PREDICTING SCHOOL SUCCESS FROM A DISRUPTION IN EDUCATIONAL EXPERIENCE

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The present study examined the relationship between exclusionary discipline practices (out-of-school suspension 10 days or less, out-of-school suspension more than 10 days, in-school suspension 10 days or less, in-school suspension more than 10 days) and educational outcomes (graduation with a regular diploma and certificate, dropout) of students with disabilities, while concurrently examining whether participant characteristics (gender: male and female; race: Black and White; disability type: Emotional Disturbance and Specific Learning Disability) moderated this relationship. The current study analyzed data from an existent data set, which contained information from each state on a variety of factors related to children with disabilities. Multiple linear regression analyses were used in order to answer the research questions. Results show support for a predictive curvilinear relationship between the discipline technique of out-of-school suspension 10 days or less and educational success in students with disabilities. Gender, race, and disability type did not moderate the relationship between suspension and educational outcomes in students with disabilities.

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CHAPTER I

LITERATURE REVIEW

Education equality is at the heart of our nation's core values and beliefs (Duncan, 2015; U.S. Department of Education, 2015a). All children should have equal access to education no matter their gender, ethnicity, religious beliefs, socio-economic status, or disability (U.S. Department of Education, 2015a). In 2015, the U.S. Secretary of Education highlighted that education is not an option, but a civil right (Duncan, 2015). Unfortunately, this is an idealistic statement in today's society. U.S. history has shown that our nation has struggled with providing equal educational opportunities for all children (Noltemeyer, Mujic, & Mcloughlin, 2012). Although it is important to note that America has made immense progress on the path towards education equality (Noltemeyer et al., 2012; U.S. Department of Education, 2015a, 2015b), inequitable opportunity gaps continue to exist especially with regards to the application of exclusionary disciplinary practices such as suspensions and expulsions in our schools (Goran & Gage, 2011; Losen, 2011; Losen & Skiba, 2010; Mendez & Knoff, 2003; Noltemeyer & Mcloughlin, 2010; Rausch & Skiba, 2004; Shirley & Cornell, 2011; Skiba et al., 2011; Smith & Harper, 2015; Sullivan, Klingbeil, & Van Norman, 2013; U.S. Department of Education, 2015a; U.S. Department of Education Office of Civil Rights, 2014).

Overview and Disproportionality of School Exclusion

In the 2011–2012 school year, 3.5 million students received an in-school suspension (ISS), 3.45 million students received an out-of-school suspension (OSS), and 130,000 students were expelled (U.S. Department of Education Office of Civil Rights,

2014). From that same year, Losen, Hodson, Keith, Morrison, and Belway (2015) examined the OSS rates in every school district across the U.S. These researchers found that many school districts across the nation administered OSS to more than one in every 10 elementary students and at least one out of every four secondary students. Research has shown that exclusionary discipline practices are being disproportionally applied across students from different backgrounds (Goran & Gage, 2011; Losen, 2011; Losen & Skiba, 2010; Mendez & Knoff, 2003; Noltemeyer & Mcloughlin, 2010; Rausch & Skiba, 2004; Shirley & Cornell, 2011; Skiba et al., 2011; Smith & Harper, 2015; Sullivan, Klingbeil, & Van Norman, 2013; U.S. Department of Education, 2015a; U.S. Department of Education Office of Civil Rights, 2014).

Race

Across the nation, evidence suggests that racial disparities in suspension and expulsion rates exist, especially for Black students (Mendez & Knoff, 2003; Noltemeyer & Mcloughlin, 2010; Rausch & Skiba, 2004; Shirley & Cornell, 2011; Skiba et al., 2011; Smith & Harper, 2015; Sullivan et al., 2013; U.S. Department of Education Office of Civil Rights, 2014). In the most recent federal level data published on suspension and expulsion rates across all public schools in the United States, the U.S. Department of Education Office for Civil Rights (2014) revealed that Black/African American students are disproportionately suspended and expelled in our nation's schools. In the 2011–2012 academic year, Black/African American students represented 16% of the student population, but 32–42% of Black/African American students were suspended or expelled in that same year. A similar percentage of suspensions/expulsions occurred in White

students at a range between 31–40%, but White students made up 51% of the student population.

Other studies have found similar results supporting the existence of a racial divide. On August 24th of 2015, the front page of the *New York Times* highlighted a recent study by the Center for the Study of Race and Equity in Education from the University of Pennsylvania (Smith & Harper, 2015), which examined the disproportionate impact of exclusionary discipline practices on Black students in Southern U.S. states. The authors examined OSS and expulsion rates of Black students in every K–12 public school district in the following 13 Southern states: Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Texas, Virginia, and West Virginia. These states were selected as they accounted for 55% of the total number of Black students suspended (1.2 million) from K–12 public schools across the nation in 2011–2012. In total, the authors examined exclusionary discipline rates from 3,022 Southern school districts where on average Black students comprised 24% of the student population. Results indicated that Black students were disproportionately suspended and expelled at rates five times or higher than their representation in the student population in 132 and 77 Southern school districts, respectively. When looking at the suspension patterns, the authors found that 84 school districts had 100% of their suspension population comprised of just Black students, 346 school districts had Black students represent 75% or more of their suspension population, and 743 school districts had Black students that represented 50% or more of the students that were suspended in their districts. With respect to expulsions, 181 school districts had

100% of their expelled students comprised of just Black students, 255 districts had Black students represent 75% or more of their suspension population, and 484 school districts had Black students represent 50% or more of the students who were expelled. These numbers paint the sobering reality that Black students experience disciplinary exclusion at disproportionately higher rates than non-Black students.

Results from smaller scale research studies support these findings. In a recent study by Sullivan et al. (2013), the authors examined the relationship between socio-demographic characteristics (i.e., race, age, gender, limited English proficiency, socio-economic status, and disability status) and indicators of school policy enactment on students' likelihood of receiving suspension. These results were based on archival data from a large sample (n = 17,837) of kindergarten through 12th grade students from an urban school district in Wisconsin in the 2009–2010 academic year. Specifically with respect to race, results indicated that Black students were three to five times more likely to be suspended than any other racial group (i.e., Black, Latino, Asian/Pacific Islander, & White) that was examined.

In another study, Rausch and Skiba (2004) explored trends in the use of OSS and expulsion practices and characteristics associated with the use of these practices in the state of Indiana in the 2002–2003 school year. The authors found that the OSS rates of African Americans (40.47 incidents per 100 students) were much higher than any other racial group examined (White: 10.11 incidents, Hispanic: 18.77 incidents, Asian: 4.93 incidents, Multi-Racial: 14.87 incidents, and Native American: 16.89 incidents). In fact, African American students were 4 times more likely to receive OSS than White

students in the state of Indiana. When examining expulsion rates, African Americans were about 2.5 times more likely to be expelled than their White peers (White: 0.50, Black: 1.17, Hispanic: 0.74, Asian: 0.13, Multi-Racial: 0.48, Native American: 0.67).

In a small-scale study on suspension trends, Mendez and Knoff (2003) found that OSS were disproportionality administered across race. The authors used data that were collected from the 1996–1997 school year for 142 schools located in one district in west central Florida. Data represented 137,563 students who received an OSS. Results indicated that Black students were more likely to receive an OSS as compared to White or Hispanic students, regardless of gender or grade level (i.e., elementary, middle, and high school). Specifically, 26.28% of Black males were suspended as compared to 11.95% White males and 15.42% Hispanic males. When looking at suspension rates of females across race, results were similar as 13.64% of Black females were suspended as compared to only 4.53% of White females and 6.48% of Hispanic females.

Skiba et al. (2011) found that students of color were more likely than White students to receive expulsions or OSS for similar problem behaviors. In their study, the authors examined patterns of office disciplinary referrals collected from the School-Wide Information System (SWIS) for the 2005–2006 academic year. Data represented 272 schools across the nation that had students in grades K–6 and 92 schools with students in grades 6–9. Results show that African American and Latino students were more likely than their White peers to receive expulsions or OSS as consequences for the same or similar problem behaviors.

Shirley and Cornell (2011) found that race is a significant predictor of OSS even when students' experiences of their school environment were controlled for. Specifically, the authors examined whether there were racial disparities in discipline referrals and OSS at a middle school in Virginia and whether student experiences of their school environment affected this relationship. The authors collected data on 400 students from a suburban public middle school in Virginia. Students ranged in age from 11 to 15 years old, with the average age of 12.7 years. Results indicate that African-American students were more likely to receive disciplinary referrals, χ^2 (1, n = 400) = 44.98, $p < 0.01$, C = 0.32), and OSS, χ^2 (1, n = 400) = 33.13, $p < 0.01$, C = 0.28, than Caucasian students in this particular middle school. Whereas African-Americans made up 20.2% of the school's student population and Caucasians made up 60.5%, 63% of African-American students received disciplinary referrals as compared to only 23% of Caucasian students. In addition, 27% of African-American students received OSS as compared to only 6% of Caucasian students. When just looking at exclusionary discipline practices, specifically OSS, a regression analysis indicated that race was a significant predictor for OSS (β = -0.30, $p < 0.001$), which accounted for 8% of the variance ($p < 0.001$). The authors of the study found that race still remained a significant predictor of OSS when students' experiences of school climate (aggressive attitudes) were controlled for (β = -0.26, $p <$ 0.001), but the variance was reduced from 8% to 6% ($p < 0.001$).

Noltemeyer and Mcloughlin (2010) found that African American students are more likely to receive exclusionary discipline as compared to White students even when poverty is controlled for. In their study, the authors investigated how exclusionary

discipline relates to school typology (i.e., urban, rural, suburban) and student ethnicity. The authors analyzed district level discipline data from the 2007 to 2008 school year in the state of Ohio. The data represented 326 school districts. Results indicated significant differences in the use of exclusionary discipline based on ethnicity when controlling for socioeconomic status. The authors found that the use of suspensions, expulsions, and other disciplinary actions were double to triple the rate for African American students as compared to White students.

Taken together, research indicates that schools across the nation are disproportionately suspending and expelling students of color. Some evidence suggests that these disproportionate rates exist for the same or similar problem behaviors. Research demonstrates that race continues to be a significant predictor of students' receipt of exclusionary discipline even when gender, grade level, socioeconomic status, and school climate is controlled for.

Gender

Research has shown that the applications of suspension and expulsion techniques are inequitably applied across gender (Losen & Skiba, 2010; Mendez & Knoff, 2003; Sullivan et al., 2013; U.S. Department of Education Office of Civil Rights, 2014). In the most recent federal level data published on exclusionary discipline practices across all public schools in the United States, male (51%) and female (49%) students each represented about half of the total student enrollment population in the 2011–2012 school year; however, 67–74% of males were suspended or expelled as compared to only 26–33% of females (U.S. Department of Education Office of Civil Rights, 2014).

Sullivan et al.'s research (2013) supports the trend found above. In their study, the authors examined the predictability of student and school variables on the likelihood of receiving suspensions. They used archival data from the 2009–2010 academic year, representing a large sample (n = 17,837) of kindergarten through 12th grade students across 39 schools in an urban school district in Wisconsin. The authors found that being a male is a significant predictor of the likelihood of being suspended. They also found that male students were more likely than female students to be suspended across all examined racial groups (i.e., Black, Latino, Asian, and White).

In another study on suspension trends, Mendez and Knoff (2003) found that OSS were disproportionality administered across gender in one school district located in west central Florida. The authors used data that schools collected on OSS during the 1996–1997 school year. The data represented 137,563 students that received an OSS from 142 schools in the district. Results indicated that male students were more likely to receive an OSS than female students. This finding was also true across race (i.e., White, Black, and Hispanic) and grade (i.e., elementary, middle, and high school) levels.

Losen and Skiba (2010) found evidence of disproportionate suspension rates across gender in U.S. middle schools. In their study, the authors analyzed school and district level suspension data from the 2002 and 2006 Elementary and Secondary Civil Rights Compliance Survey from the U.S. Department of Education Office for Civil Rights. This survey is conducted biennially in every state from about one-third of U.S. public schools. The survey requires schools to report the number of students suspended at least one time during the surveyed school year. The authors examined data on middle

school suspension rates from 18 large urban school districts. These districts were selected as Losen and Skiba felt that they would capture the diverse regional representation and trends in suspension over time. Results indicated that male middle school students (14.7%) received OSS at greater rates than female middle school students (7.5%) in 2006. These findings were true across race as well (i.e., Black, White, Hispanic, Native American, Asian/Pacific Islander).

Overall, these studies provide evidence that exclusionary discipline practices are disproportionately applied across gender. Specifically, research suggests that male students are more likely to be suspended or expelled than female students in the United States. Evidence suggests that this result may hold true across race and grade levels.

Disability Categories

In addition to race and gender, evidence also suggests that students with disabilities receive suspensions and expulsions at disproportionate rates (Losen, 2011; Sullivan et al., 2013; U.S. Department of Education Office of Civil Rights, 2014). In the most recent federal level data published on exclusionary discipline practices across all public schools in the United States, students diagnosed with an educational disability were more than twice as likely to receive an OSS (13%) than their non-disabled peers (6%) in the 2011–2012 school year (U.S. Department of Education Office of Civil Rights, 2014). Disparities were also found in a 2006 review of state reports to the U.S. Office of Special Education Programs (Losen, 2011). The analysis indicated that students with disabilities were given long-term suspensions or expulsions significantly more than their non-disabled peers in at least one district in 46 states.

Sullivan et al.'s research (2013) supports the findings above. In their study, the authors examined the predictability of student and school variables on one's receipt of suspensions. The authors used archival data from the 2009–2010 academic year, representing a large sample (n = 17,837) of kindergarten through 12th grade students across 39 schools in an urban school district in Wisconsin. They found that being in special education is a significant predictor of the likelihood of being suspended. The authors also found that within each of the examined racial groups (i.e., Black, Latino, Asian, and White), students in special education were the most likely to be suspended as compared to students in general education, male students, female students, students who received a free/reduced-price lunch, and students who did not receive a free/reduced-price lunch.

Limited research exists on whether exclusionary discipline practices are equitably applied across students that are identified with characteristics that cause them to be eligible to receive special education. In one study, Goran and Gage (2011) explored the relationship between disability type and history of suspensions among other variables of interest. The authors examined the assessment records from an extant database of students with an Emotional Disturbance (n = 25) and students with a Specific Learning Disability (n = 117) in the 2008–2009 school year from a medium sized Midwestern city. The authors found that students with an Emotional Disturbance were suspended significantly more often than students with a Specific Learning Disability, regardless of their cognitive ability, academic performance, or language skills. This result is not surprising given the diagnostic nature of Emotional Disturbance versus a Specific

Learning Disability, but this does suggest that schools may not have the supports in place for those who are known to have challenging behaviors.

Overall, evidence suggests that exclusionary discipline practices are disproportionately administered to students with disabilities. Limited research exists on whether suspensions and expulsions are equitably applied across students in special education. One known small-scale study (Goran & Gage, 2011) suggests that students diagnosed with an Emotional Disturbance are more likely to be suspended than students diagnosed with a Specific Learning Disability.

The Relationship Between Discipline and Educational Outcomes

In addition to the disproportionality of discipline practices, researchers have examined the relationship between exclusionary discipline practices and educational outcomes. Below is a summary on the research associated with exclusionary discipline and educational outcomes, specifically achievement and school dropout.

Achievement

Research on the relationship between exclusionary discipline practices and academic achievement has shown a negative relationship between the two variables (Arcia, 2006; Raffaele Mendez, 2003; Rausch & Skiba, 2004; Safer, 1986; Tobin & Sugai, 1999). Rausch and Skiba (2004) found that schools with high rates of exclusionary discipline use have lower passing rates on state achievement tests than schools with lower suspension and expulsion use. This result held true even when controlling for school's poverty rate, percentage of African American students, total

school size, school type (elementary or secondary), and locale (urban, suburban, town, and rural).

Raffaele Mendez's study (2003) also found an inverse relationship between suspension and achievement. Specifically, results indicated that suspensions in sixth grade students were negatively correlated with their math and reading achievement when they were in seventh and eighth grade for both White and Black students.

Arcia (2006) examined the relationship between suspensions, achievement, and long-term enrollment status of students. The author examined multi-year data from an urban school district. Results indicated that students who were suspended made significantly less achievement gains as compared to a control group across a three-year period.

Noltemeyer, Ward, and Mcloughlin (2015) conducted a meta-analysis on the relationship between suspension and achievement in an attempt to integrate the findings across the literature and in order to determine the magnitude of the relationship. The authors included peer reviewed and non-peer reviewed studies from 1986 to 2012. Analyses were conducted on 42 cases from a total of 24 studies. Results indicated a statistically significant inverse relationship between all types of suspension and school achievement, $Q(42) = 17337.13$, $p < .001$. The estimated effect size between achievement and all types of suspension was -.21 (CI95: .26 to .17; SE = .02) and considered significant, $z = -9.47$, $p < .001$. In other words, the authors found that students who were suspended more often were more likely to have poor achievement outcomes.

Overall, research suggests that there is a negative relationship between exclusionary discipline practices and achievement outcomes. Evidence suggests that this relationship remains significant even when controlling for African American students, school size, school type, and locale.

Dropout

School dropout is another variable that has been examined in relation to exclusionary discipline practices. In 2013, 7% of high school-aged students in the United States were dropouts (U.S. Department of Education, 2015c). The term dropout refers to high school-aged students, 16 through 24 years old, who are not enrolled in school and who have not earned a high school credential, either a diploma or an equivalency credit such as a General Educational Development (GED) certificate (U.S. Department of Education, 2015c). Dropout rates are higher for students of color (U.S. Department of Education, 2015c). The latest data from the Current Population Survey indicates that 12% of Hispanic students and 7% of Black students dropped out of school as compared to only 5% of White students in 2013 (U.S. Department of Education, 2015c). English language learners (ELL; 25%) have higher dropout rates than non-ELL students (15%; Kim, 2011). Current data show there are no measurable differences in the dropout rates across gender as 7% of males and 6% of females dropped out of school in 2013 (U.S. Department of Education, 2015c). Students in special education are at an increased risk for dropping out of school as compared to students without a disability (MacIver, 2011).

Research has shown that negative implications are associated with dropping out of school. Individuals who fail to complete high school have significantly less job

opportunities and lower earning potential (Northeastern University, 2009). In 2014, the U.S. employment rate for young adults ages 20 to 24 that completed high school was 63.7%, whereas the employment rate for those who dropped out of high school was only 46.6% (U.S. Department of Education, 2015c). Dropouts make significantly less money than those who have completed high school. In 2013, individuals who dropped out of school earned a median annual income of $23,900, as compared to $30,000 for those who completed high school (U.S. Department of Education, 2015c). In addition to individual challenges, high school dropouts have negative implications on society. Dropouts impose a net fiscal burden on the rest of society due to the financial return of their low earning potential (Northeastern University, 2009). They are more likely to rely on public assistance (Waldfogel, Garfinkel, & Kelly, 2007) and be incarcerated (Lochner & Moretti 2002). In fact, Lochner and Moretti estimated that a 1% increase in male graduation rates would save the United States as much as 1.4 billion dollars per year in reduced costs from crime incurred by victims and society at large.

Due to the negative implications associated with dropping out of school, it is important to examine the factors that may contribute to this decision, such as one's experience with exclusionary discipline practices. Research on the relationship between exclusionary discipline practices and dropout has shown a positive relationship between the two variables (Christle, Jolivette, & Nelson, 2007; Eckstrom, Goertz, Pollack, & Rock, 1986; Johnston, 1989; Kim, 2011; Lee, Cornell, Gregory, & Fan, 2011; Noltemeyer et al., 2015; Suh & Suh, 2007). In one example, Suh and Suh (2007) examined factors associated with dropout, such as suspension history. The authors used

data from the National Longitudinal Survey of Youth database from the U.S. Department of Labor. They analyzed data from 6,192 students across the nation. Results from a logistic regression analysis indicated that suspension is a significant predictor of dropout. More specifically, the authors found that a history of suspension increases the likelihood of dropping out of high school by 77.5%.

At the school level, Christle et al. (2007) examined school characteristics and disciplinary practices in relation to dropout rates. The authors analyzed data from the Kentucky Department of Education and the Kentucky Center for School Safety. The data represented information from 196 high schools in the 2000–2001 and 2001–2002 school years. The authors found that schools with higher suspension rates had significantly higher dropout rates.

Eckstrom et al. (1986) examined the characteristics associated with dropout. Although it is an older study, it is significant to highlight as the sample size was large and at the individual level. Specifically, the authors analyzed longitudinal data from 30,000 high school students in America. Results indicated that students who dropped out of high school were more likely to have a history of being suspended, which is consistent with other research in this area.

Whereas the research on the relationship between exclusionary discipline practices and dropout rates is valuable, it is possible that this relationship could be explained by other variables. Lee et al.'s study (2011) examined this issue using data from 289 Virginia public high schools obtained from the Virginia High School Safety Study. The authors found that the relationship between suspension and dropout rates

remained significant even when controlling for student demographic variables (school racial composition, percentage of students eligible for Free and Reduced Price Meals, urbanicity), school resources (per pupil expenditure), and student attitudes.

In order to integrate findings across this literature and to determine the magnitude of the relationship between suspension and dropouts, Noltemeyer et al. (2015) conducted a meta-analysis. The authors included peer reviewed and non-peer reviewed studies from 1986 to 2012. Analyses were conducted on 11 cases from a total of 10 studies. Results indicated a statistically significant positive relationship between suspension and school dropout, $Q(11) = 316.03$, $p < .001$. The estimated effect size between dropout and all types of suspension was .28 (CI95: .22 to .33; SE = .01) and found to be significant, $z = 8.81$, $p < .001$. In other words, students who were suspended more often were more likely to drop out of school.

Overall, research suggests that there is a positive relationship between exclusionary discipline practices and dropping out of school. Evidence suggests that this relationship remains significant even when controlling for race, urbanicity, school resources, and students' attitudes.

Moderators

A moderator variable is a secondary independent variable that is used in order to see if it affects or modifies the relationship between the primary independent variable and the dependent variable (Fraenkel & Wallen, 2006). This variable can affect the direction and the strength of the relationship between the independent and dependent variables. The inclusion of a moderator variable can provide considerably more information to

researchers than just studying a single independent variable in isolation (Fraenkel & Wallen, 2006).

Limited research exists on variables that moderate the relationship between exclusionary discipline practices and educational outcomes. Noltemeyer et al.'s meta-analysis (2015) aimed to address this gap by examining whether race, gender, socio-economic status, publication type, and level of analysis moderated the relationship between suspension and achievement and suspension and dropout with respect to effect size. The results from their study indicated that each of the aforementioned moderator variables explained some of the variation between the examined studies. In other words, the relationship between suspension and achievement and suspension and dropout varied based on the level of the moderator variable. Noltemeyer et al. (2015) called for more research on these moderator variables as well as others in this line of research.

Gaps in the Literature

Many studies have examined the relationship between discipline and educational outcomes, but the literature in this area is still sparse. Losen (2011) called for additional research on the connections between school discipline and educational outcomes, such as achievement and graduation rates. Limited research exists on the variables that might moderate the relationship between suspension and educational outcomes (Noltemeyer et al., 2015). Another void in the literature is the relationship between discipline and educational outcomes in students with disabilities.

Purpose of the Present Study

The purpose of this paper is to examine the relationship between exclusionary discipline practices and educational outcomes of students with disabilities, while concurrently examining participant characteristics that moderate this relationship. Previous research has shown that there is a relationship between exclusionary discipline practices and educational outcomes (Arcia, 2006; Christle et al., 2007; Eckstrom et al., 1986; Johnston, 1989; Kim, 2011; Lee et al., 2011; Noltemeyer et al., 2015; Raffaele Mendez, 2003; Rausch & Skiba, 2004; Safer, 1986; Tobin & Sugai, 1999), but it is unknown whether this relationship looks the same in students with disabilities. The current study extends the literature by examining the relationship between suspension and educational outcomes with this population. Also, previous research has found that there are variables that moderate the relationship between exclusionary discipline practices and educational outcomes (Noltemeyer et al., 2015). The current study plans to extend this line of research by examining the impact of moderator variables on the relationship between suspension and educational outcomes in students with disabilities.

It is important to note that this study is not a replication or a direct extension of the study by Noltemeyer et al. (2015). The Noltemeyer et al. study (2015) is a meta-analysis, which is a method for systematically combining data from several studies on a particular topic and then using a statistical means to synthesize the results of these studies (Fraenkel & Wallen, 2006). While there are common denominators between the Noltemeyer et al. study (2015) and the current study, the Noltemeyer et al. study is not able to answer the research questions posed in the current paper.

Research Questions and Hypotheses

The present study examined the following research questions and hypotheses with data taken at the state level:

1. Is there a relationship between the frequency of exclusionary discipline procedures (OSS 10 days or less, OSS more than 10 days, ISS 10 days or less, ISS more than 10 days) and the frequency of educational outcomes (dropout, graduated with a regular diploma) as recorded by official data-bases disclosed by state level education agencies to the US federal education agency?

   Research Hypothesis 1a: The regression coefficients for the frequencies of exclusionary discipline removals (OSS 10 days or less, OSS more than 10 days, ISS 10 days or less, and ISS more than 10 days) predicting the proportion of students who graduate with a regular diploma will be negative ($p < .05$).

   Null Hypothesis 1a: The regression coefficients for the frequencies of exclusionary discipline removals (OSS 10 days or less, OSS more than 10 days, ISS 10 days or less, and ISS more than 10 days) predicting the proportion of students who graduate with a regular high school diploma will not be negative ($p > .05$).

   Research Hypothesis 1b: The regression coefficients for the frequencies of exclusionary discipline removals (OSS 10 days or less, OSS more than 10 days, ISS 10 days or less, and ISS more than 10 days) predicting the proportion of students who dropout will be positive ($p < .05$).

Null Hypothesis 1b: The regression coefficients for the frequencies of exclusionary discipline removals (OSS 10 days or less, OSS more than 10 days, ISS 10 days or less, and ISS more than 10 days) predicting the proportion of students who dropout will not be positive ($p > .05$).

2. What is the relative contribution of each predictor variable (OSS 10 days or less, OSS more than 10 days, ISS 10 days or less, and ISS more than 10 days) in predicting educational outcomes?

   Research Hypothesis 2a: The regression coefficients for OSS more than 10 days predicting the proportion of students who graduate with a regular diploma will be the strongest as compared to OSS 10 days or less, ISS 10 days or less, and ISS more than 10 days ($p < .05$).

   Null Hypothesis 2a: The regression coefficients for OSS more than 10 days predicting the proportion of students who graduate with a regular high school diploma will not be different than the regression coefficients for OSS 10 days or less, ISS 10 days or less, and ISS more than 10 days ($p > .05$).

   Research Hypothesis 2b: The regression coefficients for OSS more than 10 days predicting the proportion of students who dropout will be the strongest as compared to OSS 10 days or less, ISS 10 days or less, and ISS more than 10 days ($p < .05$).

   Null Hypothesis 2b: The regression coefficients for OSS more than 10 days predicting the proportion of students who dropout will not be different

than the regression coefficients for OSS 10 days or less, ISS 10 days or less, and ISS more than 10 days ($p > .05$).

3. Are there factors that moderate the relationship between the frequency of exclusionary discipline procedures (OSS 10 days or less, OSS more than 10 days, ISS 10 days or less, and ISS more than 10 days) and the frequency of educational outcomes (dropout and graduated with a regular diploma) of students with disabilities at the state level?

   Research Hypothesis 3a: When looking at gender as a moderator variable, the regression coefficients for the frequencies of exclusionary discipline removals (OSS 10 days or less, OSS more than 10 days, ISS 10 days or less, and ISS more than 10 days) predicting the proportion of students who dropout will be stronger for males than for females ($p < .05$).

   Null Hypothesis 3a: When looking at gender as a moderator variable, the regression coefficients for the frequencies of exclusionary discipline removals (OSS 10 days or less, OSS more than 10 days, ISS 10 days or less, and ISS more than 10 days) predicting the proportion of students who dropout will not differ between males as compared to females ($p > .05$).

   Research Hypothesis 3b: When looking at gender as a moderator variable, the regression coefficients for the frequencies of exclusionary discipline removals (OSS 10 days or less, OSS more than 10 days, ISS 10 days or less, and ISS more than 10 days) predicting the proportion of students who

graduate with a high school diploma will be stronger for males than for females ($p < .05$).

Null Hypothesis 3b: When looking at gender as a moderator variable, the regression coefficients for the frequencies of exclusionary discipline removals (OSS 10 days or less, OSS more than 10 days, ISS 10 days or less, and ISS more than 10 days) predicting the proportion of students who graduate with a high school diploma will not differ between males as compared to females ($p > .05$).

Research Hypothesis 3c: When looking at race as a moderator variable, the regression coefficients for the frequencies of exclusionary discipline removals (OSS 10 days or less, OSS more than 10 days, ISS 10 days or less, and ISS more than 10 days) predicting the proportion of students who dropout will be stronger for Blacks than for Whites ($p < .05$).

Null Hypothesis 3c: When looking at race as a moderator variable, the regression coefficients for the frequencies of exclusionary discipline removals (OSS 10 days or less, OSS more than 10 days, ISS 10 days or less, and ISS more than 10 days) predicting the proportion of students who dropout will not differ between Blacks as compared to Whites ($p > .05$).

Research Hypothesis 3d: When looking at race as a moderator variable, the regression coefficients for the frequencies of exclusionary discipline removals (OSS 10 days or less, OSS more than 10 days, ISS 10 days or less, and ISS more than 10 days) predicting the proportion of students who

graduate with a high school diploma will be stronger for Blacks than for Whites ($p < .05$).

Null Hypothesis 3d: When looking at race as a moderator variable, the regression coefficients for the frequencies of exclusionary discipline removals (OSS 10 days or less, OSS more than 10 days, ISS 10 days or less, and ISS more than 10 days) predicting the proportion of students who graduate with a high school diploma will not differ between Blacks as compared to Whites ($p > .05$).

Research Hypothesis 3e: When looking at disability type as a moderator variable, the regression coefficients for the frequencies of exclusionary discipline removals (OSS 10 days or less, OSS more than 10 days, ISS 10 days or less, and ISS more than 10 days) predicting the proportion of students who dropout will be stronger for Emotional Disturbance than for a Specific Learning Disability ($p < .05$).

Null Hypothesis 3e: When looking at disability type as a moderator variable, the regression coefficients for the frequencies of exclusionary discipline removals (OSS 10 days or less, OSS more than 10 days, ISS 10 days or less, and ISS more than 10 days) predicting the proportion of students who dropout will not differ between Emotional Disturbance as compared to Specific Learning Disability ($p > .05$).

Research Hypothesis 3f: When looking at disability type as a moderator variable, the regression coefficients for the frequencies of exclusionary

discipline removals (OSS 10 days or less, OSS more than 10 days, ISS 10 days or less, and ISS more than 10 days) predicting the proportion of students who graduate with a high school diploma will be stronger for Emotional Disturbance than for a Specific Learning Disability ($p < .05$).

Null Hypothesis 3f: When looking at disability type as a moderator variable, the regression coefficients for the frequencies of exclusionary discipline removals (OSS 10 days or less, OSS more than 10 days, ISS 10 days or less, and ISS more than 10 days) predicting the proportion of students who graduate with a high school diploma will not differ between Specific Learning Disability as compared to Emotional Disturbance ($p > .05$).

Terminology

Below are the definitions used for the variables in the current research study, which is what the Office of Special Education Programs (OSEP) used in their collection of IDEA information from each state.

Black: A person having origins in any of the Black racial groups of Africa. Term does not include persons of Hispanic/Latino ethnicity.

Dropped out: Students with disabilities who were enrolled at the start of the reporting period, but were not enrolled at the end of the reporting period and did not exit special education through any of the other means. This includes dropouts, runaways, GED recipients (in cases where students are required to drop out of the secondary educational program in order to pursue the GED certificate), expulsions, status unknown,

students who moved but are not known to be continuing in another educational program, and other exiters from special education.

Emotional Disturbance: This refers to a condition exhibiting one or more of the following characteristics over a long period of time and to a marked degree, which adversely affects a child's educational performance: (a) an inability to learn, which cannot be explained by intellectual, sensory or health factors; (b) an inability to build or maintain satisfactory interpersonal relationships with peers and teachers; (c) inappropriate behavior or feelings under normal circumstances; (d) a general pervasive mood of unhappiness or depression; or (e) a tendency to develop physical symptoms or fears associated with personal or school problems. This term includes schizophrenia. The term does not apply to children who are socially maladjusted, unless it is determined they have an Emotional Disturbance.

Graduated with a regular high school diploma: These students exited an educational program through receipt of a high school diploma identical to that for which students without disabilities are eligible. These students met the same standards for graduation as those for students without disabilities. As defined in 34 CFR 300.102(a)(3)(iv), "the term *regular high school diploma* does not include an alternative degree that is not fully aligned with the state's academic standards, such as a certificate or GED."

In-school suspension: Instances in which a child is temporarily removed from his or her regular classroom(s) for disciplinary purposes but remains under the direct

supervision of school personnel. Direct supervision means school personnel are physically in the same location as students under their supervision.

Out-of-school suspension: Instances in which a child is temporarily removed from his or her regular school for disciplinary purposes to another setting (e.g., home, behavior center). This includes both removals in which no IEP services are provided because the removal is 10 days or less as well as removals in which the child continues to receive services according to his/her IEP.

Received a certificate: These students exited an educational program and received a certificate of completion, modified diploma, or some similar document. This includes students who received a high school diploma, but did not meet the same standards for graduation as those for students without disabilities. This also includes students receiving any alternative degree that is not fully aligned with the state's academic standards, such as a certificate or a GED, so long as the student remained continuously enrolled in the secondary education program.

Specific Learning Disability: This refers to a disability in one or more of the basic psychological processes involved in understanding or using language, spoken or written, which may manifest itself in an imperfect ability to listen, think, speak, read, write, spell or do mathematical calculations. This term includes such conditions as perceptual disabilities, brain injury, minimal brain dysfunction, dyslexia and developmental aphasia. The term does not include learning problems that primarily result from visual, hearing or motor disabilities, of intellectual disability, of emotional disturbance or of environmental, cultural or economic disadvantage.

White: A person having origins in any of the original peoples of Europe, the Middle East, or North Africa. Does not include persons of Hispanic/Latino ethnicity.

CHAPTER II

METHODOLOGY

Procedures

On an annual basis, all states in the U.S.A. are mandated by Section 618 of the *Individuals with Disabilities Education Act (IDEA)* to collect and submit data to the U.S. Department of Education on a variety of factors related to children with disabilities. The data are provided to the public and can be accessed from the IDEA Data Center website at https://ideadata.org/. This website is funded by the U.S. Department of Education's Office of Special Education Program and its intent is to provide technical assistance for building capacity within states for collecting, reporting, and analyzing high-quality IDEA data. The current study analyzed data from the *2014 Child Count and Educational Environments* file, *2013-2014 Discipline* file, and the *2013-2014 Exiting* file under Part B of IDEA. These files were chosen as they are the most recent data made available to the public. The author retrieved these files by clicking on the "Access Public IDEA Data" link at the center of the IDEA Data Center home page and then clicking on the "State Level Data Files" tab.

In order to analyze the data, the author first imported the *2013-2014 Discipline*, *2013–2014 Exiting, and 2014 Child Count and Educational Environment* CSV files into Microsoft Excel. The files were large and contained variables not related to the purpose of the current study. To make the files easier to work with, the author deleted variables and cases not pertinent to the research questions being examined. Some cells contained symbols indicating that the data were either not available, suppressed due to a small cell

size, or flagged due to questionable data quality. The author deleted these symbols and left the cells blank, so as to avoid difficulties when merging the databases.

Next, the author imported the CSV files into version 23.0 of the Statistical Package for the Social Science (SPSS; IBM Corporation, 2015). In order to merge the separate files into one database, the author restructured the data in each file so that data associated with each state appeared as one case. Once this was completed, the files were then merged into one document and saved as a sav file.

Data Analysis

Data were analyzed using version 23.0 of SPSS (IBM Corporation, 2015). The following paragraphs detail the statistical analysis used for each research question.

Research Question 1

Is there a relationship between the frequency of exclusionary discipline procedures (OSS 10 days or less, OSS more than 10 days, ISS 10 days or less, ISS more than 10 days) and the frequency of educational outcomes (dropout, graduated with a regular diploma) as recorded by official data-bases disclosed by state level education agencies to the US federal education agency?

Two multiple regression analyses were conducted in order to determine whether there was a predictive relationship between exclusionary discipline procedures and educational outcomes. In the first regression equation, the following four predictor variables were used: OSS 10 days or less, OSS more than 10 days, ISS 10 days or less, and ISS more than 10 days. All predictor variables were entered at once in order to determine which variables were significant predictors of educational outcomes. The

criterion variable was the number of students who graduated with a regular diploma in 2013.

In the second regression equation, the same four predictor variables were used and were: OSS 10 days or less, OSS more than 10 days, ISS 10 days or less, and ISS more than 10 day. Just as in the first equation, all predictor variables were entered at once in order to determine which variables were significant predictors of educational outcomes. The difference from the first equation was that the criterion variable in this equation was the number of students who dropped out.

Research Question 2

What is the relative contribution of each predictor variable (OSS 10 days or less, OSS more than 10 days, ISS 10 days or less, and ISS more than 10 days) in predicting educational outcomes?

Two multiple regression analyses were done in order to answer the question. Both regression equations used the following four predictor variables: OSS 10 days or less, OSS more than 10 days, ISS 10 days or less, and ISS more than 10 days. All predictor variables were entered at once in order to determine which variables were significant predictors of educational outcomes. The criterion variable in the first equation was the number of students who graduated with a regular diploma and certificate. In the second equation, the criterion variable was the number of students who dropped out. In order to determine the relative contribution of each predictor variable, the r-squared coefficients were compared with each other.

Research Question 3

Are there factors that moderate the relationship between the frequency of exclusionary discipline procedures (OSS 10 days or less, OSS more than 10 days, ISS 10 days or less, and ISS more than 10 days) and the frequency of educational outcomes (dropout and graduated with a regular diploma) of students with disabilities at the state level?

Multiple regression analyses were used in order to determine whether there were any variables that moderated the relationship between exclusionary discipline procedures and educational outcomes. A total of 12 multiple regression analyses were performed due to the nature of how the data were configured. Typically a moderator analysis is done by including the interaction between the two predictor variables. This was not possible due to the structure of the data; therefore the moderator analysis was conducted by running six separate regression equations. The first six regression equations examined the variables (race, gender, disability type) that moderated the relationship between the frequency of exclusionary discipline procedures and the frequency of students that dropped out. The predictor variables were as follows: OSS 10 days or less, OSS more than 10 days, ISS 10 days or less, and ISS more than 10 days. For each equation, the criterion variable was the frequency of students that dropped out. After the multiple regression analyses were computed, three separate comparisons were then conducted. Specifically, the r-squared values within each of the moderator variables were compared (males with females, Blacks with Whites, and Emotional Disturbance with a Specific

Learning Disability). If the r-squared values do not significantly differ within each variable, this suggests that the variable is not behaving as a moderator.

The last six regression equations examined factors that moderated the relationship between the frequency of exclusionary discipline procedures and the frequency of students that graduated with a regular high school diploma. The predictor variables were as follows: OSS 10 days or less, OSS more than 10 days, ISS 10 days or less, and ISS more than 10 days. For each equation, the criterion variable was the frequency of students that graduated with a regular high school diploma. The moderator analysis was conducted by running six separate regression equations. Three separate comparisons were then conducted. Specifically, the r-squared values within each of the moderator variables were compared (males with females, Blacks with Whites, and Emotional Disturbance with a Specific Learning Disability).

Assumptions

Several assumptions must be met when using multiple regression analyses. The first assumption is normality, which assumes that scores on the dependent variable are distributed normally. Visual inspection of data plots, histograms, and the Shapiro-Wilk Test can be used to assess for normality. The second assumption is linearity. This assumption assumes that the criterion variable is a linear function of the predictor variable. Linearity can be assessed by scatterplots and curve estimation. Another assumption of multiple regression is independence, meaning that one state's score is independent of another state's score. Independence can be assessed through examination of residual plots. The fourth assumption is homoscedasticity, which assumes that the

variance is constant across all levels of the predicted variable. This can be tested by a scatterplot of residuals versus predicted values. Multicollinearity is another assumption of multiple regression. If multicollinearity is present, this means that there are correlations between two or more of the independent variables, which could lead to problems interpreting which independent variable is contributing to the variance explained in the dependent variable. Multicollinearity can be assessed by Leverage/Variance Inflation Factor (VIF) values. It is predicted that the assumptions of linearity, independence, and homoscedasticity will be met.

CHAPTER III

RESULTS

Research Question One

Is there a relationship between the frequency of exclusionary discipline procedures (OSS 10 days or less, OSS more than 10 days, ISS 10 days or less, ISS more than 10 days) and the frequency of educational outcomes (graduated with a regular diploma and certificate, dropout) as recorded by official data-bases disclosed by state level education agencies to the U.S. federal education agency?

Method of Analysis

Multiple regression was used in order to determine whether there was a predictive relationship between suspension and educational outcomes in students with disabilities. This type of statistical analysis is recommended when predicting a dependent variable from a set of predictors (Stevens, 1999).

Assumptions

The assumptions to multiple regression were tested first. According to Keith (2015), the assumptions to this type of analysis are as follows: linearity, independence, homoscedasticity, and normality. In addition, multicollinearity was also examined in order to avoid misinterpretation of the regression coefficients (Keith, 2015). The results are provided below.

Linearity. In order to test for linearity, the curve estimation procedure in SPSS was used, testing the linear, quadratic, and cubic relationships between each predictive and criterion variable. A visual inspection of the scatterplot and curve estimation graph

along with a comparison of the regression coefficients for the linear, quadratic, and cubic models were compared. See Appendix A to view the scatterplots and curve estimation graphs for each relationship. Overall, results indicated that the assumption of linearity was met for more than 10 days, ISS 10 days or less, and ISS more than 10 days on both dependent variables. Linearity was violated for data from OSS 10 days or less on both criterion variables, meaning that the data are nonlinear or curvilinear. When data is nonlinear/curvilinear it means that the ratio of change between the independent and dependent variables is not constant and that the data falls along a curve rather than a straight line. The R^2 results for OSS 10 days or less and graduated with a regular diploma and certificate were as follows: linear: $R^2 = 0.004$, quadratic: $R^2 = 0.222$, and cubic: $R^2 = 0.224$. The R^2 results for OSS 10 days or less and dropout were as follows: linear: $R^2 = 0.018$, quadratic: $R^2 = 0.070$, and cubic: $R^2 = 0.149$.

It is possible that these results were due to the presence of outliers. Specifically, there appeared to be a clear outlier on data provided by Utah. Data from this state were filtered out in order to see if the linear model fit better to the observed data. The scatterplots and curve estimation graphs for OSS 10 days or less on each criterion variable were re-run. Linearity still appeared to be violated for data from OSS 10 days or less on both criterion variables. Specifically, the R^2 results for OSS 10 days or less and graduated with a regular diploma and certificate were as follows: linear: $R^2 = 0.003$, quadratic: $R^2 = 0.226$, and cubic: $R^2 = 0.228$. The R^2 results for OSS 10 days or less and dropout were as follows: linear: $R^2 = 0.121$, quadratic: $R^2 = 0.169$, and cubic: $R^2 = 0.231$.

In order to adjust for the violation of linearity on OSS 10 days or less, a fifth predictor variable was included, which was a quadratic term because it is a nonlinear relationship (Keith, 2015). This variable was created from the original OSS 10 days or less. First it was centered to avoid issues with multicollinearity and then it was squared to account for the linearity violation. Due to unusual data from Utah as compared to the other states, data from Utah were filtered out when creating the quadratic term.

Independence. The assumption of independence cannot be fully met as students can move from state-to-state within one school year; therefore, the data from one state cannot be truly independent of the data from another state. It is unlikely, though, that the number of students who moved between states within one school year was large enough to have a significant effect on independence, especially since the current study used aggregated data at the state level.

Normality. Normality was tested by visual inspection of a histogram and analysis of the Shapiro-Wilk Test for each criterion variable. See Figures 1 and 2 to view the histograms. For both criterion variables, the visual inspection of each histogram appeared to meet the normality assumption; however, the results from the Shapiro-Wilk Test indicated a violation for both graduation and dropout as indicated respectively, Shapiro-Wilk = .953, $p = .049$ and Shapiro-Wilk = .833, $p < .001$.

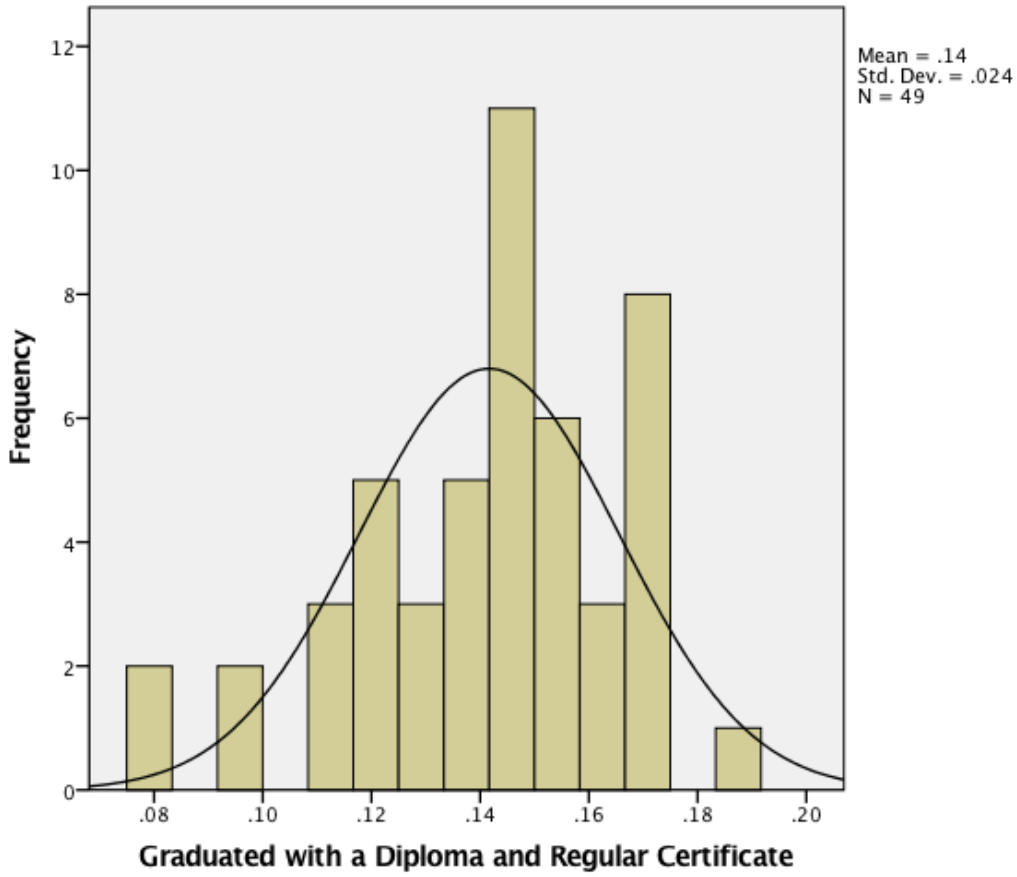


Figure 1. Frequency distribution of students who graduate with a regular diploma and certificate.

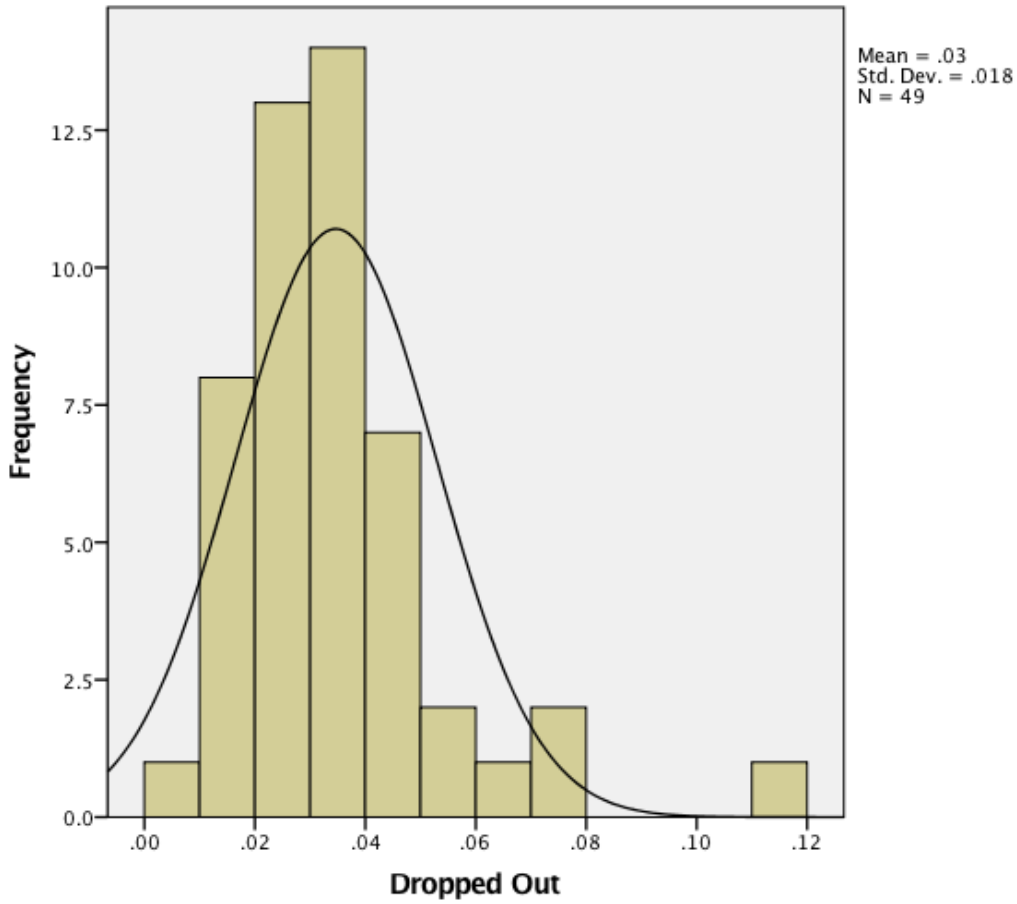


Figure 2. Frequency distribution of students who dropout.

