Empoderar a los Estudiantes, Fortalecer a la Comunidad.*



## **Appendix B**

### **The Adult Nowicki-Strickland Internal-External**

#### **Locus of Control Scale and Answer Key**

## APPENDIX B

87

Student No. \_\_\_\_\_

### Adult Nowicki-Strickland Locus of Control Scale

Directions: Read each of the following questions. Answer each question by circling "Yes" or "No". Answer each question based on your true feelings. There is no right or wrong answer. Don't take too much time answering any one question, but do try to answer them all.

- |     |    |   |
|-----|----|---|
| Yes | No | 1. Do you believe that most problems will solve themselves if you just don't fool with them?                    |
| Yes | No | 2. Do you believe that you can stop yourself from catching a cold?  |
| Yes | No | 3. Are some people just born lucky?   |
| Yes | No | 4. Most of the time, do you feel that getting good grades means a great deal to you?                            |
| Yes | No | 5. Are you often blamed for things that just aren't your fault?   |
| Yes | No | 6. Do you believe that if somebody studies hard enough, he or she can pass any subject?                         |
| Yes | No | 7. Do you feel that most of the time it doesn't pay to try hard because things never turn out right anyway?     |
| Yes | No | 8. Do you feel that if things start out well in the morning, it's going to be a good day no matter what you do? |
| Yes | No | 9. Do you feel that most of the time parents listen to what their children have to say?                         |
| Yes | No | 10. Do you believe that wishing can make good things happen?  |
| Yes | No | 11. When you get punished, does it usually seem it's for no good reason at all?                                 |
| Yes | No | 12. Most of the time, do you find it hard to change a friend's opinion? (Mind)?                                 |
| Yes | No | 13. Do you think that cheering more than luck helps a team to win?  |
| Yes | No | 14. Did you feel that it was nearly impossible to change your parent's minds about anything?                    |

- Yes No 15. Do you believe that parents should allow children to make most of their own decisions?
- Yes No 16. Do you feel that when you do something wrong, there's very little you can do to make it right?
- Yes No 17. Do you believe that most people are just born good at sports?
- Yes No 18. Are most of the other people your age stronger than you are?
- Yes No 19. Do you feel that one of the best ways to handle most problems is just not to think about them?
- Yes No 20. Do you feel that you have a lot of choice in deciding who your friends are?
- Yes No 21. If you find a four-leaf clover, do you believe that it might bring you good luck?
- Yes No 22. Did you often feel that whether or not you did your homework had much to do with what kind of grades you got?
- Yes No 23. Do you feel that when a person your age is angry with you, there's little you can do to stop him or her?
- Yes No 24. Have you ever had a good-luck charm?
- Yes No 25. Do you believe that whether or not people like you depends on how you act?
- Yes No 26. Did your parents usually help you if you asked them to?
- Yes No 27. Have you felt that when people were angry with you it was usually for no reason at all?
- Yes No 28. Most of the time, do you feel that you can change what might happen tomorrow by what you do today?
- Yes No 29. Do you believe that when bad things are going to happen, they just are going to happen no matter what you try to do to stop them?
- Yes No 30. Do you think that people can get their own way if they just keep trying?

- Yes No 31. Most of the time do you find it useless to try to get your own way at home?
- Yes No 32. Do you feel that when good things happen, they happen because of hard work?
- Yes No 33. Do you feel that when somebody your age wants to be your enemy there's little you can do to change matters?
- Yes No 34. Do you feel that it's easy to get friends to do what you want them to do?
- Yes No 35. Do you usually feel that you have little to say about what you get to eat at home?
- Yes No 36. Do you feel that when someone doesn't like you there's little you can do about it?
- Yes No 37. Did you usually feel that it was almost useless to try in school because most other children were just plain smarter than you?
- Yes No 38. Are you the kind of person who believes that planning ahead makes things turn out better?
- Yes No 39. Most of the time, do you feel that you have little to say about what your family decides to do?
- Yes No 40. Do you think it's better to be smart than to be lucky?

Permission to reproduce scale was obtained from the author.

