EXPLORING THE RELATIONSHIP OF GRIT AS A NON-COGNITIVE PREDICTOR OF FIRST SEMESTER ACADEMIC SUCCESS FOR COMMUNITY COLLEGE TRANSFER STUDENTS

by

Howard Simms

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Approved by:

_____
Dr. Mark D'Amico

_____
Dr. Claudia Flowers

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Dr. Lyndon Abrams

_____
Dr. Cathy Howell

ABSTRACT

HOWARD SIMMS. Exploring the relationship of grit as a non-cognitive predictor of first semester academic success for community college transfer students. (Under the direction of DR. MARK D'AMICO).

A growing narrative within higher education is to discover better practices and strategies that will increase retention and graduation rates among community college transfer students. Community college transfer students are at significant risk of not completing a bachelor's degree and four-year institutions need to better understand the academic challenges of transfer students at the senior institution. Jenkins and Fink (2016) found that students who originated from a North Carolina community college have only a 10 percent bachelor's degree completion rate, which is well below the national average. Grit is a non-cognitive area of research that is attributed to being a combination of perseverance and determination directly linked to higher education and collegiate academic outcomes to achieve long-term goals. The purpose of this exploratory study is to examine Grit as an outcome variable of previous transfer specific indicators and determine the relationship between self-reported Grit levels and community college student's first semester outcomes post-transfer. More specifically, the study seeks to determine the relationship between a designated non-cognitive factor (Grit), the size and transfer focus of the previous institution (Carnegie Classification) and other transfer specific variables with subsequent first-semester GPA. Multiple linear regression analyses were used to determine the level of significance that occurred between the predictor variables and the outcome variables. The average age of the community college students in the study was 24 (SD = 6.77). Composite Grit scores ranged from 15 to 40

and had a mean of 28.71 (SD = 4.85). Cronbach's alpha for Composite Grit was (α = 0.76), Perseverance of Effort reached marginal reliability (α = 0.60), and Consistency of Interest reached acceptable reliability (α = 0.76). The first regression analysis statistically significantly predicted the composite Grit score, $p < .05$, and accounted for 10.4% of the variance. The results indicated that only Transfer GPA was statistically significant. The second regression analysis was statistically significant for first semester GPA, $p < .001$, and the analysis accounted for 21.2% of the variance. The results indicated that Transfer GPA, Age, and Small Carnegie classified community colleges were statistically significant. Overall, the results of the study found that Grit, Carnegie Classification, and specified transfer related variables did not demonstrate a strong relationship with the academic performance for community college transfer students in the present study.

ACKNOWLEDGEMENTS

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DEDICATION

To those that love me, now, in the past (who have passed on before me), and future (who I am excited to yet meet and know). Moreover, to all those that have paved the way for me even to have this amazing opportunity to change lives and to live my own.

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CHAPTER ONE: INTRODUCTION

Overview

A growing narrative within higher education is to discover better practices and strategies that will increase retention and graduation rates among community college transfer students. Handel and Williams (2012) discovered that 80 percent of students who began higher education at the community college have aspirations of vertically transitioning to a four-year school to complete the bachelor's degree; however, less than a third of those students successfully transitioned to a senior institution to complete a four-year degree. The National Center for Education Statistics (NCES) reported that only 23.6 percent of students attending community college, during the 2013 academic year, graduated with an associate degree or credential (U.S. Department of Education, 2017). Community college students have a much higher rate of attrition than native four-year attendees have and are less likely to be retained during comparable timelines (Porchea, Allen, Robbins, & Phelps, 2010). Townsend (2008) reported that students transitioning from a community college background recounted more challenges in adhering to the increased academic expectations and rigor at the four-year institution. Community college transfer students are at significant risk of not completing a bachelor's degree and four-year institutions need to better understand the academic challenges of transfer students at the senior institution.