It is possible that the normality assumption was violated due to presence of outliers. Specifically, there appeared to be a clear outlier on data provided by Utah. In order to test for this, the normality analyses were re-run by excluding data from Utah on both criterion variables in order to see if this data skewed the distribution. See Figures 3 and 4 to view the histograms of each criterion variable after data from Utah were filtered out. Visual inspection of each histogram appeared to meet the normality assumption. The results from the Shapiro-Wilk Test met the assumption of normality for graduation with a certificate (Shapiro-Wilk = .96, p = .06), but normality was violated for dropout (Shapiro-Wilk = .92, p = .00).

Due to the violations of normality, further analysis was conducted by examining the residuals values rather than just the raw score distributions (Keith, 2015). Due to unusual data from Utah as compared to the data from other states, data from Utah were filtered out in this analysis. In addition, the quadratic term was included. See Figures 5 and 6 to view the Normal P-Plot of Regression Standardized Residual charts for each criterion variable. Results indicated that the departures of the residual values were small and could be interpreted as trivial. In other words, the observed cumulative probability matched the expected cumulative probability well.

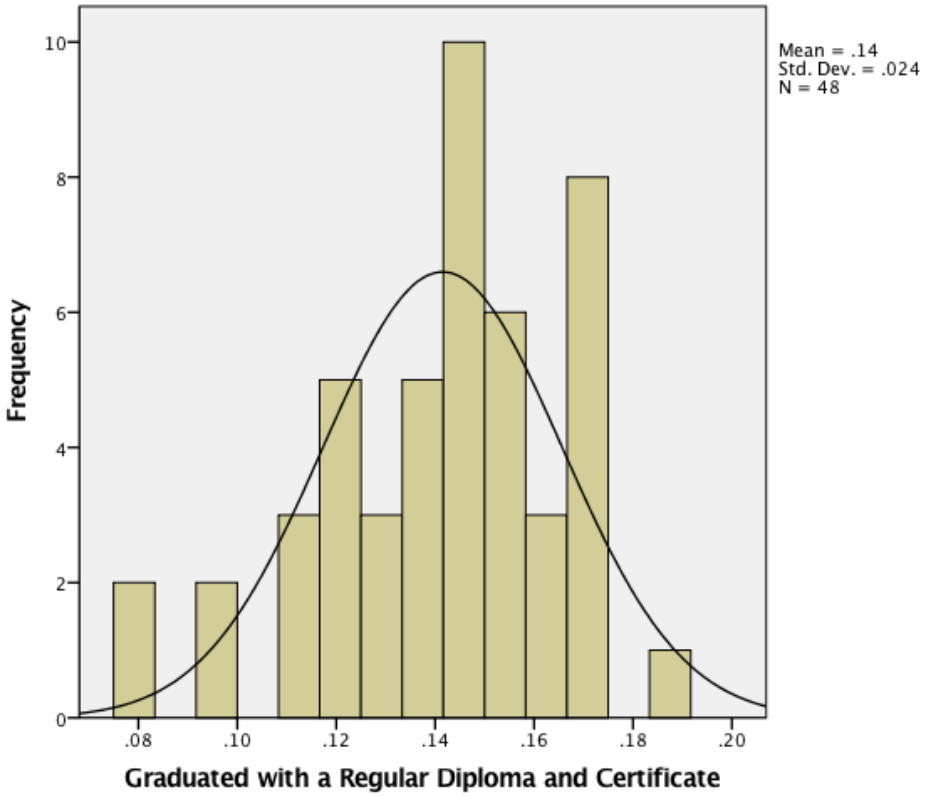


Figure 3. Frequency distribution after data from Utah were removed for students who graduate with a regular diploma and certificate.

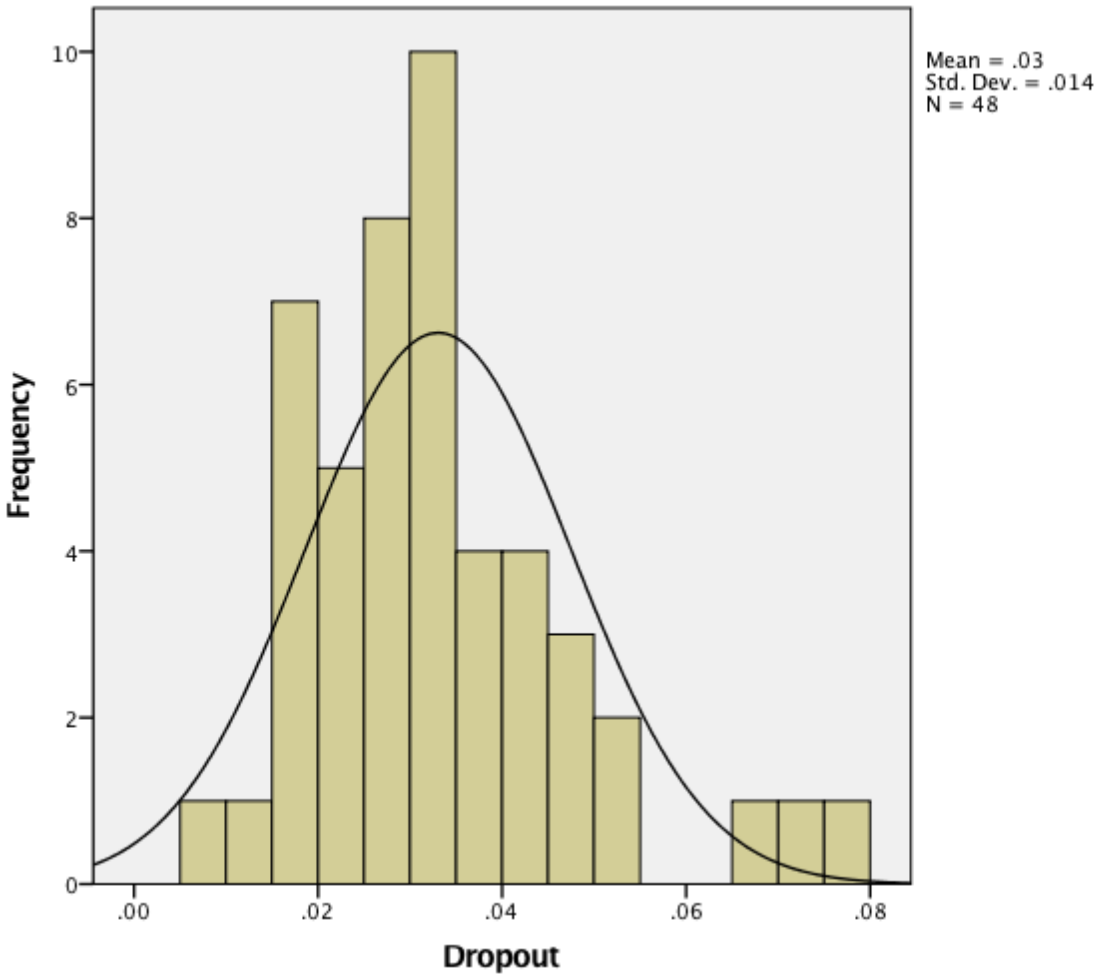


Figure 4. Frequency distribution after data from Utah were removed for students who dropout.

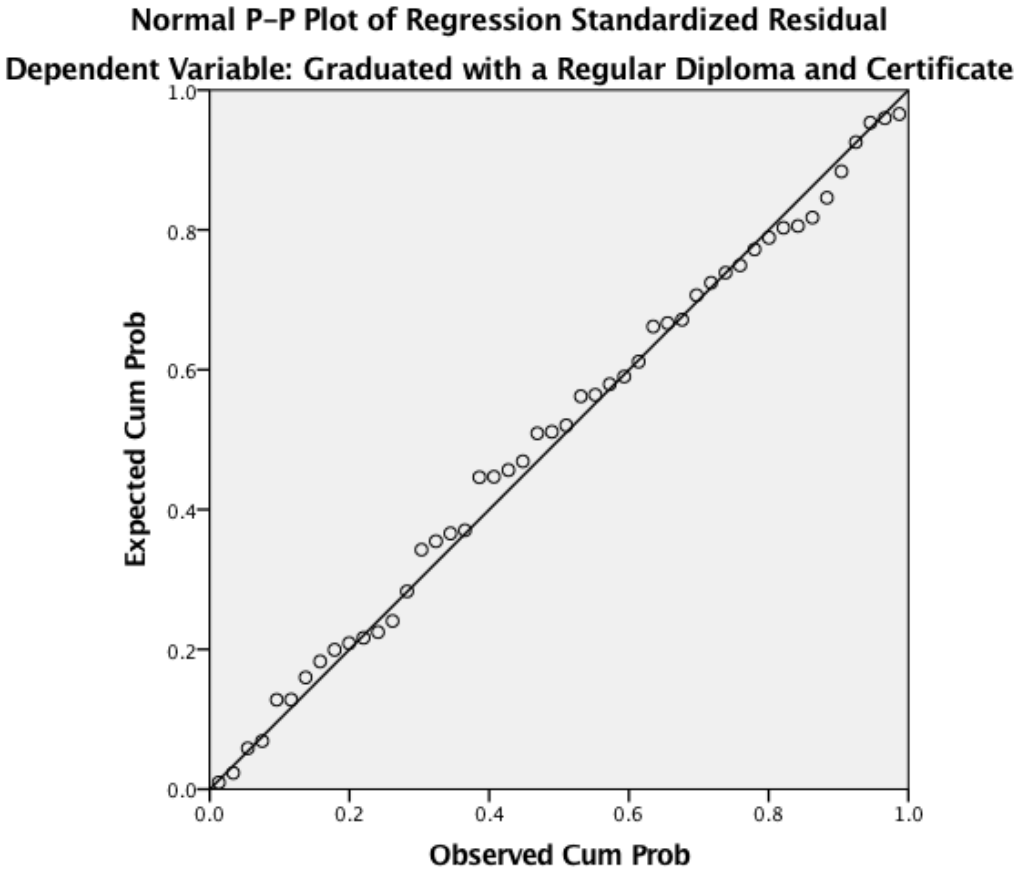


Figure 5. Regression standardized residuals after data from Utah were removed for students who graduated with a regular diploma and certificate.

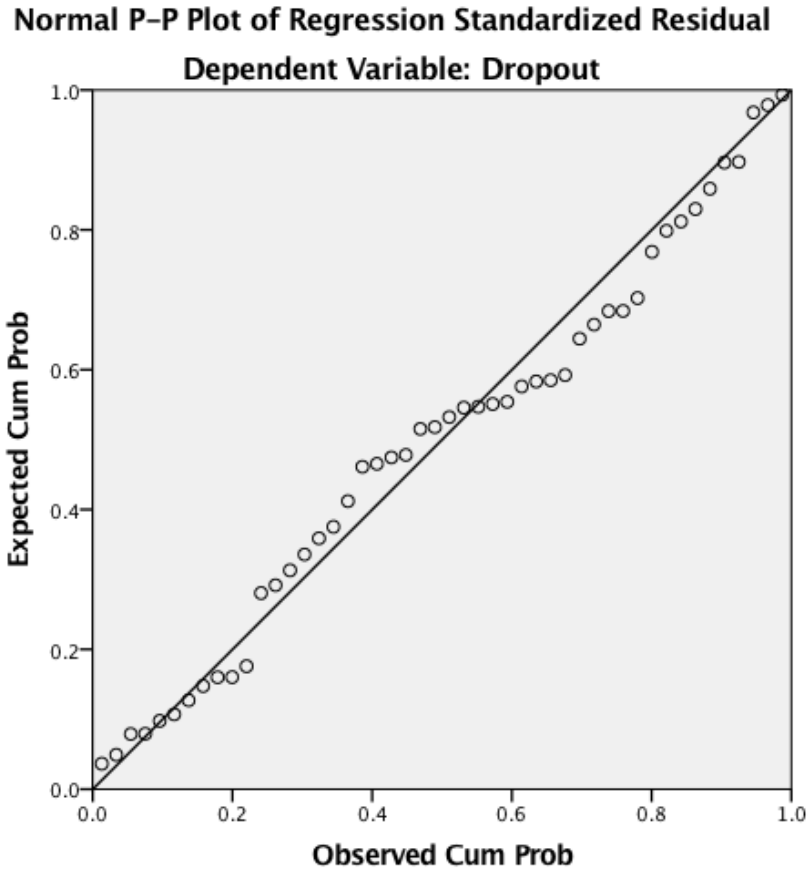


Figure 6. Regression standardized residuals after data from Utah were removed for students who dropped out.

Homoscedasticity. Visual inspection of the scatterplot of residuals versus predicted values for both criterion variables were analyzed in order to check for homoscedasticity. While some of the data points appeared to have more variability than others, there did not appear to be an overall pattern. In addition, the majority of the residuals fell between 2 and -2. Overall, these results suggest that homoscedasticity was not violated for both criterion variables, as the variability of the residuals must be fairly robust to violate this assumption (Keith, 2015). See Figures 7 and 8 to view the scatterplots.

Multicollinearity. Multicollinearity was tested by examining the Variance Inflation Factor (VIF) values. Due to the violation of linearity for data from OSS 10 days or less on both criterion variables, a fifth predictor variable, OSS 10 days or less squared, was included in order to adjust for this violation. The original variable was centered before it was squared in order to avoid issues with multicollinearity. In addition, data from Utah were excluded as this was an outlier and these data were unusual compared to data from other states. Lack of multicollinearity was met as the VIF values were less than 10. See Tables 1 and 2 for the results.

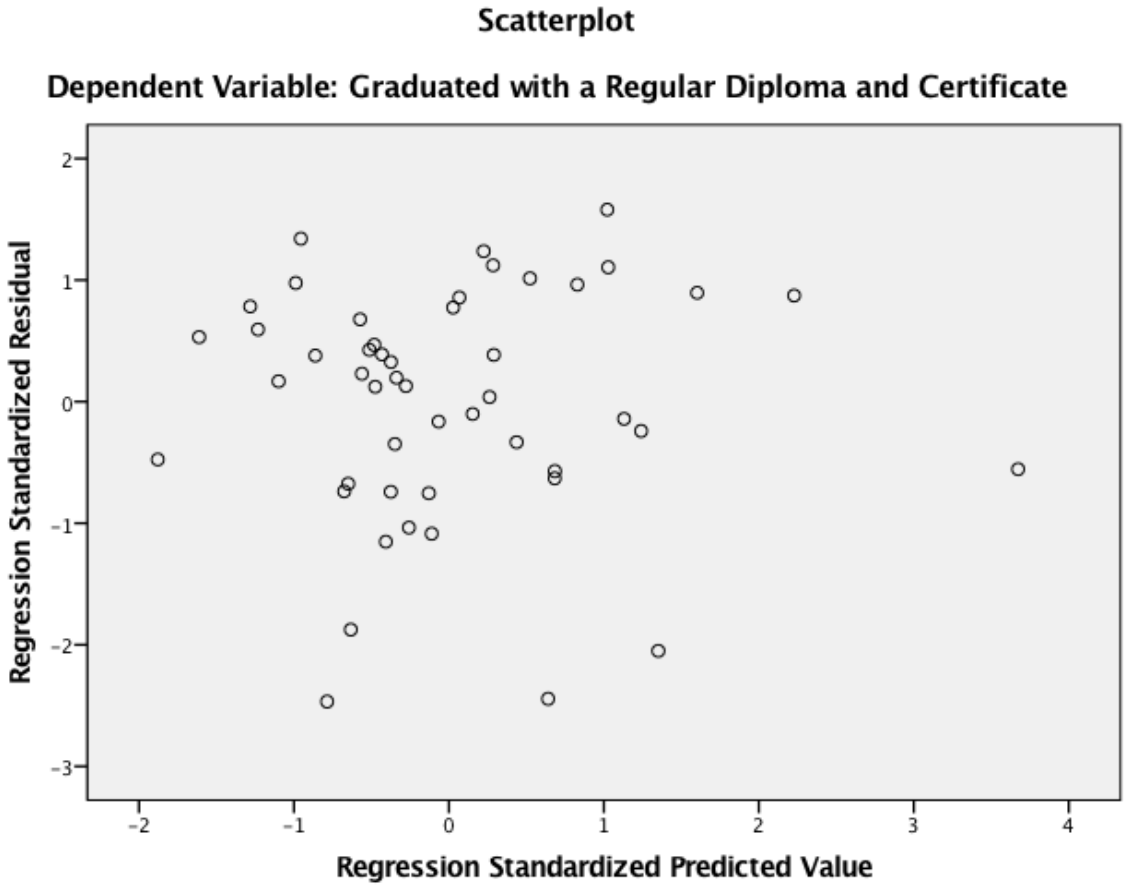


Figure 7. Scatterplot of residuals versus predicted values for students that graduate with a regular diploma and certificate.

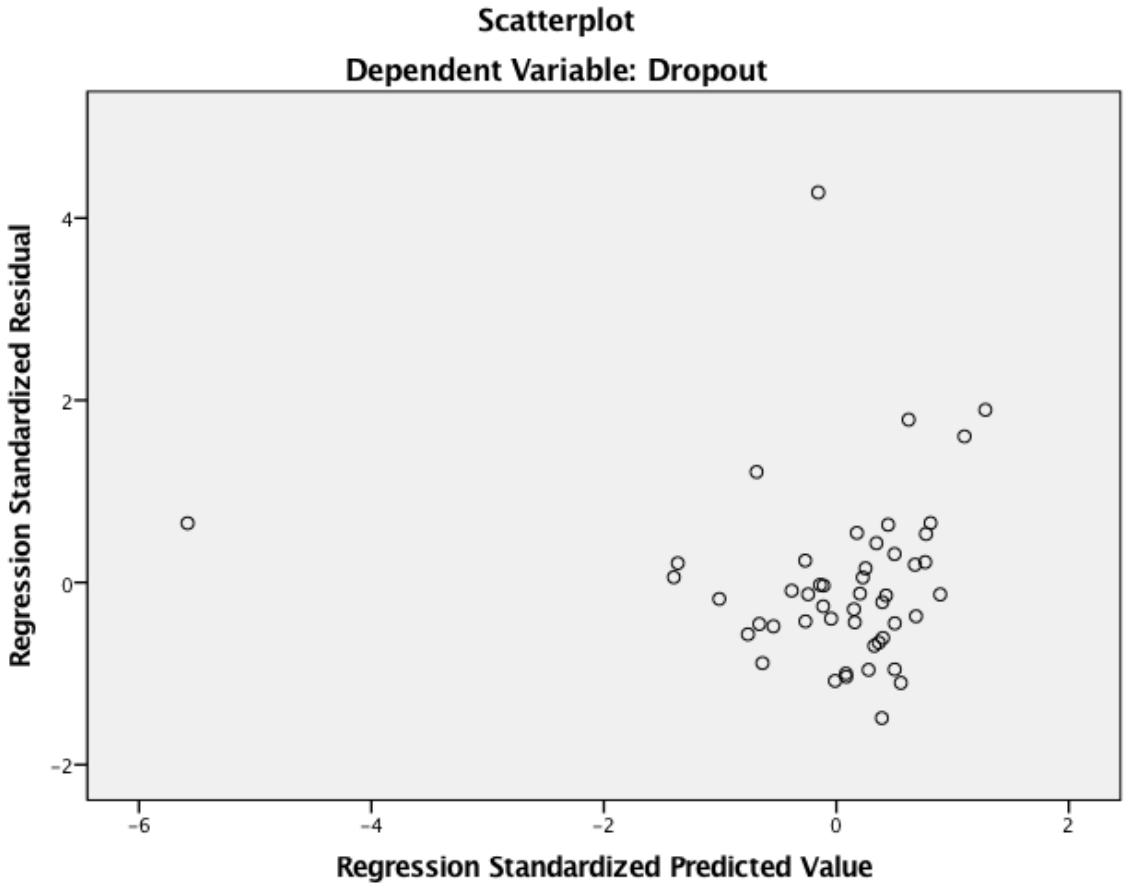


Figure 8. Scatterplot of residuals versus predicted values for students that dropout.

Table 1

Variance Inflation Factor Values (VIF) for Graduation With a Regular Diploma and Certificate

Predictors	VIF Values
OSS 10 days or less	2.73
OSS 10 days or less squared	1.13
OSS more than 10 days	1.45
ISS 10 days or less	4.39
ISS more than 10 days	3.20

Table 2

Variance Inflation Factor Values (VIF) for Dropout

Predictors	VIF Values
OSS 10 days or less	2.73
OSS 10 days or less squared	1.13
OSS more than 10 days	1.45
ISS 10 days or less	4.39
ISS more than 10 days	3.20

Summary of assumptions. Overall, the assumption of homoscedasticity and multicollinearity were met, but linearity, independence, and normality were violated. The assumption of linearity was met for all relationships except for OSS 10 days or less on both criterion variables. A quadratic term was included to adjust for this violation.

The assumption of independence was not met as students can move from state-to-state within one school year; therefore, the data from one state cannot be truly independent of the data from another state. It is unlikely, though, that the number of students who moved between states within one school year was large enough to have a significant effect on independence.

The assumption of normality was met based upon visual inspection of each histogram, but the results from the Shapiro-Wilk Test indicated a violation for both graduation and dropout. Further analysis was conducted by examining the residuals values rather than just the raw score distributions. Results indicated that the departures of the residual values were small and are trivial. In other words, the observed cumulative probability matched the expected cumulative probability well.

Analysis Procedures

Two multiple regression analyses were conducted in order to determine whether there was a predictive relationship between suspension and educational outcomes in students with disabilities. In the first multiple regression equation, the following five predictor variables were used: OSS 10 days or less centered, OSS 10 days or less centered squared, OSS more than 10 days, ISS 10 days or less, and ISS more than 10 days. OSS 10 days or less centered was included in order to avoid multicollinearity with

OSS 10 days or less squared. In order to account for the presence of curvilinearity, the OSS 10 days or less variable was squared and entered into the model. All predictor variables were entered at once in order to determine which variables were significant predictors of educational outcomes. The criterion variable was the percentage of students with disabilities who graduated with a regular diploma and received a certificate. Due to unusual data from Utah, data from this state were excluded.

In the second regression equation, the same five predictor variables were used and were: OSS 10 days or less centered, OSS 10 days or less centered squared, OSS more than 10 days, ISS 10 days or less, and ISS more than 10 days. Just as in the first equation, all predictor variables were entered at once in order to determine which variables were significant predictors of educational outcomes. The difference from the first equation was that the criterion variable in this equation was the number of students who dropped out of high school. Due to unusual data from Utah, data from this state were excluded.

Outcome for Graduated With a Regular Diploma and Certificate

The means and standard deviations for the regression equation variables are reported in Table 3. Pearson correlations were used to examine the associations between the independent and dependent variables and are provided in Table 4. Twenty nine percent of the variability in the frequency of students who graduate with a regular diploma and a certificate was explained by the combination of predictor variables (R^2 = .29; N = 48, p = .01). The linear combination of the variables did explain a significant

portion of the variability in the outcome F (5, 42) = 3.36, p = .01. Regression analysis information is found in Table 5.

Table 3

Means and Standard Deviations for Exclusionary Discipline Practices and the Outcome of Students Who Graduated With a Regular Diploma and Certificate

Group	M	SD
Graduated	.14	.02
OSS 10 days or less	.00	.09
OSS 10 days or less squared	.01	.01
OSS more than 10 days	.03	.02
ISS 10 days or less	.20	.11
ISS more than 10 days	.01	.02

Note. n = 48 as data were missing from Wyoming and data from Utah were filtered out.

Table 4

Intercorrelations for Exclusionary Discipline Practices and the Outcome of Students Who Graduated With a Regular Diploma and Certificate

Variable	Y	X1	X2	X3	X4	X5
Y Graduated	1.0					
X1 OSS 10 days or less	-.05	1.0				
X2 OSS 10 days or less sq	-.46**	-.13	1.0			
X3 OSS more than 10 days	.05	.55**	-.13	1.0		
X4 ISS less than 10 days	.05	.56**	.08	.31*	1.0	
X5 ISS more than 10 days	.09	.03	.29*	.03	.69**	1.0

Note. * $p < .05$, ** $p < .01$.

Table 5

Regression Analysis Summary for Variables Predicting Frequency of Graduation With a Regular Diploma and Certificate

Variable	B	SE B	Beta	t	P
OSS 10 days or less	-.04	.06	-.14	-.66	.51
OSS 10 days or less squared	-1.00	.25	-.55	-3.95	.00
OSS more than 10 days	0.08	.24	.05	.33	.74
ISS 10 days or less	-.01	.06	-.02	-.09	.93
ISS more than 10 days	.40	.35	.27	1.14	.26

$R^2 = .29$; $N = 48$, $p = .012$

Outcome for Dropout

The means and standards deviations for the regression equation variables are reported in Table 6. Pearson correlations were used to examine the associations between the independent and dependent variables and are provided in Table 7. Twenty eight percent of the variability in the frequency of students who drop out was explained by the combination of predictor variables ($R^2 = .28$; $N = 48$, $p = .02$). The linear combination of the variables did explain a significant portion of the variability in the outcome $F(5, 42) = 3.21$, $p = .02$. Regression analysis information is found in Table 8.

Table 6

Means and Standard Deviations for Exclusionary Discipline Practices and the Outcome of Students Who Drop Out

Group	M	SD
Dropout	.03	.01
OSS 10 days or less	.00	.09
OSS 10 days or less squared	.01	.01
OSS more than 10 days	.03	.02
ISS 10 days or less	.20	.11
ISS more than 10 days	.01	.02

Note. $n = 48$ as data were missing from Wyoming and data from Utah were filtered out.

Table 7

Intercorrelations for Exclusionary Discipline Practices and the Outcome of Students Who Drop Out

Variable	Y	X1	X2	X3	X4	X5
Y Dropout	1.0					
X1 OSS 10 days or less	.35**	1.0				
X2 OSS 10 days or less sq	.17	-.13	1.0			
X3 OSS more than 10 days	.27*	.55**	-.13	1.0		
X4 ISS 10 days or less	.09	.56**	.08	.31*	1.0	
X5 ISS more than 10 days	-.20	.03	.29*	.03	.69**	1.0

Note. *$p < .05$. **$p < .01$.

Table 8

Regression Analysis Summary for Variables Predicting Frequency of Dropout

Variable	B	SE B	Beta	t	P
OSS 10 days or less	.03	.04	.20	.92	.36
OSS 10 days or less squared	.36	.15	.33	2.37	.02
OSS more than 10 days	.13	.15	.15	.92	.36
ISS 10 days or less	.03	.04	.22	.79	.43
ISS more than 10 days	-.41	.21	-.46	-1.94	.06

$R^2 = .28$; $N = 48$, $p = .02$

Research Question Two

What is the relative contribution of each predictor variable (OSS 10 days or less, OSS more than 10 days, ISS 10 days or less, ISS more than 10 days) in predicting educational outcomes?

Method of Analysis

Two multiple regression analyses were conducted in order to answer research question two. Once each equation was computed, the squared part coefficients were compared with each other in order to determine the relative contribution of each predictor variable.

Assumptions

Before the multiple regression equations were computed, the assumptions to a multiple regression analysis were tested first. A detailed overview of the assumption results was provided in the section addressing research question one.

Analysis Procedures

Two multiple regression analyses were conducted in order to determine the contribution of each predictor variable. In the first multiple regression equation, the following five predictor variables were used: OSS 10 days or less centered, OSS 10 days or less centered squared, OSS more than 10 days, ISS 10 days or less, and ISS more than 10 days. OSS 10 days or less centered was included in order to avoid multicollinearity with OSS 10 days or less squared. In order to account for the presence of curvilinearity, the OSS 10 days or less variable was squared and entered into the model. All predictor variables were entered at once in order to determine which variables were significant

predictors of educational outcomes. The criterion variable was the number of students who graduated with a regular diploma and received a certificate. Due to unusual data from Utah, data from this state were excluded. The squared part correlations were compared with each other in order to determine the relative contribution of each predictor variable.

In the second regression equation, the same five predictor variables were used and were: OSS 10 days or less centered, OSS 10 days or less centered squared, OSS more than 10 days, ISS 10 days or less, and ISS more than 10 days. Just as in the first equation, all predictor variables were entered at once in order to determine which variables were significant predictors of educational outcomes. The difference from the first equation was that the criterion variable in this equation was the number of students who dropped out of high school. Due to unusual data from Utah, data from this state were excluded. The squared part correlations were compared with each other in order to determine the relative contribution of each predictor variable.

Outcome for Graduated With a Regular Diploma and Certificate

The means and standards deviations for the regression equation variables are reported in Table 3. Pearson correlations were used to examine the associations between the independent and dependent variables and are provided in Table 4. The linear combination of the variables did explain a significant portion of the variability in the outcome, $F(5, 42) = 3.36$, $p = .01$. Twenty nine percent of the variability in the frequency of students who graduate with a regular diploma and a certificate was

explained by the combination of predictor variables ($R^2 = .29$; $N = 48$, $p = .01$). The relative contribution of each predictor variable can be seen in Table 9.

Table 9

Contribution of Variables Predicting Frequency of Graduation with a Regular Diploma and Certificate

Variable	Part Correlation	Squared Part Correlation	P Value
OSS 10 days or less	-.09	.01	.51
OSS 10 days or less squared	-.52	.27	.00
OSS more than 10 days	.04	.00	.74
ISS 10 days or less	-.01	.00	.93
ISS more than 10 days	.15	.02	.26

Outcome for Dropout

The means and standards deviations for the regression equation variables are reported in Table 6. Pearson correlations were used to examine the associations between the independent and dependent variables and are provided in Table 7. The linear combination of the variables did explain a significant portion of the variability in the outcome $F (5, 42) = 3.21$, $p = .02$. Twenty eight percent of the variability in the frequency of students who drop out was explained by the combination of predictor variables ($R^2 = .28$; $N = 48$, $p = .02$). The relative contribution of each predictor variable can be seen in Table 10.

Table 10

Contribution of Variables Predicting Frequency of Dropout

Variable	Part Correlation	Squared Part Correlation	P Value
OSS 10 days or less	.12	.01	.36
OSS 10 days or less squared	.31	.10	.02
OSS more than 10 days	.12	.01	.36
ISS 10 days or less	.10	.01	.43
ISS more than 10 days	-.26	.07	.06

Research Question Three

Are there factors that moderate the relationship between the frequency of exclusionary discipline procedures (OSS 10 days or less, OSS more than 10 days, ISS 10 days or less, and ISS more than 10 days) and the frequency of educational outcomes (dropout and graduated with a regular diploma) of students with disabilities at the state level?

Method of Analysis

Multiple regression analyses were used in order to determine whether there were any variables that moderated the relationship between exclusionary discipline procedures and educational outcomes in students with disabilities. This type of statistical analysis is recommended when predicting a dependent variable from a set of predictors (Stevens, 1999). Typically a moderator analysis is done by including the interaction between the two predictor variables. This was not possible due to the structure of the data; therefore,

the moderator analysis was conducted by calculating separate regression equations for each level of the moderator variables and then the regression coefficients were compared between them.

Assumptions

The assumptions to multiple regression were tested first. According to Keith (2015), the assumptions to this type of analysis are as follows: linearity, independence, homoscedasticity, and normality. In addition, multicollinearity was also examined in order to avoid misinterpretation of the regression coefficients (Keith, 2015). The results are described in the next few paragraphs.

Linearity. In order to test for linearity, the curve estimation procedure in SPSS was used, testing the linear and quadratic relationships between each predictive and criterion variable. Data from Utah were filtered out due to unusual data that were discovered when running analyses on research question one and two. A visual inspection of the scatterplot and curve estimation graph along with a comparison of the regression coefficients for the linear and quadratic models were compared. See Appendix B to view the scatterplots and curve estimation graphs for each relationship. Out of the 48 relationships, linearity was met in 40 of the correlations and violated in 8. Specifically, when looking at gender as the moderator, linearity was violated for OSS 10 days or less and graduation with a regular diploma and certificate for both males and females. When looking at race as the moderator variable, linearity was violated for OSS more than 10 days and graduation with a regular diploma and certificate for White students with a disability and OSS 10 days or less and graduation with a regular diploma and certificate

for both Black and White students with a disability. When looking at disability type as the moderator, linearity was violated for OSS 10 days or less and graduation with a regular diploma and certificate for both students with an Emotional Disturbance and students with a Specific Learning Disability. Linearity was also violated for OSS more than 10 days and graduation with a regular diploma and certificate for students with a Specific Learning Disability.

For each of the linearity violations, a quadratic term was added to the equation to account for the nonlinear relationship between the variables (Keith, 2015). First the original predictor variable was centered to avoid issues with multicollinearity and then it was squared to account for the linearity violation. In order to assure that comparisons of the same model were being made between two groups, quadratic terms were also used for the relationship between graduation with a regular diploma and certificate and OSS more than 10 days for Black students and students with an Emotional Disturbance where linearity was not violated.

Independence. As in the first two research questions, the assumption of independence cannot be fully met as students can move from state-to-state within one school year; therefore, the data from one state cannot be truly independent of the data from another state. It is unlikely, though, that the number of students who moved between states within one school year were large enough to have a significant effect on independence, especially since the current study used aggregated data at the state level.

Normality. Normality was tested by visual inspection of a histogram and analysis of the Shapiro-Wilk Test for each criterion variable. Data from Utah were

filtered out due to unusual data that were discovered when running analyses on research question one and two. See Appendix C to view the histograms. Visual inspection of each histogram appeared to meet the normality assumption on all criterion variables, except for Black students who drop out and students diagnosed with an Emotional Disturbance who graduated with a regular diploma and certificate. While visual inspection of each histogram appeared to meet normality on 10 out of 12 criterion variables, the results from the Shapiro-Wilk Test indicated a violation for 6 out of the 12 criterion variables. Please see Table 11 to view the Shapiro-Wilk results.

Table 11

Results of the Shapiro Wilk Test for Each Moderator and Criterion Variable

Moderator Variable	Shapiro Wilk	
	Graduation	Dropout
Male	.98	.94*
Female	.97	.92**
Black	.97	.91**
White	.98	.93*
Emotional Disturbance	.93*	.95
Specific Learning Disability	.97	.92**

Note. $n = 47$ as data were missing from Wyoming and data from Utah were filtered out.
* $p < .05$. ** $p < .01$.

Due to the violations of normality, further analysis was conducted by examining the residuals values rather than just the raw score distributions (Keith, 2015). In addition,

the quadratic terms were included. See Appendix D to view the Normal P-Plot of Regression Standardized Residual charts for each criterion variable. Results indicated that the departures of the residual values were small and could be interpreted as trivial. In other words, the observed cumulative probability matched the expected cumulative probability well.

Homoscedasticity. Visual inspection of the scatterplot of residuals versus predicted values for each criterion variable were analyzed in order to check for homoscedasticity. In the analyses, data from Utah were filtered out and the quadratic terms were included. See Appendix E to view the scatterplots. While some of the data points appeared to have more variability than others, there did not appear to be an overall pattern. In addition, the majority of the residuals fell between 2 and -2. Overall, these results suggest that homoscedasticity was not violated for each of the criterion variables, as the variability of the residuals must be fairly robust to violate this assumption (Keith, 2015).

Multicollinearity. Multicollinearity was tested by examining the Variance Inflation Factor (VIF) values. Due to the unusual data from Utah, data from this state were filtered out. The quadratic terms were included in order to account for the linearity violations. The original variables were centered before they were squared in order to avoid issues with multicollinearity. Results indicate that lack of multicollinearity was met for all relationships, as the VIF values were less than 10. See Appendix F for the results.

Analysis Procedures

Twelve multiple regression analyses were performed due to the nature of how the data were configured. The first six regression equations examined the variables (gender, race, disability type) that potentially moderated the relationship between the frequency of exclusionary discipline procedures and the frequency of students that graduate with a regular diploma and certificate. The predictor variables for each of the regression equations were as follows: OSS 10 days or less, OSS more than 10 days, ISS 10 days or less, and ISS more than 10 days. Data from Utah were filtered out. In order to account for the linearity violations, quadratic terms for some relationships were included in the analyses. All predictor variables were entered at once in order to determine which variables were significant predictors of educational outcomes. For each equation, the criterion variable was the frequency of students that graduated with a regular diploma and certificate. After the multiple regression analyses were computed, three separate comparisons were then conducted. Specifically, the r-squared values were compared between the same regression equation for different levels of the moderator variables. In order to compute the last six regression equations, the same procedures as above were repeated except that the criterion variable was student who drop out as opposed to students that graduate with a regular diploma and certificate.

Outcome for Gender

Graduation with a regular diploma and certificate. The means and standard deviations for the regression equation variables are reported in Table 12. When looking at whether gender moderated the relationship between suspension and graduation, the

linear combination of the variables did not explain a significant portion of the variability for either males (F (5, 40) = 1.52, p = .21, r^2 = .16) or females (F (5, 40) = 1.68, p = .16, r^2 = .17). When looking at the individual relationships between each variable, there was a significant relationship between OSS 10 days or less squared and graduation with a regular diploma and certificate for both males (Beta = -.41, t(45) = -2.50, p = .02) and females (Beta = -.36, t(45) = -2.39, p = .02). Gender did not moderate this relationship as there was no significant difference (z = -.11, p = .91) between the squared part correlations for males (r^2 = .13) and females (r^2 = .12). See Table 13 for the relative contribution of each predictive variable.

Table 12

Means and Standard Deviations of Gender Moderating the Relationship Between Suspension and Graduation

	Male	Female
Group	Mean (SD)	Mean (SD)
Criterion Variable	.10 (.02)	.11 (.02)
OSS 10 days or less	.00 (.07)	.00 (.04)
OSS 10 days or less sq	.01 (.01)	.00 (.00)
OSS more than 10 days	.02 (.01)	.01 (.01)
ISS 10 days or less	.16 (.09)	.09 (.05)
ISS more than 10 days	.01 (.01)	.00 (.01)

Note. n = 46 for both males and females as data were missing from Idaho, Iowa, and Wyoming and data from Utah were filtered out.

Table 13

Correlations of Gender Moderating the Relationship Between Suspension and Graduation

	Part		Squared Part		P Value	
Predictor	Male	Female	Male	Female	Male	Female
OSS 10 days or less	-.10	.10	.01	.01	.51	.48
OSS 10 days or less sq	-.36*	-.34*	.13*	.12*	.02*	.02*
OSS more than 10 days	.08	.13	.01	.02	.60	.36
ISS 10 days or less	-.05	-.21	.00	.04	.75	.15
ISS more than 10 days	.12	.23	.01	.05	.40	.12

Note. * *p* value is significant.

Dropout. The means and standard deviations for the regression equation variables are reported in Table 14. When looking at whether gender moderated the relationship between suspension and dropout, the linear combination of the variables did not explain a significant portion of the variability for either males, F (4, 41) = 2.23, p = .08, r^2 = .18), or females, F (4, 41) = 1.57, p = .20, r^2 = .13. When looking at the individual relationships between each variable, there were no significant relationships and the squared part correlations were similar. See Table 15 for the relative contribution of each predictive variable.

Table 14

Means and Standard Deviations of Gender Moderating the Relationship Between Suspension and Dropout

Predictor	Male M (SD)	Female M (SD)
Criterion Variable	.02 (.01)	.02 (.01)
OSS 10 days or less	.20 (.07)	.10 (.04)
OSS more than 10 days	.02 (.01)	.01 (.01)
ISS 10 days or less	.16 (.09)	.09 (.05)
ISS more than 10 days	.01 (.01)	.00 (.01)

Note. $n = 46$ for both males and females as data were missing from Idaho, Iowa, and Wyoming and data from Utah were filtered out.

Table 15

Correlations of Gender Moderating the Relationship Between Suspension and Dropout

	Part		Squared Part		P Value	
Predictor	Male	Female	Male	Female	Male	Female
OSS 10 days or less	.13	.15	.02	.02	.38	.32
OSS more than 10 days	.10	.01	.01	.00	.47	.96
ISS 10 days or less	.08	.02	.01	.00	.56	.89
ISS more than 10 days	-.18	-.15	.03	.02	.20	.30

Outcome for Race

Graduation with a regular diploma and certificate. The means and standard deviations for the regression equation variables are reported in Table 16. When looking at whether gender moderated the relationship between suspension and graduation, the linear combination of the variables did not explain a significant portion of the variability in Black students with a disability, $F (6, 40) = 1.84$, $p = .12$, $r^2 = .22$, nor for White students, $F (6, 41) = 2.22$, $p = .06$, $r^2 = .25$. When looking at the individual relationships between each variable, there was a significant relationship between OSS 10 days or less squared and graduation with a regular diploma and certificate for both Black (Beta = -.41, $t(46) = -2.43$, $p = .02$) and White students (Beta = -.45, $t(47) = -2.75$, $p = .01$). Race did not moderate this relationship as there was no significant difference ($z = .16$, $p = .87$) between the squared part correlations of Black ($r^2 = .12$) and White students ($r^2 = .14$). See Table 17 for the relative contribution of each predictive variable.

Table 16

Means and Standard Deviations of Race Moderating the Relationship Between Suspension and Graduation

Group	Black M (SD)	White M (SD)
Criterion Variable	.11 (.03)	.11 (.02)
OSS 10 days or less	.01 (.12)	.00 (.05)
OSS 10 days or less sq	.01 (.02)	.00 (.00)
OSS more than 10 days	.00 (.03)	.00 (.01)
OSS more than 10 days sq	.00 (.00)	.00 (.00)
ISS 10 days or less	.22 (.11)	.12 (.06)
ISS more than 10 days	.02 (.02)	.01 (.01)

Note. For Black students, $n = 47$ as data was missing from Idaho, Utah, and Wyoming. For White students, $n = 48$ as data was missing from Wyoming and Utah.

Table 17

Correlations of Race Moderating the Relationship Between Suspension and Graduation

	Part		Squared Part		P Value	
Predictor	Black	White	Black	White	Black	White
OSS 10 days or less	-.09	-.20	.01	.04	.52	.14
OSS 10 days or less sq	-.34*	-.37*	.12*	.14*	.02*	.01*
OSS more than 10 days	.20	.22	.04	.05	.15	.12
OSS more than 10 days sq	-.12	-.12	.01	.01	.39	.39
ISS 10 days or less	-.07	.00	.00	.00	.63	1.00
ISS more than 10 days	.20	.04	.04	.00	.17	.77

Note. * = *p* value is significant.

Dropout. The means and standard deviations for the regression equation variables are reported in Table 18. When looking at whether race moderated the relationship between suspension and dropout, the linear combination of the variables explained a significant portion of the variability with both Black, $F(4, 42) = 4.00$, $p = .01$, $r^2 = .28$, and White students, $F(4, 43) = 2.70$, $p = .04$, $r^2 = .20$; however, there was no significant difference between the r^2 values, which suggests that race did not moderate the relationship. When looking at the individual relationships between each variable, there was not a significant relationship between any of the predictor and criterion variables and the squared part correlations were all similar to each other. See Table 19 for the relative contribution of each predictive variable.

Table 18

Means and Standard Deviations of Race Moderating the Relationship Between Suspension and Dropout

Group	Black M (SD)	White M (SD)
Criterion Variable	.03 (.02)	.02 (.01)
OSS 10 days or less	.31 (.12)	.12 (.05)
OSS more than 10 days	.05 (.03)	.01 (.01)
ISS 10 days or less	.22 (.11)	.12 (.06)
ISS more than 10 days	.02 (.02)	.01 (.01)

Note. For Black students, $n = 47$ as data was missing from Idaho, Utah, and Wyoming. For White students, $n = 48$ as data was missing from Wyoming and Utah.

Table 19

Correlations of Race Moderating the Relationship Between Suspension and Dropout

	Part		Squared Part		P Value	
Predictor	Black	White	Black	White	Black	White
OSS 10 days or less	.20	.20	.04	.04	.13	.15
OSS more than 10 days	.23	.08	.05	.01	.09	.54
ISS 10 days or less	.02	-.01	.00	.00	.87	.92
ISS more than 10 days	-.13	-.11	.02	.01	.34	.44

Outcome for Disability Type

Graduation with a regular diploma and certificate. The means and standard deviations for the regression equation variables are reported in Table 20. When looking at whether disability type moderated the relationship between suspension and graduation, the linear combination of the variables did not explain a significant portion of the variability for students with an Emotional Disturbance, $F(6, 39) = 1.55$, $p = .19$, $r^2 = .19$, and students with a Specific Learning Disability, $F(6, 39) = 1.59$, $p = .18$, $r^2 = .20$. When looking at the individual relationships between each variable, there were no significant relationships and the squared part correlations were similar. See Table 21 for the relative contribution of each predictive variable.

Table 20

Means and Standard Deviations of Disability Type Moderating the Relationship Between Suspension and Graduation

	Emotional Disturbance	Specific Learning Disability
Group	M (SD)	M (SD)
Criterion Variable	.13 (.04)	.14 (.03)
OSS 10 days or less	.01 (.20)	.00 (.08)
OSS 10 days or less sq	.04 (.06)	.01 (.01)
OSS more than 10 days	.00 (.05)	.00 (.01)
OSS more than 10 days sq	.00 (.00)	.00 (.00)
ISS 10 days or less	.34 (.17)	.17 (.10)
ISS more than 10 days	.03 (.05)	.01 (.01)

Note. $n = 46$ for both students with an Emotional Disturbance and students with a Specific Learning Disability as data were missing from Idaho, Iowa, and Wyoming and data from Utah were filtered out.

Table 21

Correlations of Disability Type Moderating the Relationship Between Suspension and Graduation

	Part		Squared Part		P Value	
Predictor	ED	SLD	ED	SLD	ED	SLD
OSS 10 days or less	-.14	.22	.02	.05	.33	.14
OSS 10 days or less sq	-.24	-.28	.06	.08	.10	.06
OSS more than 10 days	.12	.03	.01	.00	.39	.84
OSS more than 10 days sq	-.19	-.21	.04	.04	.19	.16
ISS 10 days or less	.03	-.17	.00	.03	.83	.24
ISS more than 10 days	-.05	.24	.00	.06	.73	.10

Dropout. The means and standard deviations for the regression equation variables are reported in Table 22. When looking at whether disability type mediated the relationship between suspension and dropout, the linear combination of the variables did not explain a significant portion of the variability for students with an Emotional Disturbance, $F(4, 41) = 1.37$, $p = .26$, $r^2 = .12$, but it did for students with a Specific Learning Disability, $F(4, 41) = 2.87$, $p = .04$, $r^2 = .22$; however, there was no significant difference between the r^2 values ($z = -.48$, $p = .63$), which suggests that disability type did not moderate the relationship. When looking at the individual relationships between each variable, there were no significant relationships and the squared part correlations were similar. See Table 23 for the relative contribution of each predictive variable.

Table 22

Means and Standard Deviations of Disability Type Moderating the Relationship Between Suspension and Dropout

	Emotional Disturbance	Specific Learning Disability
Group	M (SD)	M (SD)
Criterion Variable	.08 (.03)	.03 (.01)
OSS 10 days or less	.53 (.20)	.18 (.08)
OSS more than 10 days	.08 (.05)	.02 (.01)
ISS 10 days or less	.34 (.17)	.17 (.10)
ISS more than 10 days	.03 (.05)	.01 (.01)

Note. $n = 46$ for both students with an Emotional Disturbance and students with a Specific Learning Disability as data were missing from Idaho, Iowa, and Wyoming and data from Utah were filtered out.

Table 23

Correlations of Disability Type Moderating the Relationship Between Suspension and Dropout

	Part		Squared Part		P Value	
Predictor	ED	SLD	ED	SLD	ED	SLD
OSS 10 days or less	.08	.14	.01	.02	.58	.31
OSS more than 10 days	.21	.14	.04	.02	.16	.32
ISS 10 days or less	-.06	.10	.00	.01	.68	.50
ISS more than 10 days	-.08	-.16	.01	.03	.61	.26

CHAPTER IV

DISCUSSION

In the United States, access to education equality is a constitutional right that is guaranteed to all children. For some time, Americans have held with them a notion that suspension prevents students from receiving access to a quality education. The results from this study challenge this notion and suggest that suspension may be beneficial under the right conditions.

The remainder of this paper will revisit the purpose of the present study, summarize the results, discuss why the findings challenge the notion that suspension prevents equitable access to education, and address potential implications for policy and practice. This chapter will conclude with the limitations of this study and suggestions for future research.