Nowicki, S. Jr. (1999). *The Adult Nowicki-Strickland Internal-External locus of control scale. An unpublished manuscript.* Emory University. Atlanta, Georgia.

## Appendix B

### Part I General Information:

The Nowicki-Strickland locus of control scales were designed to assess the construct of locus of control of reinforcement. Rotter (1966) has defined locus of control of reinforcement as the perception of a connection between one's action and its consequences.

In 1969, Nowicki and Strickland constructed and published the Children's Nowicki-Strickland Internal-External control scale (1973). This test is appropriate for children from ages 9 through 18. It soon became apparent that there were no comparable instruments for those interested in looking at locus of control orientation in subjects younger than 9 and older than 18. Rotter's scale was used in the majority of studies using adults, but there was no comparable downward extension of this instrument for children. In addition, the great majority of adult scales were only appropriate for college ages and educated adults. To fill this void Emory researchers have constructed an upward extension of the CNSIE, the Adult Nowicki-Strickland Internal-External control scale (ANSIE). It has a simple reading level, acceptable reliability and initially satisfactory validity information. There is a college (C) and noncollege (NC) form.

In addition, as an aid for investigators who were looking at younger children in efforts to assess antecedent relations to locus of control orientation, a Pre-school and Primary form of the CNSIE was constructed (the PPNSIE). After various formats were attempted, the PPNSIE presents items in a cartoon type format, a form for males (m) and a form for females (f).

Finally, a variant of the adult scales was devised so as to be more appropriate for older adults. The Geriatric Nowicki-Strickland Internal-External control scale is especially constructed for use with those subjects 65 years of age and older.

With the completion of the Geriatric form (GNSIE), there were comparable locus of control scales available for preschool through geriatric populations. The life-span series allows for the collection of data from different developmental ages. The potential usefulness of having such instruments is significant. For example, it allows for the simultaneous assessment of this construct for all generations of a family. The life-span series allows for the assessment of the construct in longitudinal studies. An added bonus is that at certain age levels there are, in essence, parallel forms. For example, there are norms available for the Preschool-Primary scale at the second and third grade level where the Children's form is also appropriate.

With the construction and apparently satisfactory construct validity information reported for the Children's Nowicki-Strickland Internal-External control scale, it soon became apparent that there was also a need for an adult form of CNSIE.

Although the historical significance of the Rotter scale cannot be denied, it has received significant criticism. For one thing, Rotter scores have shown a consistent and



significant relationship to social desirability responding and to the denial of psychopathology. For another, Rotter items confound personal, political and ideological causation. Last, the scales' forced choice format and difficult reading level may make it inappropriate for noncollege populations. This last criticism is important, for it means that there is a large segment of the adult population for whom the Rotter scale may be inappropriate. This shortcoming makes generalizability of locus of control results to noncollege populations difficult. Further difficulty in generalizability of results lies in the realm of younger age groups for whom there is no existing parallel to the Rotter scale, but only measures specifically usable with children. This makes developmental comparisons, which would be theoretically valuable, quite unwieldy and difficult. Based on the above reasoning, there is a need for an adult scale that does not possess the problems of the Rotter scale, i.e., (1) has language appropriate for noncollege educated adults; (2) not related to social desirability; and (3) usable with younger age groups, thus allowing developmental comparison. Such a scale would have to be written in language simple enough for children to understand while also being appropriate for adults. One logical choice would be a scale constructed for children that through slight alteration could be used with adults.

The original construction of the test was presented by Nowicki and Duke (1974). In this initial study, three groups of college students (total  $n = 156$ ) and a group of adults ( $n = 33$ ) from the general community (a suburb of a large metropolitan area in the southeastern part of the United States) were used to gather beginning psychometric data. The college students participated for credit in their introductory psychology course. The community adults were voluntary participants in a study of locus of control in children. They ranged from 26 to 30 years of age and were predominantly members of the upper-lower and lower-middle classes. All subjects were white.