There has been a particular emphasis placed on community college transfers who must navigate unique challenges, including the transition process between two or more institutions and the risk of experiencing situationally lowered academic performance,

which may hinder their matriculation to a new educational environment (Johnson, Blattner, Coppola, Elling, & Smail, 2008). Nationally, the bachelor's degree completion rates for students who started at a two-year public institution, during the 2011 academic year, was approximately 38 percent (Shapiro et al., 2018). In comparison to the 2017 NCES data, the completion rate for community college students continues to decline. Additional reports have noted that based on extended enrollment in college, still only 15 to 16 percent of the students who started in the two-year college sector completed a bachelor's degree at a four-year institution within a six-year timeframe (Shapiro et al., 2016). The National Student Clearinghouse (2016) concluded that the majority of students are taking an extended amount of time to complete a college degree and the historical indicator of student success has been the time from initial enrollment in college to graduation with either a two-year credential or four-year degree.

Community college transfer students, in comparison to native first-year students, are at more risk of low academic performance at the mid-point of the college experience, which can expose them to lower persistence towards degree completion. Jenkins and Fink (2016) suggested that four-year institutions should monitor the graduation rates of community college students, especially students transferring from specific community colleges. Many prior studies have limited the researched graduation metric to connections with a combination of student demographic data, grade point average earned at the senior institution, student perception of a successful transition, student engagement patterns, and subsequent retention rate at the four-year institution (Duckworth, 2007; Horn & Griffith, 2006; Kirk-Kuwaye & Kirk-Kuwaye, 2007; Provasnik & Planty, 2008 Shapiro et al.,

2016). Akos and Kretchmar (2017) describe how universities have historically applied non-cognitive measures, including essays and extracurricular activities, to provide additional insight into the student's potential to be successful upon admittance to the university. This exploratory study aims to explore whether there are additional non-cognitive measures that combine with other performance attributes beyond high school grades and standardized test scores.

Although there are many studies on transfer student success, few research models have conducted studies on the combination of non-cognitive performance factors and former academic success markers. Akos and Kretchmar (2017) suggested that Grit might be a better predictor of performance in academic disciplines. The motivation to persevere and work hard towards a goal, commonly known as Grit, has been shown as a technique by those students with less intellectual capability to overcompensate in higher education environments (Duckworth, Peterson, Matthews, & Kelly, 2007). Eggleston and Laanan (2001) concluded that senior level institutions need to develop support programs specific to the needs of transfer students, in an effort to increase retention, persistence from one semester to the next, and successful academic completion. Those designated support programs can be grounded in Grit development and function as protective factors for the anticipated decline in academic performance and serve as successful predictors of impending academic success.

Problem Statement

Research has shown that students who initiate their college experience at a two-year public institution are less likely to complete a bachelor's degree in comparison to native first-year students who are continuously enrolled at a four-year school (Coston, Lord, & Monell, 2013; Handel, 2010). Monahan and Attwell (2014) also contend that community college students have a much lower bachelor's completion rate in comparison to entering first-year students who began at four-year institutions. Shapiro et al. (2018) found that students who started at a two-year public institution, regardless of earned credential, completed a bachelor's degree at 15 percent. The state of North Carolina is ranked third in the nation for the number of community colleges serving the region (Provasnik & Planty, 2008). Jenkins and Fink (2016) found that students who originated from a North Carolina community college have only a 10 percent bachelor's degree completion rate, which is well below the national average at 14 to 16 percent. D'Amico and Chapman (2018) forecast statewide workforce implications stemming from lower bachelor's degree attainment after the community college students transition to a public four-year urban research institution within the state of North Carolina.

Nationally, 40 percent of first-time in college students begin post-secondary education at a community college; with approximately 31% of new entered students from North Carolina's begin at this level (D'Amico & Chapman, 2018; National Center for Education Statistics, 2015; Shapiro et al., 2017). The National Clearinghouse (2015) reported that slightly less than 50 percent of the students who were registered for one term at a community college successfully completed the requirements towards a

bachelor's degree. Senior institutions analyze multiple data factors to discover which metrics are success indicators for student performance. Some researchers have provided an alternate perspective that academic success should be measured by additional factors other than the current best practice standards. (Duckworth & Allred 2012; Hiss & Franks 2014).