Purpose of Study

The purpose of this study was to examine the relationship between suspension and educational outcomes in students with disabilities, while concurrently examining participant characteristics that moderate this relationship. Previous research has examined this relationship (Arcia, 2006; Christle et al., 2007; Eckstrom et al., 1986; Johnston, 1989; Kim, 2011; Lee et al., 2011; Noltemeyer et al., 2015; Raffaele Mendez, 2003; Rausch & Skiba, 2004; Safer, 1986; Tobin & Sugai, 1999), but not with this population. Also, previous research has found that there are variables that moderate the relationship between suspension and educational outcomes (Noltemeyer et al., 2015), but more research with moderator variables is needed. Thus, the current study aimed to

extend the literature by examining the relationship between suspension and educational outcomes in students with disabilities, while also examining whether selected moderator variables had an impact on this relationship.

Overview and Explanation of Results

Research Question One

Question. The first research question investigated whether there was a relationship between the frequency of suspension (OSS 10 days or less, OSS more than 10 days, ISS 10 days or less, ISS more than 10 days) and the frequency of educational outcomes (graduated with a regular diploma and certificate, dropout).

Hypotheses. It was hypothesized that there would be a negative relationship between suspension (OSS 10 days or less, OSS more than 10 days, ISS 10 days or less, and ISS more than 10 days) and graduation with a regular diploma and certificate. In other words, it was predicted that states with higher frequencies of each suspension technique would have less students who would graduate with a regular diploma and certificate. In addition, it was also hypothesized that the relationship between suspension (OSS 10 days or less, OSS more than 10 days, ISS 10 days or less, and ISS more than 10 days) and dropout would be positive. In other words, it was predicted that states with higher frequencies of ISS and OSS would have more students that would drop out. These hypotheses were based off of prior research that has shown higher frequencies of suspension leads to negative educational outcomes (Noltemeyer et al., 2015).

Results. When looking at the relationship between suspension and graduation with a regular diploma and certificate, results indicated that there was a significant

negative curvilinear relationship between OSS 10 days or less and the criterion variable. This means that the relationship peaked in the middle and was low on the tails or in other words states that used OSS 10 days or less a medium amount had higher graduation rates as compared to states that used this discipline technique very little or a lot. The relationships between the remaining predictor variables with the criterion variable were all non-significant. Although the remaining relationships were not statistically significant, there were negative relationships between the criterion variable and the predictors of OSS 10 days or less and ISS 10 days or less. There were positive relationships between the criterion variable and the predictors of OSS more than 10 days and ISS more than 10 days. The effect size between the criterion variable and the practice of ISS more than 10 days was moderate, while the other effect sizes in the remaining non-significant relationships were low. With more power, it is possible that this relationship would be significant. The research hypothesis was partially supported since two of the relationships were negative; however, these relationships were not significant.

When looking at the relationship between suspension and dropout, results indicate that there was a significant positive curvilinear relationship between OSS 10 days or less and the criterion variable. In other words, states that used OSS 10 days or less a medium amount had lower dropout rates as compared to states that used this discipline technique very little or a lot. The relationships between the remaining predictor variables with the criterion variable were all non-significant. Although the remaining relationships were not statistically significant, there were positive relationships between the criterion variable

and OSS 10 days or less centered, OSS more than 10 days, and ISS 10 days or less. There was a negative relationship between the criterion variable and ISS more than 10 days. It is important to note that while the relationship between ISS more than 10 days and dropout was not significant, the effect size was moderate. The effect sizes in the remaining non-significant relationships were small in comparison. Overall, the research hypothesis was partially supported since three out of the five relationships were positive; however, these relationships were not significant.

Explanation. Overall, the results from this study suggest that states that make moderate use of suspension for 10 days or less tend to have higher levels of educational success as compared to states that use this practice infrequently or a lot. These results are surprising as previous research on the relationship between exclusionary discipline practices and educational success has shown evidence that suspension is related to negative educational outcomes (Arcia, 2006; Christle et al., 2007; Eckstrom et al., 1986; Johnston, 1989; Kim, 2011; Lee et al., 2011; Noltemeyer et al., 2015; Raffaele Mendez, 2003; Rausch & Skiba, 2004; Safer, 1986; Suh & Suh, 2007; Tobin & Sugai, 1999); however, these studies did not examine this relationship in students with disabilities. It is possible that suspension affects the outcomes of students with disabilities differently than it does with students without disabilities.

Perhaps one of these reasons that this study found positive educational outcomes resulting from suspension of students with disabilities could be the mandates required by IDEA that are in place to protect students with disabilities, which are not required when suspending students without disabilities. One of the purposes of IDEA is to ensure that

students with disabilities are given equitable access to instruction and to ensure that they are not discriminated against because of their disability.

Under IDEA, students with disabilities can be suspended just like any other student who violates the school code of conduct, but only if the proposed suspension and the child's prior suspensions do not total up to ten cumulative school days during the current school year. If a child has had ten or less days of suspension, then schools are not required to provide educational services during the time of removal as long as they do not provide this to students without disabilities under the same circumstances.

Once a student has reached ten days of suspension within one school calendar, IDEA mandates that schools implement certain procedures to ensure that students with disabilities are not being penalized as a result of their disability. For each behavioral infraction that may result in a subsequent suspension, a team must determine whether the student's behavior was a direct result of their disability. If so, then the student must be returned to the original education setting unless the parents agree otherwise to the new placement. If the behavior was not directly related to the disability, then the school can use the same disciplinary actions that they would impose on students without disabilities who engage in similar behaviors; however, the student must receive special education services even if the child is in an alternative setting. In addition, the IEP team must do an assessment to determine the function of the child's misbehavior. After this assessment is completed, the team must develop a behavioral intervention plan that is designed to increase positive behaviors and decrease the negative behaviors that are occurring repeatedly. The child's IEP team must also determine if the behavioral infraction was the

direct result of the school's failure to implement the student's Individualized Education Plan (IEP). If the behavior was a result of the schools failure to implement the IEP, then the school must take steps to remedy this problem and the student is allowed to return to his or her original placement.

It is possible that the results of this study could be due to the legal protections that are currently in place for students with disabilities. As a result of federal mandates, schools are required to be more conscientious about how they suspend students with disabilities. These protections may lead to schools being more thoughtful and proactive about the supports that are delivered to students with disabilities, even if students did not reach the "ten day rule". Is it possible that states that use the practice of OSS 10 days or less infrequently or a lot tend to rely on only this discipline technique to remediate misbehavior. Could it be that states that use OSS 10 days or less a moderate amount are seeing positive educational outcomes with their student body because they are perhaps implementing suspension as part of a package of supports that are delivered to students that are breaking the code of conduct? Perhaps these states are being thoughtful about using a variety of techniques to help remediate negative behaviors in students with disabilities so as to prevent students from reaching the "ten day rule".

It is interesting that the results from this study indicated a negative curvilinear relationship between OSS 10 days or less and graduation with a regular diploma and a positive curvilinear relationship between OSS 10 days or less and dropout. This suggests that there is something different about states that implement this specific suspension technique infrequently or a lot as compared to states that use this moderate amounts. In

other words, there may be a confounding variable that is affecting the results. As alluded to in the prior paragraph, it is possible that states that are using the practice of OSS 10 days or less a moderate amount are implementing this technique along with other behavioral supports whereas states that are using this suspension technique infrequently tend to rely solely on this technique to remediate behavioral concerns.

The results from this study did not provide support that there was a significant relationship between the three remaining suspension techniques (ISS 10 days or less, ISS more than 10 days, OSS more than 10 days) and the criterion variables. It is possible that there was not enough power to detect further relationships as the sample size of the study and the proportions of the variables were low.

Research Question Two

Question. Research question two investigated how much each predictor variable contributed to the criterion variables. It was hypothesized that the relationship would be the strongest between OSS more than 10 days and each of criterion variables.

Hypotheses. This was predicted as this disciplinary practice may be construed as the harshest out of the predictors since students are removed from the classroom the most with this technique.

Results. When looking at graduation with a regular diploma and certificate, results indicate that OSS more than 10 days was not the strongest predictor variable that contributed to the prediction of the criterion variable, rather OSS 10 days or less squared was the strongest and only predictor variable that significantly contributed to the prediction of graduation with a regular diploma and certificate. The contribution of this

variable was moderately strong as the part correlation was -.52. The other predictor variables were not statistically significant and each of them contributed very little to the prediction of the criterion variable. Although one of the relationships was significant, none of the regression coefficients were significantly different from each other, thus the null hypothesis was not rejected.

When looking at dropout, results indicate that OSS more than 10 days was not the strongest predictor variable that contributed to the prediction of students that dropout, rather OSS 10 days or less squared was the strongest and only predictor variable that significantly contributed to the prediction of the criterion variable. The contribution of this variable was moderately strong as the part correlation was .31. Although not significant, the part correlation for ISS more than 10 days was moderately strong at -.26. OSS 10 days or less centered, OSS more than 10 days, and ISS 10 days or less contributed very little to the prediction of the criterion variable as their part correlations were .12, .12, and .10 respectively. Although one of the relationships was significant, none of the regression coefficients were significantly different from each other, thus the null hypothesis was not rejected.

Explanation. It was thought that the strongest relationships would be between the criterion variables and the exclusionary practice of OSS more than 10 days as this specific suspension technique is the most restrictive and removes students from the school setting the most. The results of this study suggest that restricting access to the education setting is not the most powerful determinant in states' graduation and dropout rates. It is also plausible that the relationship between the criterion variables and OSS

more than 10 days was not the strongest because the frequency with which this technique was used was low, so there was not much variability present.

Research Question Three

Question. Research question three investigated whether there were any factors that moderated the relationship between suspension (OSS 10 days or less, OSS more than 10 days, ISS 10 days or less, and ISS more than 10 days) and educational outcomes (graduated with a regular diploma and certificate, dropout) of students. Specifically, the current investigation examined whether gender (male, female), race (Black, White), and disability type (Emotional Disturbance, Specific Learning Disability) moderated the relationship.

Hypotheses. The present study anticipated that gender, race, and disability type would moderate the relationship between suspension and educational outcomes. The author predicted this because previous research found evidence that gender and race along with other variables moderated the relationship between suspension and educational outcomes in students without disabilities (Noltemeyer et al., 2015). It was hypothesized that the relationship between suspension (OSS 10 days or less, OSS more than 10 days, ISS 10 days or less, and ISS more than 10 days) and the educational outcomes (graduated with a regular diploma and certificate, dropout) would be stronger in males than females, stronger for Black students than for White students, and stronger for students with an Emotional Disturbance than students with a Specific Learning Disability.

Results. When looking at gender, the results indicated that the linear combination of the predictor and criterion variables did not explain a significant portion of the variability in males or females. In addition, the regression coefficients were similar. When looking at the individual relationships between each variable where gender was the moderator, there was a significant relationship between OSS 10 days or less squared and graduation with a regular diploma and certificate for males and females. The regression coefficients in this relationship were slightly higher with males than they were for females, but this relationship was not significant. This suggests that there is a predictive relationship between OSS 10 days or less and graduation with a regular diploma and certificate, but gender does not moderate this relationship. The research hypotheses was not supported since the regression coefficients for the frequencies of exclusionary discipline removals predicting the proportion of students who graduate with a regular diploma and certificate and the proportion of students who dropout were not significantly stronger for males than females in each relationship examined.

When looking at race, the results indicated that the linear combination of the predictor variables and graduation with a regular diploma and certificate did not explain a significant portion of the variability in both Black and White students with a disability. When looking at the individual relationships between each variable, there was a significant relationship between OSS 10 days or less squared and graduation with a regular diploma and certificate for both Black and White students. The regression coefficients were slightly higher with White students than they were for Black students, but this relationship was not significant. Overall, these results suggest that there is a

predictive relationship between OSS 10 days or less and graduation with a regular diploma and certificate, but race does not moderate this relationship. The linear combination of the predictor variables and dropout did explain a significant portion of the variability in both Black and White students with a disability. The regression coefficients were slightly higher with White students than they were for Black students, but this relationship was not significant. When looking at the individual relationships between each variable, all relationships were non-significant and all the squared part correlations were similar. Overall, these results suggest that there is a predictive relationship between suspension and dropout in both Black and White students with a disability, but race does not moderate this relationship. The research hypotheses was not supported since the regression coefficients for the frequencies of exclusionary discipline removals predicting the proportion of students who graduate with a regular diploma and certificate and dropout were not significantly stronger for Black students with a disability than for White students with a disability in each relationship examined.

When looking at disability type, results showed that the linear combination of the predictor and criterion variables did not explain a significant portion of the variability in students with an Emotional Disturbance, but it did in students with a Specific Learning Disability only with respect to dropout. While the regression coefficients were slightly higher with the latter group, the differences were not statistically significant. When looking at the individual relationships between each of the variables, there were no significant relationships and all squared part correlations were similar. Overall, these results suggest that disability type does not moderate the relationship between suspension

and graduation with a regular diploma and certificate and suspension and dropout. The research hypotheses were rejected since the regression coefficients for the frequencies of exclusionary discipline removals predicting the proportion of students who graduate with a regular diploma and certificate and dropout were not significantly stronger for students with an Emotional Disturbance than for students with a Specific Learning Disability in each of the examined relationships.

Explanation. Overall, the results from this study do not show evidence that gender, race, and disability type moderated the relationship between suspension and educational outcomes in students with disabilities. One reason for these findings could be that the results of this study are based off of data aggregated at the state level. Analyses of aggregated data can detect broad trends and patterns, but it may not be sensitive enough to pick up on underlying trends that may impact the relationship between suspension and educational outcomes. In addition, the sample size of this study was small due to the use of state level data and the proportions that were examined were relatively low. These factors reduced the power and limited the ability to detect underlying relationships.

Implications

Based on the surprising results from this study, policies and practices at the federal, state, and local levels may need to be reexamined. Prior research supporting the negative implications of suspension in students without disabilities have resulted in the development of policies and procedures aimed at limiting the use of suspension in schools and encouraging the use of alternative evidence-based practices to increase

educational outcomes. The results from this study provide a piece of evidence that indicates that moderate use of suspension may result in positive educational outcomes and perhaps the current policies and practices don't align with what serves this population the best. It is possible that some use of suspension benefits the students with disabilities that are left behind in the classroom after the unruly students are removed.

Additionally, disproportionate uses of suspension across various populations have resulted in the development of policies that mandate schools to collect data on their suspension practices each year. States monitor this data and penalize schools for disproportionate application of this practice. One notion behind the development of this policy is that students that are suspended do not have the same access to instructional opportunities as their peers who are not being suspended and thus they may fall behind academically. The results from this study show that states use of suspension practices with students with disabilities may lead to increases in educational success and may not prevent inequitable access to instruction like we thought. Since the outcomes of suspension may differ across student populations, it is worth examining whether policies need to be rewritten so that schools are not penalized for using a higher level of suspension practices with a population that benefits from it.

Generalization

The generalization of the results from this study may be widespread as the population represents the relationship between suspension practices and achievement in students with disabilities across every state in the U.S. Furthermore, the data provided at the state level is derived from all public school entities that service students with

disabilities. Many studies are only able to examine a small subset of a population, but the results from the current study may in fact be a snapshot of the relationship between suspension and achievement in almost all students with disabilities across the U.S. at the time it was studied.

Limitations

There are several limitations to the current investigation. First, the data utilized came from an existent data set. The degree to which the data were collected and recorded with fidelity is unknown; however, the Office of Special Education Programs (OSEP) reviews the data for quality assurance. The OSEP has several checks in place to help identify any issues with the quality of the data that were collected and reported. In addition, the OSEP compares the data from year-to-year in each state in order to determine if there have been large fluctuations. If issues are noted, the OSEP requests each state to review and explain the concerns before the data is made available to the public. There are times when the data that is made available to the public may need to be suppressed due to data quality control issues.

Another limitation is that the data utilized in the current study were aggregated at the state level. Whereas aggregated data can give good information about broad trends and patterns, there are limitations to the scope of what can be drawn from the data. Aggregated data may not be sensitive enough to pick up on the underlying problems that may impact the relationship between suspension and educational success in students with disabilities. In addition, what is true at the group level might not be true for individual students.

Conclusions about the relationship between suspension and achievement were based off of cross-sectional data, which is data that comes from different populations at a single point in time. The research questions in the current study were investigated by using data from three separate files, which were merged and then analyzed. Specifically, the current study used data from the *2013-2014 Discipline*, *2013-2014 Exiting*, and *2014 Child Count and Educational Environment* CSV files accessed from the IDEA Data Center website. The data from the *2013-2014 Discipline* file included frequency counts at the state level of disciplinary incidents from children with disabilities from ages 3 through 21. The *2013-2014 Exiting* file provided exiting information based on students with disabilities ages 14 through 21 aggregated at the state level. The current study examined the relationship between the data from these two files, which were not based on the exact same population of students. The *2014 Child Count and Educational Environment* provided a categorical breakdown on the number of students ages 3 through 21 with disabilities in 2014 to 2015. Data from this file were used to account for difference in population sizes across states. Therefore, the inferences drawn from the current study were based off of multiple populations, which could limit the validity of the results due to the problems with subject interference. In other words, it is important to keep in mind that the conclusions drawn about the relationship between suspension and achievement is not based on a cause-and-effect relationship. However, the results from this study may be stable as aggregated data was used.

Finally, the assumption violations of multiple regression on some of the relationships are potentially limiting. The current study used a multiple linear regression

analysis in order to answer the three research questions posed. This type of statistical analysis was chosen for several reasons. First, a regression analysis was used as this study was not an experiment and rather examined the predictive relationship between two existing variables. The dependent variables in the study were predicted from a set of multiple predictor variables and both the criterion and predictor variables were continuous in nature. In addition, it was predicted that the data met the assumptions of linearity, independence, normality, and homoscedasticity. Data analyses, though, revealed that some of the assumptions appeared to be violated in some of the examined relationships. It is possible that the statistical tests that were used may not be the best analyses; however, the present investigation accounted and adjusted for each violation, which is detailed in the results section of this paper. Therefore, it was determined that multiple linear regression was still the appropriate statistical analysis for the nature of the data.

Due to the assumption violations, it is plausible that another data analysis technique would have been more appropriate such as gamma regression. Gamma regression is an alternative statistical analysis that can be used with continuous variables when the distribution of the data is skewed. It was determined that this technique was not necessary since analysis of the residual values rather than just the raw score distributions indicated that the departures were small and trivial. In other words, the observed cumulative probability matched the expected cumulative probability well. After the original study was conducted, the author of the current study did go back and explore whether the results varied if the gamma regression analysis was used. No significant

differences in the results were noted, so it was determined that the analysis originally used to explore the data was indeed appropriate.

Future Research

The current study provides a starting point to the examination of how suspension may affect students with disabilities. Future research should replicate this study by using district or individual level data to see if the results are similar and whether other relationships are discovered. Researchers may want to consider designing a longitudinal study that examines the relationship between suspension and educational outcomes in students with disabilities. Finally, additional research is needed on other variables that may moderate the relationship between suspension and educational success in students with disabilities, such as examining other types of educational disabilities and races as well as to the level that schools use other intervention techniques such as positive behavior supports to remediate behavioral problems.

Conclusion

Equitable access to educational opportunities is a fundamental belief that is rooted in the U.S. Constitution and in the federal laws designed to protect the rights of students with disabilities. The notion that suspension prevents students with disabilities from having access to a quality education is flawed. The results of this study challenge the ideas that we have about suspension practices and it's effects on students with disabilities. If our goal is to deliver equal access to education, then our current policies and practices surrounding suspension do not support our fundamental belief for students with disabilities. Perhaps it's time to reexamine the evidence supporting the policies and

practices that are currently in place regarding suspension practices with students with disabilities. This study is a step in moving towards a better understanding of the practices that benefit this unique population.

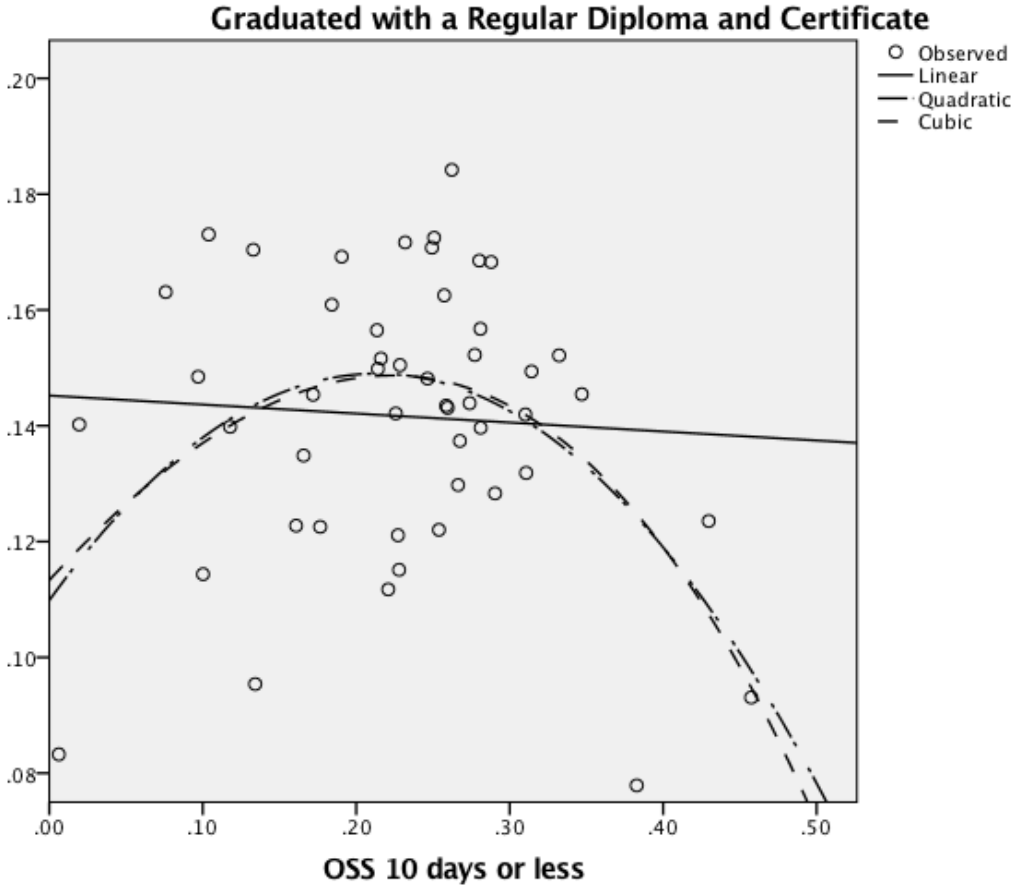
APPENDICES

APPENDIX A

RESEARCH QUESTION ONE: SCATTERPLOTS AND CURVE ESTIMATION GRAPHS

Appendix A

Research Question One: Scatterplots and Curve Estimation Graphs



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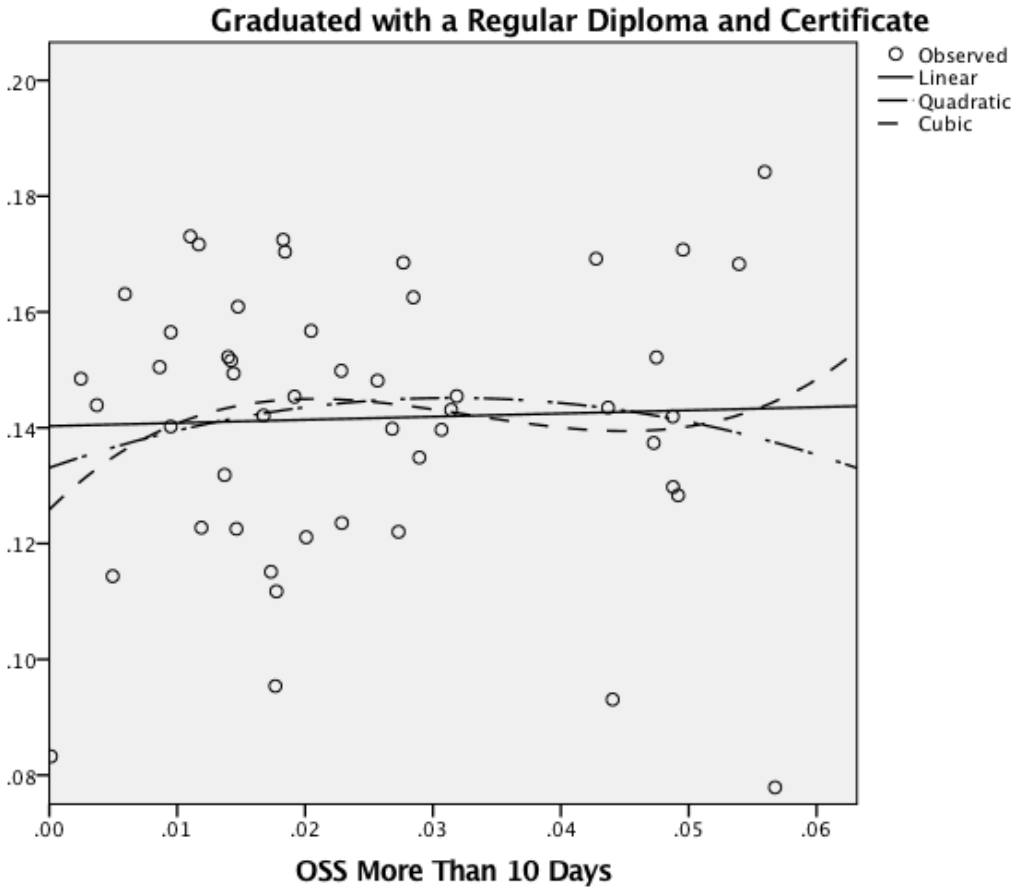

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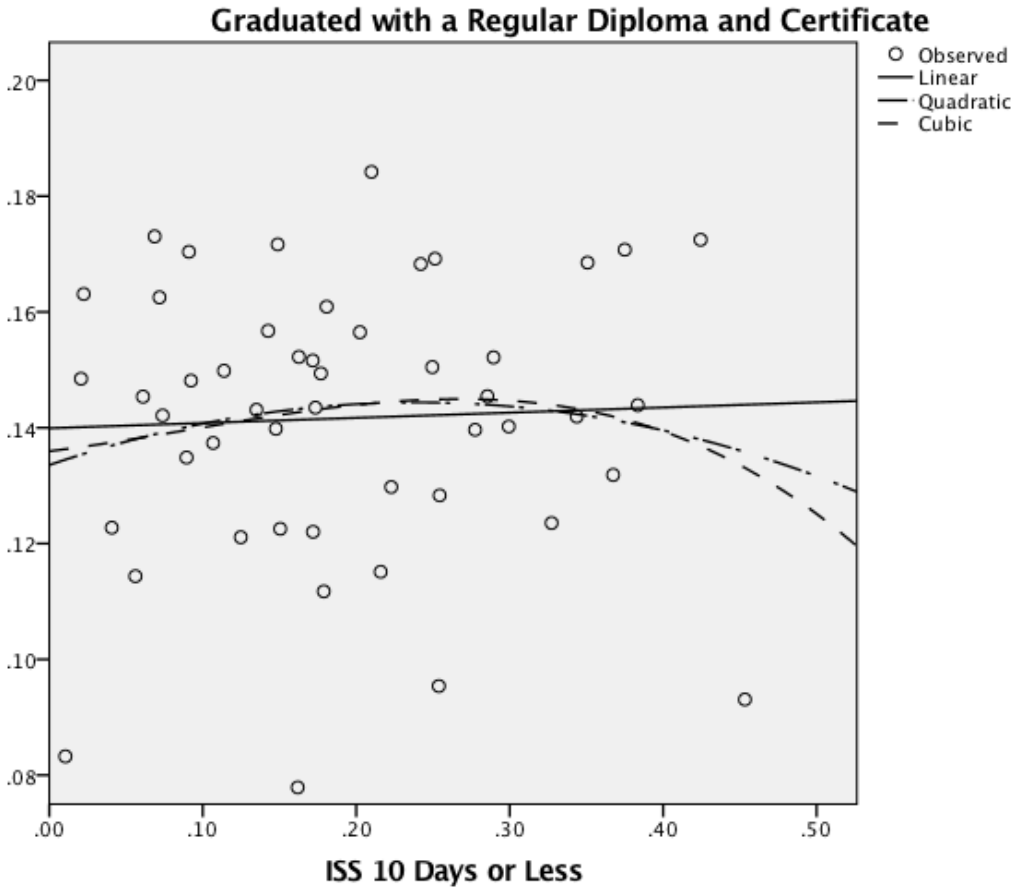

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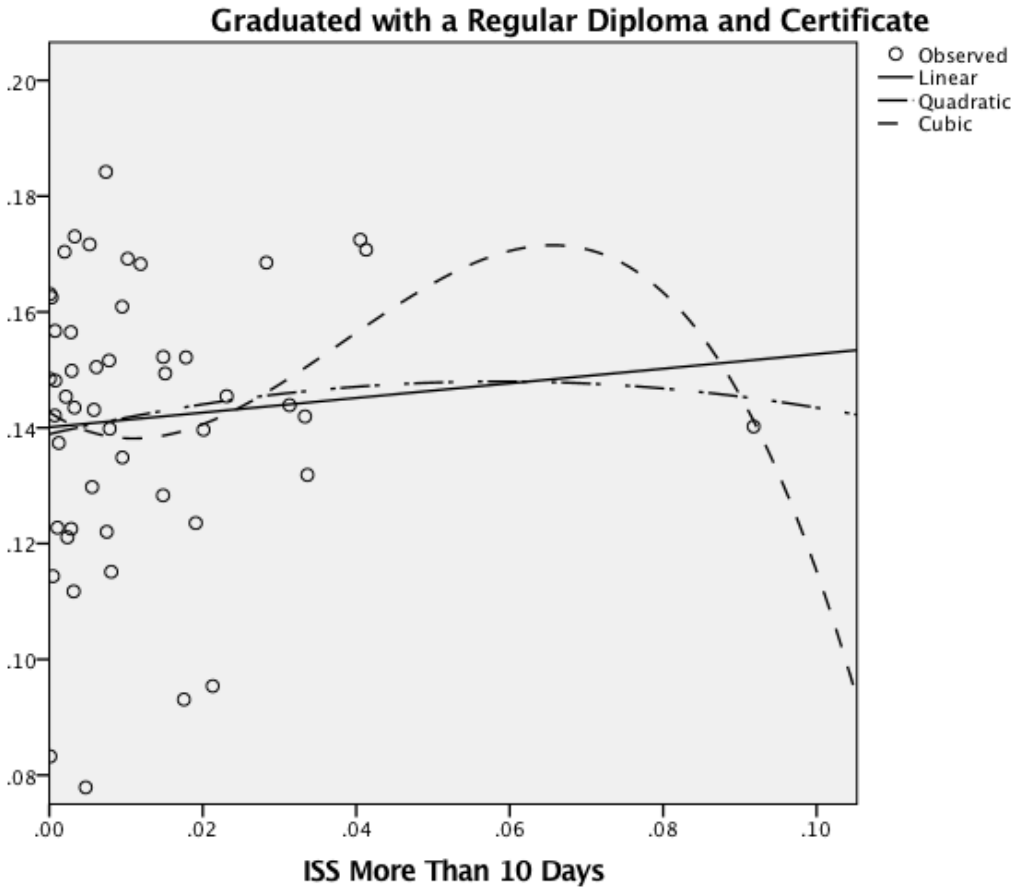

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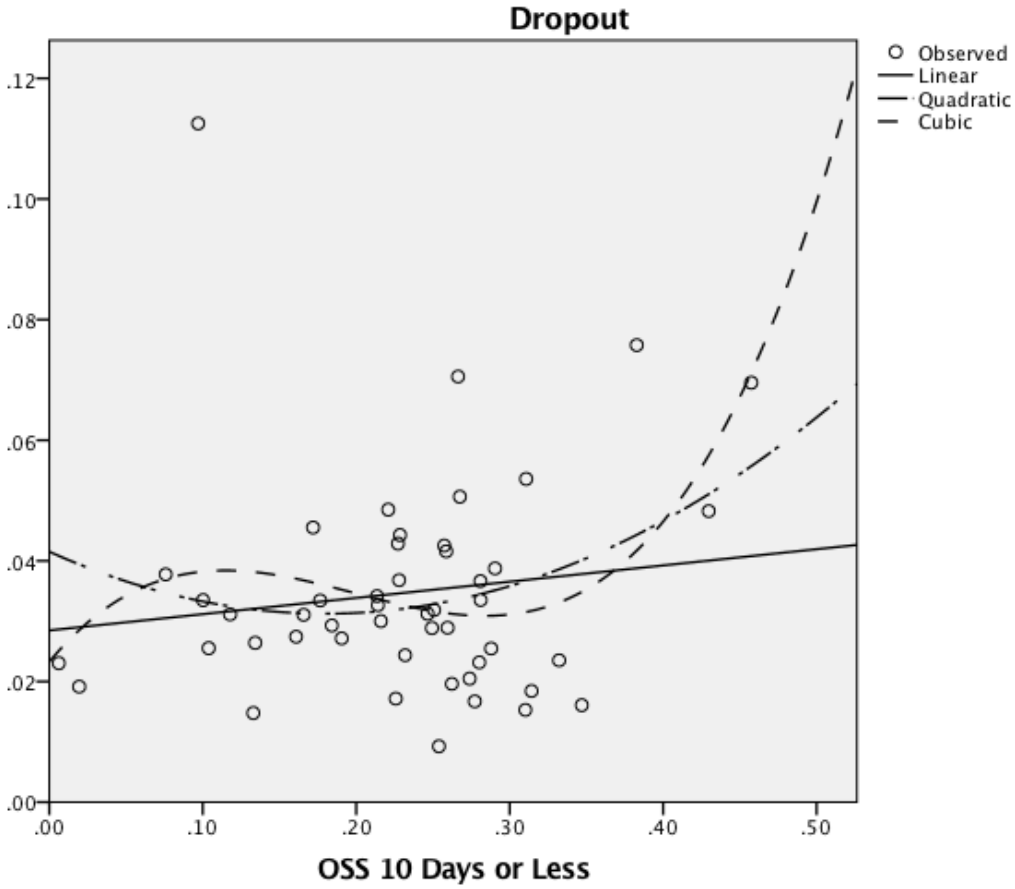

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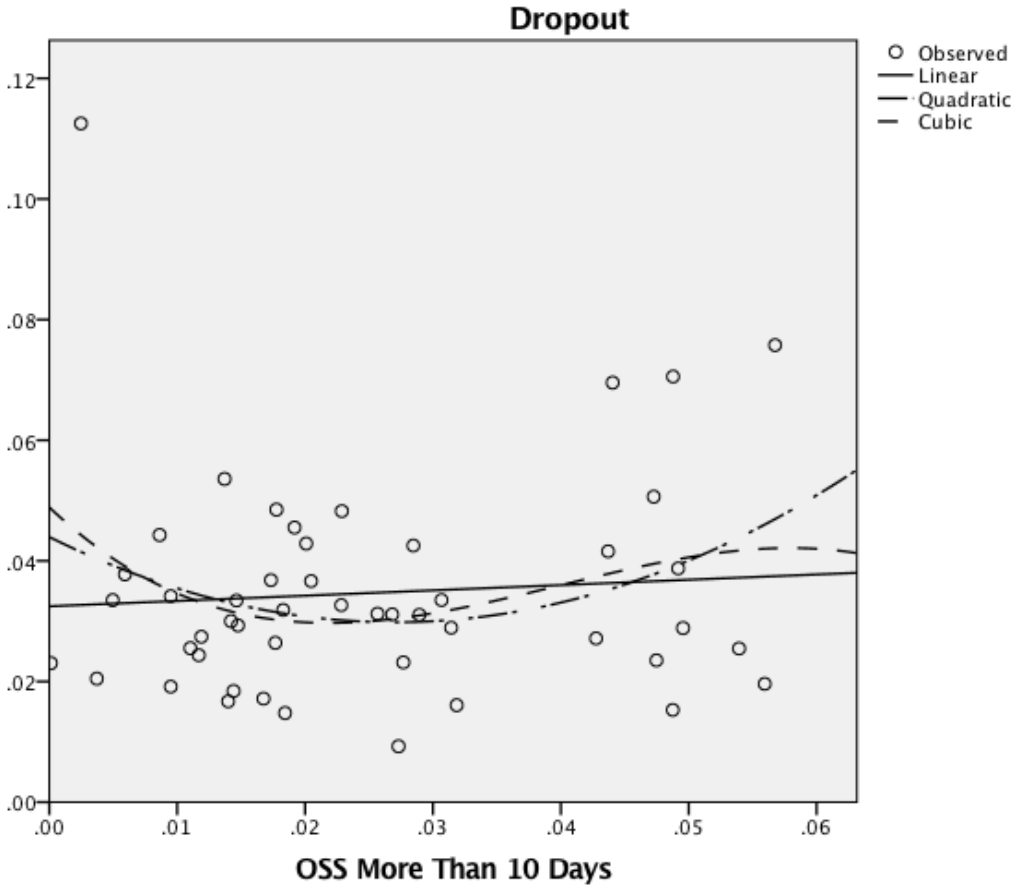

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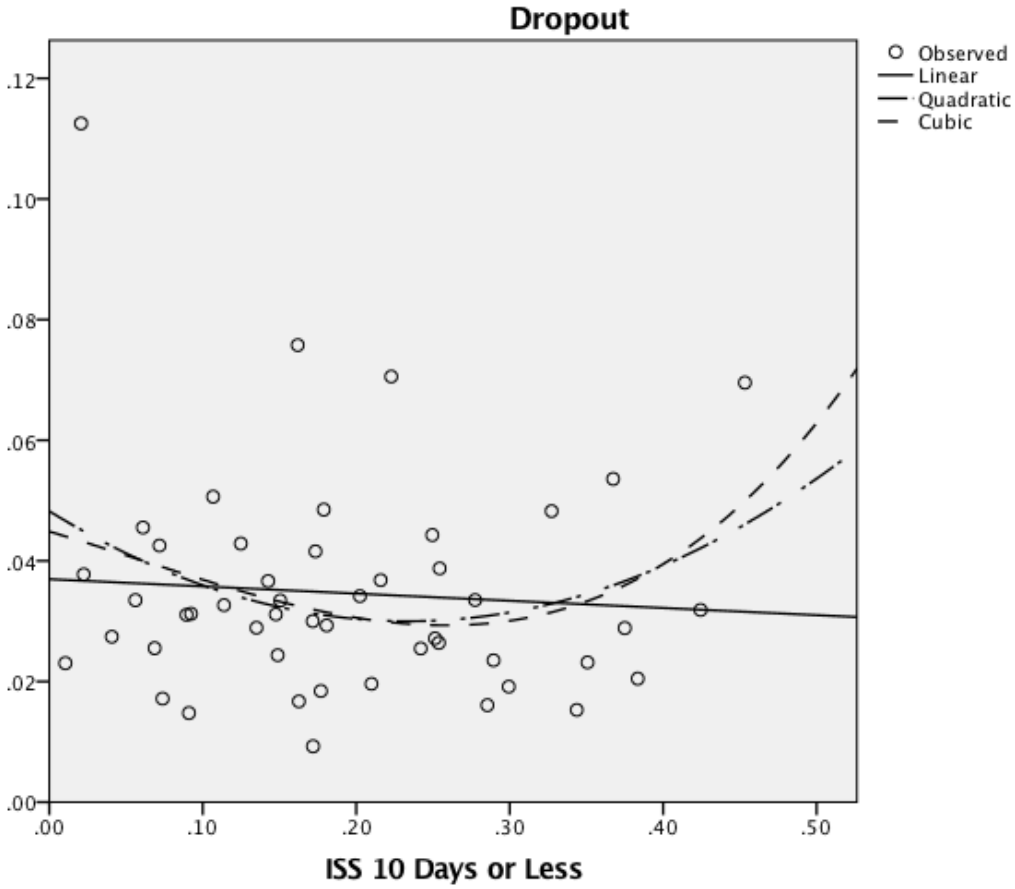

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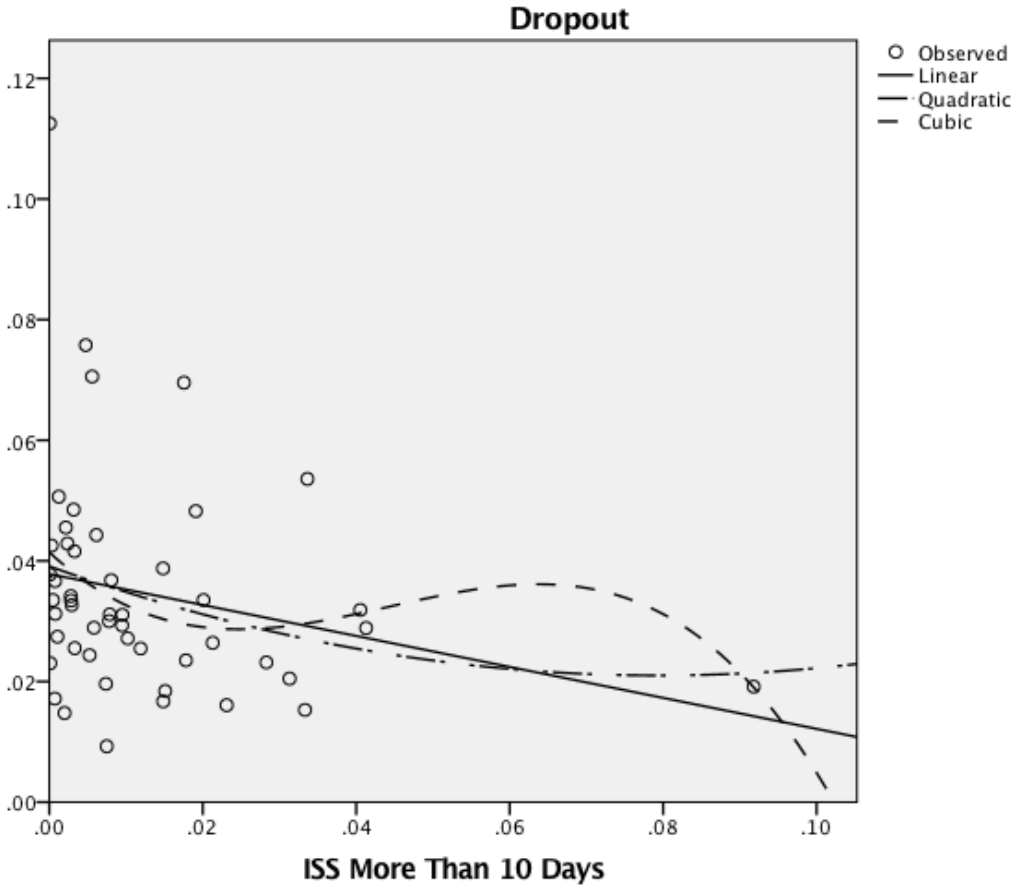


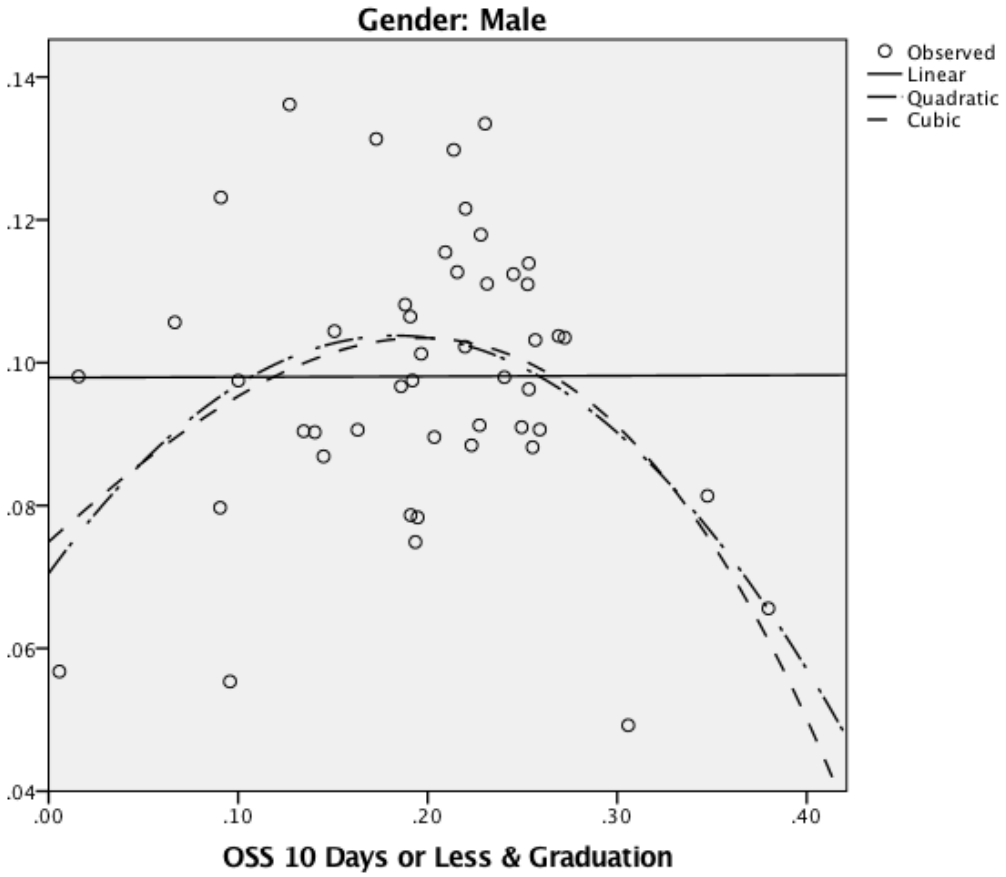
Scatterplot and curve estimation graph for students that have been suspended in-school for 10 days or more and dropped out of school.