The ANSIE consists of 40 items which are answered either yes or no. The items were derived through modification of the CNSIE. These alterations consisted chiefly of changing the word "children" to "people" ( $n = 6$ ) and changing the tense of some statements to make them more appropriate for adults ( $n = 5$ ).

#### Part II Directions for Administering and Scoring Administration:

Depending on the testing situation, the scales can be administered to groups of any size or to an individual. In cases where examinee handicaps may make personal attention more important, the scales should be administered in smaller groups or individually.

The exceptions to the general instruction for administration of the different scales will be covered in each section describing the specific scale. However, some general comments are appropriate here. The instructions for each scale are generally the same and go as follows:

"We are trying to find out what men and women your age think about certain things. We want you to answer the following questions the way you feel. There are no right or wrong answers. Don't take too much time answering any one question, but do try to answer them all."

For those subjects who might have difficulty understanding the task it is suggested that the examiner have a practice session on the identification and meaning of yes and no. All forms of the scale usually take from ten to fifteen minutes to administer.

It might be proper at this point to comment on an often asked question by the examinees: "what should I do if I can answer both yes and no to a question?" The usual response to this question has been to assure the subject that this is not an unusual happening and to tell him/her that if it is a little more yes than no then answer yes; if it is a little more no than yes then answer no. They are urged to pick one or the other response and to try to answer that and all items.

### Scoring

For all the scales, the score is the total number of items answered in an externally controlled direction. The externally keyed responses are presented in tables at the end of the sections relating to each of the tests.

### Part III Psychometric Characteristics:

In the following sections information pertaining to construct validation is presented. The data were gathered from a variety of populations.

### Item Statistics

Item-total score correlations for the initial college and adult samples are presented in Table 1. Also presented in Table 1 are the percentages of subjects answering items in an external direction and the external answers keyed either Y or N at the left of the item.

Chandler (1976) found comparable item-total correlations to those reported by Nowicki and Duke (1973). Comparable though somewhat less consistent biserial  $r$ s were reported by Anderson (1976).

### Internal Consistency

Nowicki and Duke (1974) report split-half reliabilities in the .60s for college ( $n = 156$ ) and community samples ( $n = 33$ ). These split-half reliabilities seem to be satisfactory in light of the fact that these personality items are not arranged according to difficulty. This makes the split-half reliabilities an underestimate of the true internal consistency reliability. Anderson (1976) reported KR20s of .69 for a male sample ( $n = 40$ ) and .39 for female sample ( $n = 40$ ).

Christner (1975) reported a factor analysis of the responses of 391 subjects. Chandler and Patterson (1976) report factor analysis of the responses of 390 college students to both the original form and a revised Likert format. In the analysis of the original ANSIE scale there was support for a general factor accounting for 29% of the common variance. The Likert format form of the ANSIE showed little evidence of a general factor.

Kendall (1976) also reported a factor analysis of the ANSIE. He also found a significant general factor that he called "helplessness."

#### Test-Retest Reliability

Nowicki and Duke reported test retest reliability for college subjects over a six week period to be .83 ( $n = 48$ ), which is comparable to that found by Chandler (1976) over a seven week period of  $r = .65$  ( $n = 70$ ). Further, Mink (1976) reported a test-retest reliability over one year of  $r = .56$  ( $n = 854$ ) for community college students.

#### Discriminative Validity

As with the CNSIE, information was gathered allowing for the testing of ANSIE's discriminative validity. Nowicki and Duke investigated relation of ANSIE scores to social desirability. This relation was considered to be important because of the criticism of the Rotter I-E scale for its scores being significantly related to social desirability.

Two samples of college students ( $n = 48$ ,  $n = 68$ ) were asked to complete the Marlowe-Crowne Social Desirability scale. Consistent with the requirements of discriminative validity, ANSIE scores were not related to scores from the social desirability measure ( $r = .10$ ,  $df = 47$ ,  $r = .06$ ,  $df = 67$ ). Others have also found ANSIE scores to be unrelated to social desirability scores (Herman, 1976,  $n = 80$ ; Nemec, 1974,  $n = 64$ ; Quinn, 1974,  $n = 40$ ).