Although previous research has shown that a transfer student is less likely to complete a four-year degree, it has not been revealed that non-cognitive factors, in relationship with prior academic course completion rate, are predictive of academic performance after the transition to a senior institution. D'Amico and Chapman (2018) contend that lower degree completion may be attributed to factors beyond aptitude or academic performance. This exploratory study will address that gap in the existing literature to provide policymakers and administrators with the knowledge to predict the successful transition and acclimation to the university. Shapiro, Dundar, Yuan, Harrell, and Wakhungu (2014) determined that community college students who align with the requirements of the bachelor's degree before transfer are the most successful two-year students making the transition to the four-year institution. The discovery of unique predictive measures that can address the underlying cause of low academic performance and transitional challenges facing new community college transfer students is the conceivable goal of senior institutions seeking to improve retention and graduation rates of students.

The problem addressed in this exploratory study is that senior institutions are not discovering the most useful metrics to both predict and adequately support new transfers

at risk of underperforming upon entering into university. Keeley and House (1993) found consistent findings that transfer students experience an academic decline in the first semester after the transition. Glass and Harrington (2002) reported studies that show transfer students display a significant rate of decline in retention after the first semester at the senior institutions. Thus, transfer students are more likely to be placed on academic probation or suspension within their first year of transition. Seemingly, senior administrators and policymakers have not identified a consistent measure or combination of factors that can serve as reliable predictors to minimize low academic performance for new community college transfer students.

Forty-two percent of all community college students who successfully transitioned to a four-year institution completed a bachelor's degree within a six-year timeframe of beginning college at the community college (Shapiro et al., 2017). This completion rate may be an indicator that two-year transfer students may need extended timelines to degree completion due to the lack of academic and social confidence after the initial transition to a four-year institution that would improve the likelihood of completing the bachelor's degree. However, as students matriculate, there is currently an existing barrier of academic performance and diminished retention in subsequent semesters. Townsend and Wilson (2006) argued that retention studies found that transfer students were more likely not to be afforded concerted efforts to support their retention to the following semester. Lazarowicz (2015) noted that universities have presumed that the policies and support measures established for first-year students would address and serve the unique challenges facing transfer students.

Community college transfer students are at severe risk of low academic performance upon transition to a senior institution. Very little research exists on the most predictive combination of factors, such as Grit in combination with prior academic performance, which can reveal two-year transfer students at risk. Duckworth and Quinn (2009) confirmed that the short scale Grit measurement, Grit-S is a validated instrument and is the more efficient method of measuring Grit scores among participants. Therefore, this study investigated the noted non-cognitive factor, in combination with prior academic performance and transfer GPA, to better understand the first-semester academic performance.

Purpose Statement

The purpose of this exploratory study is to examine Grit as an outcome variable of previous transfer specific indicators and determine the relationship between Grit levels and community college student's first semester outcomes post-transfer. More specifically, the study seeks to determine the relationship between a designated non-cognitive factor (self-reported Grit score), the size and transfer focus of the previous institution (Carnegie Classification) and other transfer specific variables known at the time of admission with subsequent first-semester GPA.

Research Questions

This study examined how transfer students' internal measure of non-cognitive levels of persistence and endurance, in the form of Grit, and is related to the first semester academic performance after the transition from a community college to a four-year

institution. The variables in this study are described in Figure 1 and Table 1. The following research questions guided this exploratory study:

1. How do prior academic experience, transfer student demographics and community college Carnegie Classification relate to transfer students' composite Grit score?
2. How do individual Grit score dimensions (POE and COI), prior academic experience, transfer student demographics and community college Carnegie Classification relate to transfer students' first semester grade point average?