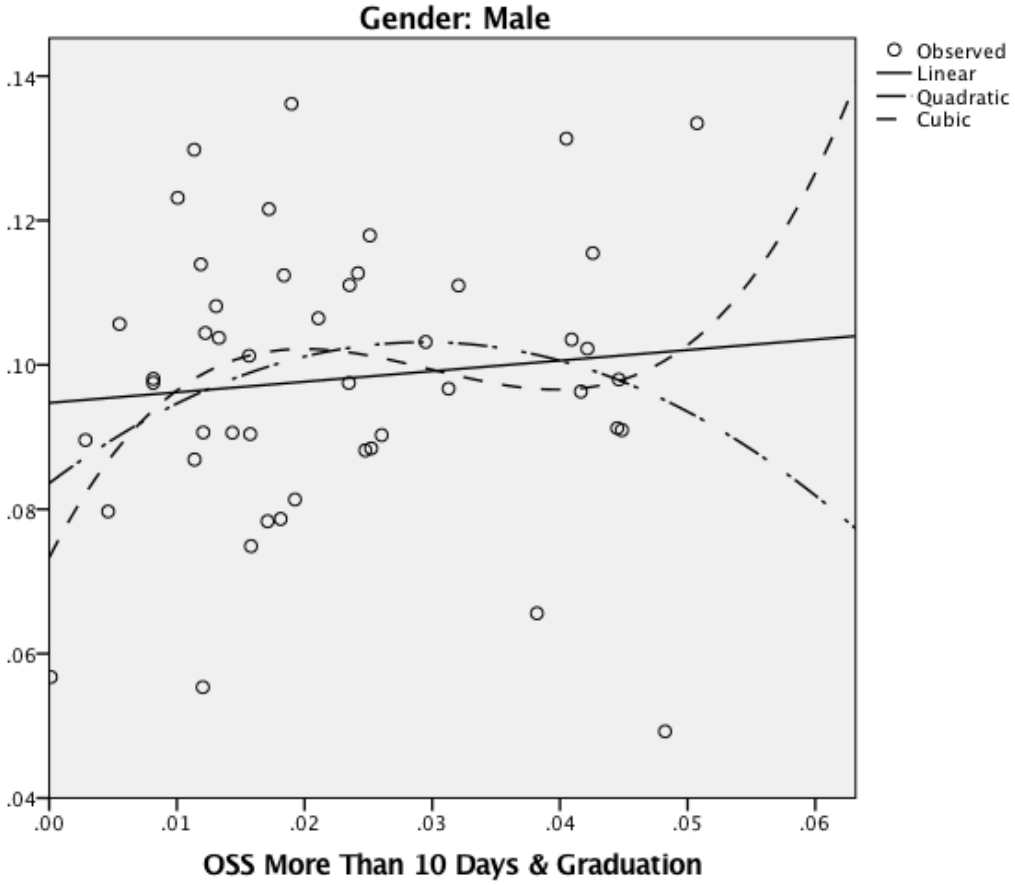
APPENDIX B

RESEARCH QUESTION THREE: SCATTERPLOTS AND CURVE ESTIMATION GRAPHS

Appendix B

Research Question Three: Scatterplots and Curve Estimation Graphs

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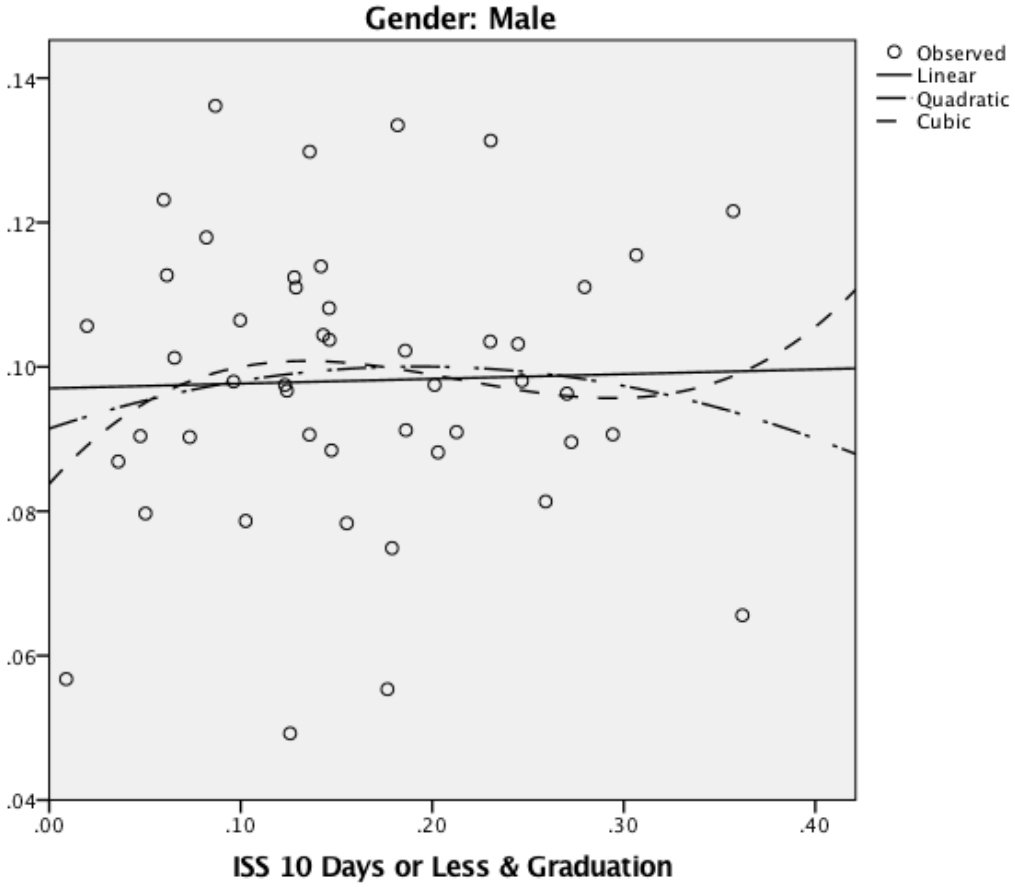
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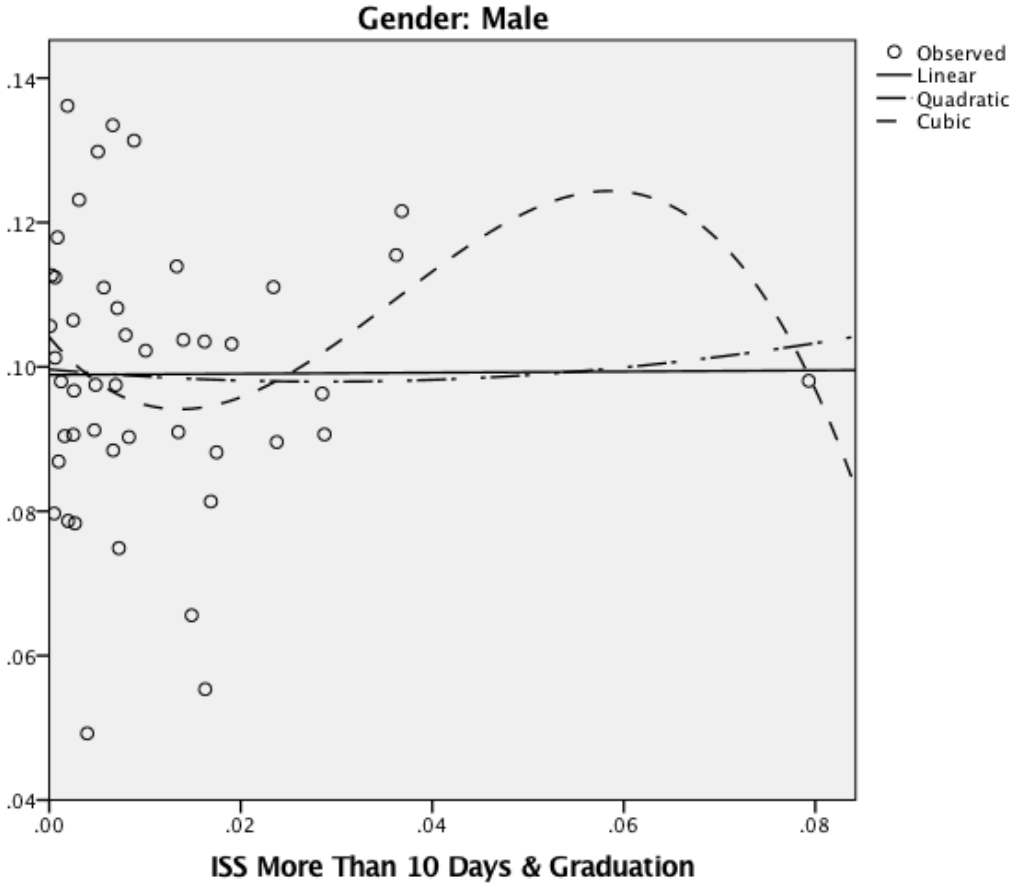
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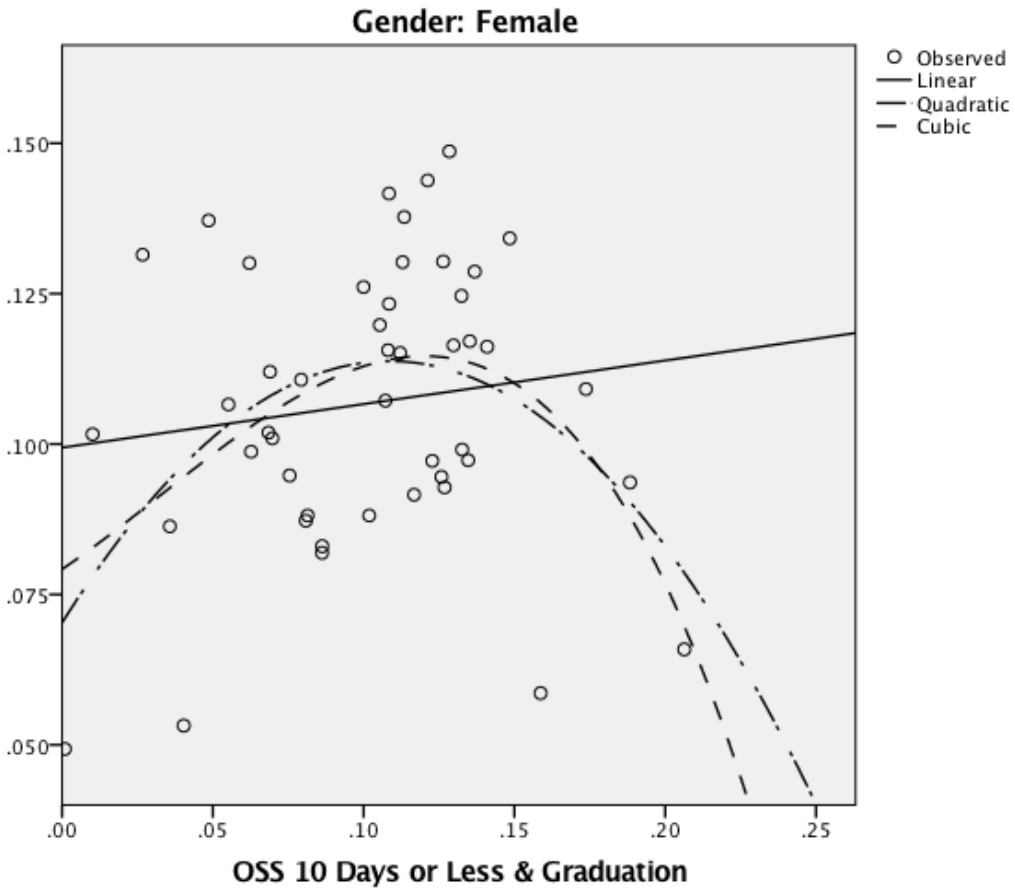
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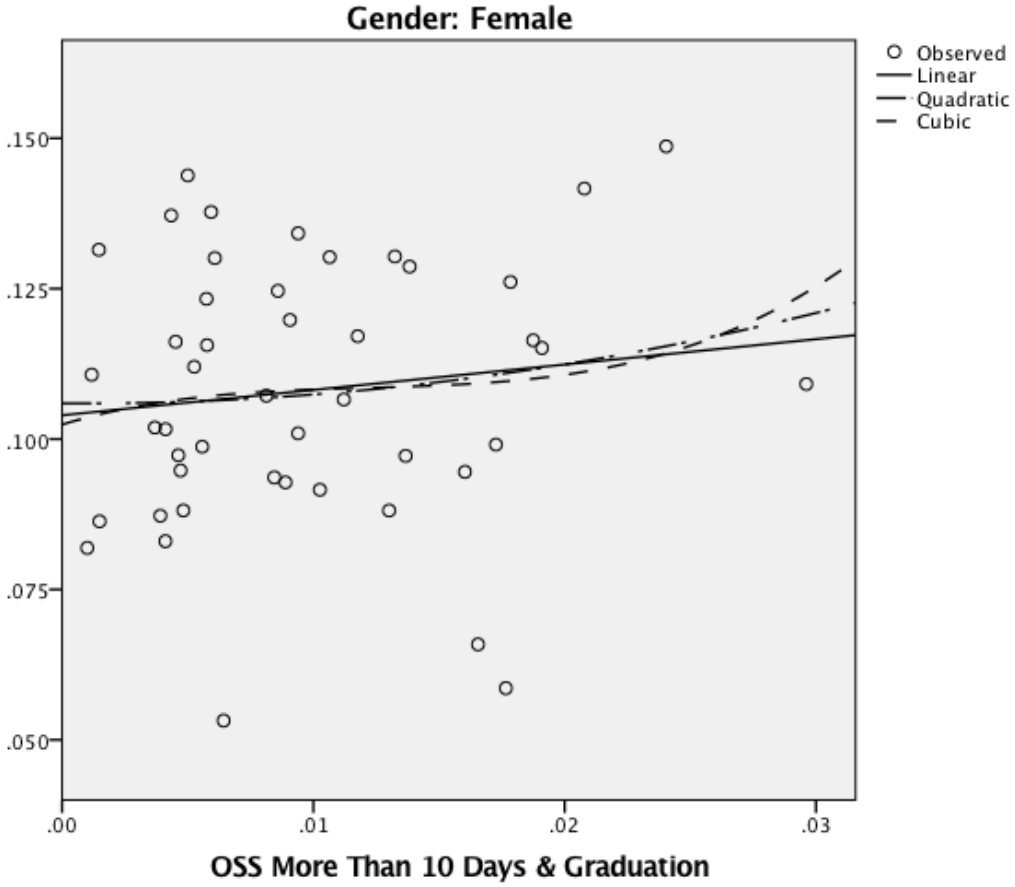
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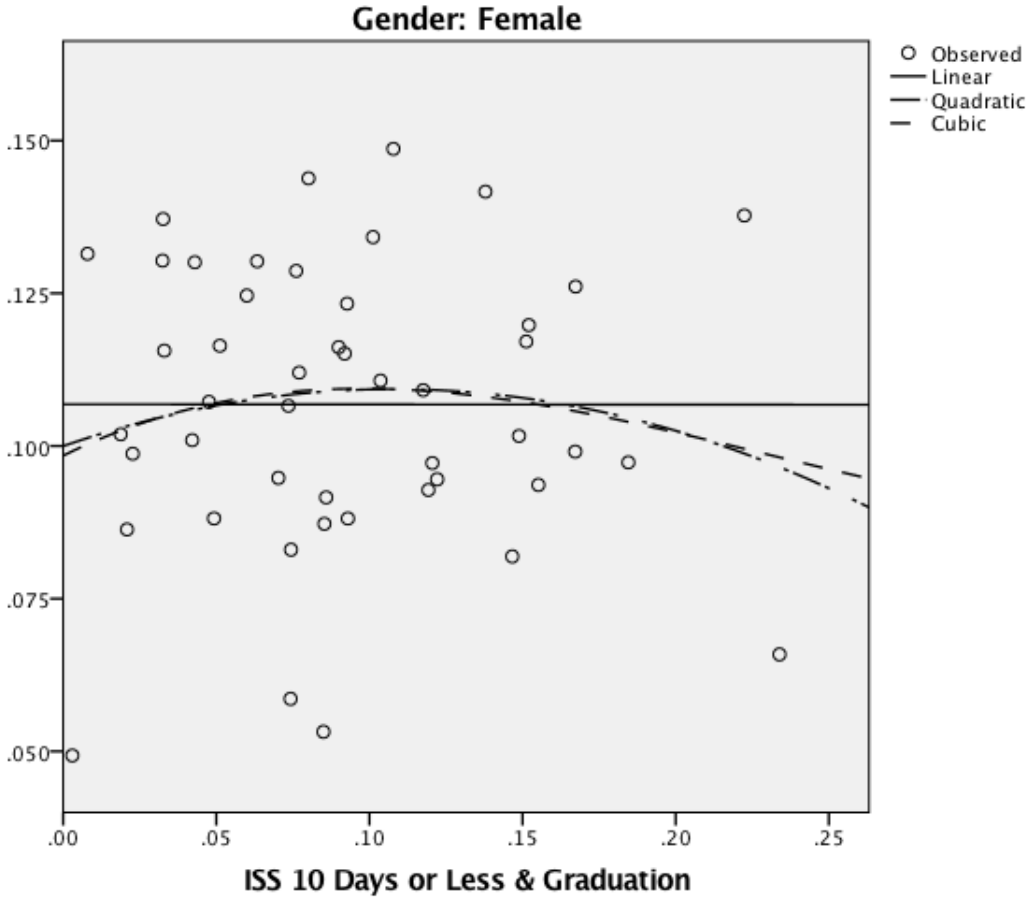
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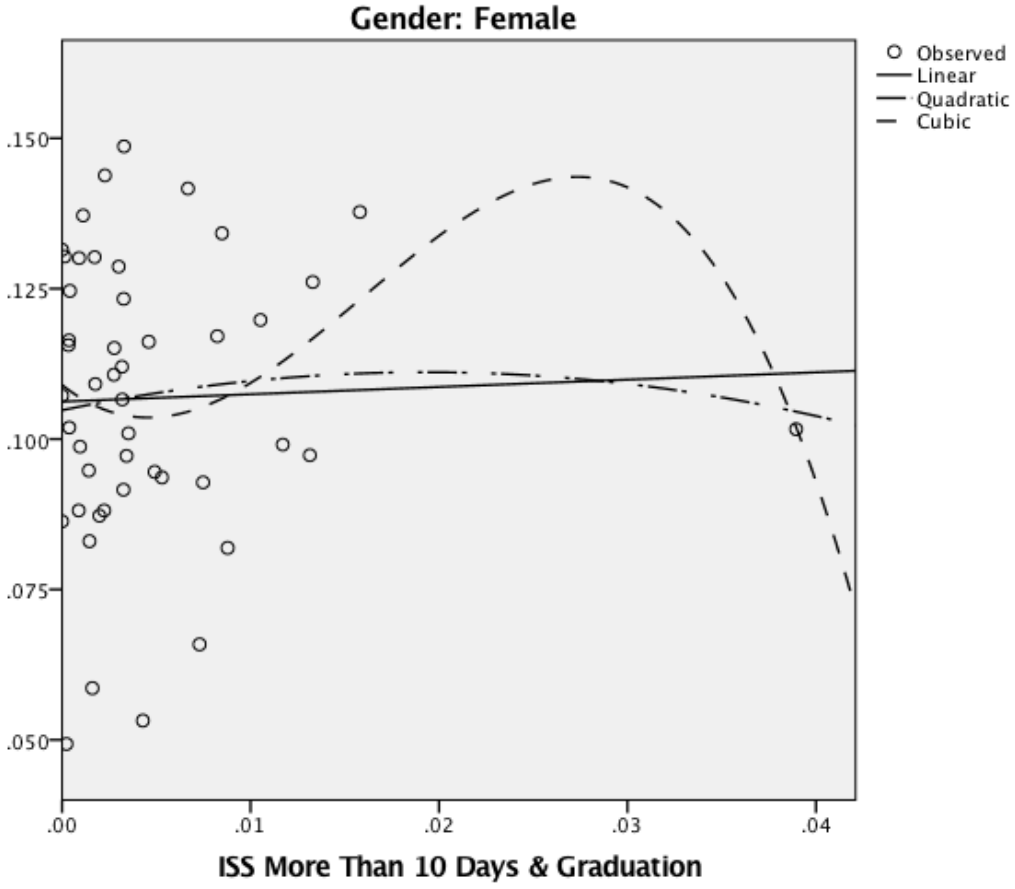
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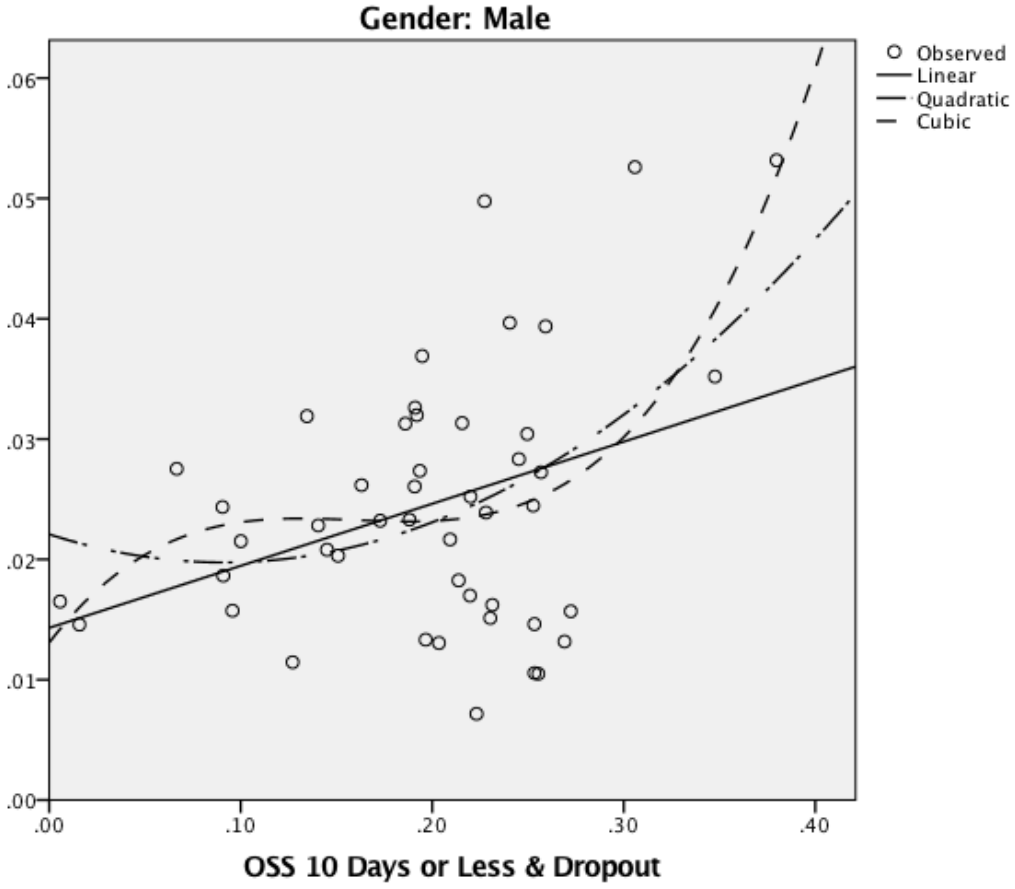
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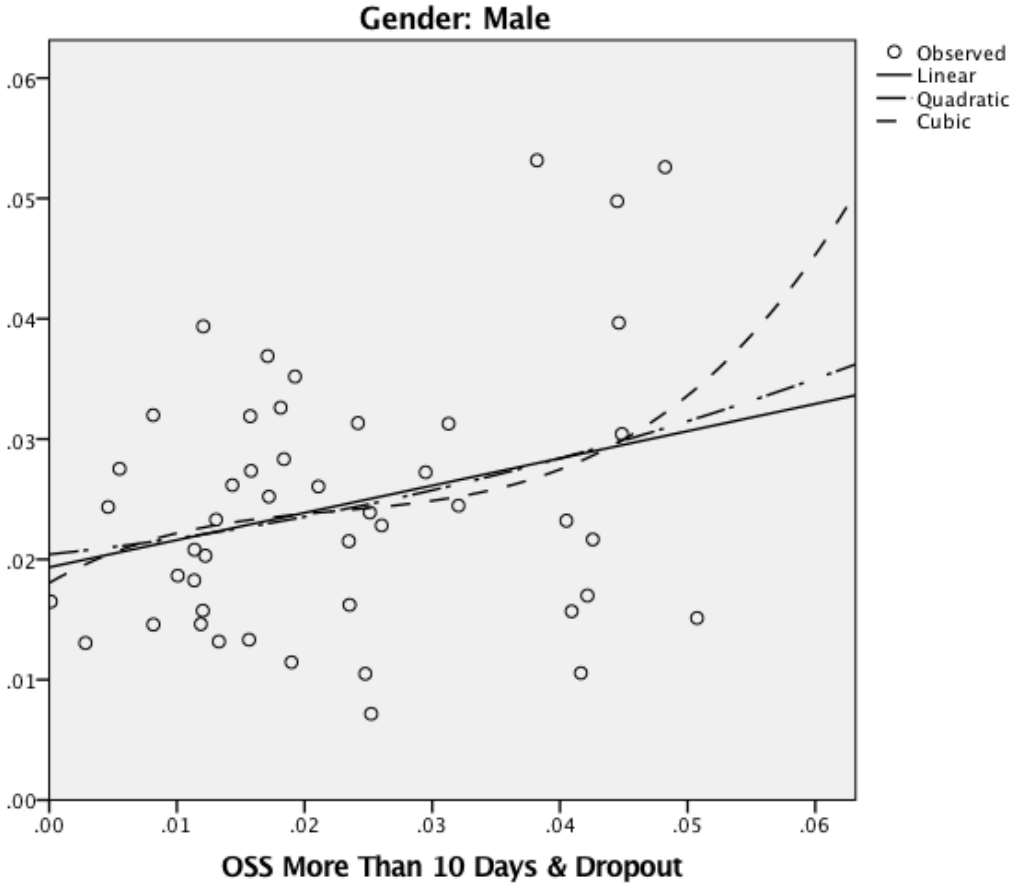
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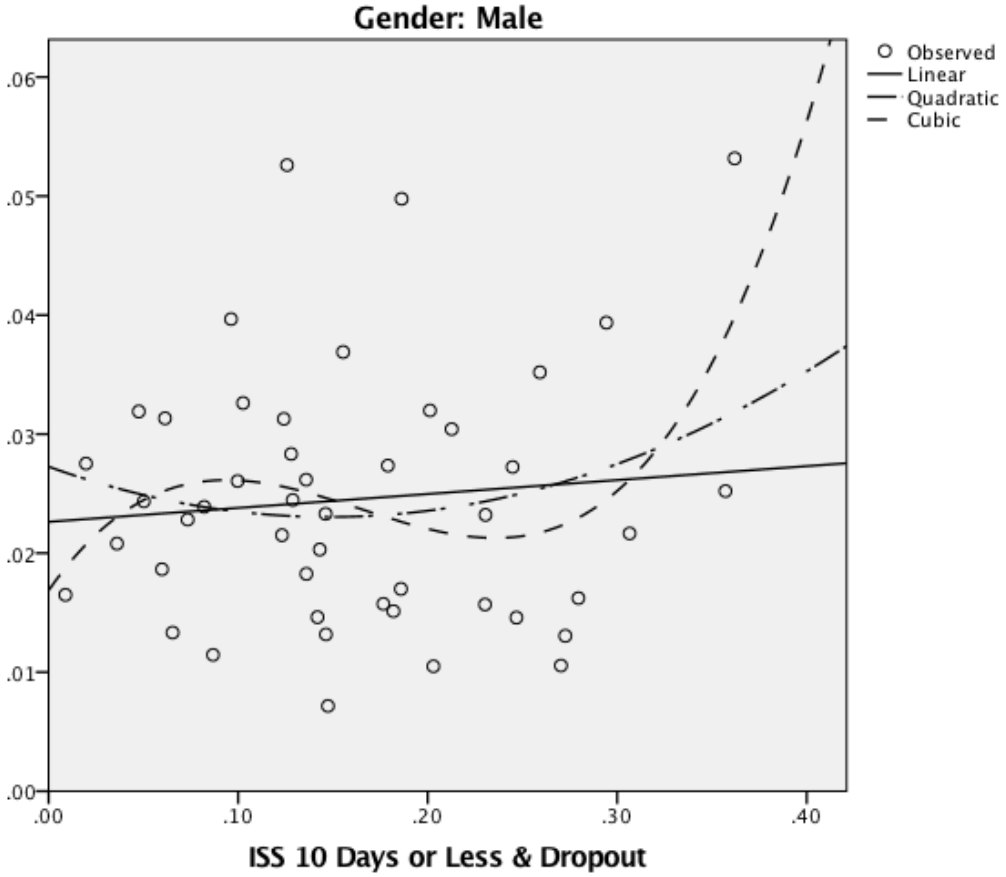
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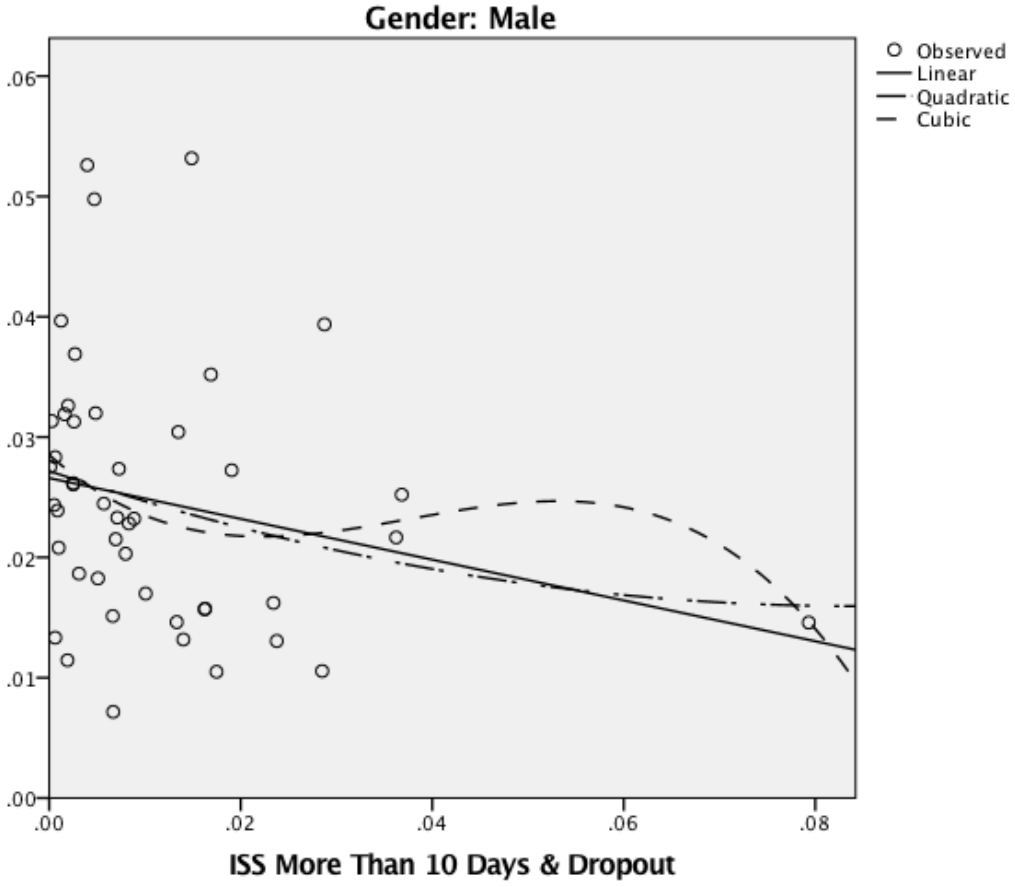
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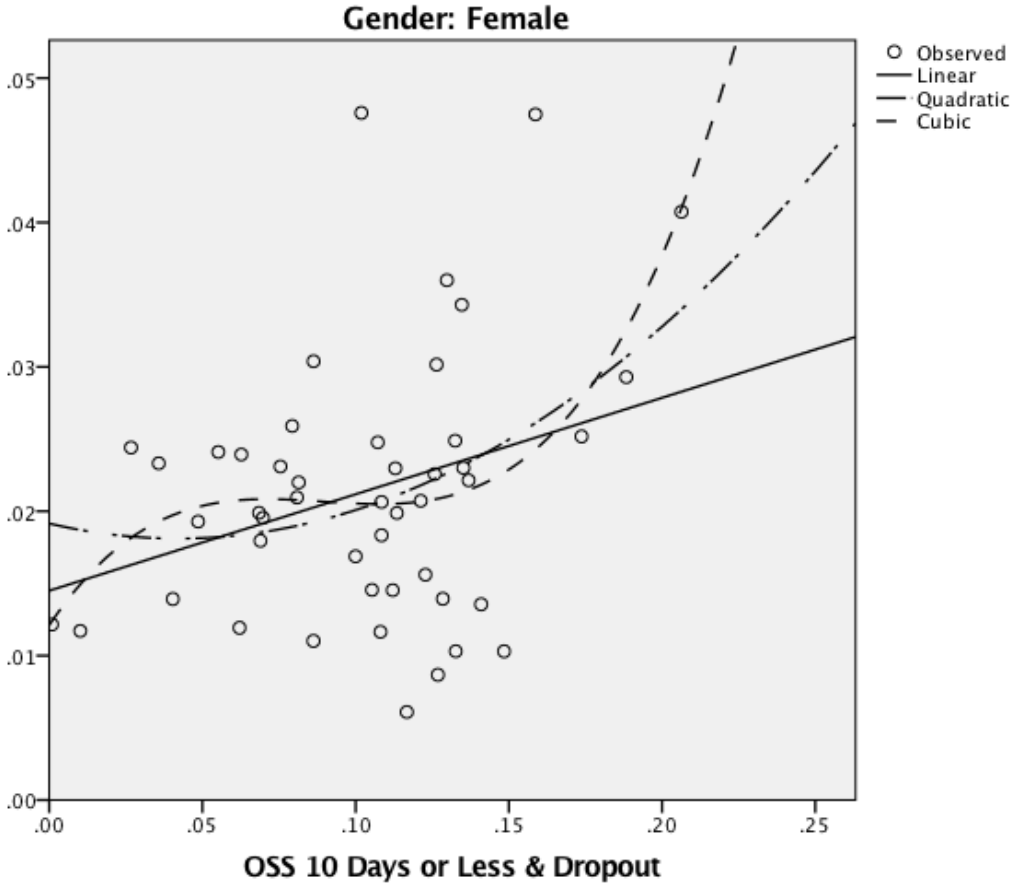
ISS More Than 10 Days & Dropout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Quadratic
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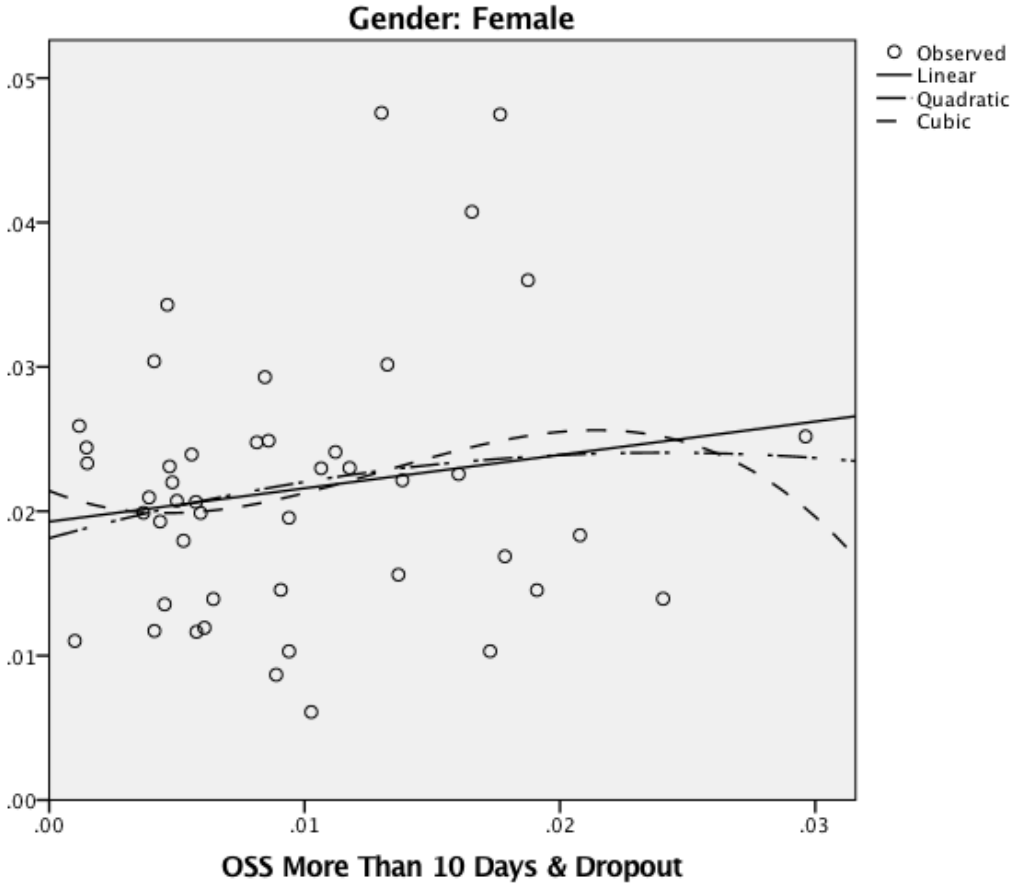
OSS 10 Days or Less & Dropout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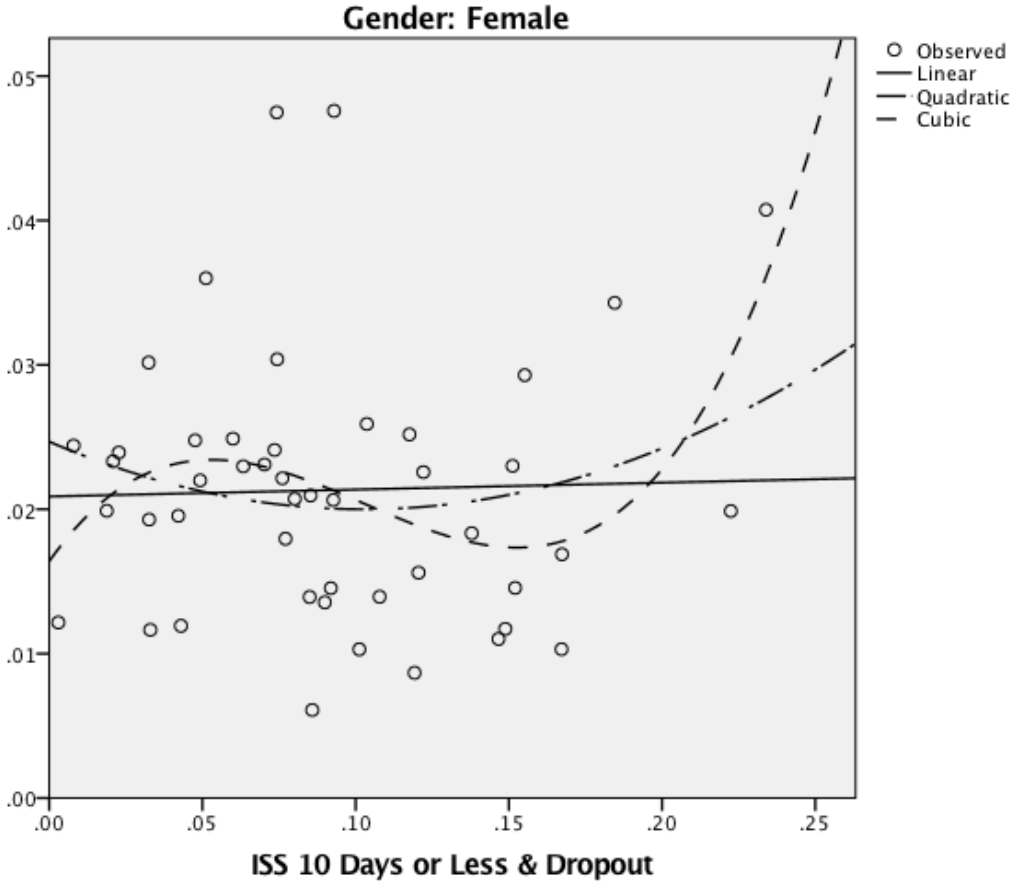
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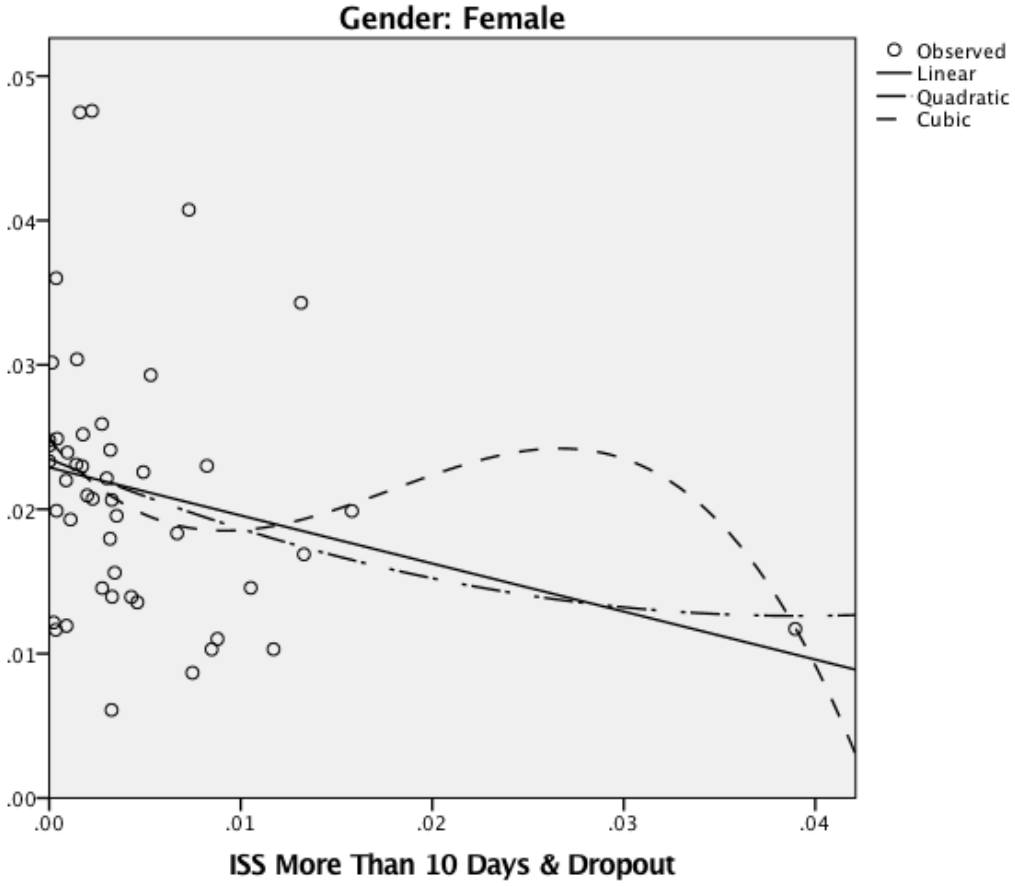
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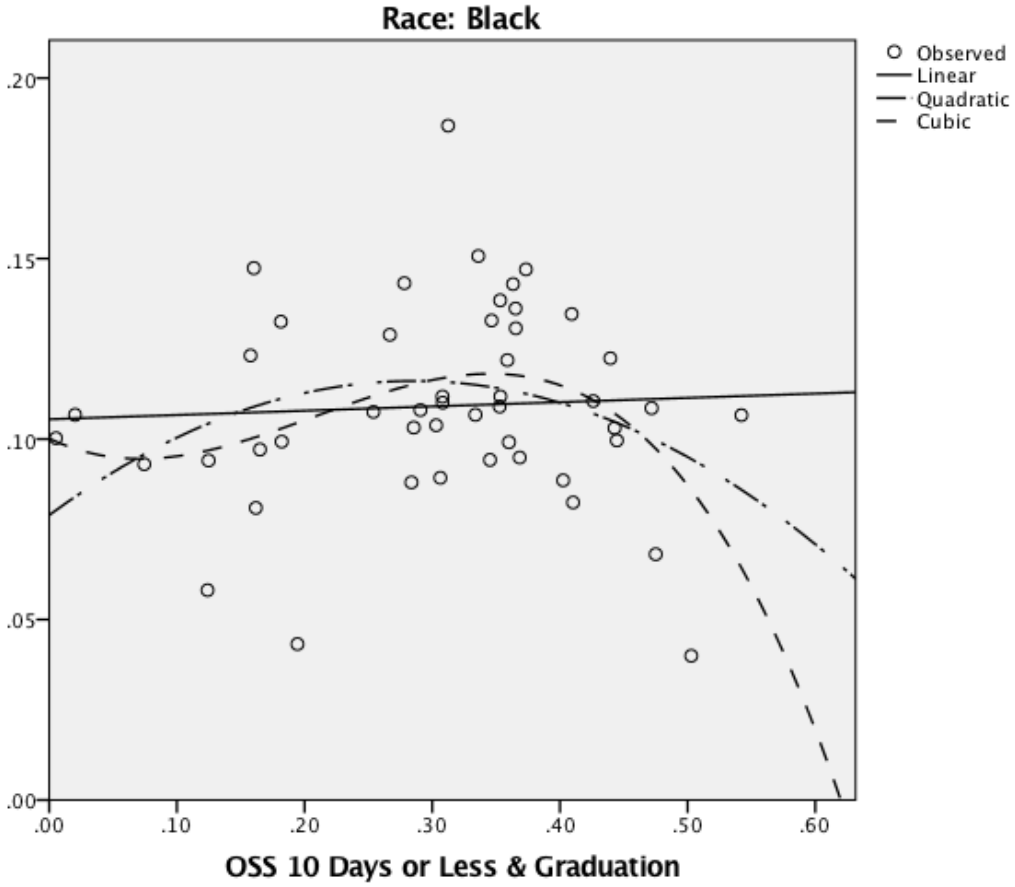
ISS More Than 10 Days & Dropout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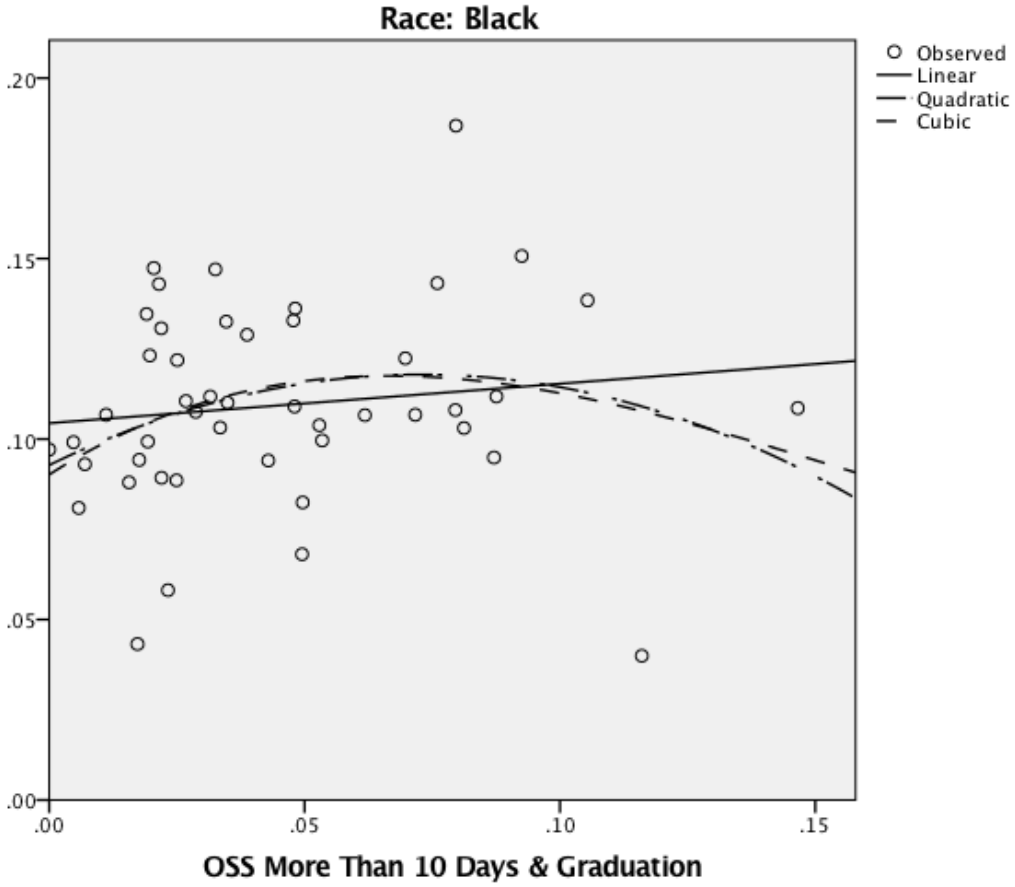
OSS 10 Days or Less & Graduation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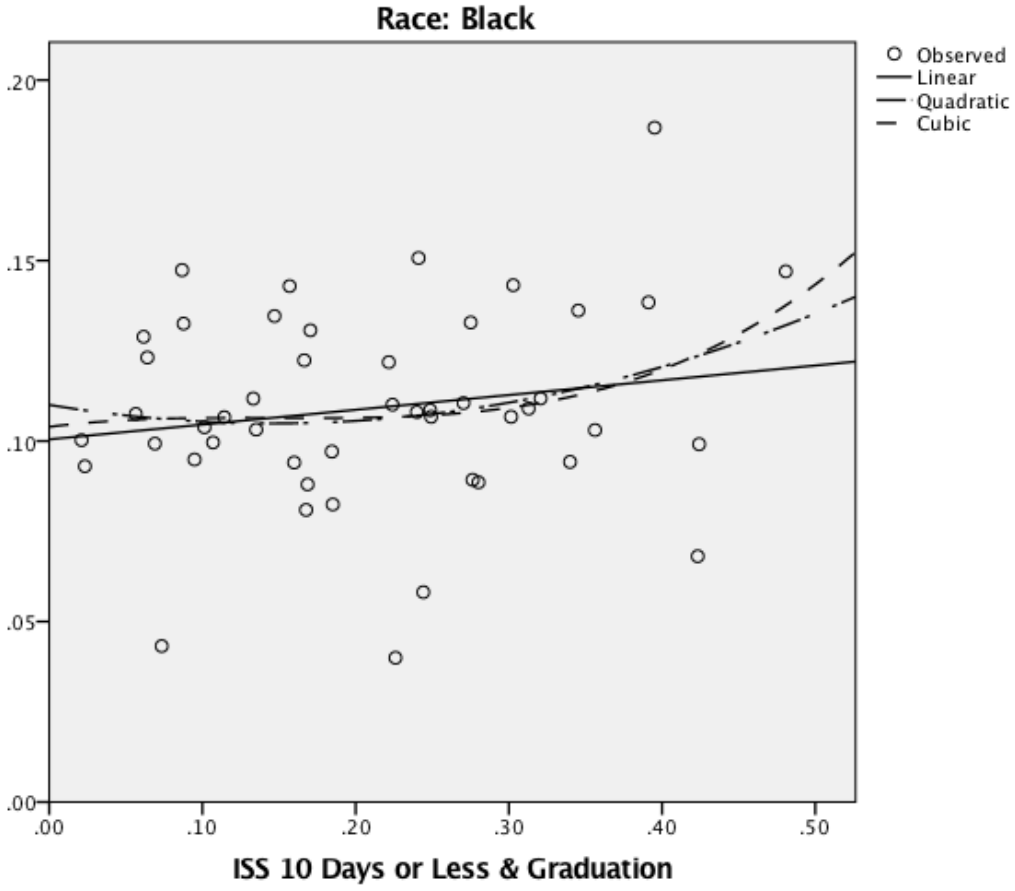
OSS More Than 10 Days & Graduation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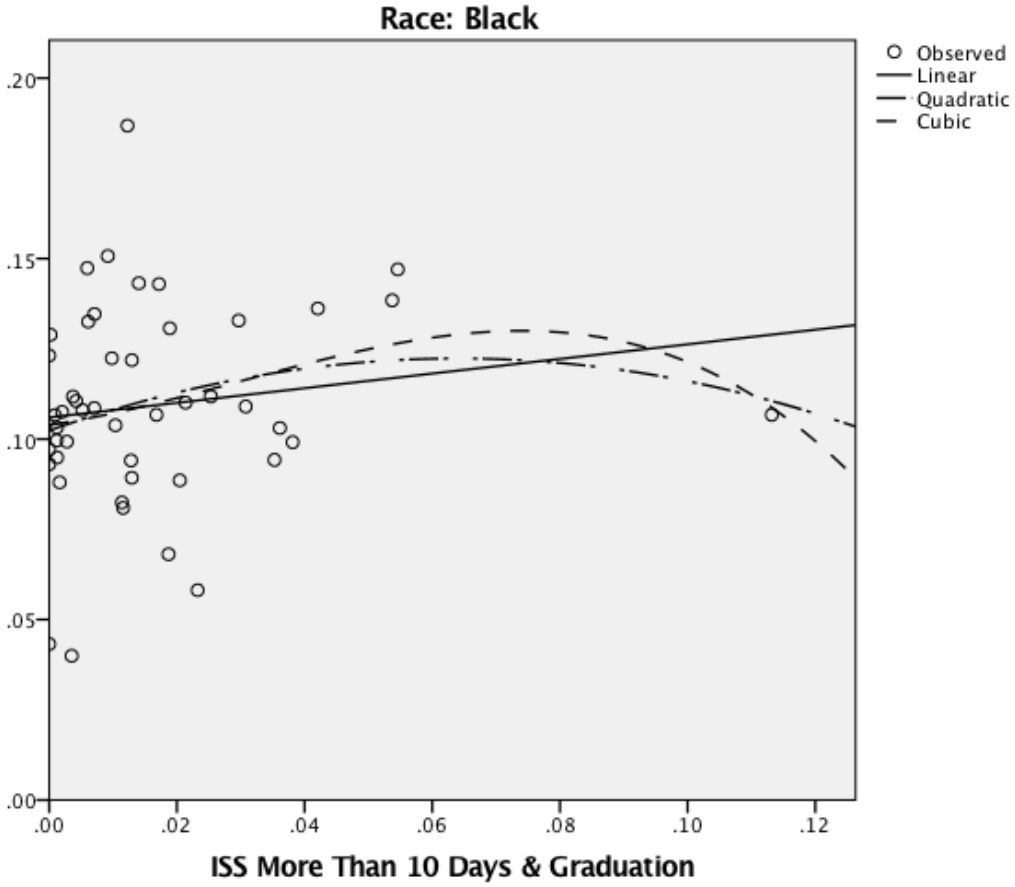
ISS 10 Days or Less & Graduation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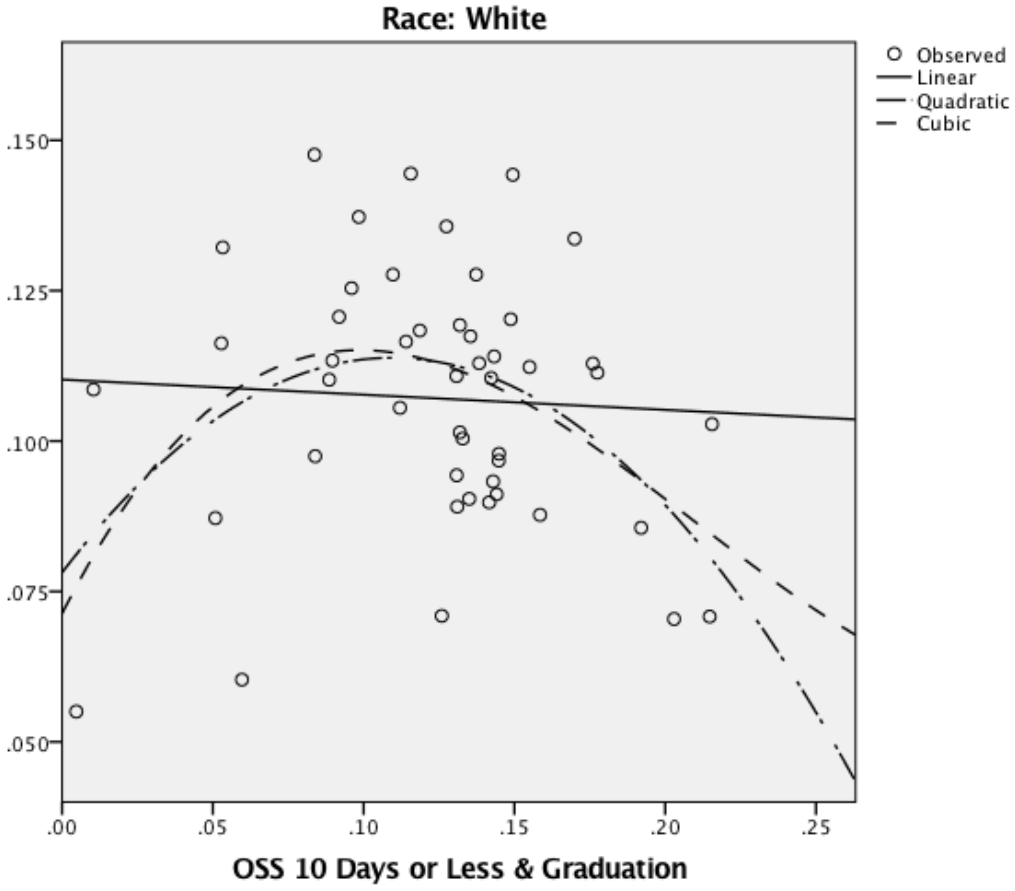
ISS More Than 10 Days & Graduation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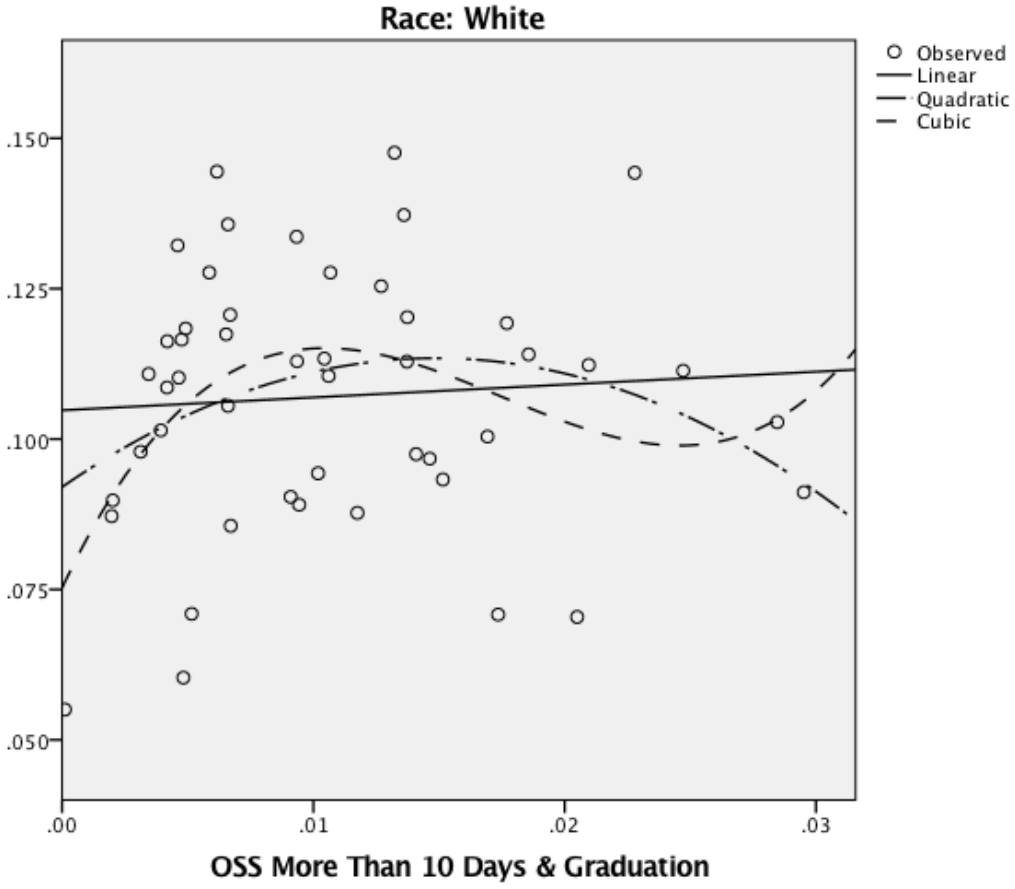
OSS 10 Days or Less & Graduation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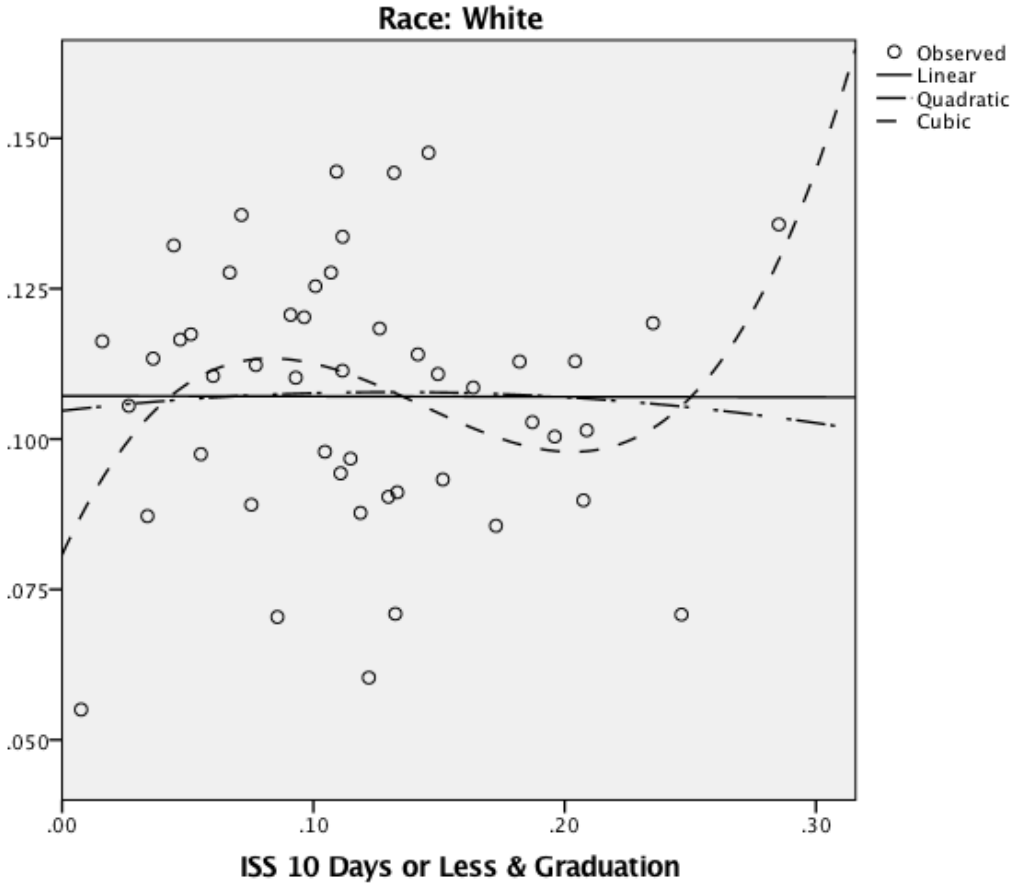
OSS More Than 10 Days & Graduation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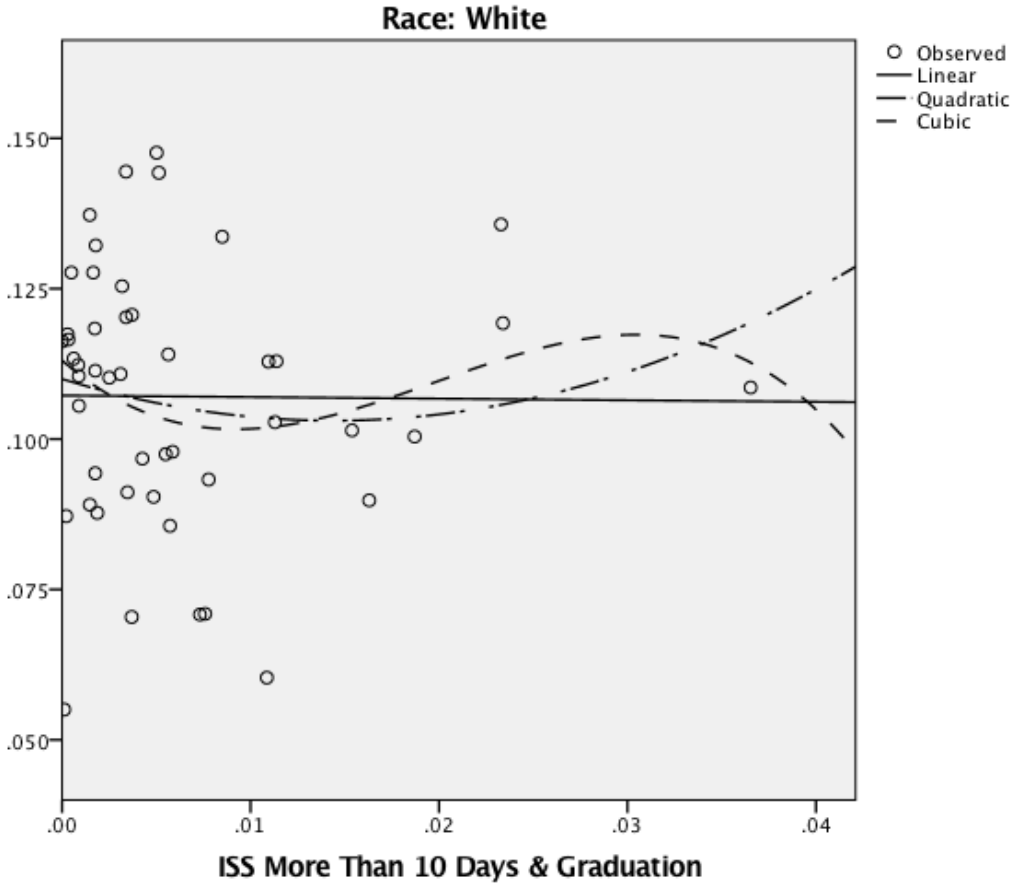
ISS 10 Days or Less & Graduation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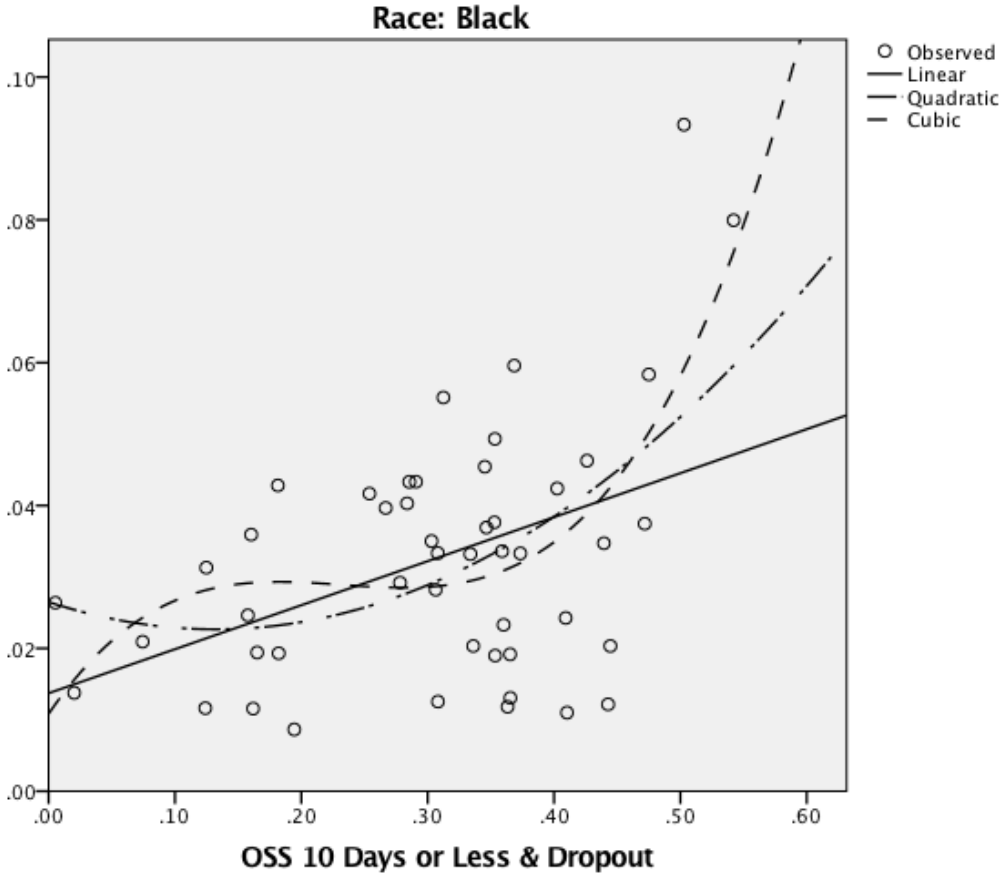
ISS More Than 10 Days & Graduation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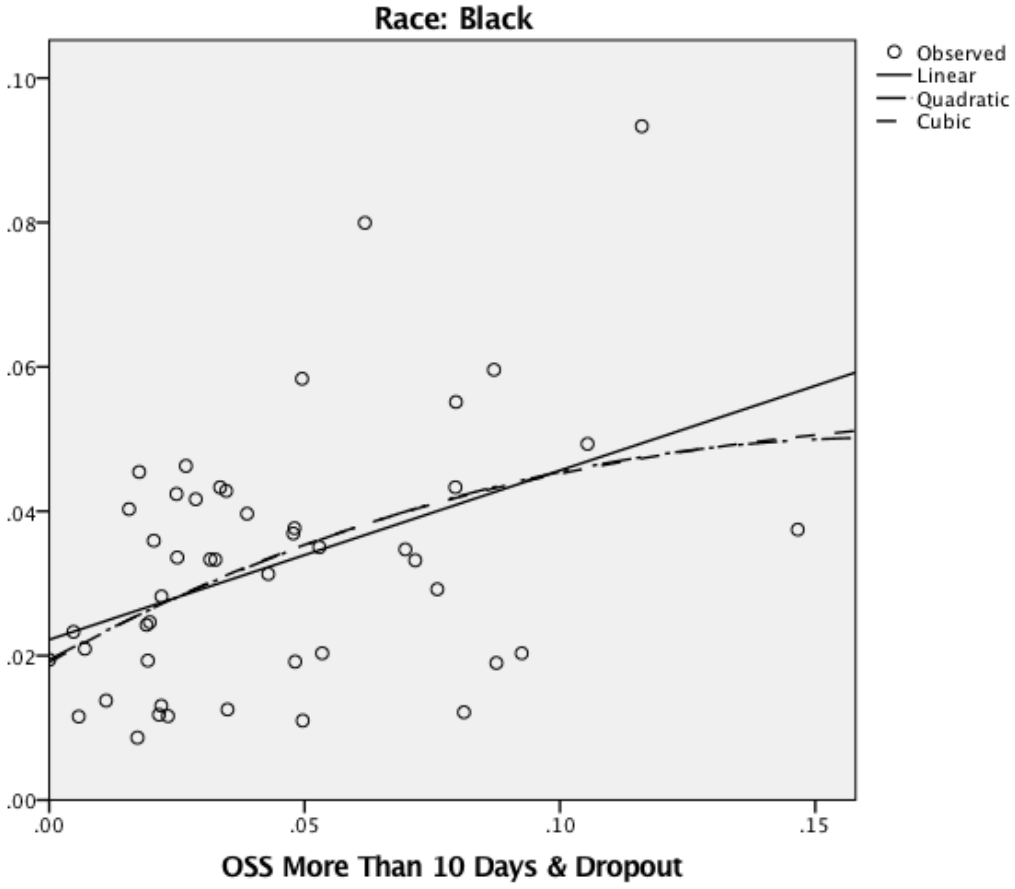
OSS 10 Days or Less & Dropout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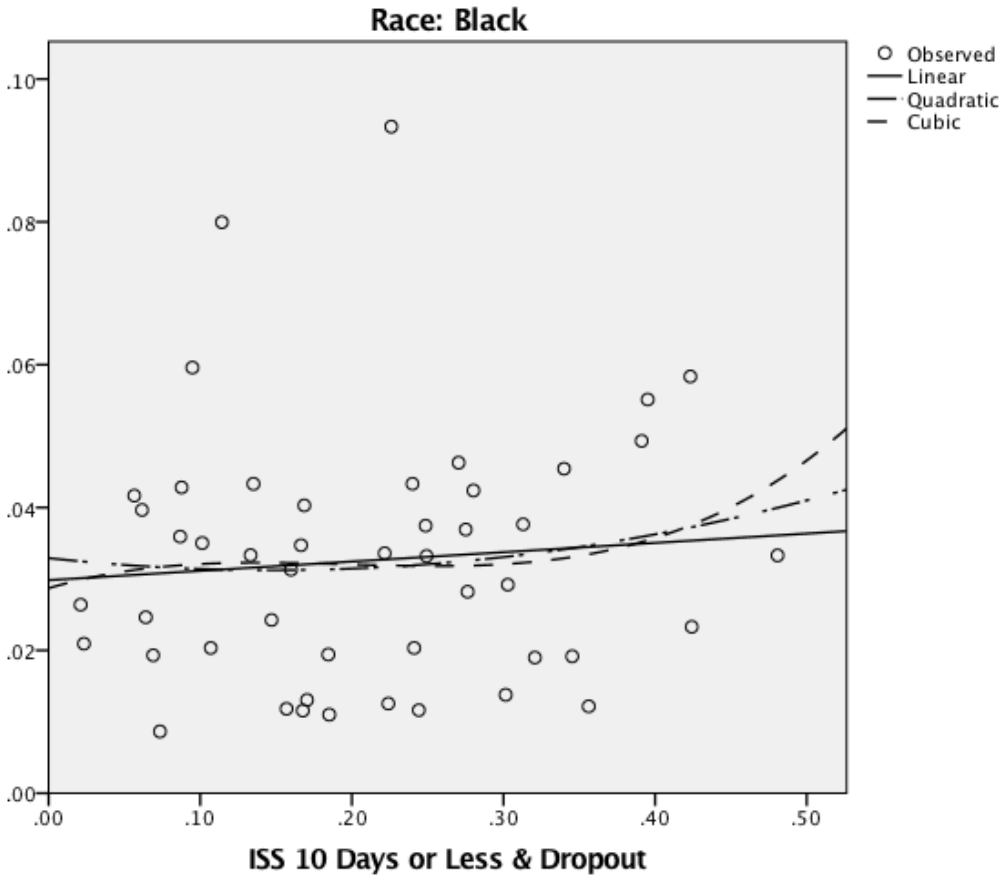
OSS More Than 10 Days & Dropout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Quadratic
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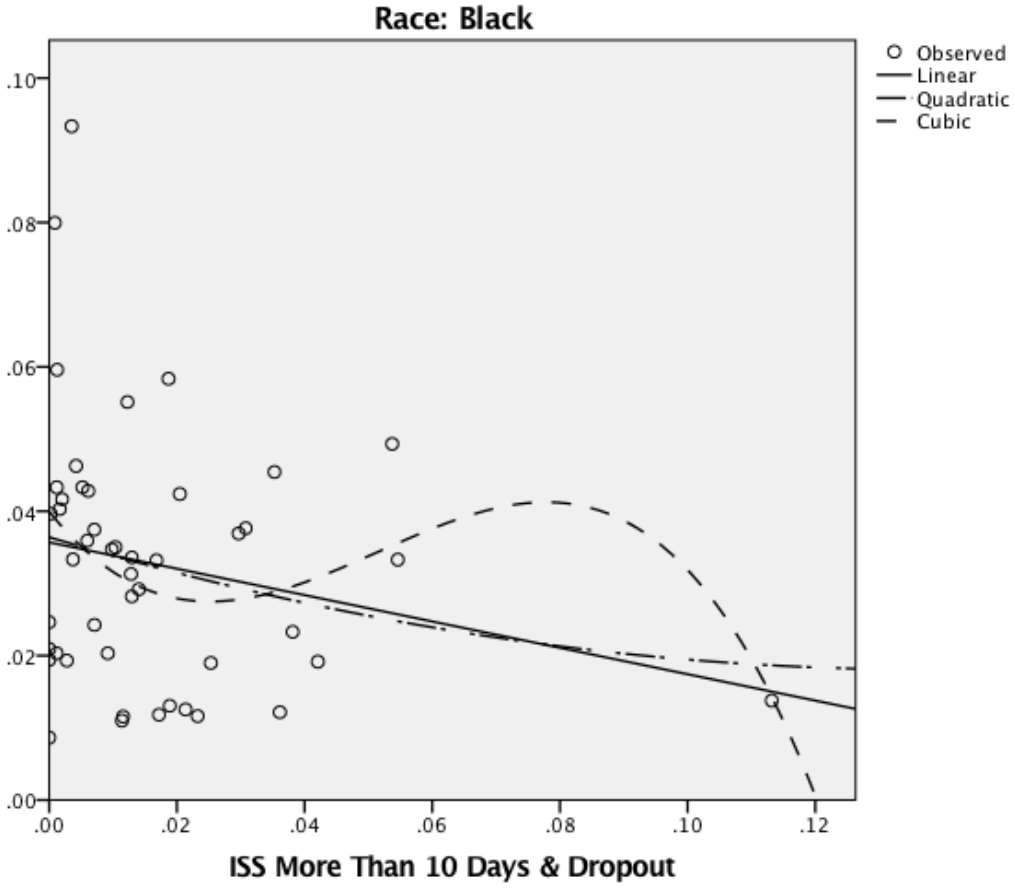
ISS 10 Days or Less & Dropout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Quadratic
Cubic
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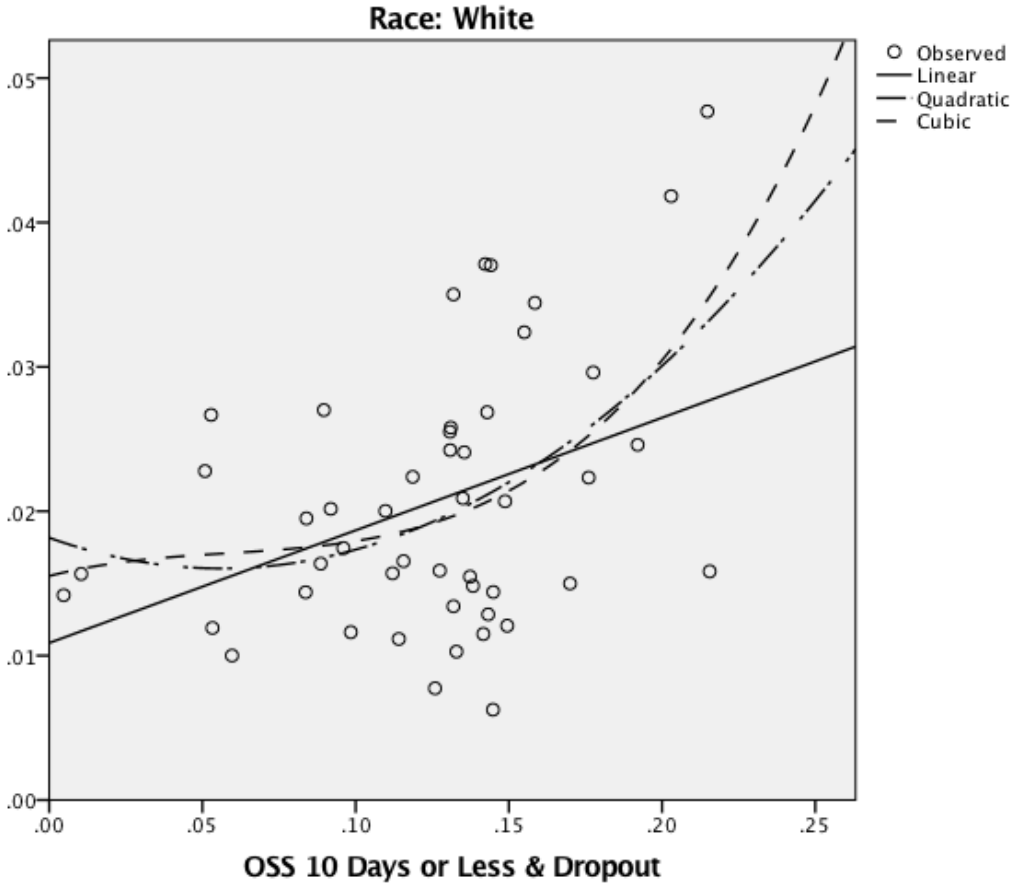
ISS More Than 10 Days & Dropout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Quadratic
Cubic
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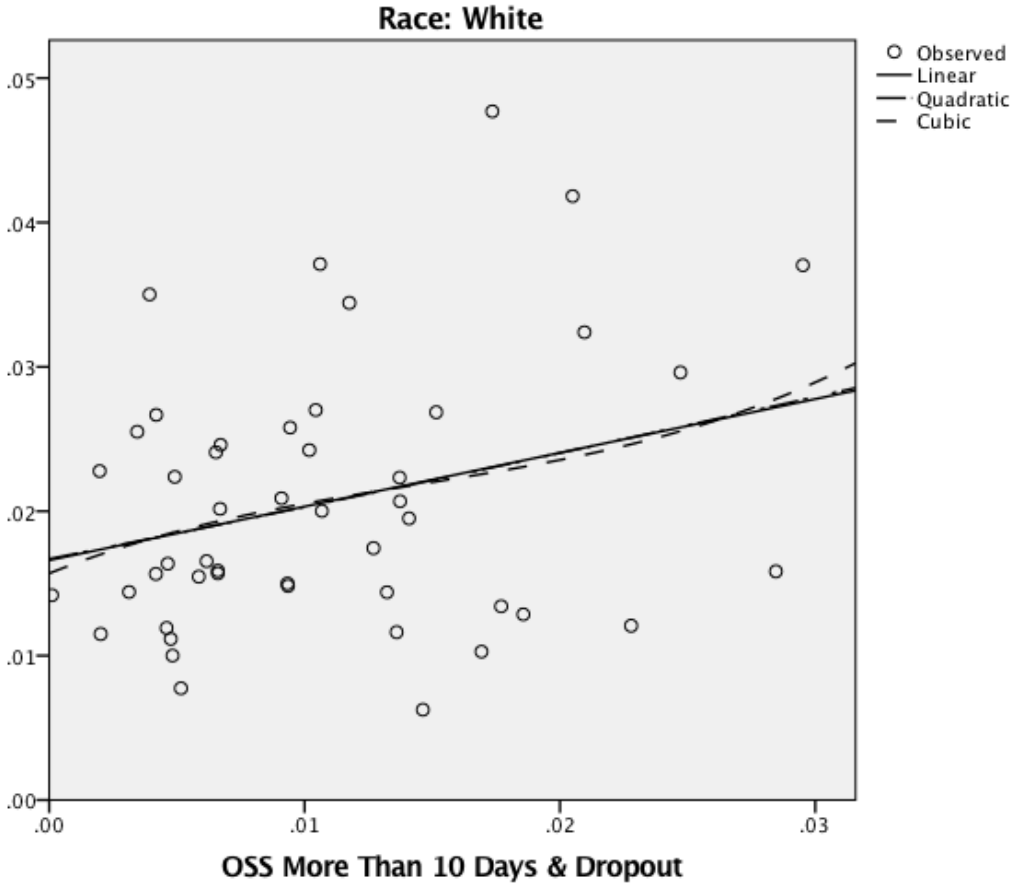
OSS 10 Days or Less & Dropout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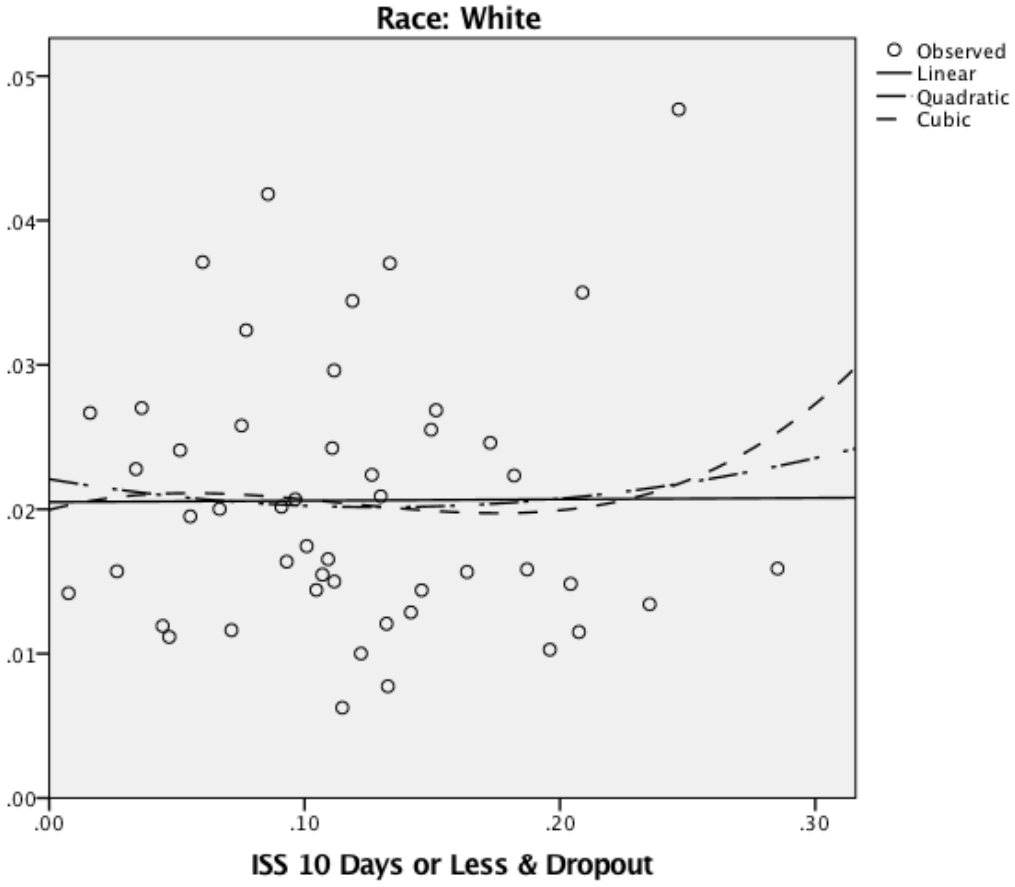
OSS More Than 10 Days & Dropout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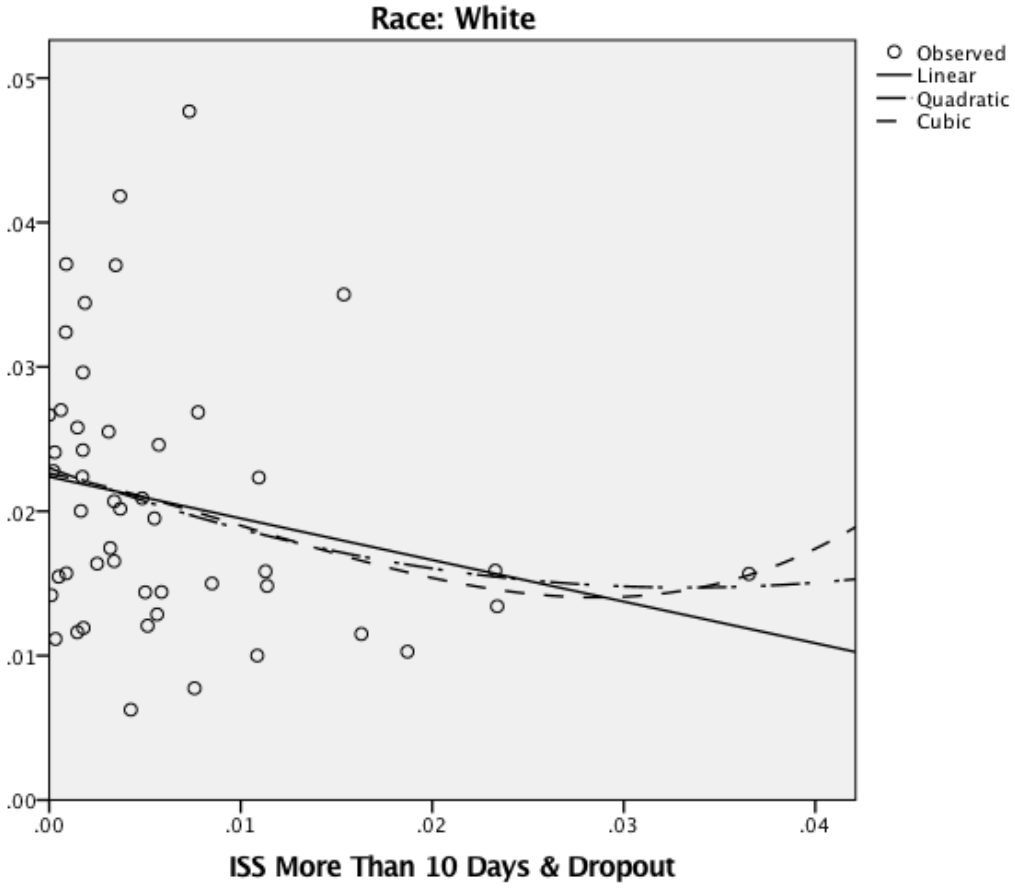
ISS 10 Days or Less & Dropout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Quadratic
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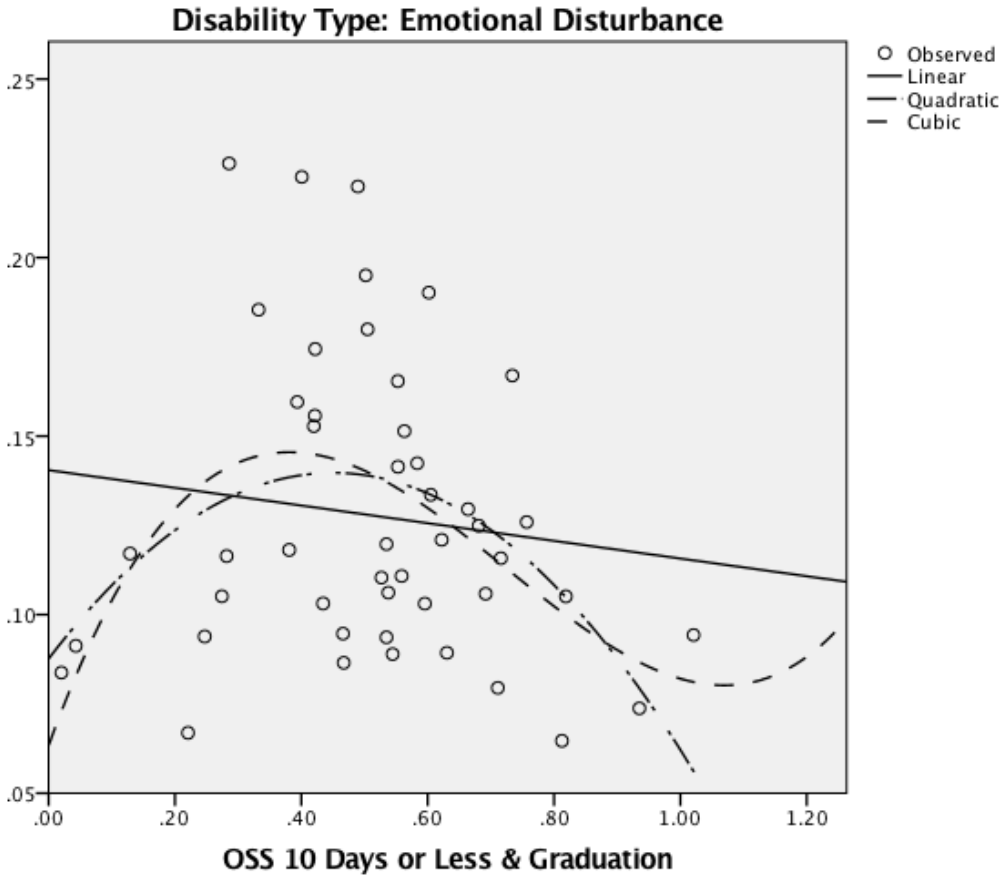
ISS More Than 10 Days & Dropout