Likewise the relation of ANSIE scores to intelligence was also investigated. Nowicki and Duke (1974) found that the relation between ANSIE and Scholastic Aptitude Test scores was not significant ( $n = 48$ ,  $r = .11$ ). Thus these results lead one to suggest that whatever results were obtained in terms of differences in achievement between internals and externals were not attributed to differences in intelligence.

#### Construct Validity

Basically, the philosophy of construct validation implies that a new measure of a construct should show a significant relationship with well-established measures of that construct. An example of such a procedure is the correlating of a new measure of intelligence with the Stanford-Binet or with the Wechsler scales. If, however, the authors of a new measure assume the new measure adds something unique or measures the construct more accurately than the established measure, then the resulting relationship with the established measure should be somewhat less than identity. This is important to our present purpose. Since Rotter and others who have used this scale have amassed a large amount of data consistent with theoretical predictions from social learning theory, favorable comparison with this scale is indicated. It is predicted, therefore, that if the ANSIE scale is measuring the same construct as the Rotter scale is, the two should be significantly related. However, if the ANSIE is accounting for a unique portion of variance, then correlations between the measures should be positive and should fall in the middle range.

To ascertain the relation between the ANSIE and the Rotter scale, Nowicki and Duke (1974) administered both scales to two college and community adult samples. In all three samples, the correlations between the two measures were significant and consistent with requirements ( $r = .68$ ,  $df = 47$ ,  $p < .01$ ,  $r = .48$ ,  $df = 37$ ,  $p < .01$ ). These results are consistent with the contention that these two measures are assessing the same construct, but not in an identical manner. Nemec (1973) also administered both scales to her subjects ( $n = 91$ ) and found a correlation of  $r = .59$  ( $p < .01$ ). Significant correlations have been found by Remainis (1974) and Jones (1976).

In another study, Nowicki and Duke (1975) related ANSIE scores to Adjective Check List scores as Hersch and Scheibe (1969) had done previously with Rotter scores. There was a strong similarity in terms of relations.

Chandler and Patterson (1976) have recast the ANSIE into a Likert style format. While the Likert format reduced some skewness found with the original scale, these researchers concluded that both forms were measuring similar constructs.

In addition, Remainis (1976) found a significant relation between ANSIE and Anomie scores. Mink (1976) reported, in a sample of community college students, a significant relation with the Internal scale ( $r = -.24$ ,  $n = 1195$ ,  $p < .01$ ), Powerful Others ( $r = .24$ ,  $n = 1196$ ,  $p < .01$ ) and Chance ( $r = .40$ ,  $n = 1195$ ,  $p < .01$ ) scales constructed by Levinson.

If a measure of a construct has been found to reflect theoretical assumptions accurately regarding that construct, then this measure has gained some degree of construct validation. It follows, then, that a newer measure of that construct could also gain some degree of construct validation by showing empirical relationships similar to those found with the more established measure and thereby reflecting implied theoretical relationships.

Dortzbach (1976) reported data showing those subjects who were lower class were more external than those from the middle class. Again as was found with the ANSIE, there are no consistent differences in scores between males and females (see Table 2). Locus of control was correlated with age such that the older the adult subjects the more external they were. Likewise, Mink reports a low but significant negative relation between internality and age in sample of community college students ( $n = 1233$ ,  $r = -.12$ ,  $p < .01$ ).

Another area where Rotter scale results have been consistent with social learning theory and where the ANSIE's ability to measure the locus of control construct can be assessed, is in the realm of the race of subjects. Years of living under conditions where reinforcements were in the hands of powerful others could lead Blacks to respond in a more external manner than whites. Empirically, this has been demonstrated among both children and adults. It was hypothesized, therefore, that this should be the case for responders to the ANSIE. For this purpose, data were gathered in two additional studies, in one of which middle class black college students were tested (Johnson & Nowicki, 1972), and in another, middle class white college students were used (Duke & Nowicki,

1972). In support of the hypothesis, blacks scored in a significantly more external direction ( $t = 6.32$ ,  $df = 101$ ,  $p < .01$ ).