Disability Type: Emotional Disturbance
Observed
Linear
Quadratic
Cubic
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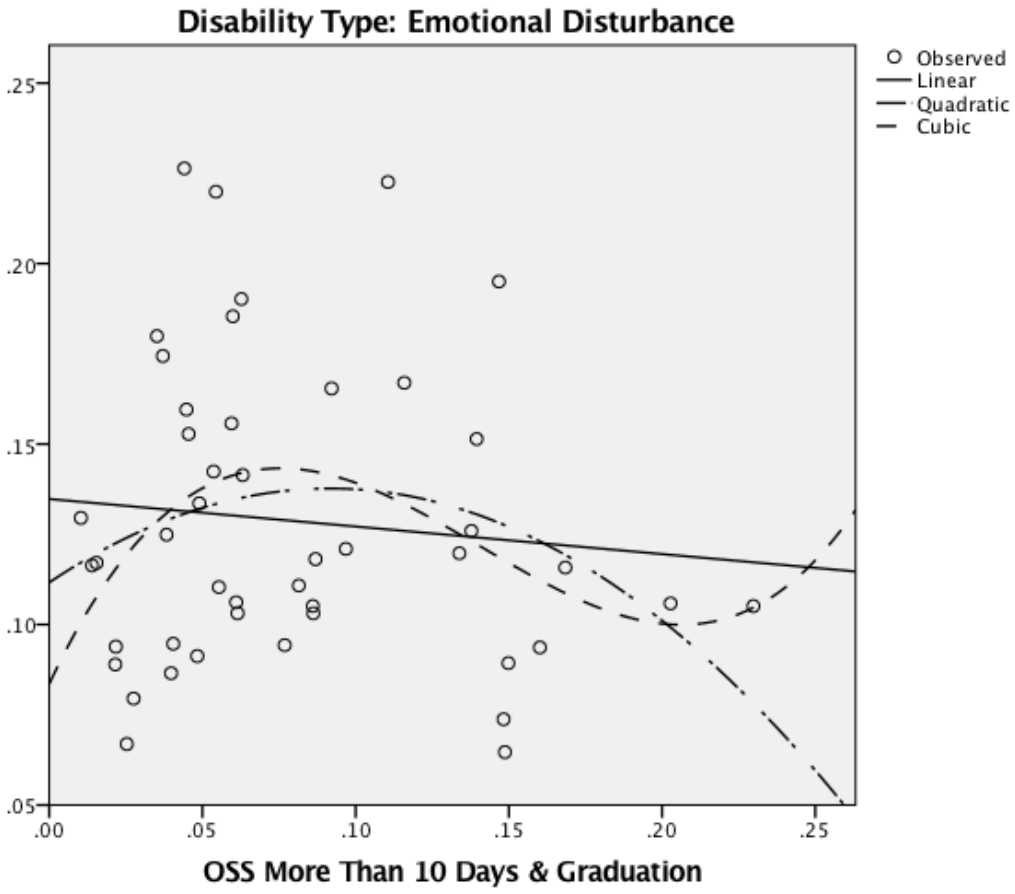
OSS 10 Days or Less & Graduation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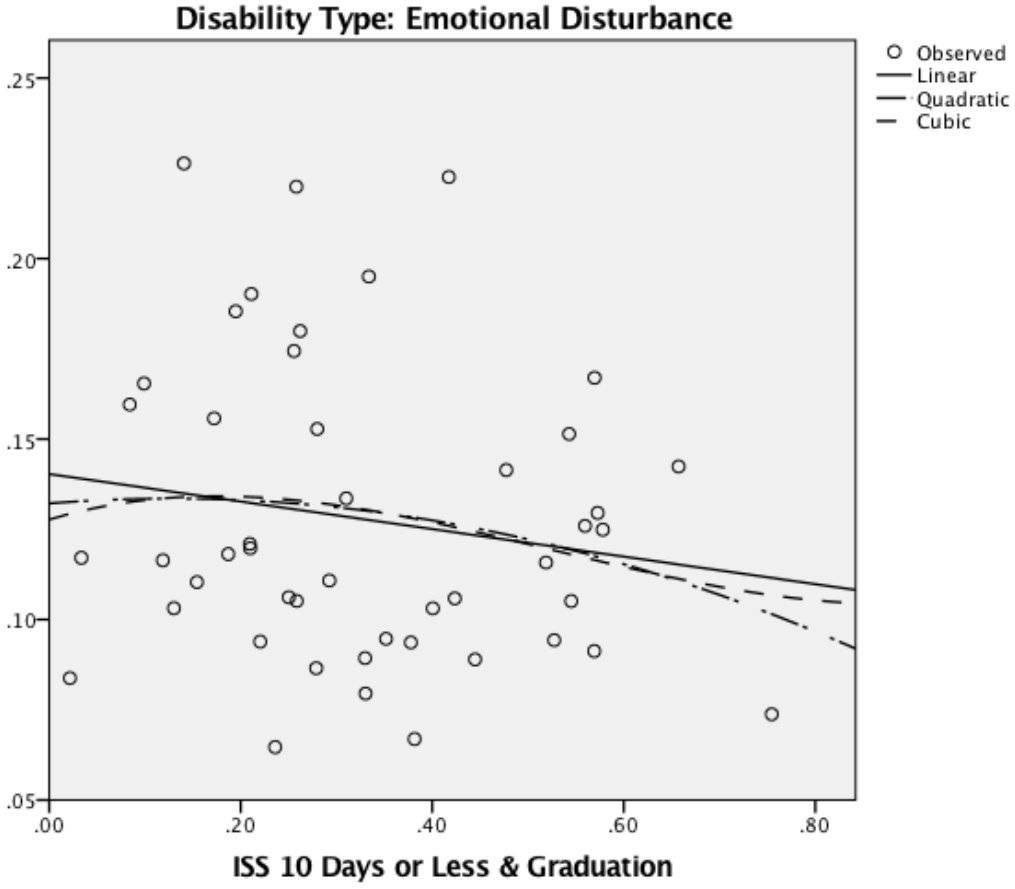
OSS More Than 10 Days & Graduation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Observed
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Quadratic
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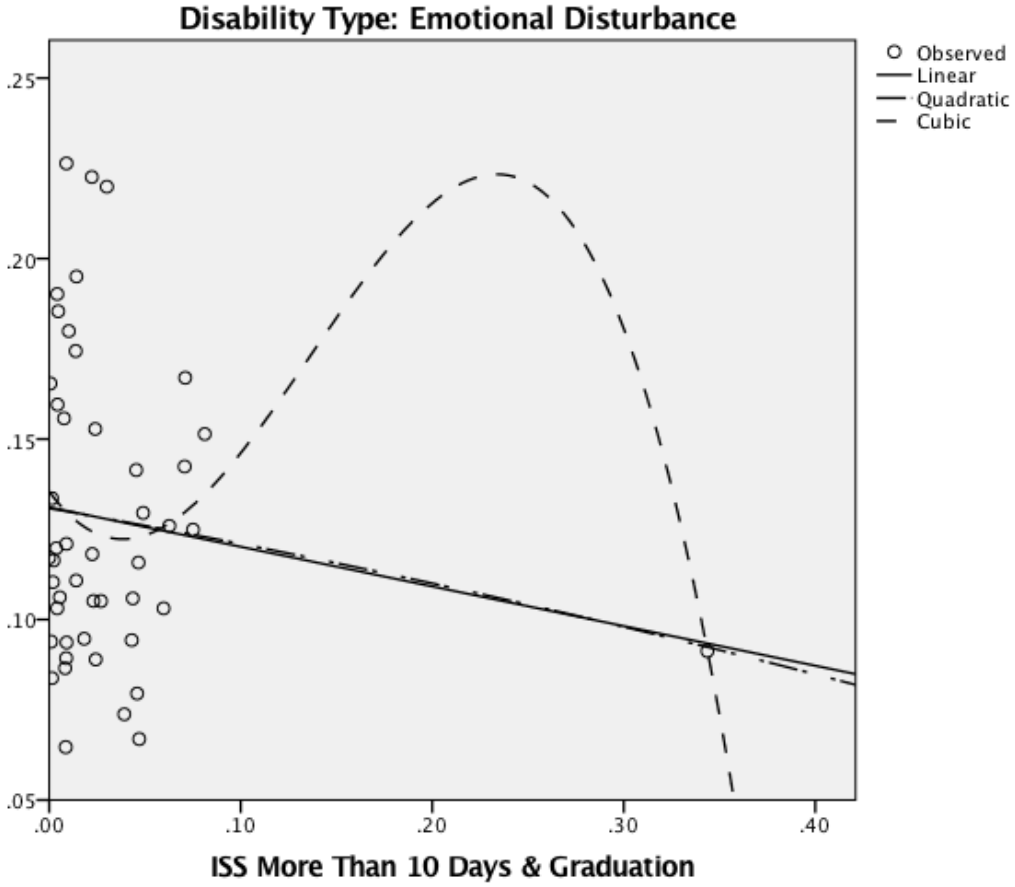
ISS 10 Days or Less & Graduation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Observed
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Quadratic
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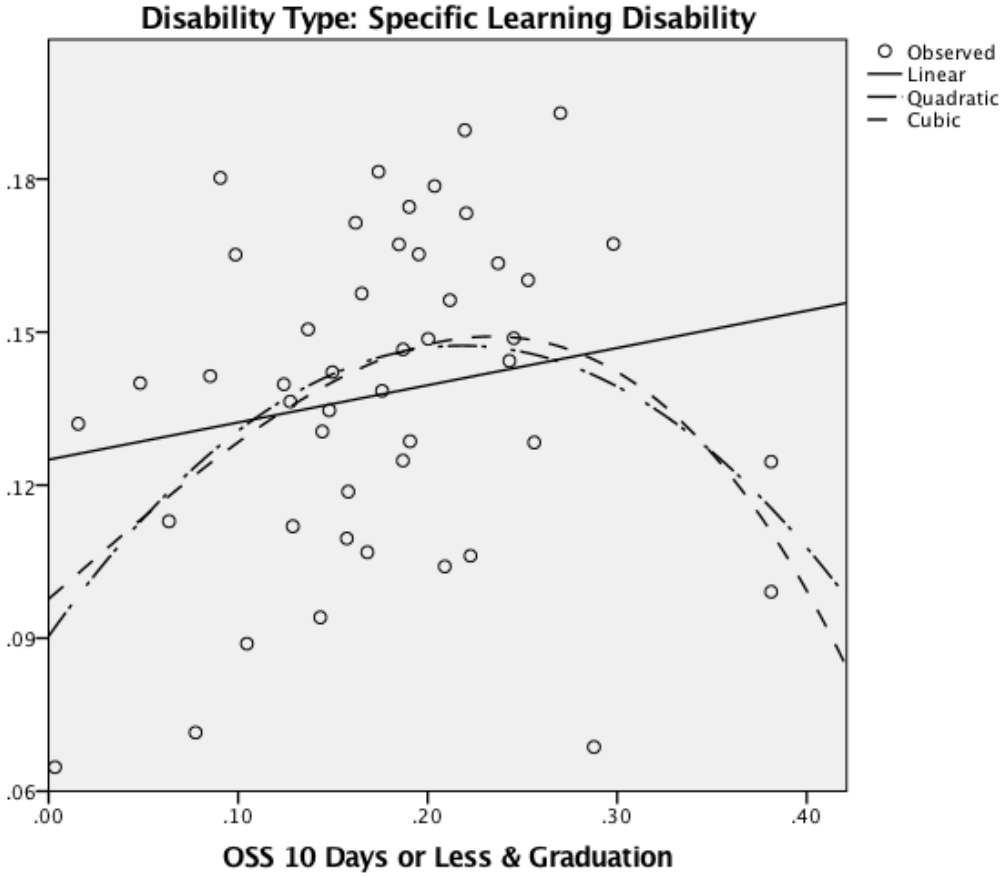
ISS More Than 10 Days & Graduation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Quadratic
Cubic
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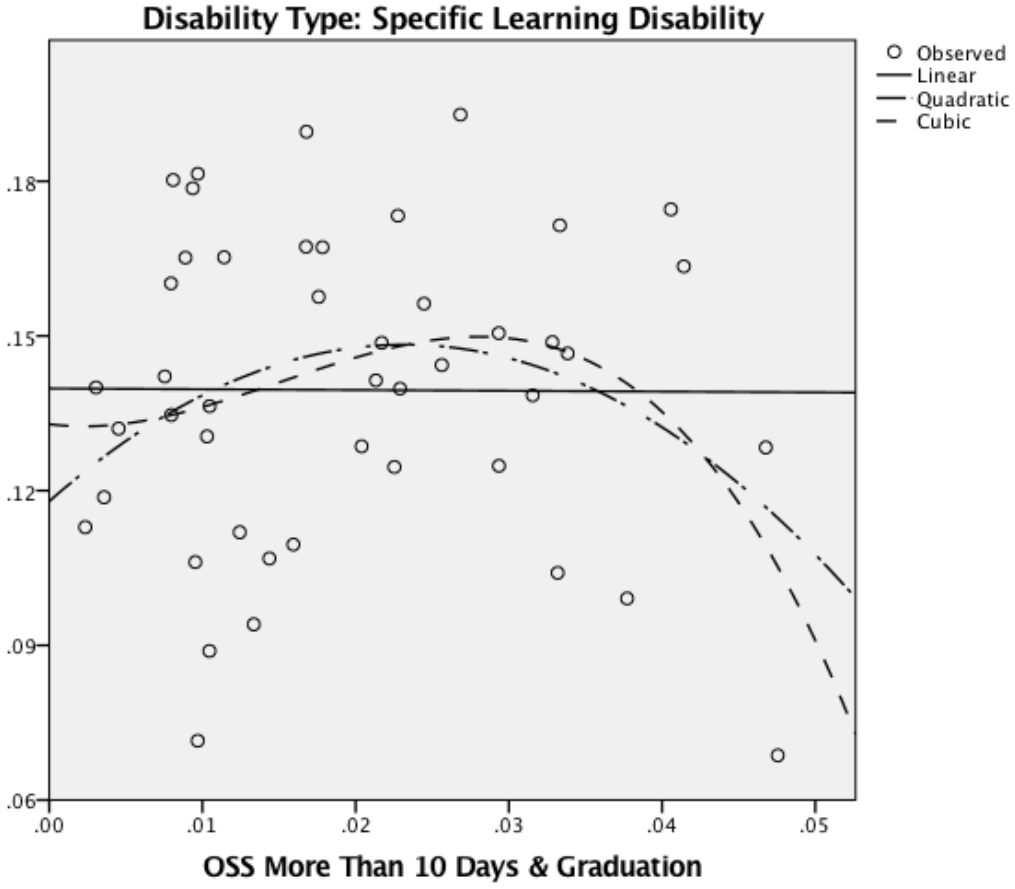
OSS 10 Days or Less & Graduation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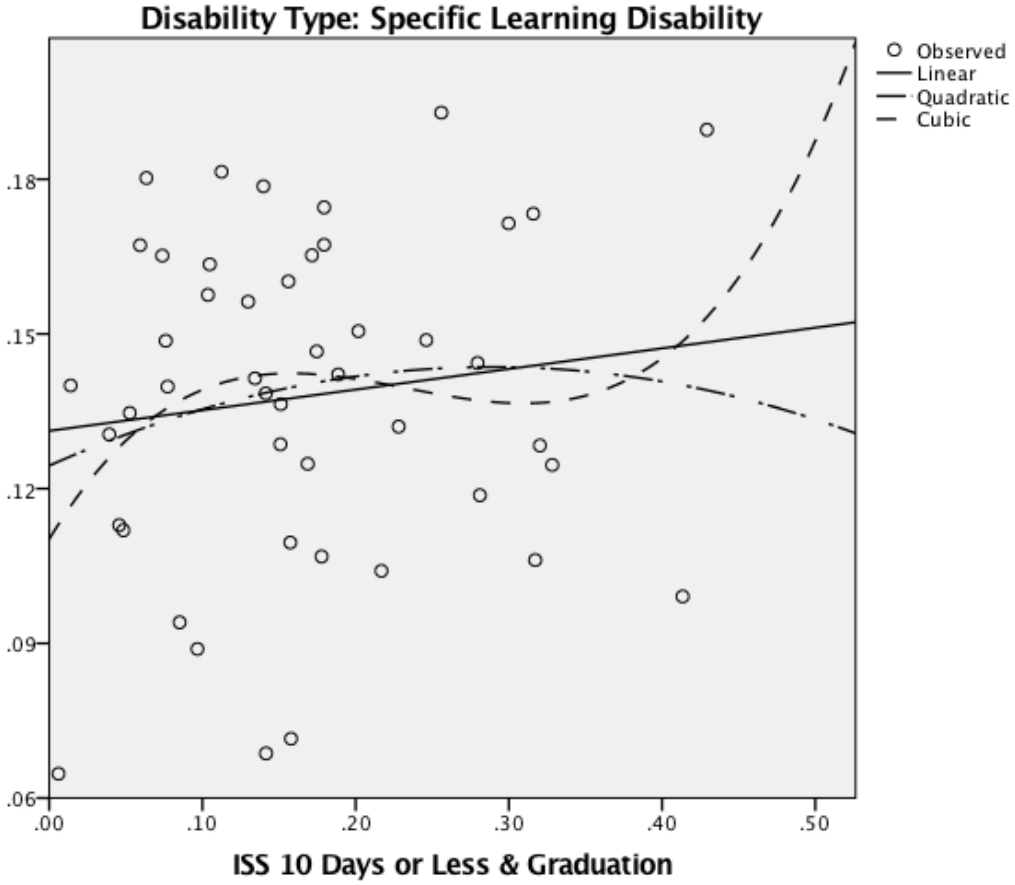
OSS More Than 10 Days & Graduation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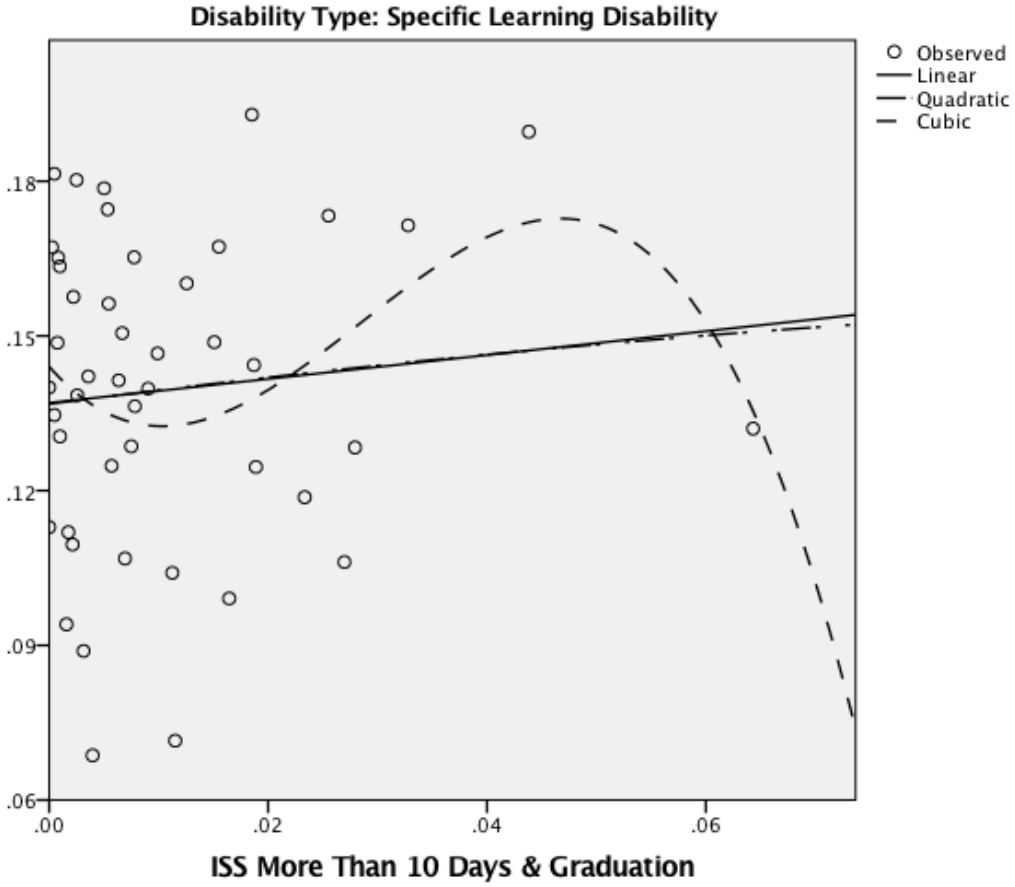
ISS 10 Days or Less & Graduation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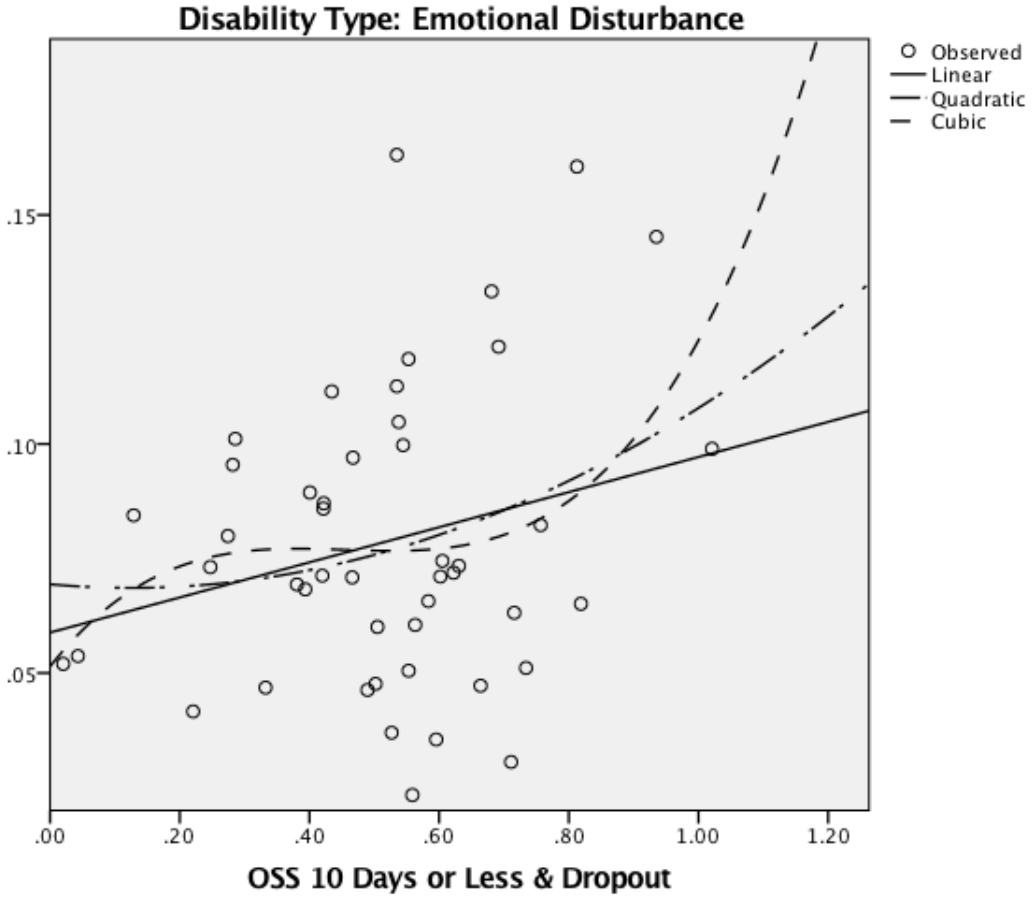
ISS More Than 10 Days & Graduation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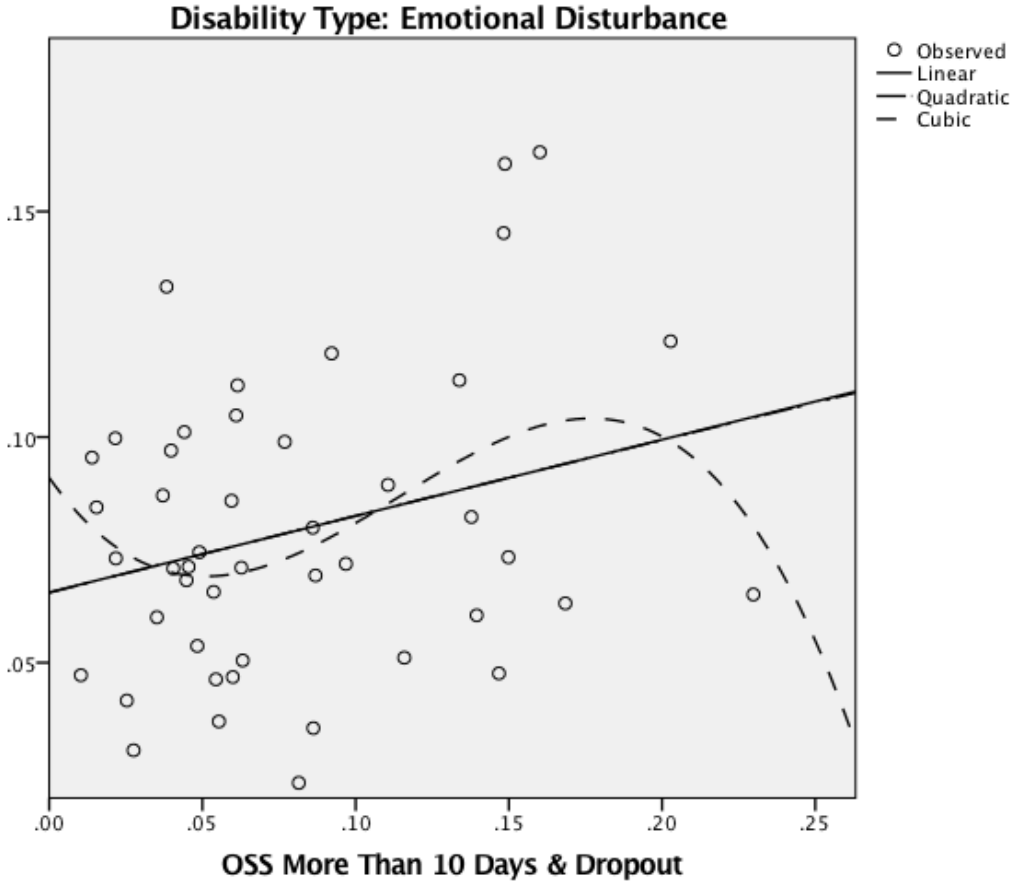
OSS 10 Days or Less & Dropout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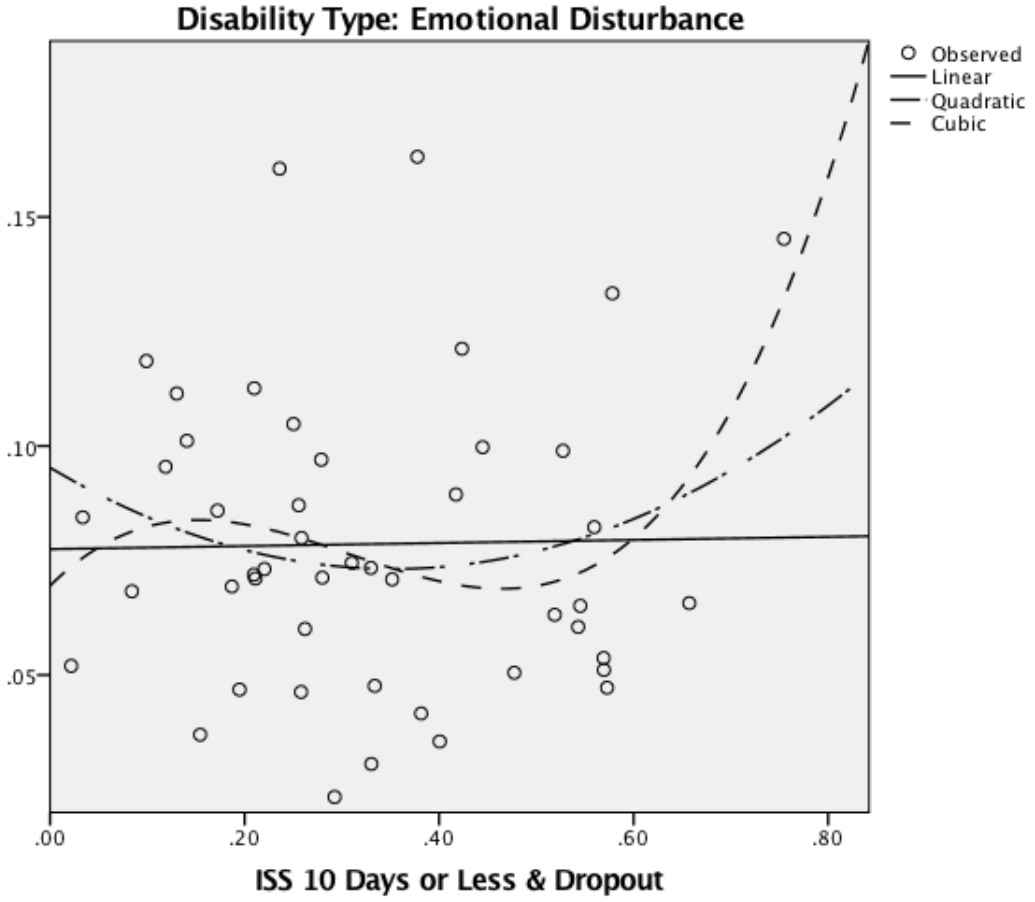
OSS More Than 10 Days & Dropout


Disability Type: Emotional Disturbance
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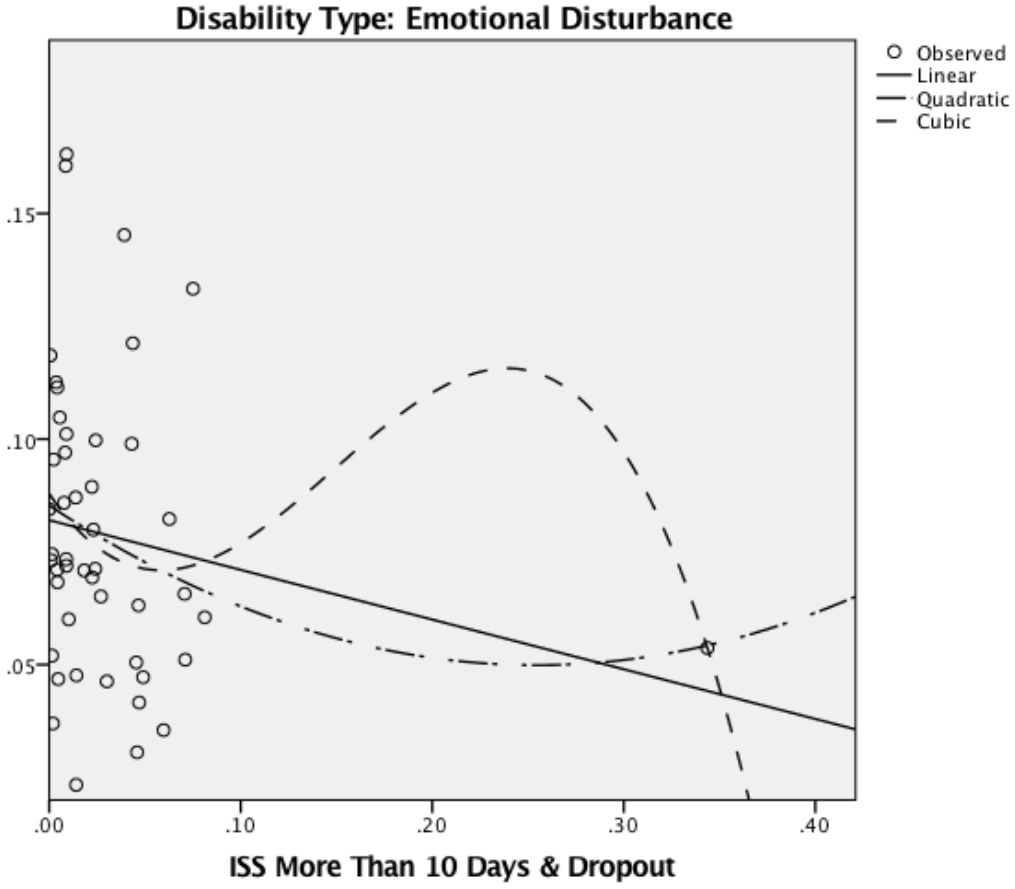
ISS 10 Days or Less & Dropout


Disability Type: Emotional Disturbance
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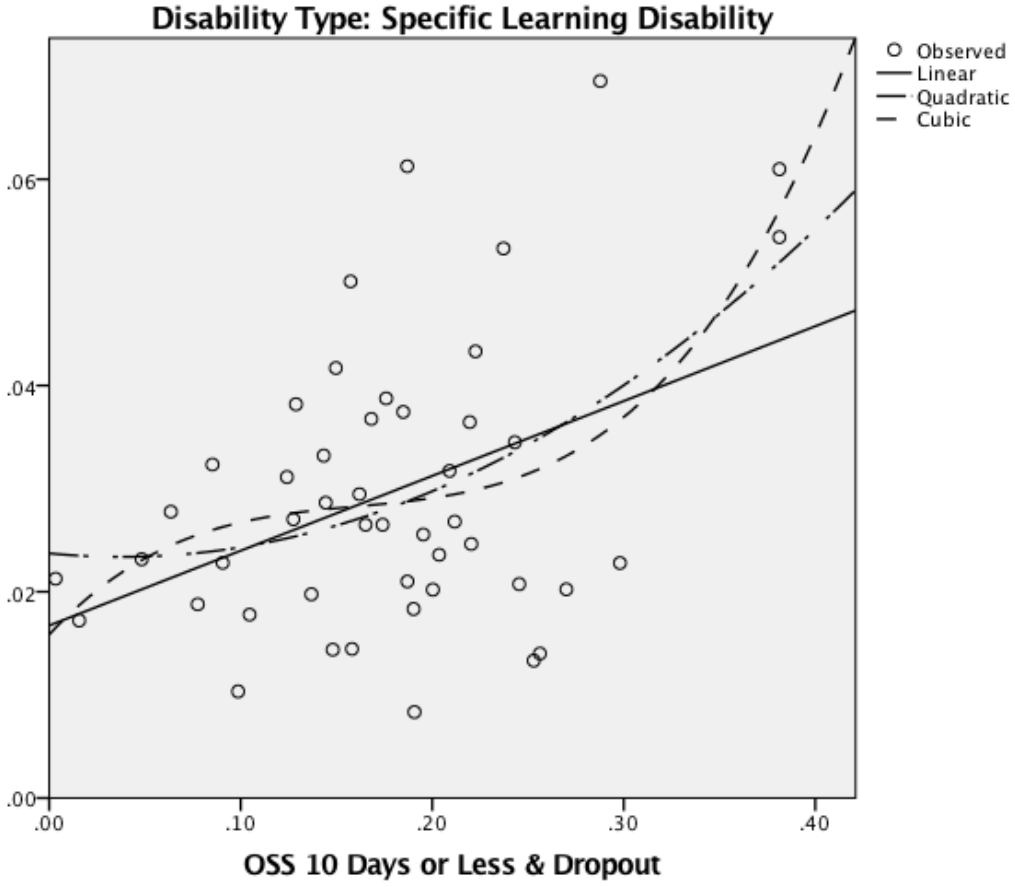
ISS More Than 10 Days & Dropout


Disability Type: Specific Learning Disability
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Quadratic
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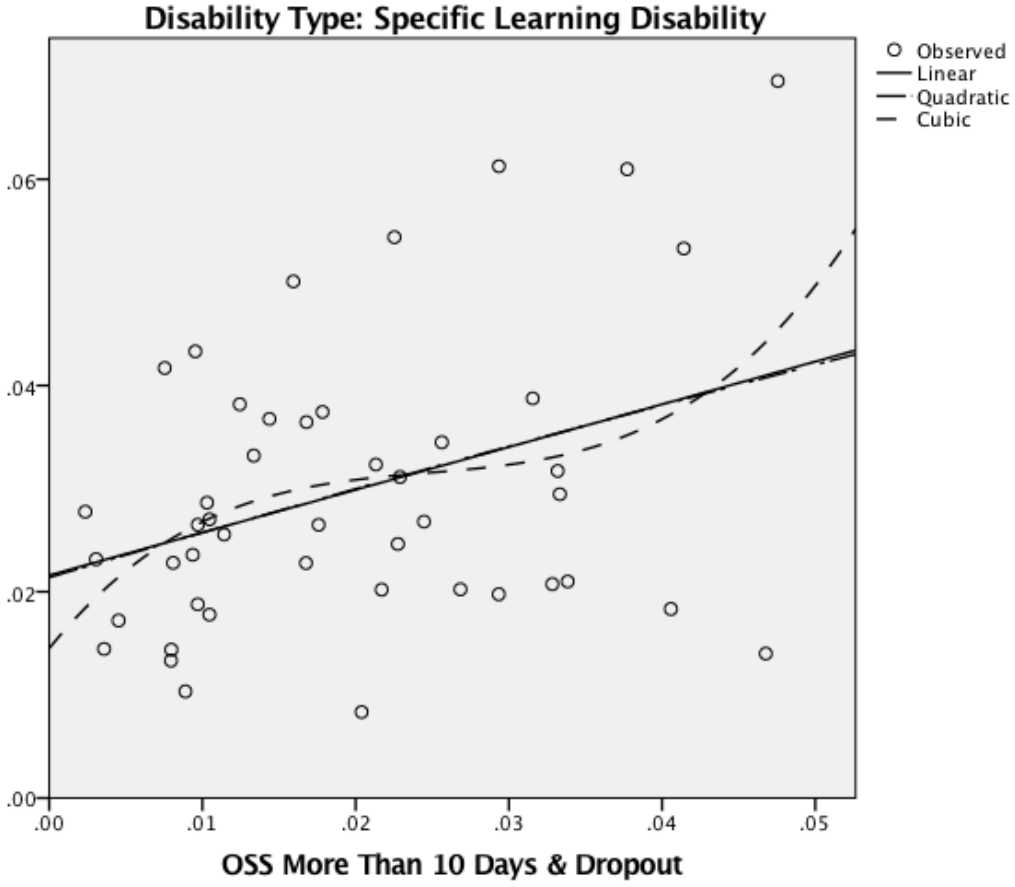
OSS 10 Days or Less & Dropout


Disability Type: Specific Learning Disability
Observed
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Quadratic
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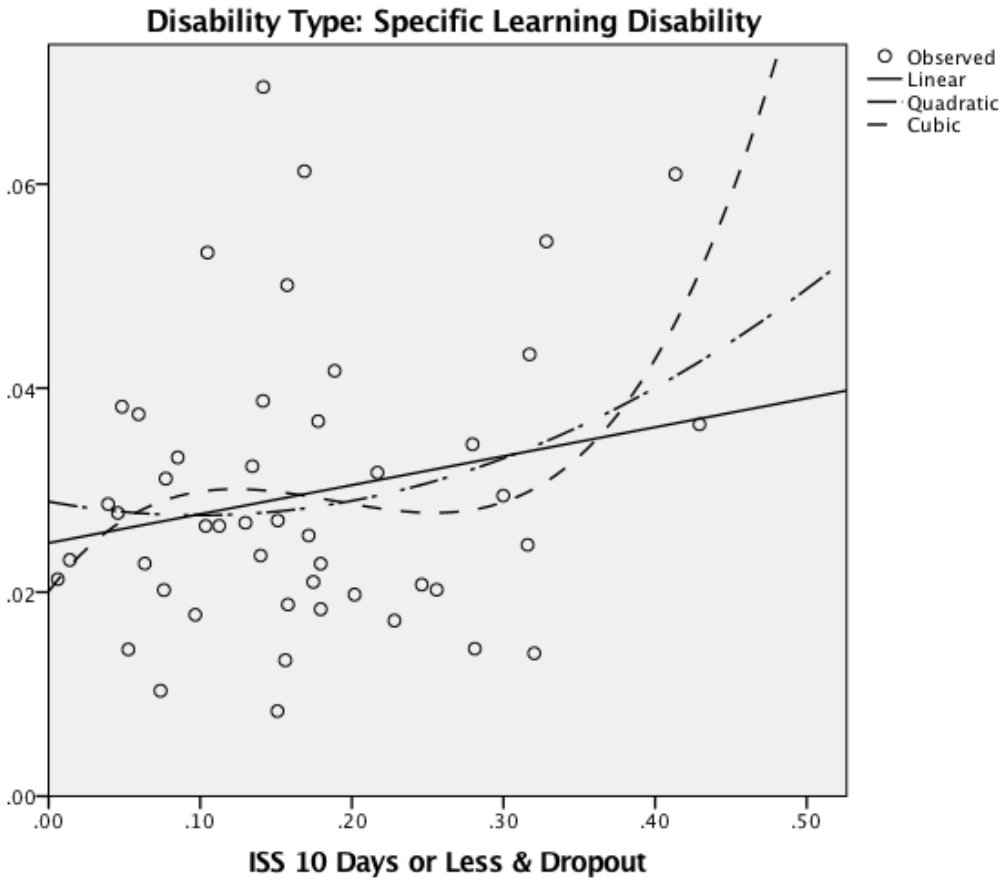
OSS More Than 10 Days & Dropout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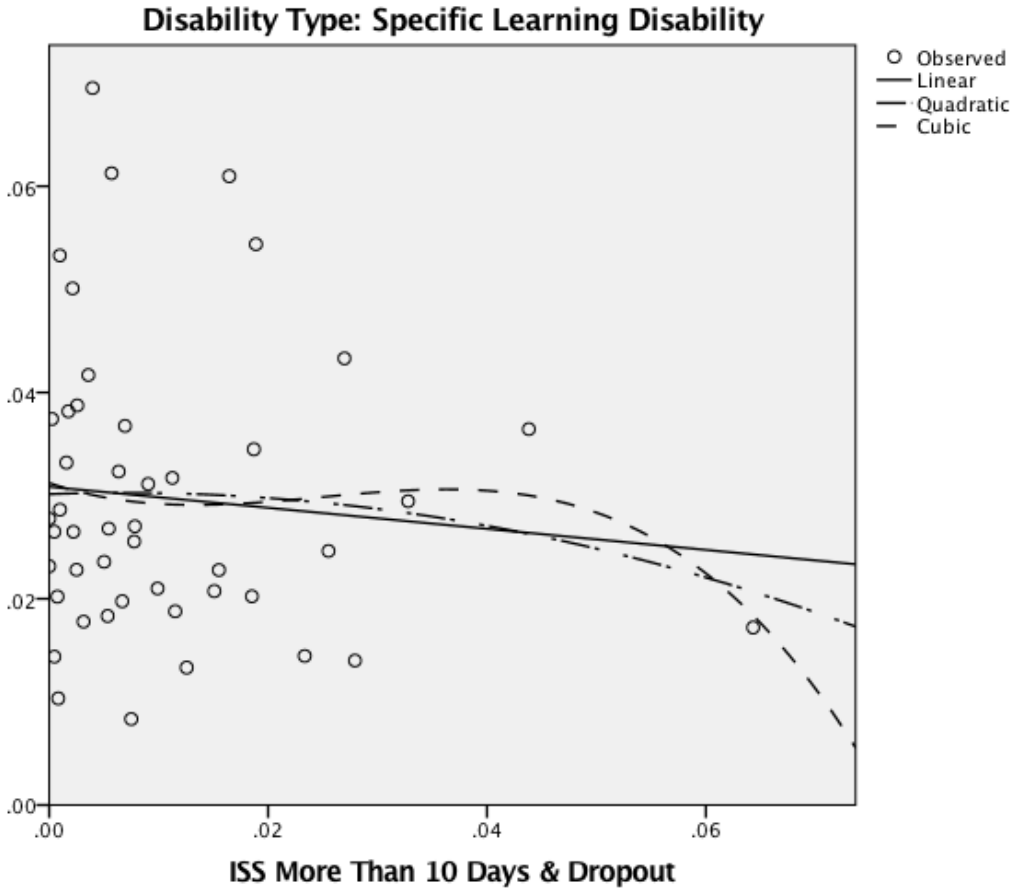
ISS 10 Days or Less & Dropout


Disability Type: Specific Learning Disability
Observed
Linear
Quadratic
Cubic
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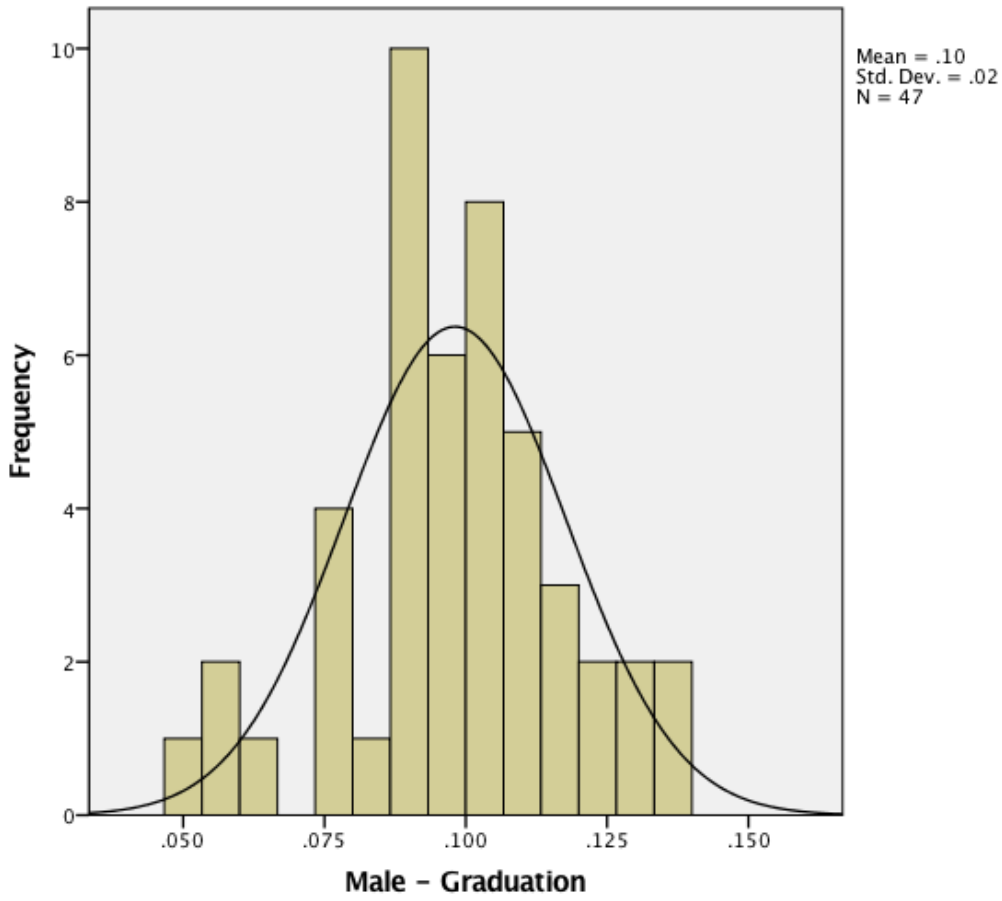
ISS More Than 10 Days & Dropout

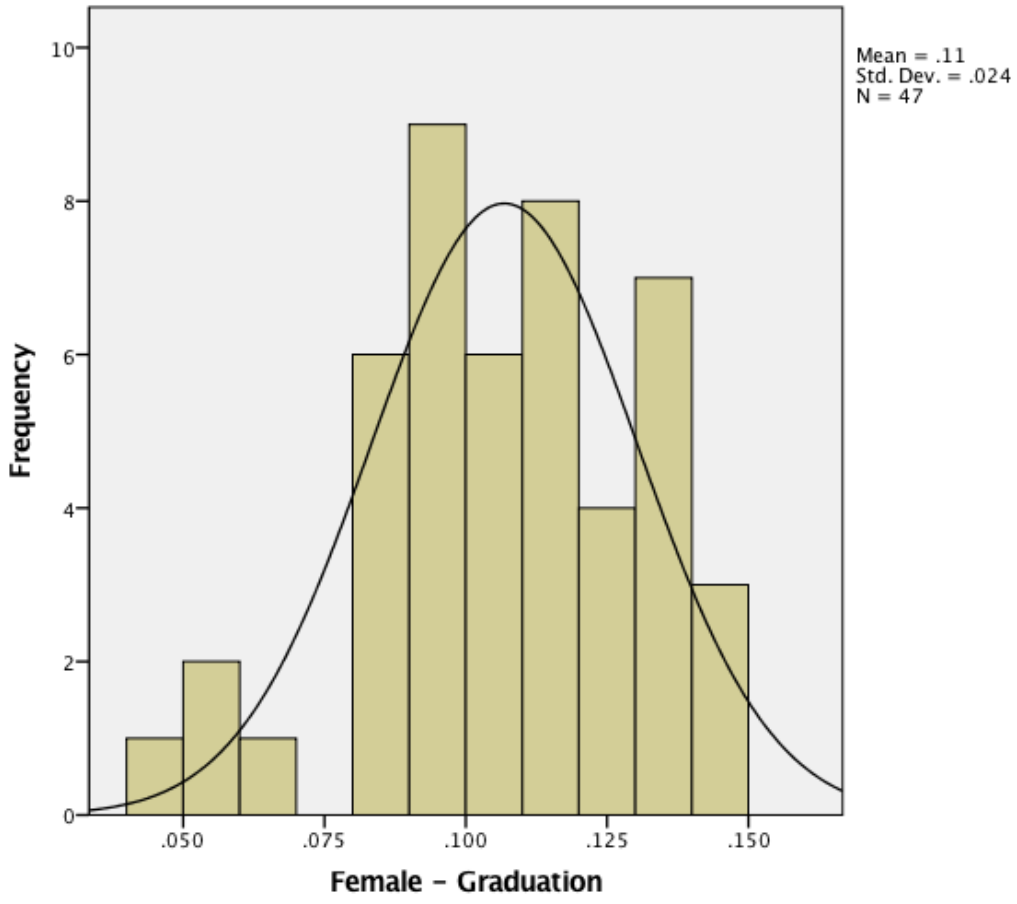
APPENDIX C

RESEARCH QUESTION THREE: NORMALITY

Appendix C

Research Question Three: Normality




Mean = .11
Std. Dev. = .024
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.075
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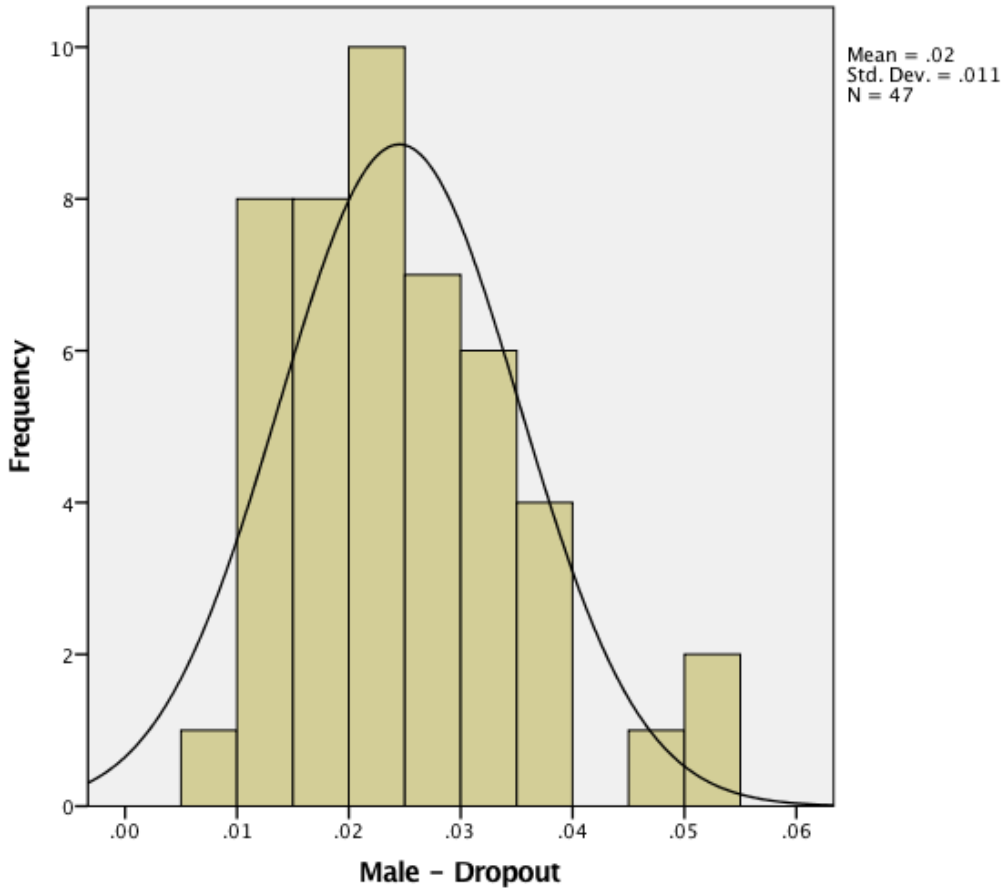
.125
.150
Female - Graduation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Std. Dev. = .011
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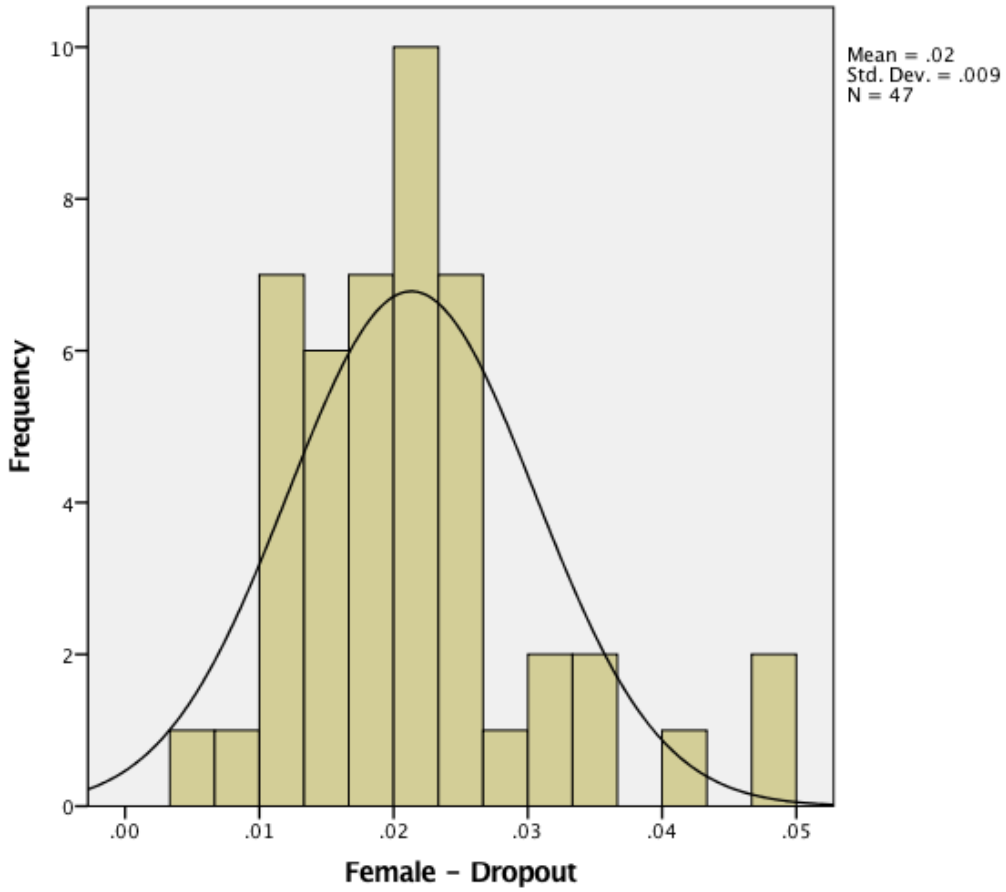
.06
Male - Dropout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Std. Dev. = .009
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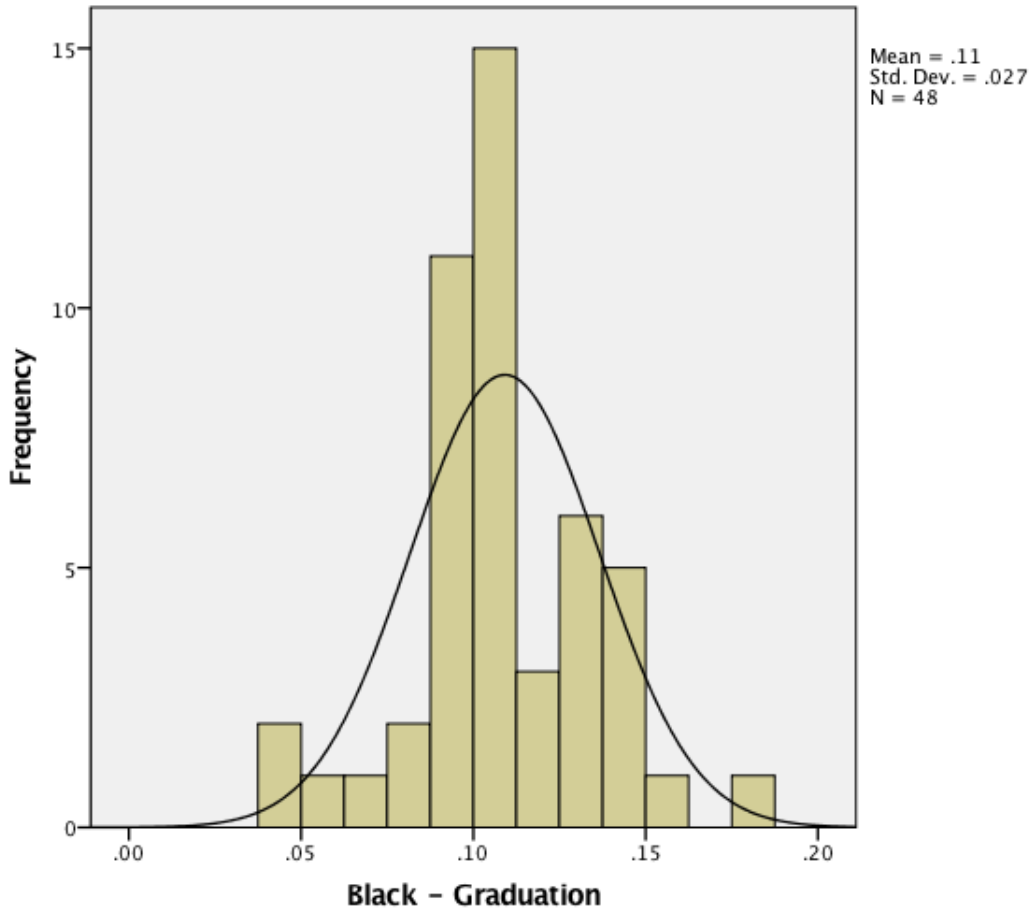
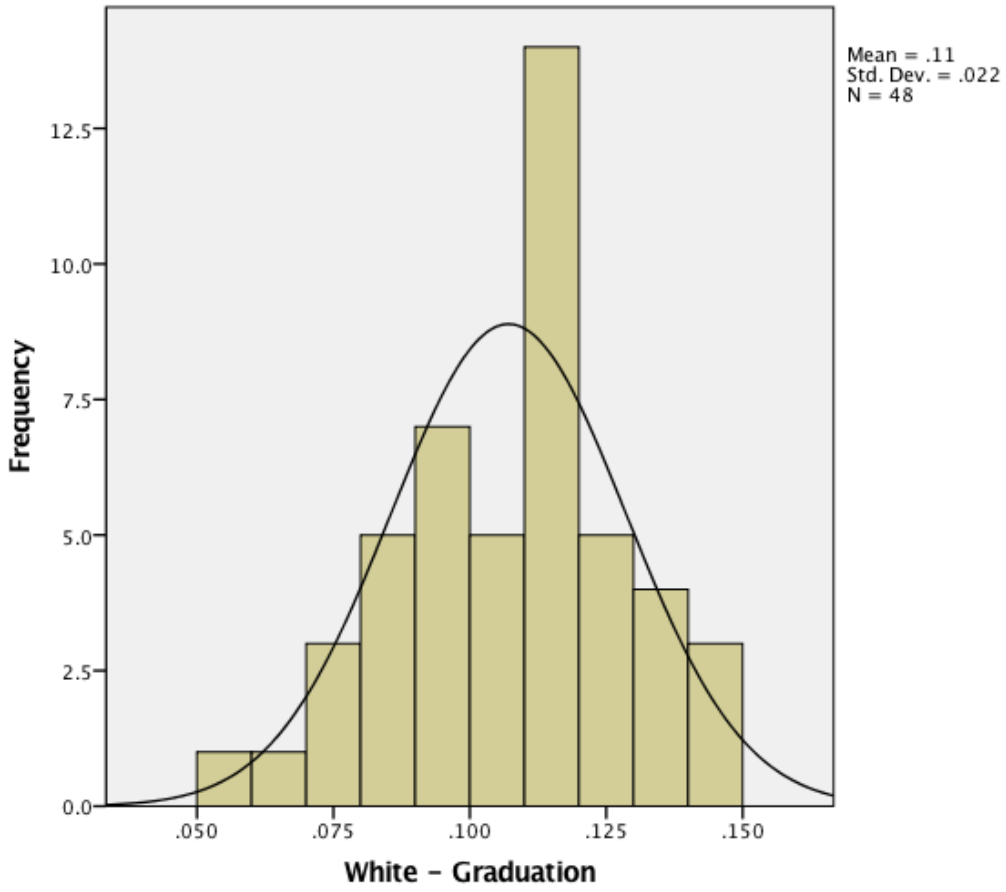
.02
.03
.04
.05
Female - Dropout