Mink (1977) reported in a sample of community college students that internals had families with higher incomes ( $n = 1095$ ), had fathers and mothers with higher levels of education ( $n = 1062$ ), and had fathers with higher occupational levels ( $n = 933$ ).

In the area of psychopathology, social learning theorists predict and previous investigators using the Rotter scale have found that externality is related to psychological maladjustment. If the ANSIE is an accurate measure of locus of control of reinforcement, subjects who score in an external direction should also show more evidence of maladjustment than internals. In support of this, Nowicki (1972b) found that externality on the ANSIE was positively related to higher Neuroticism scores on Eysenck's scale (males,  $r = .36$ ,  $df = 35$ ,  $p < .05$ ; females,  $r = .32$ ,  $df = 46$ ,  $p < .05$ ); and to Anxiety scores as measured by the Taylor Manifest Anxiety Scale (males,  $r = .34$ ,  $df = 35$ ,  $p < .10$ ; females,  $r = .40$ ,  $df = 46$ ,  $p < .05$ ). Duke and Mullens (1972) administered ANSIE scales to two groups of hospitalized females differing in degree of maladjustment as defined by psychiatric diagnosis, psychotic ( $n = 20$ ) or neurotic ( $n = 20$ ) and a control group ( $n = 20$ ) of female staff workers. As predicted, hospitalized schizophrenics (Mean = 16.30) were significantly more external than hospitalized nonschizophrenic patients (Mean = 11.95) who, in turn were more external than the control group (Mean = 9.20). All differences were consistent with previous results where the Rotter scale has been employed with schizophrenics. Candler (1976) found that externals showed a larger self-ideal discrepancy, a lower self-concept and a lower self acceptance as measured by the Index of Adjustment and Value.

As in the case of psychopathology, it was hypothesized, based on social learning theory that those individuals suffering from some handicap would show greater externality than comparable subjects without disability. Dortzbach (1975) reported, in support of the above hypotheses, that those subjects who were in poor physical health were more external than average. Finlayson and Rouche (1976) reasoned that the left side of the brain was more importantly involved in behavior, especially verbal behavior, and that damage to the left hemisphere would lead to greater externality than damage to the right side. These investigators tested 12 subjects with left brain lesion, right brain lesion and normal controls and found that the left lesion group was significantly more external than the other two groups. In addition, these investigators found that there were no significant differences among the three groups on Wechsler Adult Intelligence Scale scores. These same investigators (Finlayson & Rouche, 1976) tested hemiplegics and found that hemiplegics ( $n = 12$ ) were more external than a medical control ( $n = 12$ ). Further, they found that within the hemiplegic group, internality was significantly correlated with the physiotherapist's judgement of motivation for treatment. In terms of motivation for treatment and physical illness, other investigators have found that externality was greater than average but within the physically disabled groups that internality was related to greater motivation for treatment in kidney disease and kidney machine use (Weaver, 1974), heart disease (Johnson, 1977), open heart surgery (Wilson, 1977), obesity (Willen, 1976), and dental care (Cohen & Duke, 1975).

The next area of construct validity involves achievement-competence behaviors

Internality has been found to be related to greater academic achievement (Remainis, 1974; Ramirez, 1976). Mink (1976) reported a significant relation between internality and higher ACT composite scores ( $r = -.28$ ,  $n = 431$ ,  $p < .01$ ). In addition, internality was related significantly with both first semester grade point average ( $n = 1032$ ) and second semester grade point average ( $n = 894$ ). Jones (1976) reported that while Rotter and ANSIE scores were significantly related to each other only ANSIE scores were significantly related to grade point average and then only for males.

Additional researchers found that internals were more efficient learners especially in the area of concept learning (deMahy, 1974). Internals required fewer trials to solve concept learning tasks and used more focusing and scanning strategies than externals (Pappas-Jones, 1976). Internals have also been shown to use feedback better in increasing their alpha rhythm (a measure of attention based on brain wave readings) (Johnson, 1974).