Mean = .11
Std. Dev. = .027
N = 48
Frequency
15
10
5
0
.00
.05
.10
.15
.20
Black - Graduation


Mean = .11
Std. Dev. = .022
N = 48
Frequency
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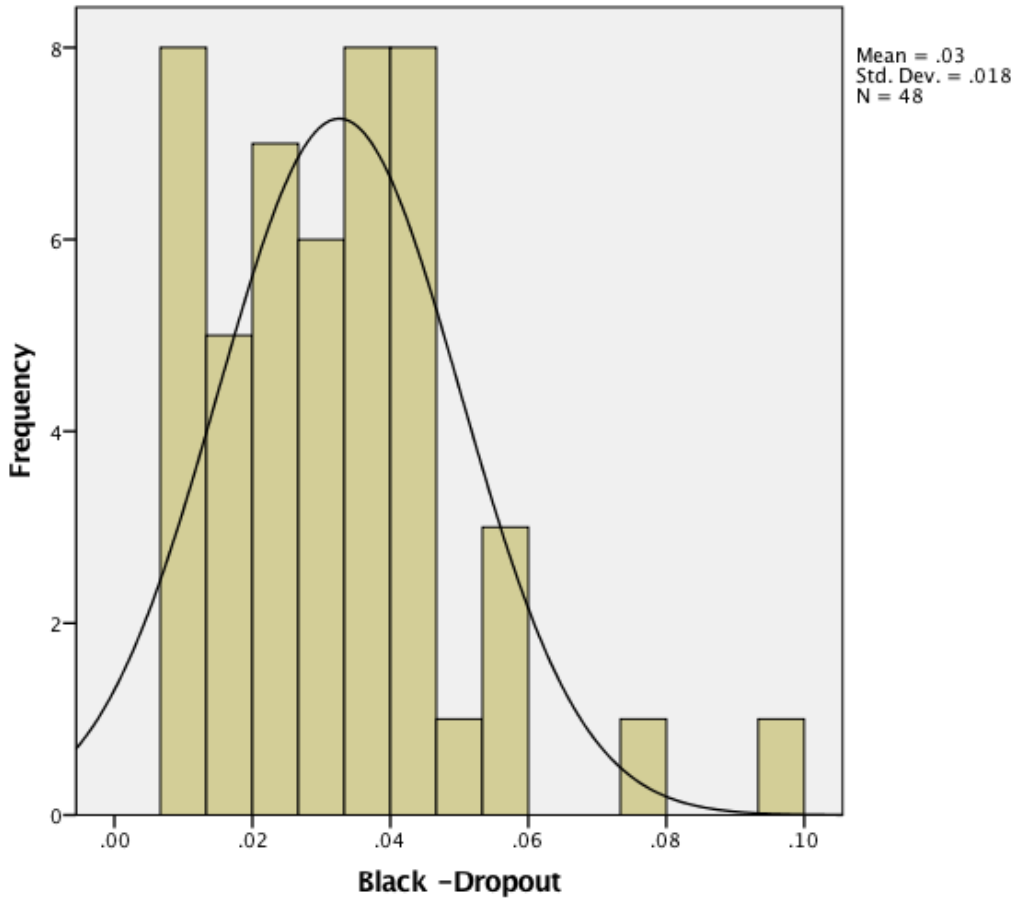
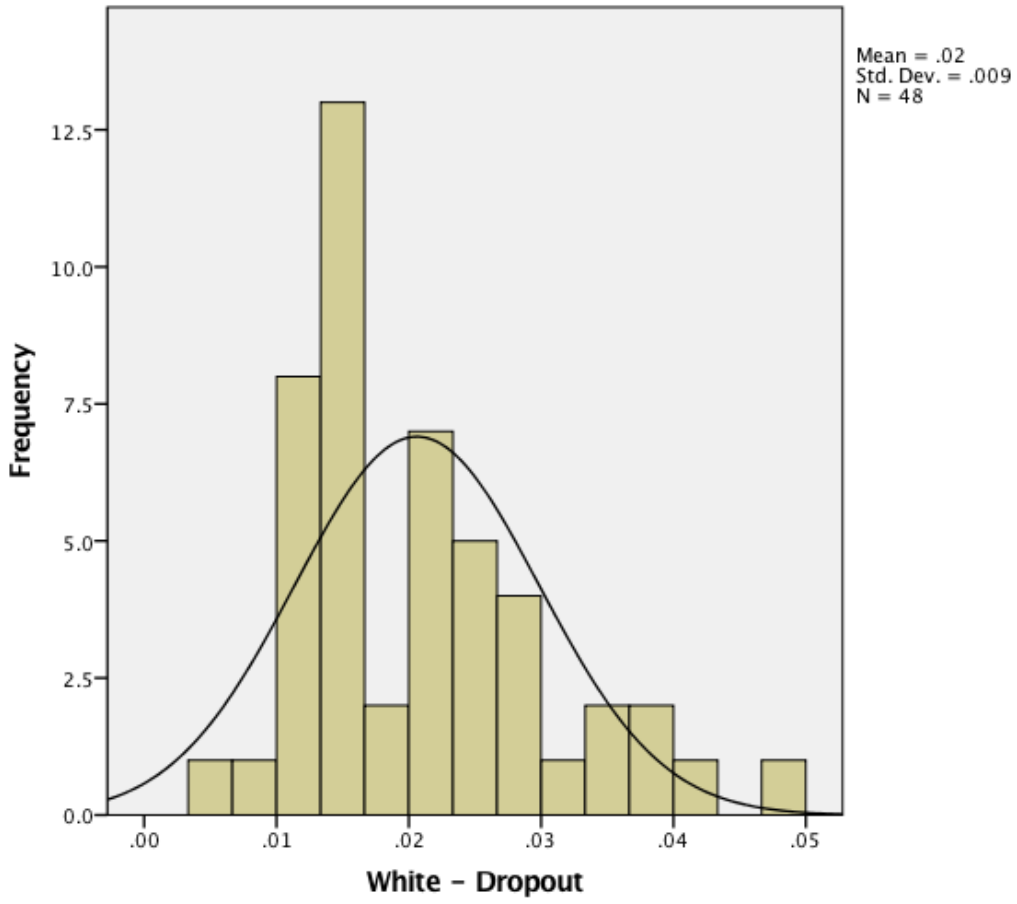
10.0
7.5
5.0
2.5
0.0
.050
.075
.100
.125
.150
White - Graduation


Mean = .03
Std. Dev. = .018
N = 48
Frequency
0
2
4
6
8
.00
.02
.04
.06
.08
.10
Black -Dropout


Mean = .02
Std. Dev. = .009
N = 48
Frequency
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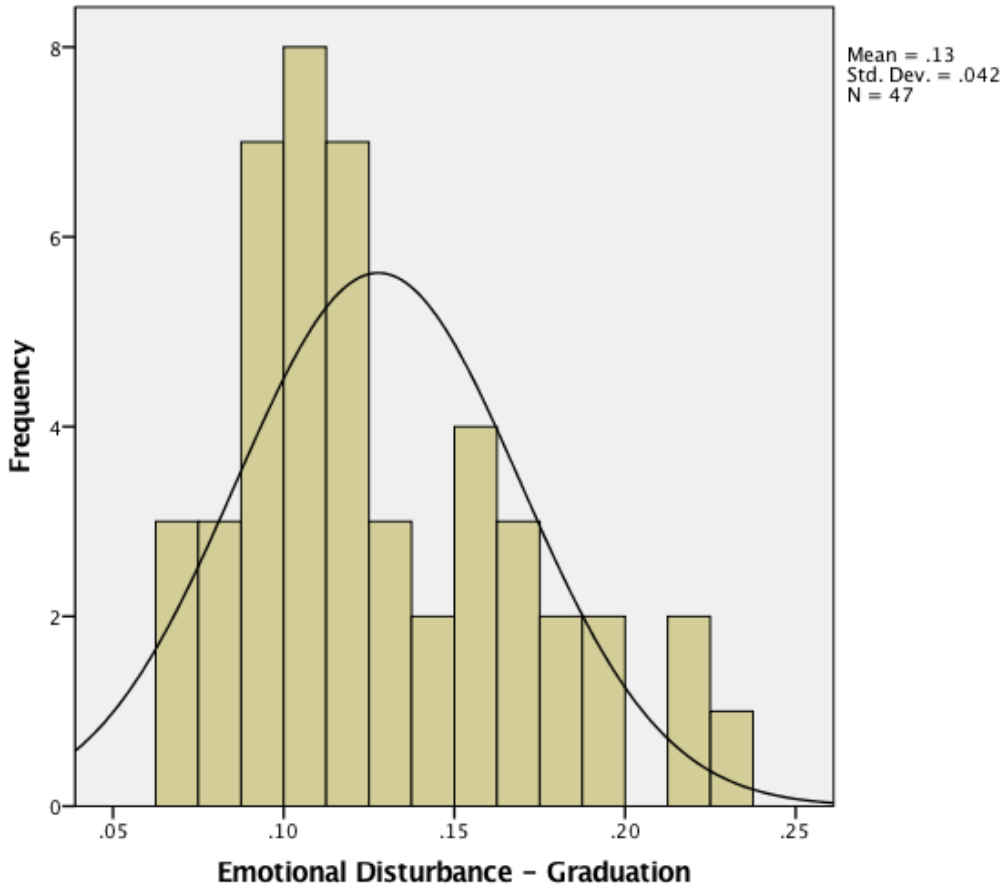
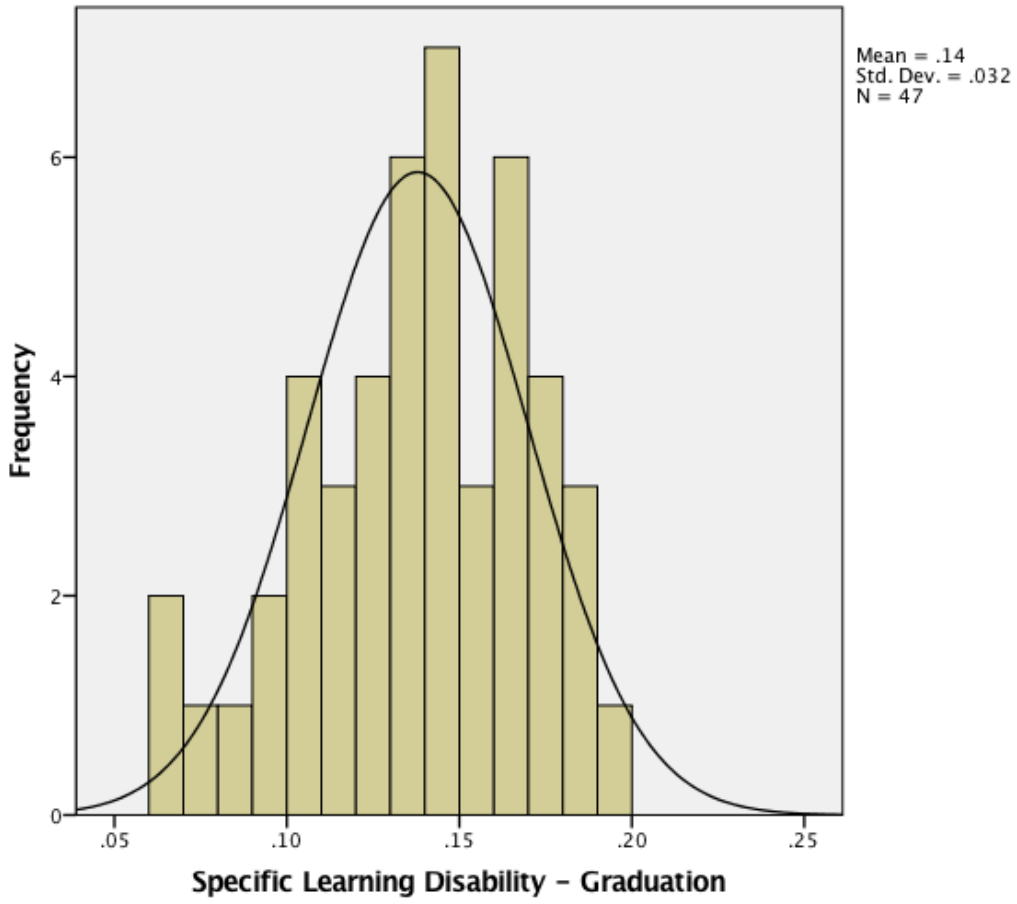
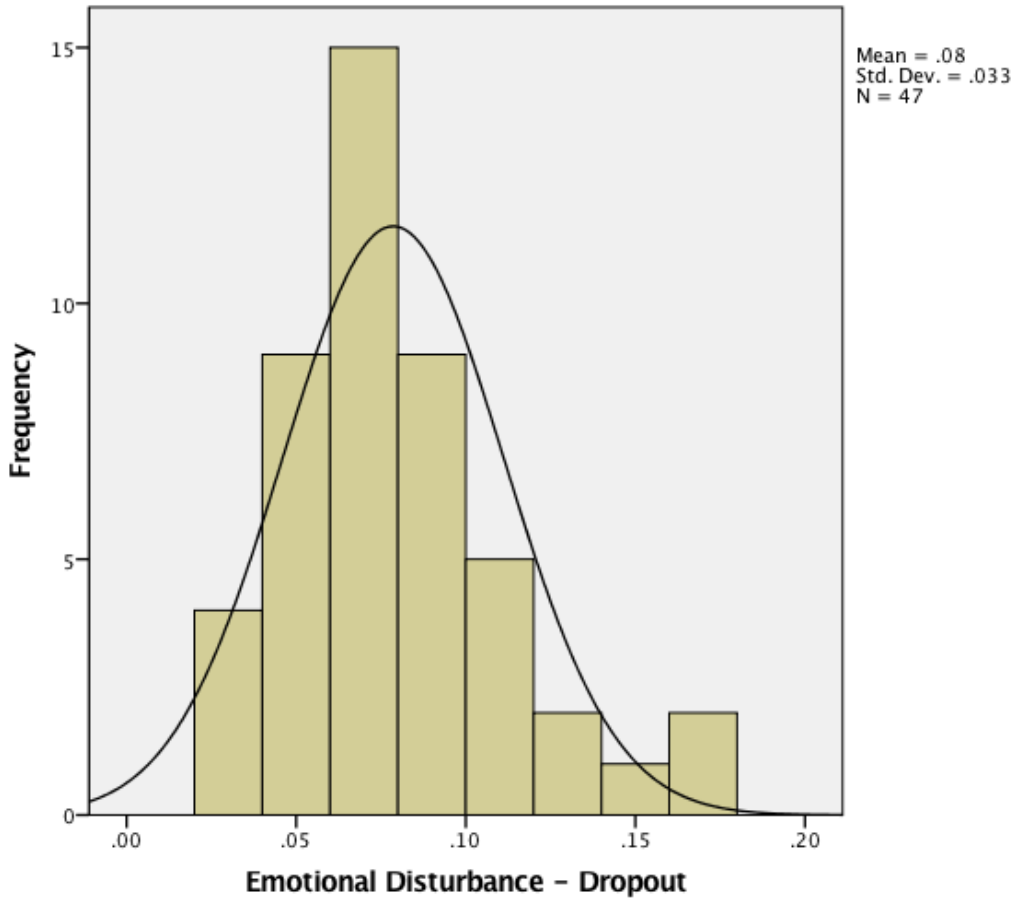
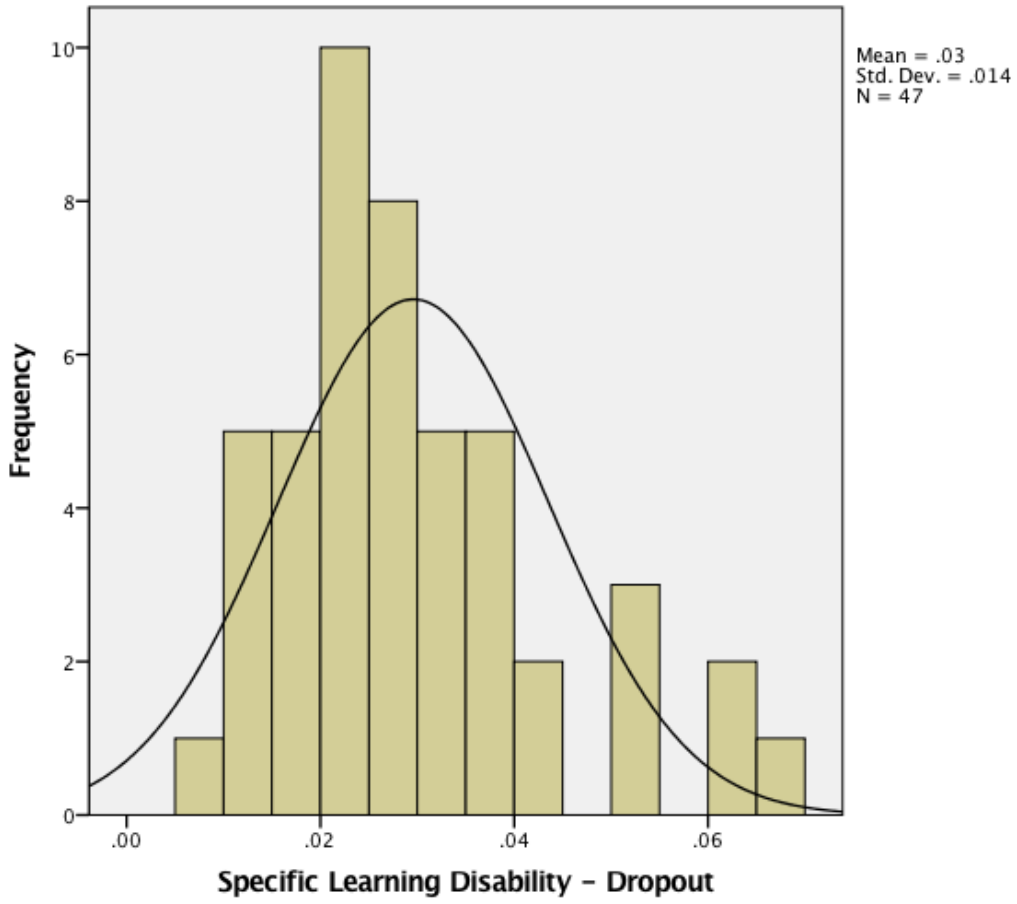
10.0
7.5
5.0
2.5
0.0
.00
.01
.02
.03
.04
.05
White - Dropout


Mean = .13
Std. Dev. = .042
N = 47
Frequency
0
2
4
6
8
.05
.10
.15
.20
.25
Emotional Disturbance - Graduation


Mean = .14
Std. Dev. = .032
N = 47
Frequency
0
2
4
6
.05
.10
.15
.20
.25
Specific Learning Disability – Graduation


Mean = .08
Std. Dev. = .033
N = 47
Frequency
15
10
5
0
.00
.05
.10
.15
.20
Emotional Disturbance – Dropout


Mean = .03
Std. Dev. = .014
N = 47
Frequency
10
8
6
4
2
0
.00
.02
.04
.06
Specific Learning Disability – Dropout

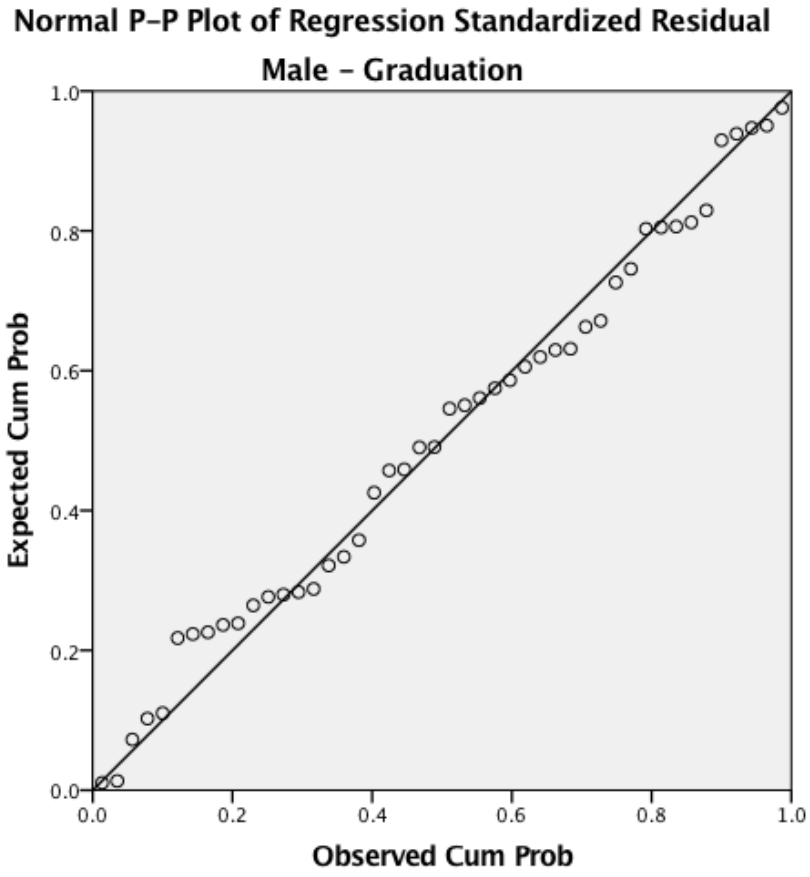
APPENDIX D

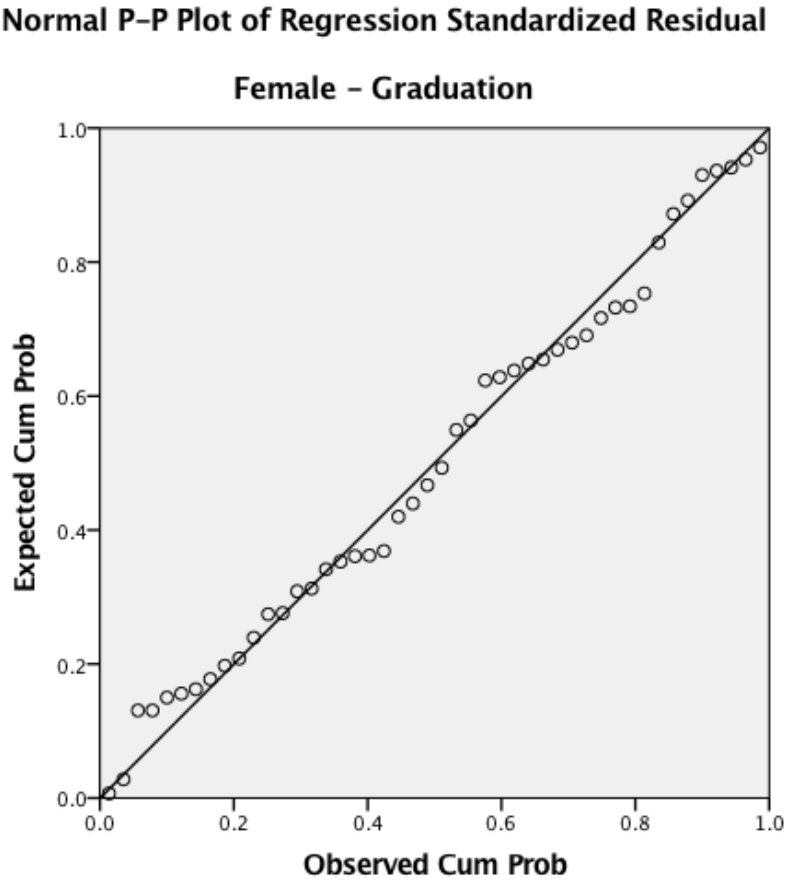
RESEARCH QUESTION THREE: NORMAL P-PLOT OF REGRESSION STANDARDIZED RESIDUAL CHARTS

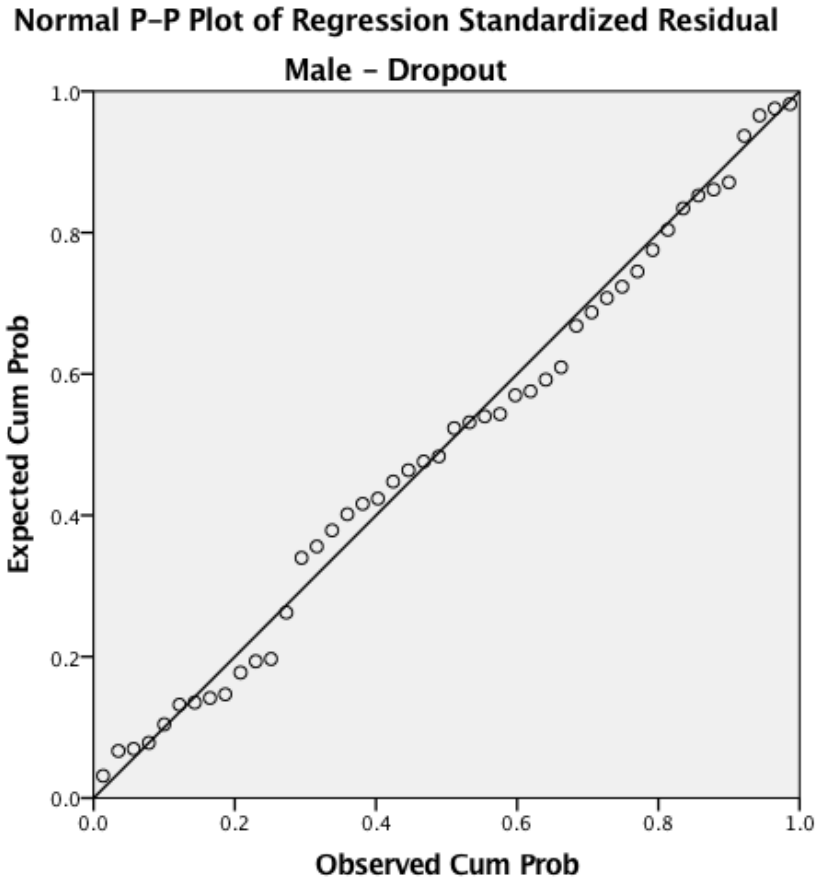
Appendix D

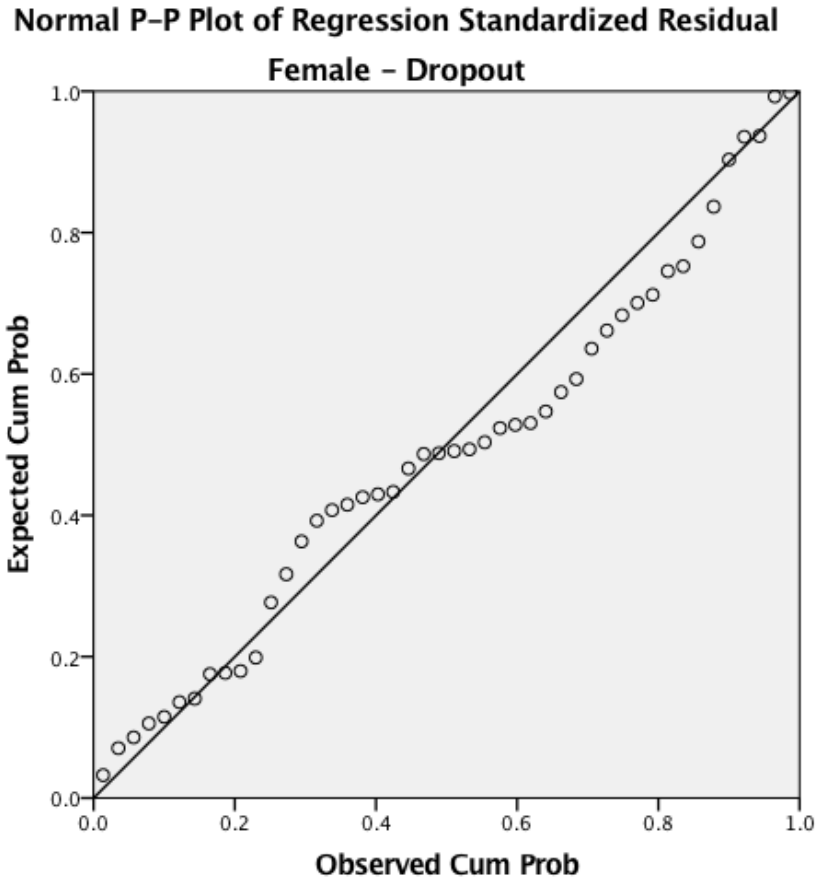
Research Question Three:

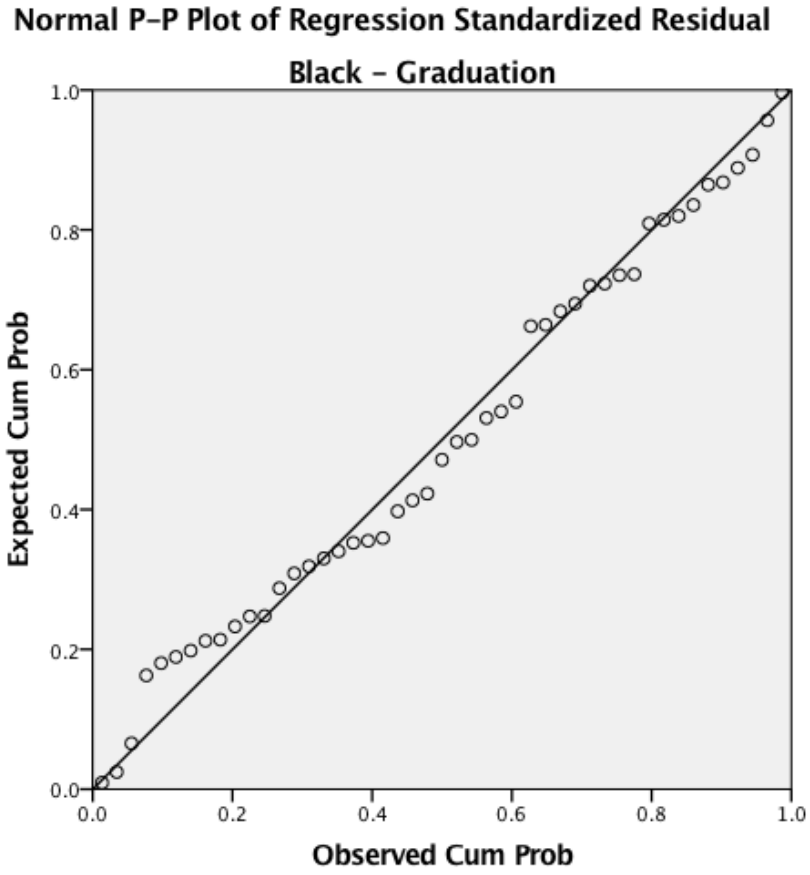
Normal P-Plot of Regression Standardized Residual Charts

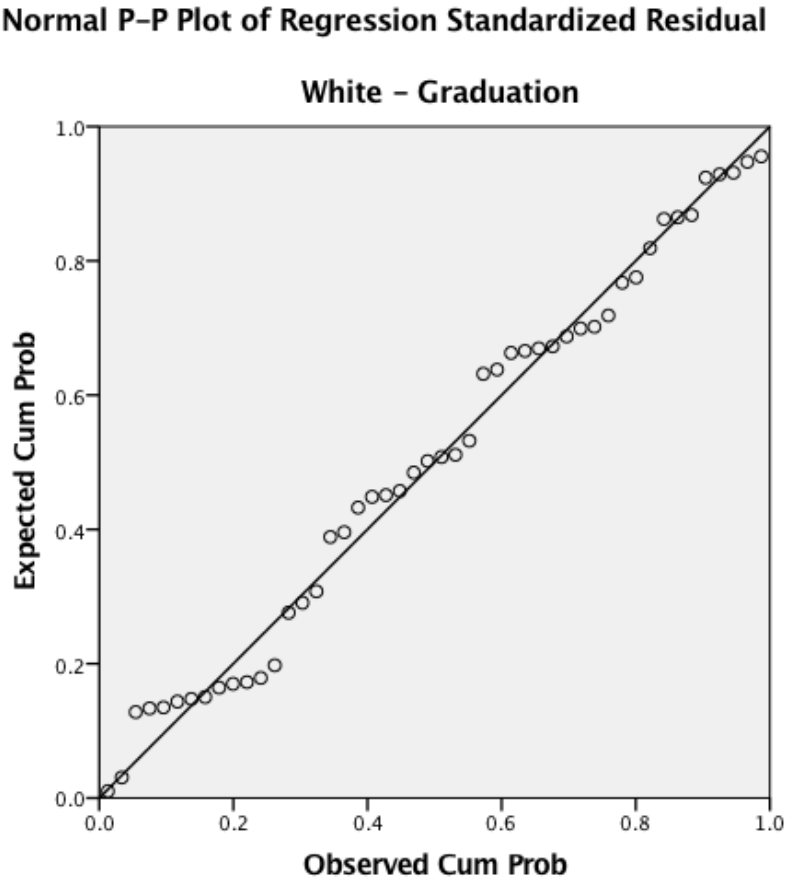


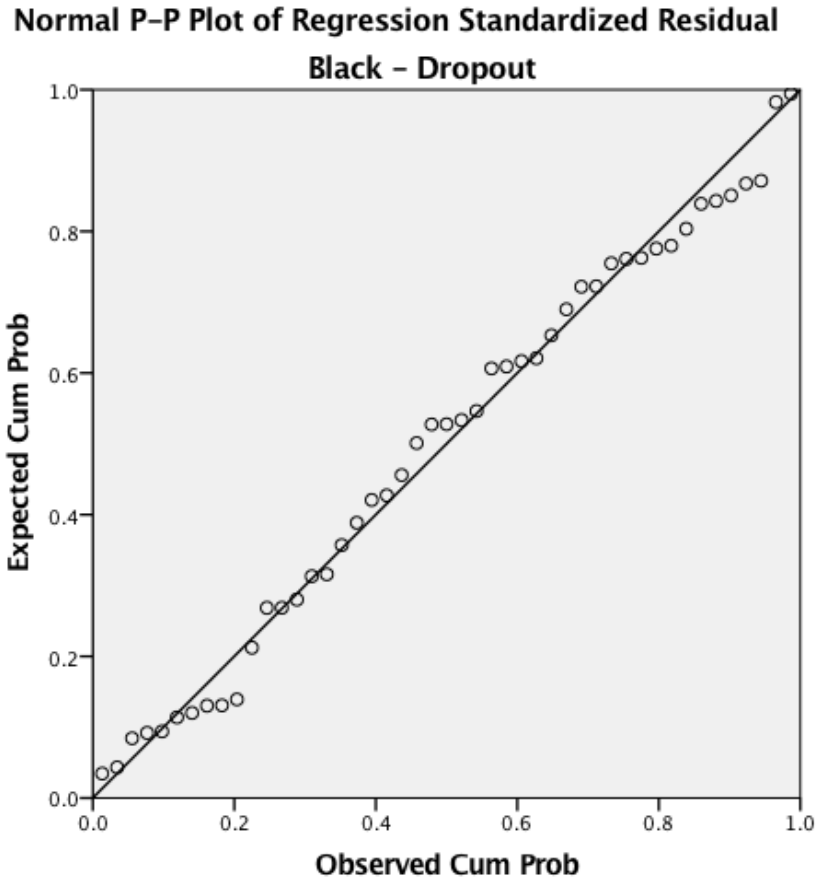

Normal P-P Plot of Regression Standardized Residual
Female - Graduation
Expected Cum Prob
Observed Cum Prob
0.0
0.2
0.4
0.6
0.8
1.0

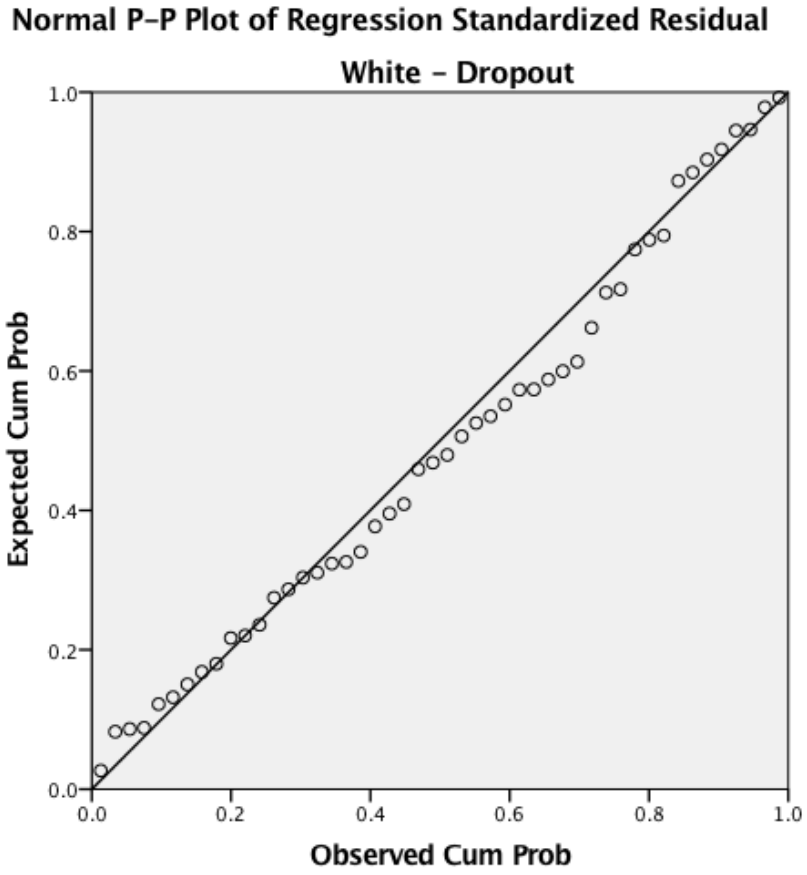

Normal P-P Plot of Regression Standardized Residual
Male - Dropout
Expected Cum Prob
Observed Cum Prob
0.0
0.2
0.4
0.6
0.8
1.0

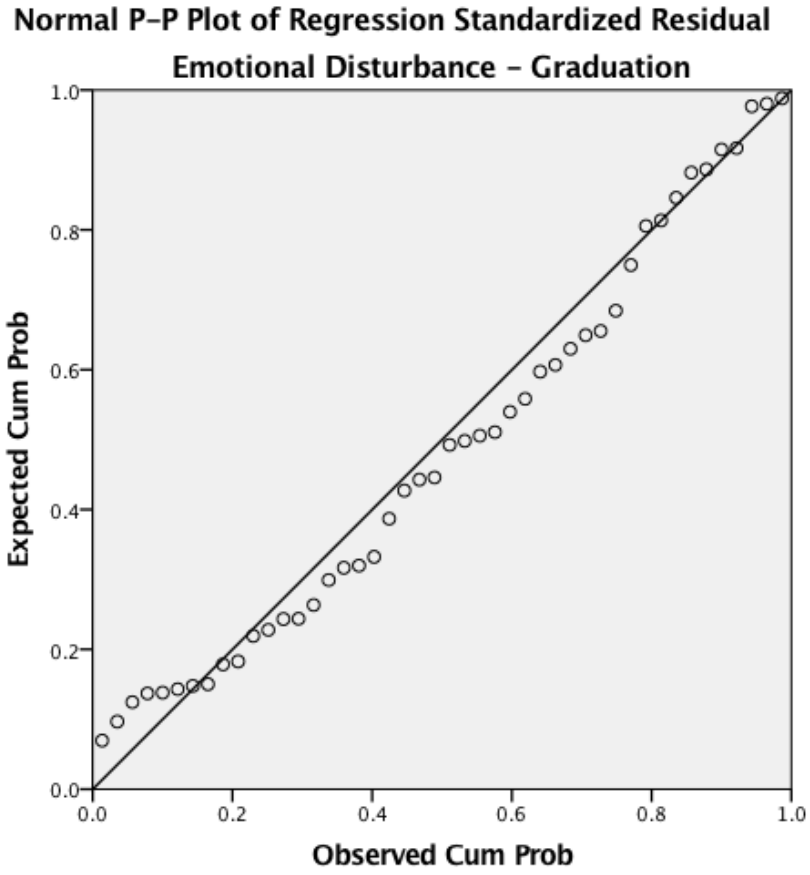

Normal P-P Plot of Regression Standardized Residual
Female - Dropout
Expected Cum Prob
Observed Cum Prob
0.0
0.2
0.4
0.6
0.8
1.0

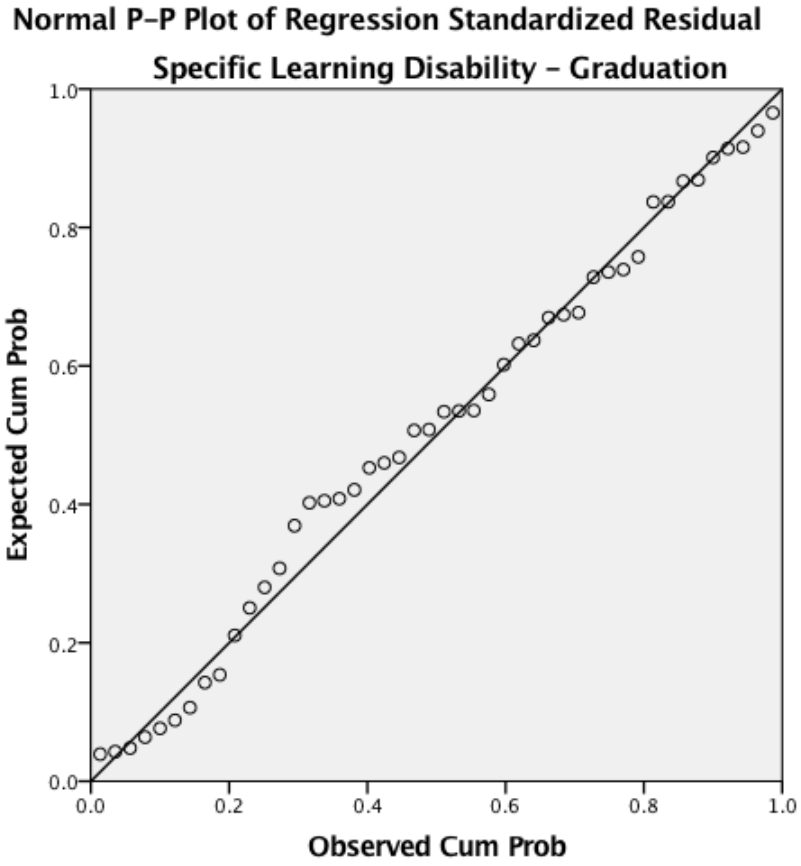

Normal P-P Plot of Regression Standardized Residual
Black - Graduation
Expected Cum Prob
Observed Cum Prob
0.0
0.2
0.4
0.6
0.8
1.0

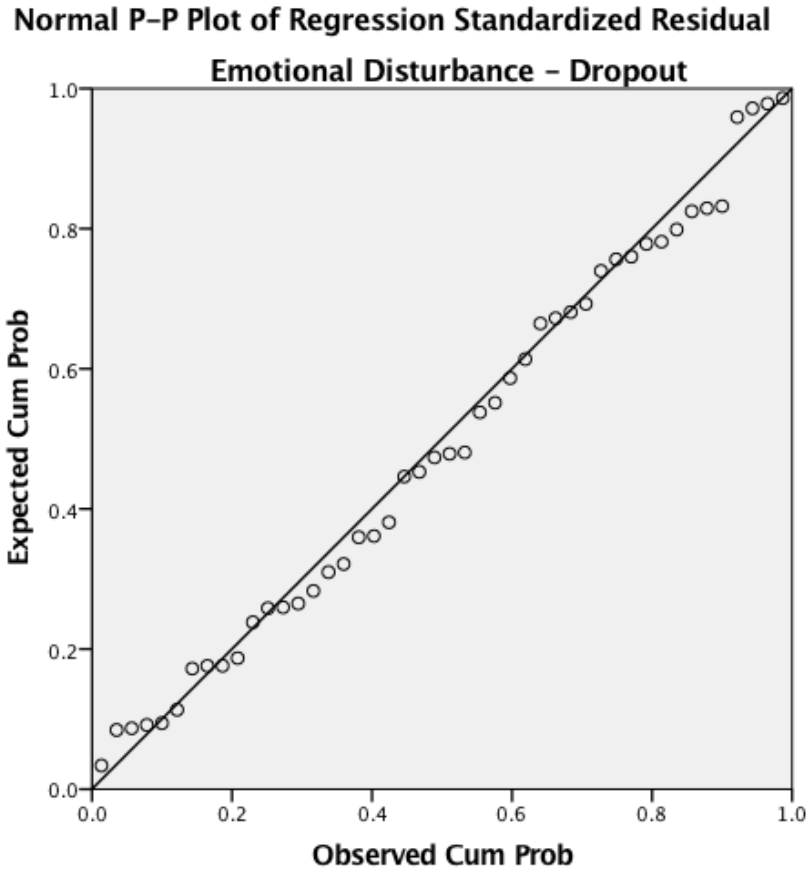

Normal P-P Plot of Regression Standardized Residual
White - Graduation
Expected Cum Prob
Observed Cum Prob
0.0
0.2
0.4
0.6
0.8
1.0

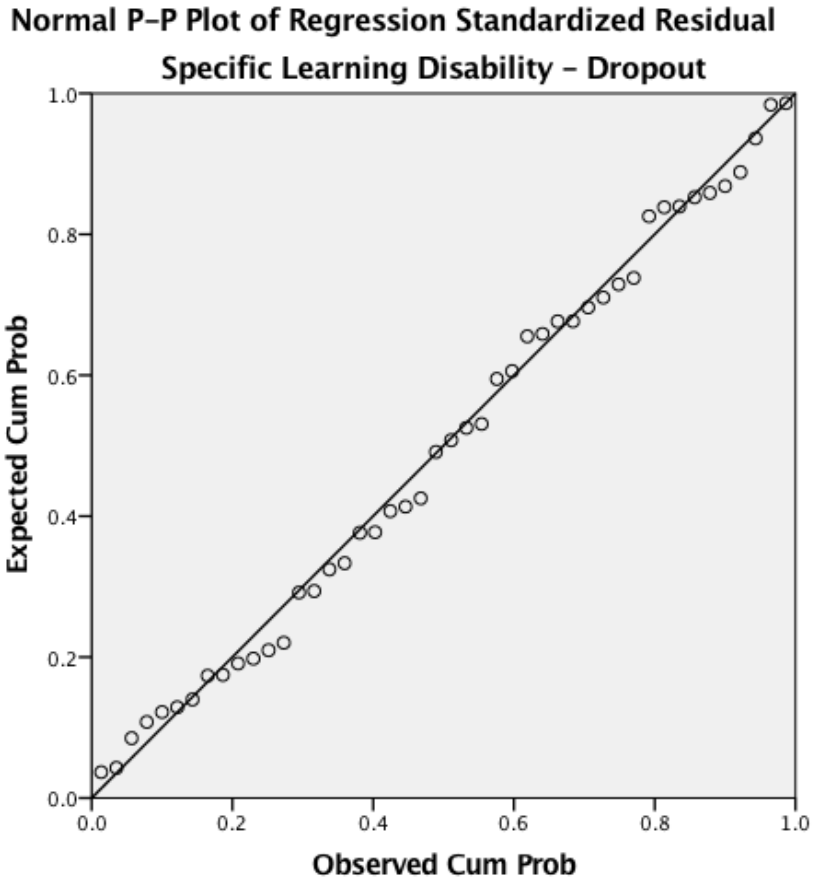

Normal P-P Plot of Regression Standardized Residual
Black - Dropout
Expected Cum Prob
Observed Cum Prob
0.0
0.2
0.4
0.6
0.8
1.0


Normal P-P Plot of Regression Standardized Residual
White - Dropout
Expected Cum Prob
Observed Cum Prob
0.0
0.2
0.4
0.6
0.8
1.0


Normal P-P Plot of Regression Standardized Residual
Emotional Disturbance - Graduation
Expected Cum Prob
Observed Cum Prob
0.0
0.2
0.4
0.6
0.8
1.0


Normal P-P Plot of Regression Standardized Residual
Specific Learning Disability – Graduation
Expected Cum Prob
Observed Cum Prob
0.0
0.2
0.4
0.6
0.8
1.0


Normal P-P Plot of Regression Standardized Residual
Emotional Disturbance - Dropout
Expected Cum Prob
Observed Cum Prob
0.0
0.2
0.4
0.6
0.8
1.0

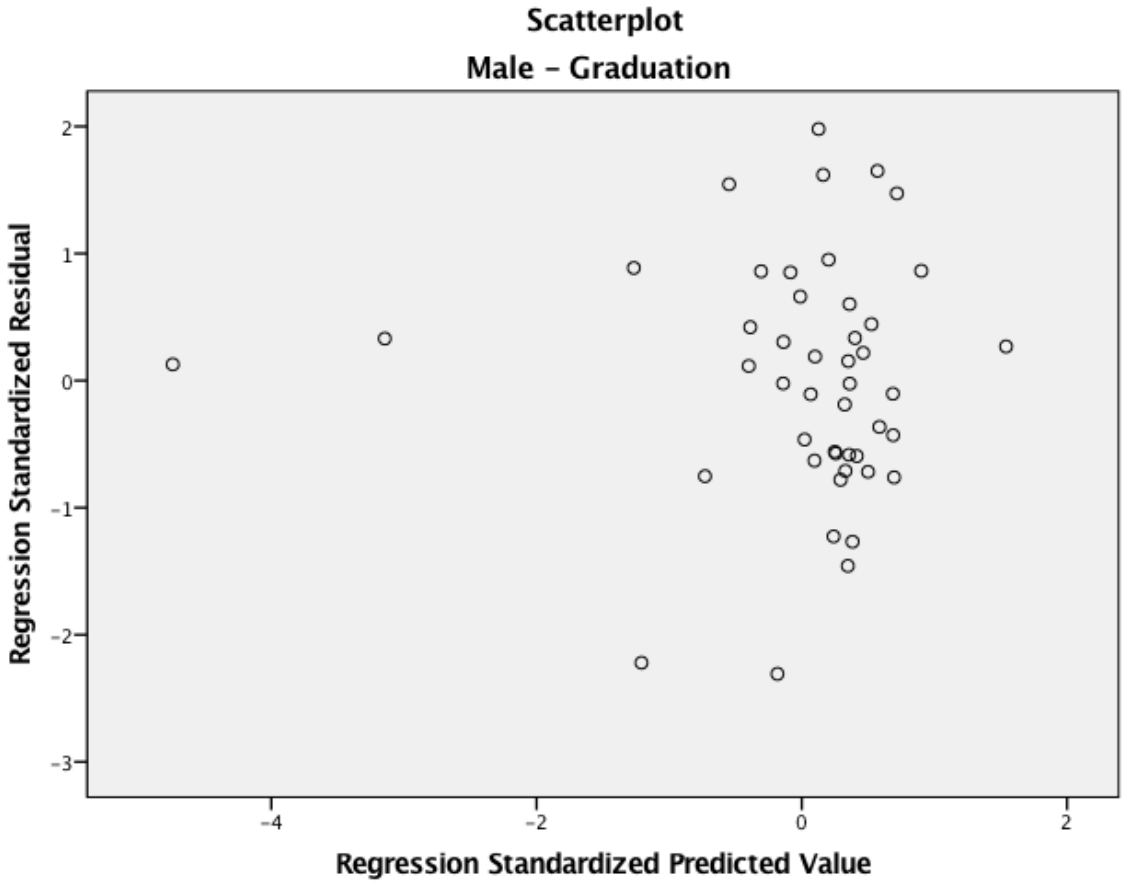

Normal P-P Plot of Regression Standardized Residual
Specific Learning Disability - Dropout
Expected Cum Prob
Observed Cum Prob
0.0
0.2
0.4
0.6
0.8
1.0

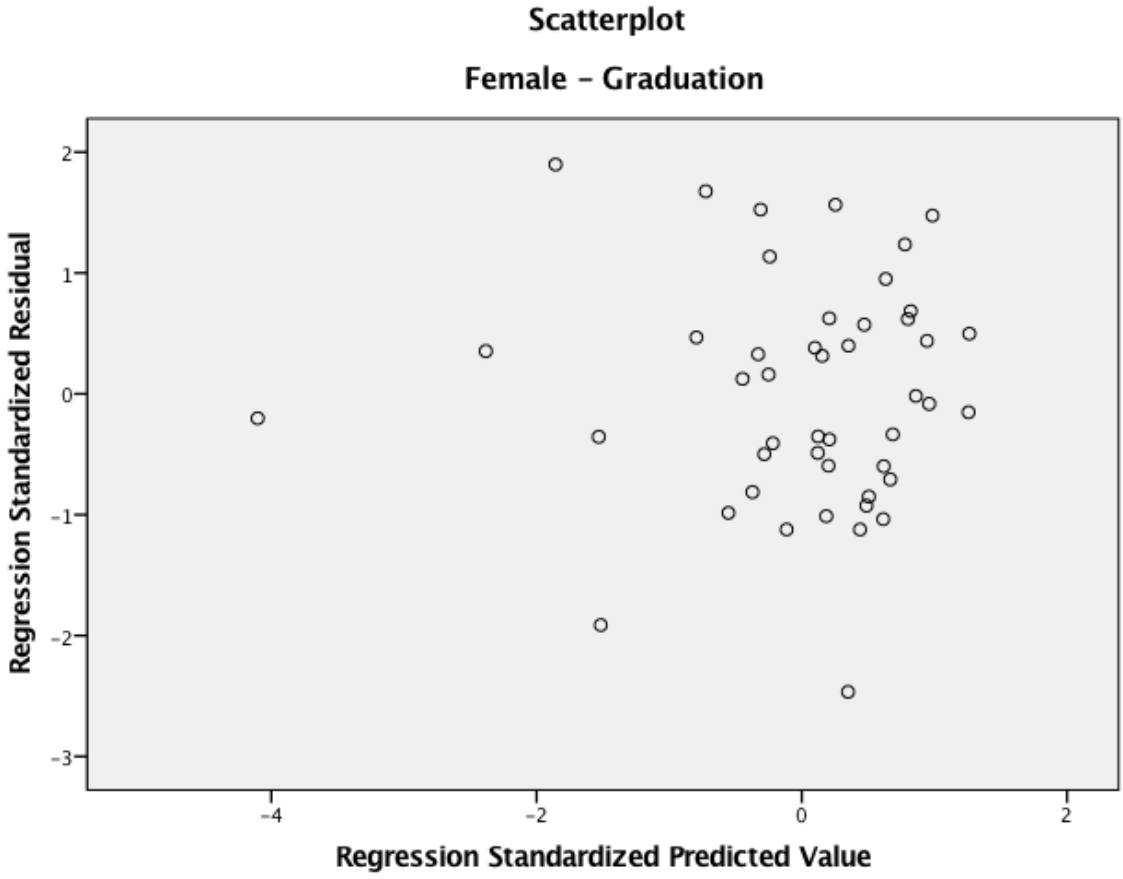
APPENDIX E

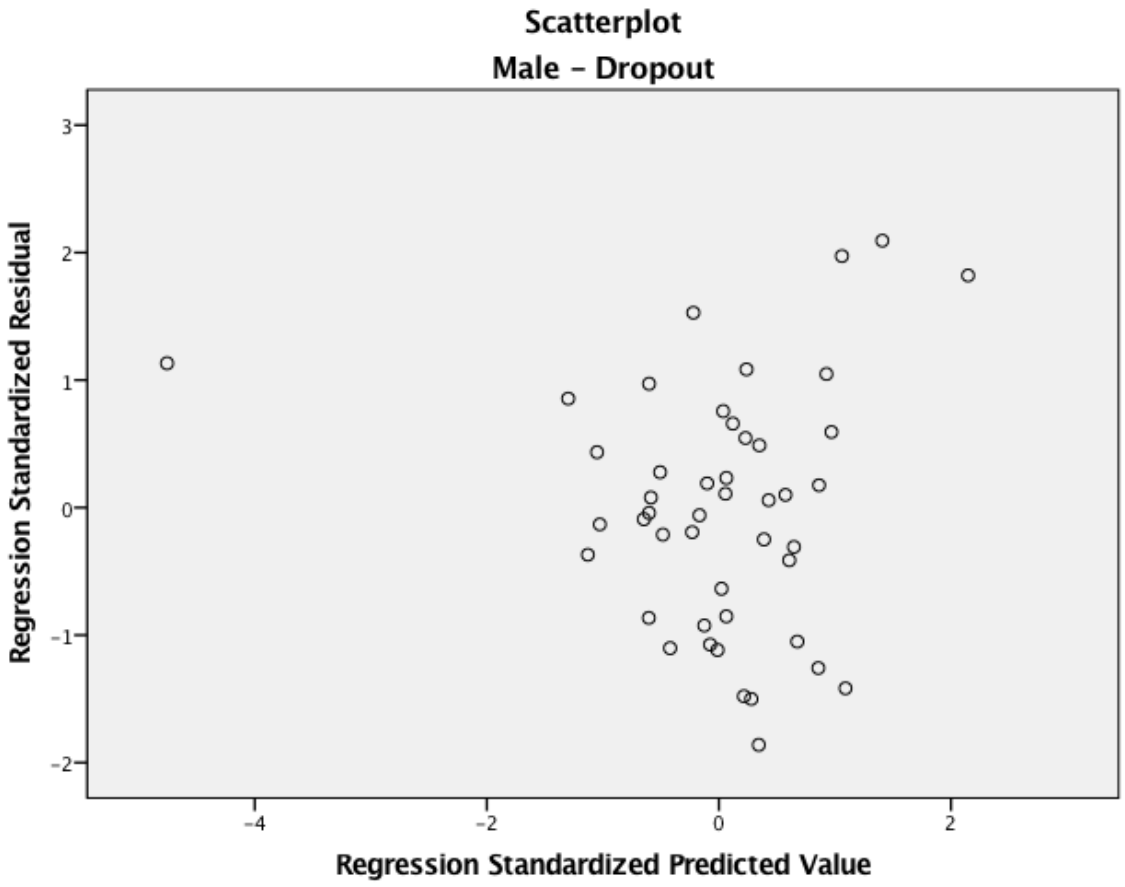
RESEARCH QUESTION THREE: SCATTERPLOT OF RESIDUALS VERSUS PREDICTED VALUES

Appendix E

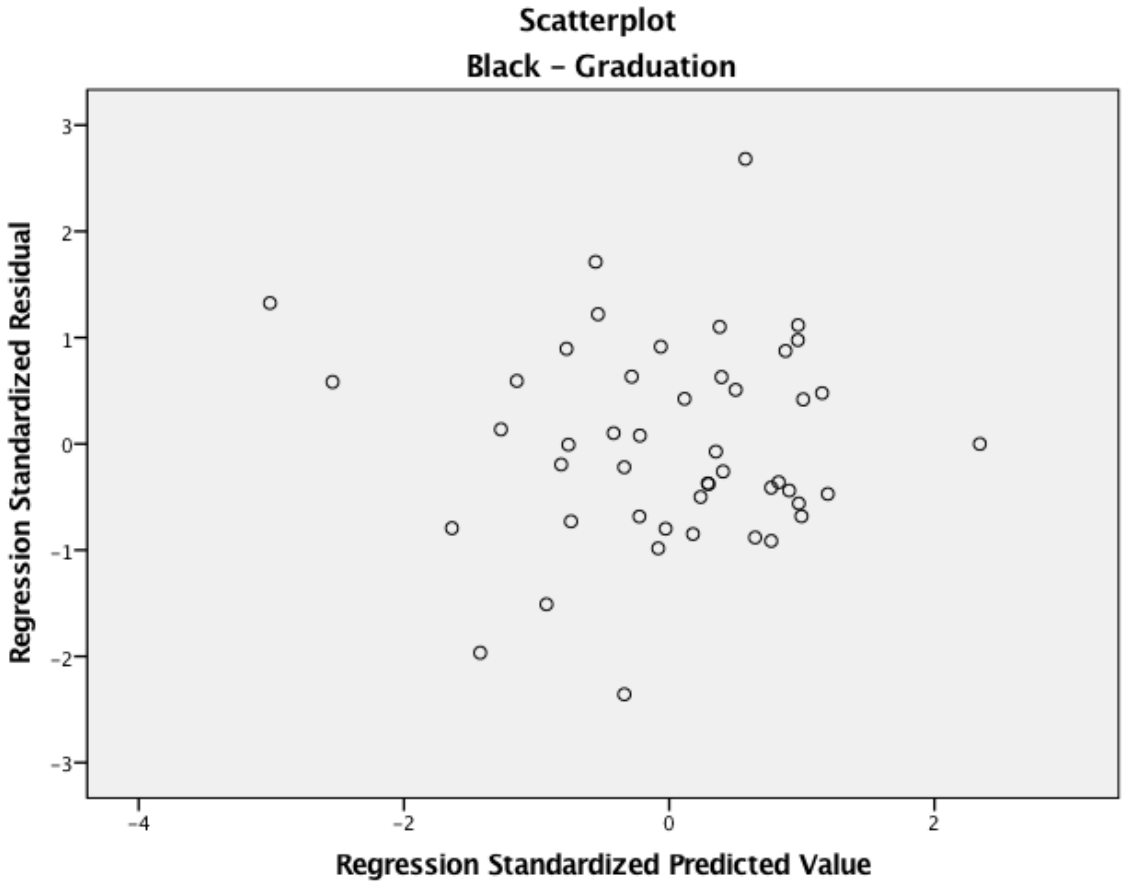
Research Question Three: Scatterplot of Residuals Versus Predicted Values

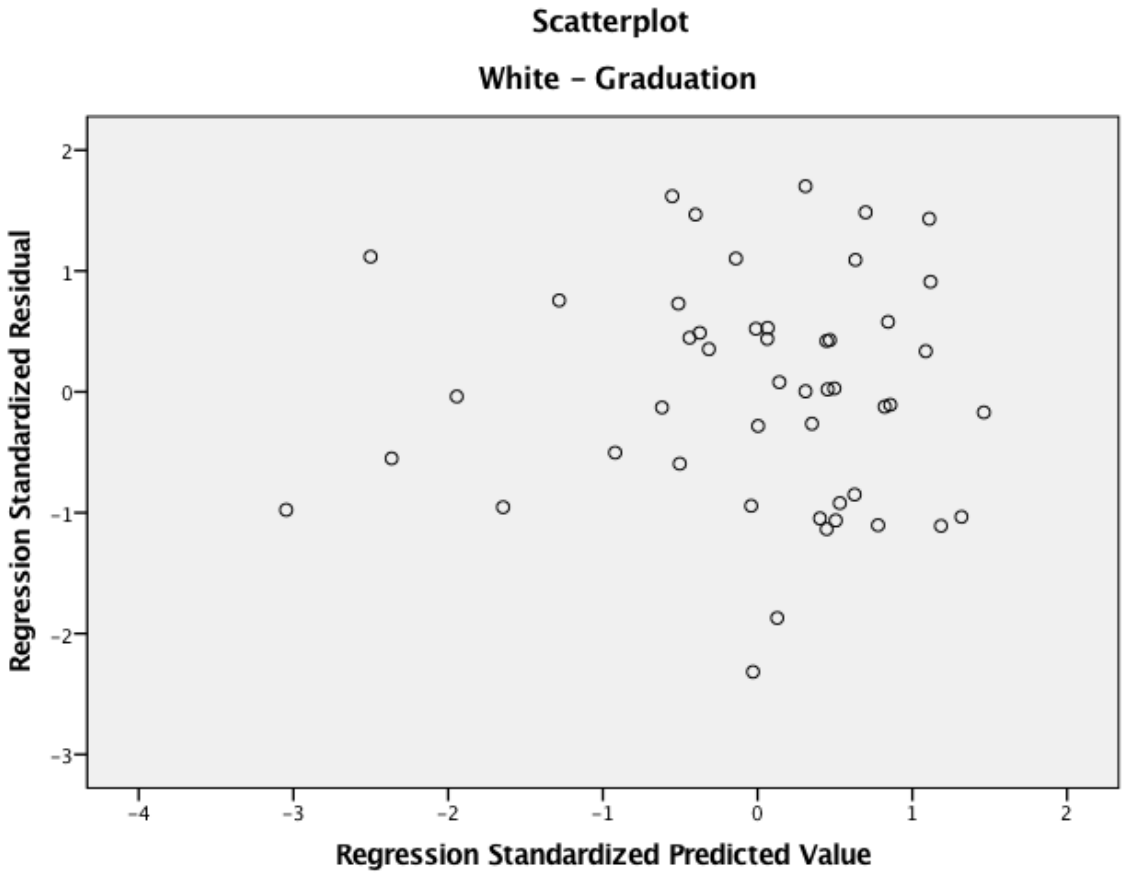


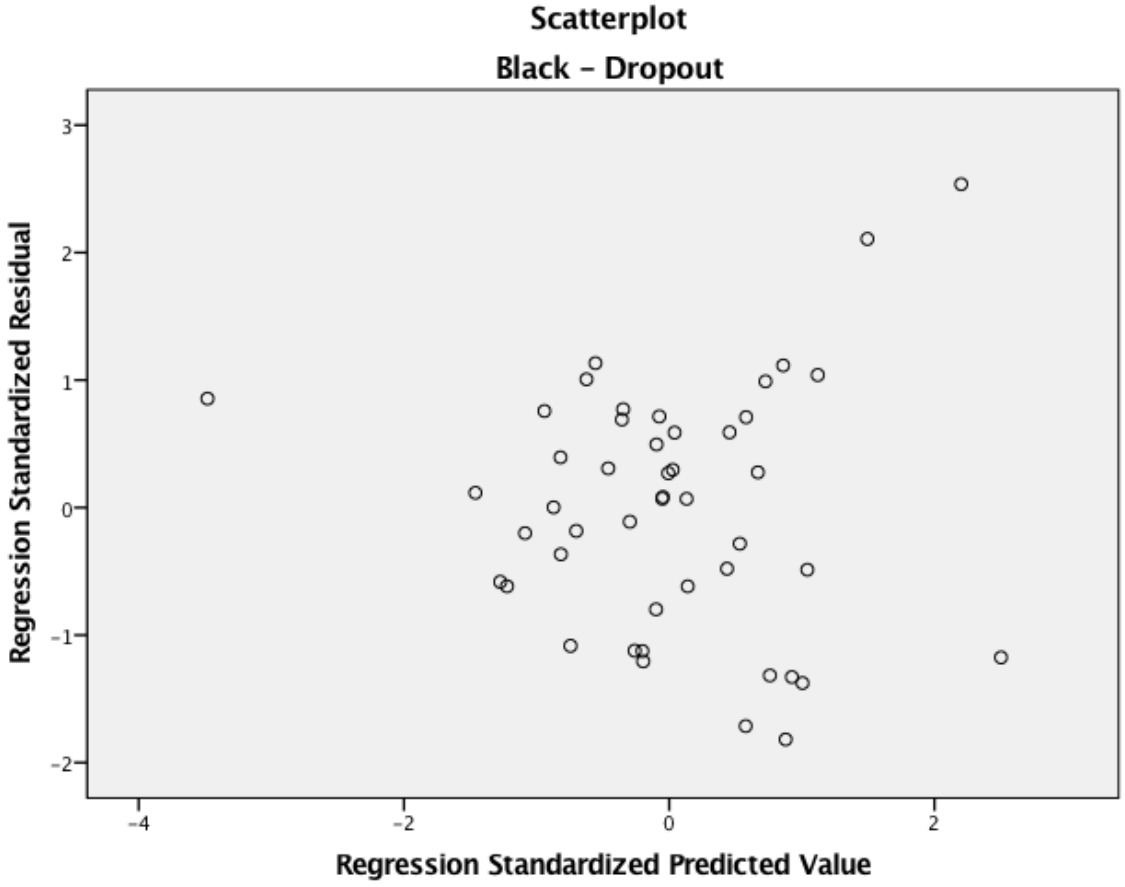

Scatterplot
Female – Graduation
Regression Standardized Residual
Regression Standardized Predicted Value
2
1
0
-1
-2
-3
-4
-2
0
2

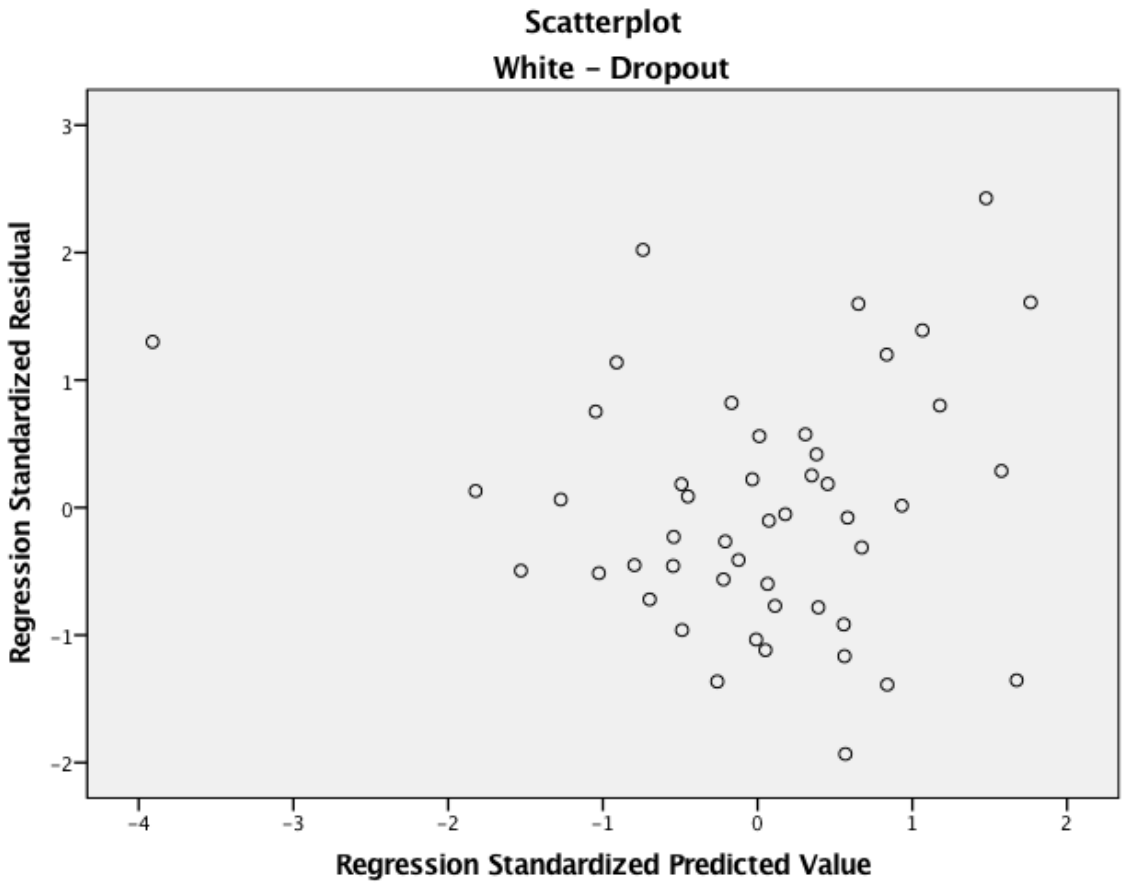

Scatterplot
Male – Dropout
Regression Standardized Residual
Regression Standardized Predicted Value
3
2
1
0
-1
-2
-4
-2
0
2

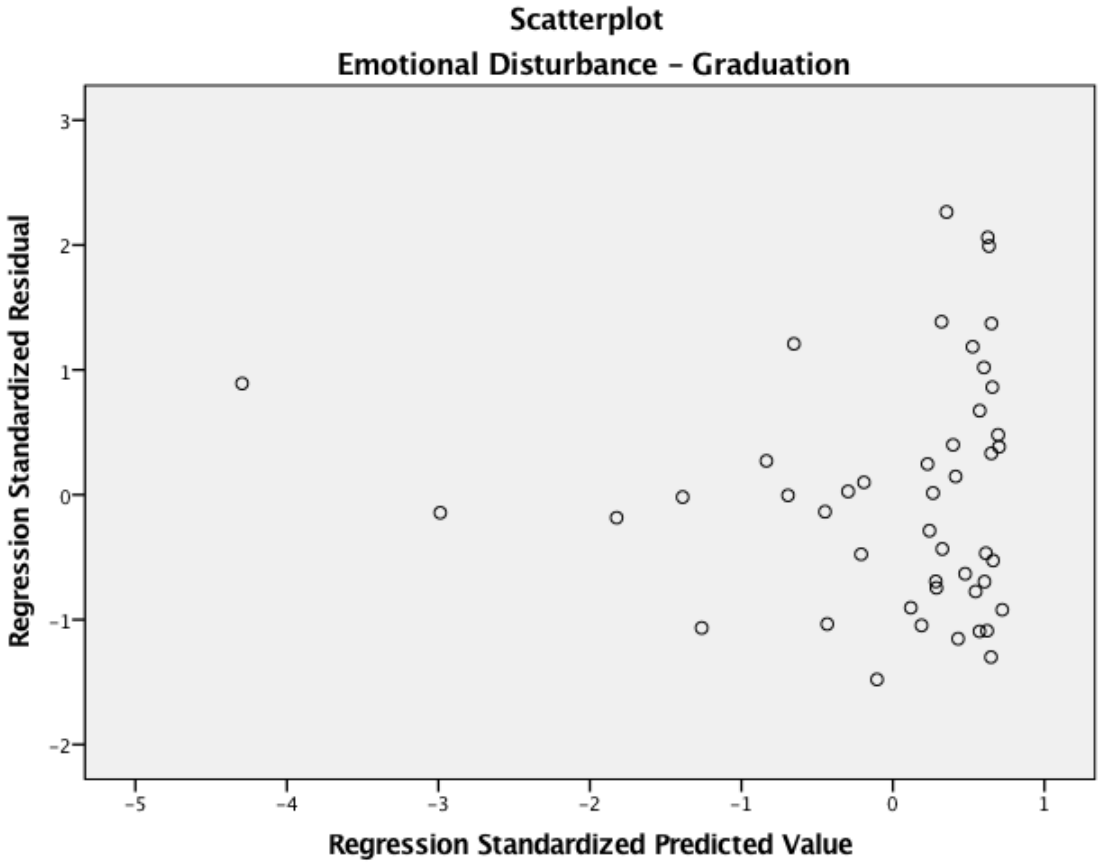

Scatterplot
Female – Dropout
Regression Standardized Residual
Regression Standardized Predicted Value
3
2
1
0
-1
-2
-6
-4
-2
0
2

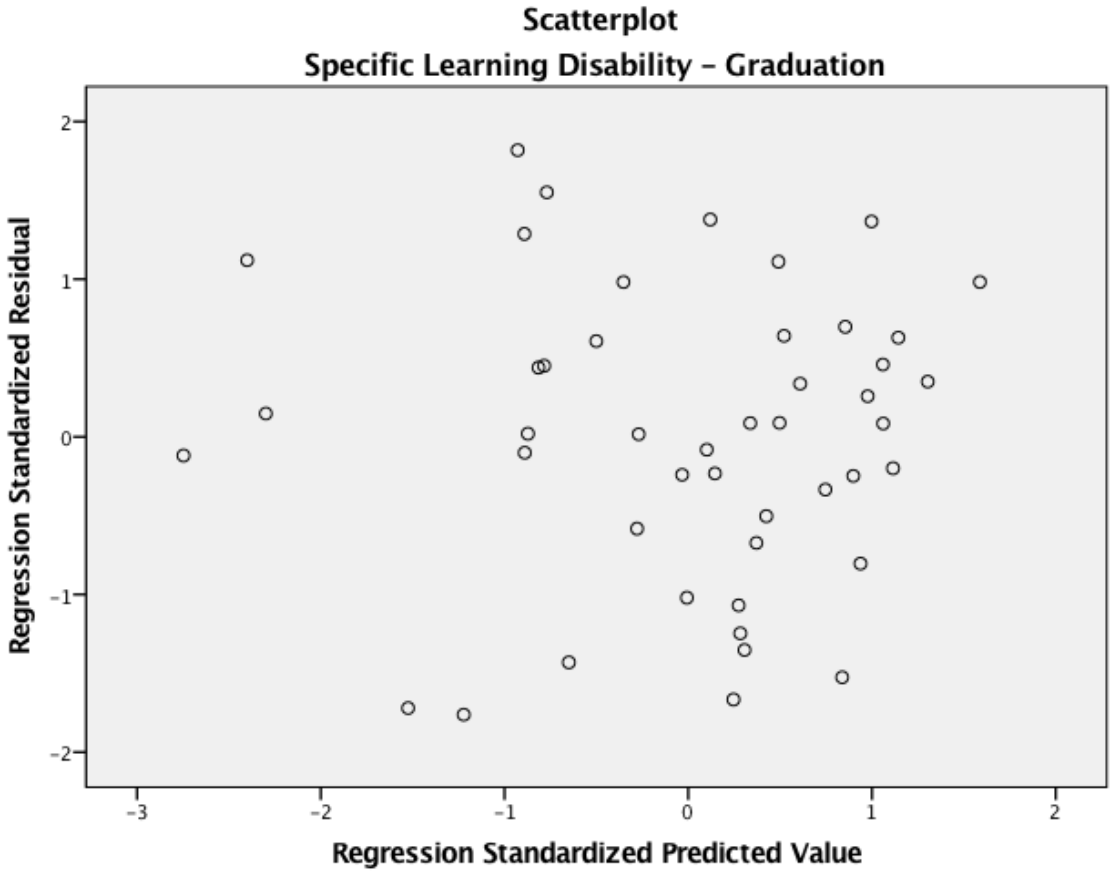

Scatterplot
Black – Graduation
Regression Standardized Residual
Regression Standardized Predicted Value
3
2
1
0
-1
-2
-3
-4
-2
0
2

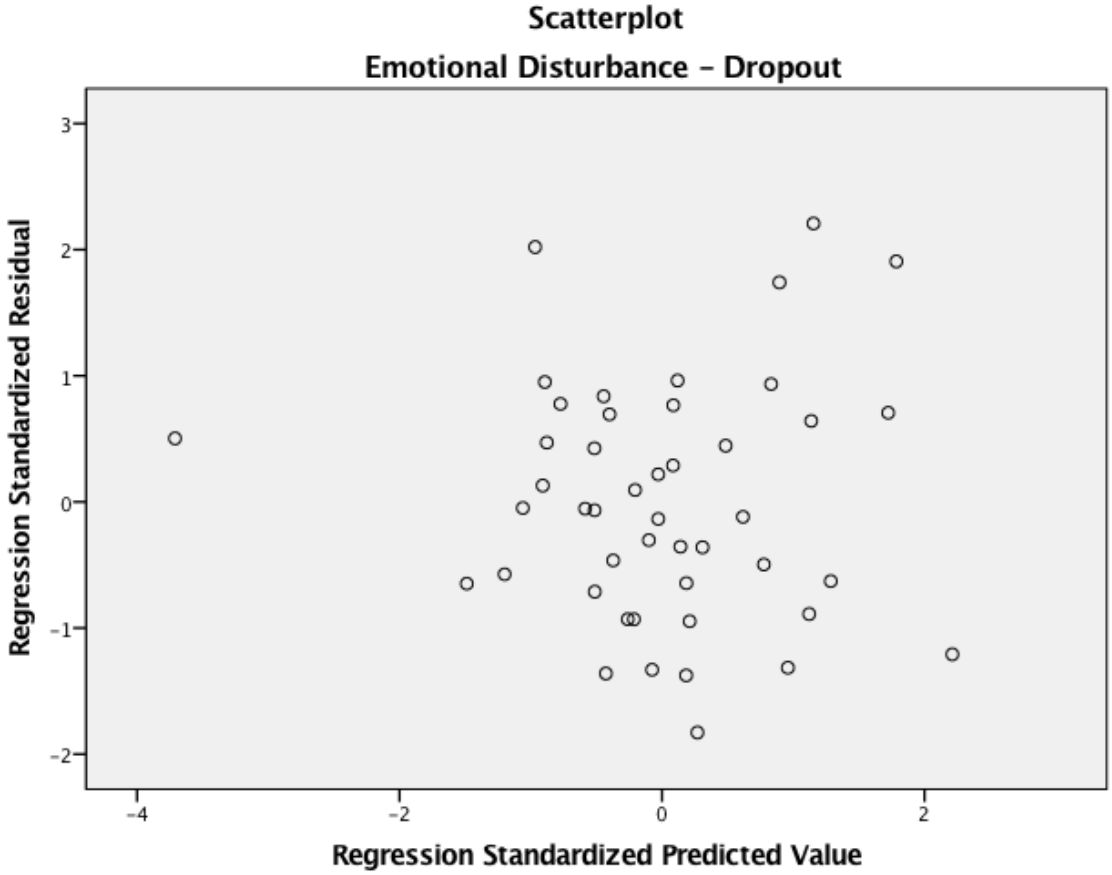

Scatterplot
White – Graduation
Regression Standardized Residual
Regression Standardized Predicted Value
2
1
0
-1
-2
-3
-4
-3
-2
-1
0
1
2

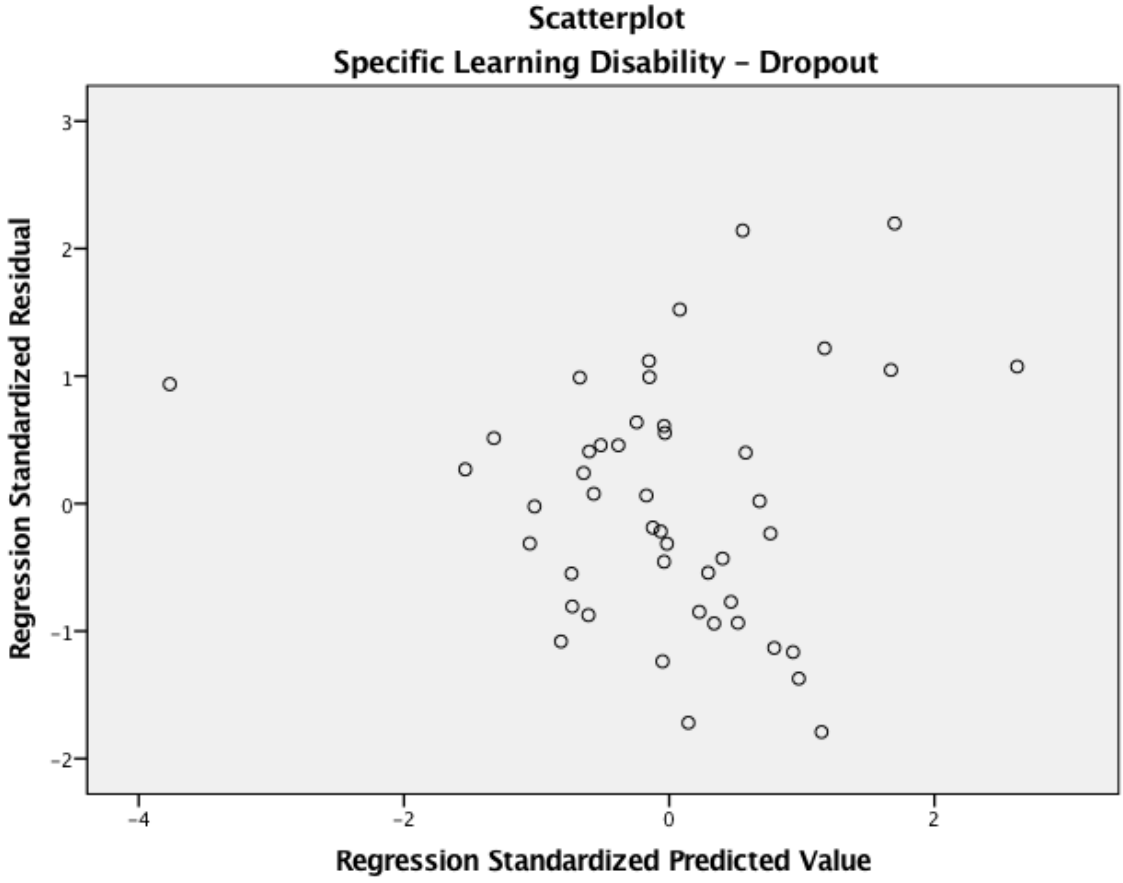

Scatterplot
Black – Dropout
Regression Standardized Residual
Regression Standardized Predicted Value
3
2
1
0
-1
-2
-4
-2
0
2


Scatterplot
White – Dropout
Regression Standardized Residual
Regression Standardized Predicted Value
3
2
1
0
-1
-2
-4
-3
-2
-1
0
1
2


Scatterplot
Emotional Disturbance – Graduation
Regression Standardized Residual
Regression Standardized Predicted Value
3
2
1
0
-1
-2
-5
-4
-3
-2
-1
0
1


Scatterplot
Specific Learning Disability – Graduation
Regression Standardized Residual
Regression Standardized Predicted Value
2
1
0
-1
-2
-3
-2
-1
0
1
2


Scatterplot
Emotional Disturbance – Dropout
Regression Standardized Residual
Regression Standardized Predicted Value
3
2
1
0
-1
-2
-4
-2
0
2


Scatterplot
Specific Learning Disability – Dropout
Regression Standardized Residual
Regression Standardized Predicted Value
3
2
1
0
-1
-2
-4
-2
0
2

APPENDIX F

RESEARCH QUESTION THREE: VIF VALUES

Appendix F

Research Question Three: VIF Values

Table F1

VIF Values of Gender Moderating the Relationship Between Suspension and Graduation

Predictor	Male	Female
OSS 10 days or less	2.33	2.63
OSS 10 days or less squared	1.25	1.13
OSS more than 10 days	1.35	1.50
ISS 10 days or less	3.92	3.49
ISS more than 10 days	3.42	2.88

Note. VIF = variance inflation factor values.

Table F2

VIF Values of Gender Moderating the Relationship Between Suspension and Dropout

Predictor	Male	Female
OSS 10 days or less	2.31	2.59
OSS more than 10 days	1.34	1.50
ISS 10 days or less	3.84	3.47
ISS more than 10 days	2.97	2.68

Note. VIF = variance inflation factor values.

Table F3

VIF Values of Race Moderating the Relationship Between Suspension and Graduation

Predictor	Black	White
OSS 10 days or less	1.83	2.78
OSS 10 days or less squared	1.46	1.45
OSS more than 10 days	2.30	2.26
OSS more than 10 days squared	1.89	1.83
ISS 10 days or less	2.89	4.53
ISS more than 10 days	2.69	3.74

Note. VIF = variance inflation factor values.

Table F4

VIF Values of Race Moderating the Relationship Between Suspension and Dropout

Predictor	Black	White
OSS 10 days or less	1.77	2.72
OSS more than 10 days	1.40	1.51
ISS 10 days or less	2.45	4.29
ISS more than 10 days	2.16	3.38

Note. VIF = variance inflation factor values.

Table F5

VIF Values of Disability Type Moderating the Relationship Between Suspension and Graduation

Predictor	Emotional Disturbance	Specific Learning Disability
OSS 10 days or less	2.68	2.87
OSS 10 days or less squared	1.41	1.36
OSS more than 10 days	2.15	2.21
OSS more than 10 days squared	1.82	1.52
ISS 10 days or less	3.13	4.88
ISS more than 10 days	2.79	3.46

Note. VIF = variance inflation factor values.

Table F6

VIF Values of Disability Type Moderating the Relationship Between Suspension and Dropout

Predictor	Emotional Disturbance	Specific Learning Disability
OSS 10 days or less	2.49	2.51
OSS more than 10 days	1.39	1.49
ISS 10 days or less	2.95	4.78
ISS more than 10 days	2.19	3.23

Note. VIF = variance inflation factor values.

REFERENCES

REFERENCES

Arcia, E. (2006). Achievement and enrollment status of suspended students: Outcomes in a large, multicultural school district. *Education and Urban Society, 38*(3), 359-369. doi:10.1177/0013124506286947

Christle, C. A., Jolivette, K., & Nelson, C. M. (2007). School characteristics related to high school dropout rates. *Remedial & Special Education, 28,* 325-339. doi:10.1177/07419325070280060201

Duncan, A. (2015). *America's educational crossroads: Making the right choice for our children's future.* Retrieved June 2, 2015 from http://www.ed.gov/news/speeches/americas-educational-crossroads-making-right-choice-our-children%E2%80%99s-future.

Eckstrom, R. B., Goertz, M. E., Pollack, J. M., & Rock, D. A. (1986). Who drops out of high school and why? Findings from a national study. *Teachers College Record, 87,* 357-373.

Fraenkel, J. R., & Wallen, N. E. (2006). Variables and hypotheses. New York, NY: McGraw-Hill.

Goran, L. G., & Gage, N. A. (2011). A comparative analysis of language, suspension, and academic performance of students with Emotional Disturbance and students with learning disabilities. *Education and Treatment of Children, 34,* 469-488. doi:10.1353/etc.2011.0035

IBM Corporation. (2015). Released 2013. IBM SPSS Statistics for Macintosh, Version 23.0. Armonk, NY: Author.

Johnston, J. S. (1989). High school completion of in-school suspension students. *NASSP Bulletin, 73,* 89-95. doi:10.1177/019263658907352117

Keith, T. Z. (2015). *Multiple regression and beyond: An introduction to multiple regression and structural equation modeling* (2nd ed.). New York, NY: Routledge.

Kim, J. (2011). Relationships amount and between ELL status, demographic characteristics, enrollment history, and school persistence (CRESST Report 810). Los Angeles, CA: University of California, National Center for Research on Evaluation, Standards, and Student Testing (CRESST).

Lee, T., Cornell, D., Gregory, A., & Fan, X. (2011). High suspension schools and dropout rates for Black and White students. *Education & Treatment of Children, 34,* 167-192. doi:10.1353/etc.2011.0014

Lochner, L., & Moretti, E. (2002). The effect of education on crime: Evidence from prison inmates, arrests, and self-reports. *The American Economic Review, 94*(1), 155-189. doi:10.1257/000282804322970751.

Losen, D. J. (2011). *Discipline policies, successful schools, and racial justice.* Boulder, CO: National Education Policy Center. Retrieved from http://nepc.colorado.edu/publication/discipline-policies

Losen, D. J., & Skiba, R. J. (2010). *Suspended education: Urban middle schools in crisis.* Los Angeles, CA: The Civil Rights Project at UCLA. Retrieved from https://www.splcenter.org/20100901/suspended-education-urban-middle-schools-crisis

Losen, D. J., Hodson, C., Keith II, M. A., Morrison, K., & Belway, S. (2015). *Are we closing the school discipline gap? K–12 Racial Disparities in School Discipline.* UCLA: The Civil Rights Project. Retrieved August 31, 2015 from http://civilrightsproject.ucla.edu/resources/projects/center-for-civil-rights-remedies/school-to-prison-folder/federal-reports/are-we-closing-the-school-discipline-gap/losen-are-we-closing-discipline-gap-2015-summary.pdf

Mac Iver, M. A. (2011). The challenge of improving urban high school graduation outcomes: Findings from a randomized study of dropout prevention efforts. *Journal of Education for Students Placed at Risk, 16*(3), 167-184. doi:10.1080/10824669.2011.584497

Mendez, L. M. R., & Knoff, H. M. (2003). Who gets suspended from school and why: A demographic analysis of schools and disciplinary infractions in a large school district. *Education & Treatment of Children, 26,* 30-51.

Noltemeyer, A., & Mcloughlin, C. S. (2010). Patterns of exclusionary discipline by school typology, ethnicity, and their interaction. *Perspectives on Urban Education, 7,* 27-40.

Noltemeyer, A. L., Mujic, J., & Mcloughlin, C. S. (2012). The history of inequity in education. In A. L. Noltemeyer & C. S. Mcloughlin (Eds.), *Disproportionality in education: A guide to creating more equitable learning environments* (pp. 3-22). Springfield, IL: Charles C. Thomas.

Noltemeyer, A. L., Ward, R. M., & Mcloughlin, C. (2015). Relationship between school suspension and student outcomes: A meta-analysis. *School Psychology Review, 44,* 224-240. doi:10.17105/spr-14-0008.1

Northeastern University – Center for Labor Market Studies and Alternative Schools Network in Chicago. (2009). *Left behind in America: The nation's dropout crisis.* Center for Labor Market Studies Publications. Retrieved from http://hdl.handle.net/2047/d20000598

Raffaele Mendez, L. M. (2003). Predictors of suspension and negative school outcomes: A longitudinal investigation. *New Directions for Youth Development, 99*, 17-33.

Rausch, M. K., & Skiba, R. (2004). Unplanned outcomes: Suspensions and expulsions in Indiana. *Education Policy Briefs, 2,* 1-8.

Safer, D. J. (1986). Nonpromotion correlates and outcomes at different grade levels. *Journal of Learning Disabilities, 19*, 500-503. doi: 10.1177/002221948601900812

Shirley, E. L. M., & Cornell, D. G. (2011). The contribution of student perceptions of school climate to understanding the disproportionate punishment of African American students in a middle school. *School Psychology International, 33,* 115-134. doi:10.1177/0143034311406815

Skiba, R. J., Horner, R. H., Chung, C-G., Rausch, M. K., May, S. L., & Tobin, T. (2011). Race is not neutral: A national investigation of African American and Latino disproportionality in school discipline. *School Psychology Review, 40*(1), 85-107.

Smith, E. J., & Harper, S. R. (2015). *Disproportionate impact of K–12 school suspension and expulsion on Black students in southern states.* Philadelphia, PA: University of Pennsylvania, Center for the Study of Race and Equity in Education. Retrieved August 31, 2015 from http://www.gse.upenn.edu/equity/sites/gse.upenn.edu.equity/files/publications/SOUTHADVANCEDDRAFT24AUG15.pdf

Stevens, J. (1999). *Intermediate statistics: A modern approach* (2nd ed.). Mahwah, NJ: Lawrence Erlbaum Associates.

Sullivan, A. L., Klingbeil, D. A., & Van Norman, E. R. (2013). Beyond behavior: Multilevel analysis of the influence of sociodemographics and school characteristics on students' risk of suspension. *School Psychology Review, 42*, 99-114.

Suh, S., & Suh, J. (2007). Rick factors and levels of risk for high school dropouts. *Professional School Counseling, 10,* 297-306. doi:10.5330/prsc.10.3.w26024vvw6541gv7

Tobin, T. J., & Sugai, G. M. (1999). Using sixth-grade school records to predict school violence, chronic discipline problems, and high school outcomes. *Journal of Emotional and Behavioral Disorders, 7*(1), 40-53. doi:10.1177/106342669900700105

U.S. Department of Education. (2015a). *Equity of opportunity.* Retrieved October 23, 2015, from http://www.ed.gov/equity

U.S. Department of Education. (2015b). *Partners in progress.* Retrieved October 23, 2015, from http://www2.ed.gov/progress/index.html

U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. (2015c). *The Condition of Education 2015* (NCES 2015-144). Retrieved October 9, 2015, from https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2015144

U.S. Department of Education Office of Civil Rights. (2014). *Civil rights data collection: Data snapshot (school discipline).* Retrieved July 9, 2015, from http://ocrdata.ed.gov/Downloads/CRDC-School-Discipline-Snapshot.pdf

Waldfogel, J., Garfinkel, I., & Kelly, B. (2007). Welfare and the costs of public assistance. In C. R. Belfield & H. M. Levin (Eds.), *The price we pay: Economic and social consequences of inadequate education* (pp. 160-176). Washington, DC: The Brookings Institution.