In the area of personality correlates of internal-external orientation, it has been found that internals were higher in self concept (Ramirez, 1976), while externals showed more interpersonal distance (Duke & Nowicki, 1972; Skinner, 1976), greater debilitating anxiety (Kendall, Finch & Montgomery, 1976), higher authoritarianism (Nemec, 1973; Nowicki, 1976; Surlin, 1976) and less self actualization (Hjelle, 1975).

Mink (1976) reported that internality in a sample of community college students was related to lower Debilitating Anxiety scores ( $r = .25$ ,  $n = 826$ ,  $p < .01$ ) and higher Facilitating Anxiety scores ( $r = .10$ ,  $n = 1192$ ,  $p < .01$ ). Further, internality was related to higher State Anxiety scores ( $r = .29$ ,  $n = 1218$ ,  $p < .01$ ) and higher Trait Anxiety scores ( $r = .34$ ,  $n = 1204$ ,  $p < .01$ ).

Likewise, Quinn, in a study of aggressiveness, found among other relations that internals displayed significantly more instrumental aggression for both males and females. Nemec (1974) and Kent (1976) have found that internal females are more severe in their sentencing of defendants accused of crime than were any of the other groups. Johnson (1975) has found that internality was related to higher scores from the Creativity Checklist and Remote Associates Test.

In all then, ANSIE appears to meet the minimal requirements necessary for its use as a measure of locus of control in adults. Further work is reported in Nowicki and Duke (1983).

Scoring Key (Items are keyed in the external direction)

1. Yes
2. No
3. yes
4. no
5. yes
6. no
7. yes

8. yes  
9. no  
10. yes  
11. yes  
12. yes  
13. no  
14. yes  
15. no  
16. yes  
17. yes  
18. yes  
19. yes  
20. no  
21. yes  
22. no  
23. yes  
24. yes  
25. no  
26. no  
27. yes  
28. no  
29. yes  
30. no  
31. yes  
32. no  
33. yes  
34. no  
35. yes  
36. yes  
37. yes  
38. no  
39. yes  
40. no

## **Appendix C**

**Letter Granting Permission to use the Adult Nowicki-Strickland**

**Internal-External Locus of Control Scale**



-----Original Message-----

From: Nowicki Jr., Stephen <snowick@emory.edu>

To: salazarelisabeth <salazarelisabeth@aol.com>

Sent: Wed, Aug 29, 2012 7:01 pm

Subject: RE: Permission for the use of the Adult Nowicki-Strickland Internal-External Control Scale

Dear Lisa,

Congratulations!!!

You have my permission to reproduce my scale.

I'm including an updated manual for your information and if you'd like the reference list please let me know.

If you have the time I'd appreciate having your name, title of the dissertation and an abstract of what you found. I will then be able to add your name to the reference list.

Again,

CONGRATULATIONS!

Steve

---

This e-mail message (including any attachments) is for the sole use of the intended recipient(s) and may contain confidential and privileged information. If the reader of this message is not the intended recipient, you are hereby notified that any dissemination, distribution or copying of this message (including any attachments) is strictly prohibited.

If you have received this message in error, please contact the sender by reply e-mail message and destroy all copies of the original message (including attachments).

**Appendix D**  
**Demographic Form**

### Demographic and High School Credential Survey

**Directions:** Please answer each question truthfully.

1. Age:
  - If under 18, you are ineligible for participation in this study.
2. Were you enrolled in college during the Spring and Fall of 2014?
3. Number of college semesters completed:
4. Race/Ethnicity:
  - ☐ **Caucasian/White** (A person having origins in any of the original peoples of Europe, the Middle East, or North Africa.)
  - ☐ **Hispanic/Latino** (A person of Spanish, Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin regardless of race)
  - ☐ **American Indian or Alaska Native** (A person having origins in any of the original peoples of North and South America, including Central America, and who maintains a tribal affiliation or community attachment.)
  - ☐ **Asian** (A person having origins in any of the peoples of the Far East, Southeast Asia, or the Indian Subcontinent, including, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand, and Vietnam.)
  - ☐ **Black or African American** (A person having origins in any of the Black racial groups of Africa.)
  - ☐ **Native Hawaiian or Other Pacific Islander** (A person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands.)
5. Gender: Male \_\_\_\_\_ Female \_\_\_\_\_
6. What was your Grade Point Average (GPA) Spring 2014 \_\_\_\_\_
7. What was your Grade Point Average (GPA) Fall 2014 \_\_\_\_\_
8. What is your Grade Point Average (GPA) Spring 2015 \_\_\_\_\_
9. What is your mom's level of education?
  - High School Graduate
  - GED Recipient
  - Did Not Graduate from High School
  - Other \_\_\_\_\_

10. What is your dad's level of education?

- High School Graduate
- GED Recipient
- Did Not Graduate from High School
- Other \_\_\_\_\_

**Please answer yes or no to the following questions.**

11. Did you receive a traditional high school diploma? \_\_\_\_\_

12. If you answered no to the previous question, did you receive a GED? \_\_\_\_\_

13. If you received a GED, what was the reason for dropping out of school:

- To work/help support family
- Take care of family member
- Religious reasons
- High School wasn't meeting your needs
- Other \_\_\_\_\_

**At the end of your survey, you may enter a drawing to win an iPad. Your contact information will remain confidential and will be destroyed once a winner is selected.**

**Please be aware that your survey is anonymous and your contact information will not be linked to your survey. You may drop out of this survey at any time for any reason.**

\*\*\*\*\*

**Thank you for your participation and cooperation!**

**Appendix E**  
**Informed Consent**



## INFORMED CONSENT

Project Title: Control Your Destiny or Someone Else Will:  
The Value of a GED®

Principal Investigator: Sheri Williams, Ph.D.  
Assistant Professor  
Educational Leadership Program  
UNM College of Education  
Hokona Hall 380  
Office Ph. (505) 277-2839

Doctoral Student: Lisa G. Salazar, MA, LPCC, NCC  
Doctoral Student—The University of New Mexico

Phone: 505.501.2220  
Email: lisagjs@yahoo.com

CNM IRB Contact  
Information: Office of Planning & Institutional Effectiveness  
Central New Mexico Community College  
525 Buena Vista SE  
Albuquerque, New Mexico 87106  
(505) 224-3450

The purpose of this study is to compare college performance (self-reported GPA) between traditional high school students and GED recipients at three postsecondary institutions in northern New Mexico. As participants of this study, you will be asked to complete a demographic form and a locus of control on-line survey via [www.SurveyMonkey.com](http://www.SurveyMonkey.com) that will take approximately 15 minutes. The survey includes questions such as: "Are some people just born lucky?" Or, "Do you believe that wishing can make good things happen?"

1. Your participation is entirely voluntary. During the on-line survey, you have the right to refuse to answer a particular question and you may withdraw from the on-line survey and this study at any time, for any reason, without penalty. The on-line survey will provide you with an opportunity to exit the survey. Information will only be collected if you click on the "submit" button.

2. Anticipated risks are slight to minimal to for adult learners who participate in this research. The researchers will act in an ethical manner, protect participant data, and adhere to IRB research protocol and standards. Complete anonymity and confidentiality is ensured. Names will not be used. All data will be group averages, not individual scores. Only the Principal Investigator and the Doctoral Student will have information regarding the study. All data will be kept on a flash drive in a locked cabinet and will be kept for one year and then destroyed. The

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results of the anonymous data will be published in my dissertation.

3. Compensation will be provided to participants in the form of an optional drawing. Participants may choose to enter the drawing for an IPAD after completing the survey.
4. The number of students anticipated to participate in this study is approximately 1000.
5. This study may help society better understand the differences and similarities of academic performance between GED® recipients and Traditional High School (THS) students.

I have read the information provided and hereby give my consent to voluntarily participate in this study.

You are making a decision whether or not you will participate. By clicking "OK" your electronic signature indicates your willingness to participate having read the information provided.

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