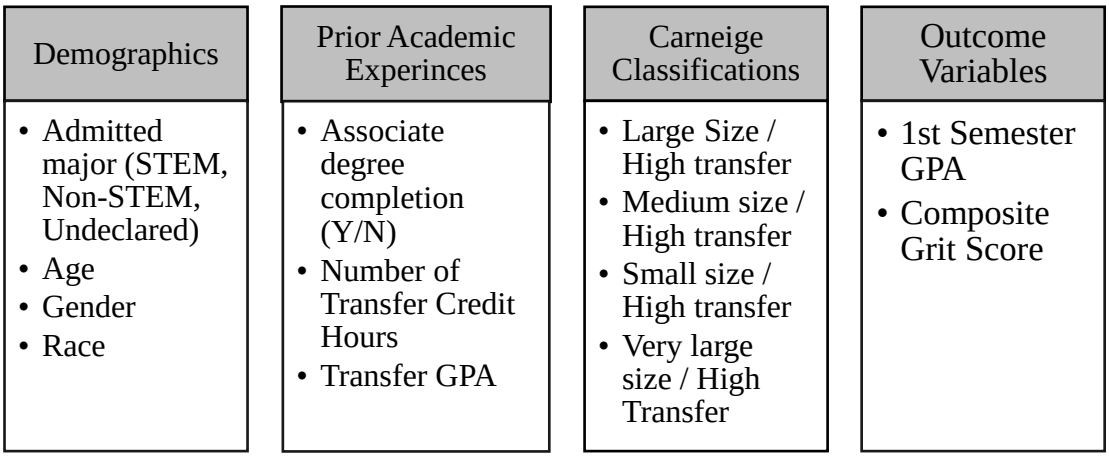

Figure 1. Conceptual model guiding the study

Table 1

Predictor Variables

Name of Variable	Level of Measurement	Definition/Value
Admitted major	Categorical (nominal)	Value: Entering major is STEM, Non-STEM, Undeclared

Table 1 (continued)

Age	Ratio (discrete)	Value: Student age as of start of Fall 2018 semester (17 years old or younger); (18 to 24 years old); (25 to 39 years old); (40 years or older)
Associate degree completion	Categorical (nominal dichotomous)	Value: Associate degree earned, No Associate degree earned
Carnegie classification	Categorical (nominal)	Value: Size and focus of community college
First Semester GPA	Ratio (discrete)	Value: Student first semester grade point average for Fall 2018
Gender	Categorical (nominal)	Value: Men, Women
Grit Score	Ratio (discrete)	Value: Student total Grit dimensions scores (Perseverance of Effort and Consistency of Interest)
Number of earned credit hours	Ratio (discrete)	Value: Number of credit hours earned during the Fall 2018 semester
Race	Categorical (nominal)	Value: African American, Asian/Pacific Islander, Caucasian, Hispanic, Multiracial

Theoretical Framework

Viewed through the lens of transfer student success this exploratory study was guided by a combination of two frameworks, (1) Schlossberg's (1981) Transition Theory and (2) Laanan's (1998) Transfer Student Capital. The theoretical frameworks for the present study are described below. Through this framework, the researcher attempts to

separate specific factors from each theory that will guide the study affecting transfer student transition and academic success. Applying all of the concepts and constructs of each of the models for this study would be too expansive, potentially lessen the impact and intent of the study's research questions, and support implications. Merging the appropriate components of each framework will provide a possible new framework for monitoring, projecting, and designing services to support new transfer students (see Figure 2).

Schlossberg's transition theory is based on life changes that are important to conceptualize to process a particular transition that is perceived to be expected, unexpected or forced, or a non-event that ultimately changes a previous pattern routine or role (Goodman, Schlossberg, & Anderson, 2006; Lazarowicz, 2015). Community college transfer students generally anticipate and plan to matriculate to a four-year institution to complete the bachelor's degree. However, students do not necessarily anticipate the initial shock and increase in academic rigor that can result in academic probation or ultimate drop out from college due to an unsuccessful academic transition (unexpected events).

Schlossberg describes a specific set of coping resources that can determine how well a student manages and navigates the adjustment in the academic environment (Chickering & Schlossberg, 1995). Transfer students constantly manage four coping strategies to navigate the acclimation process at the new institution referred to as the four S's (Chickering & Schlossberg, 1995). The original transition theory was expanded to incorporate the four S model that includes situational factors, self-assessment, support factors, and personal strategies that can dictate the student success at the new institution

(Anderson, Goodman, & Schlossberg, 2012; Chickering & Schlossberg, 1995; Goodman et al., 2006). Schlossberg (1981) developed three primary constructs that guided the understanding of a student adaptation to the transition process. First, are the characteristics of the (actual) transition process, next are the characteristics of the pre-transition and evaluation of the post-transition environment, and third is the characteristics of the participant experiencing the adjustment and transitional phase.

According to the transition theory, the students' integration and evaluation of the transition process are evaluated as either negative, positive, or irrelevant (Evans, Forney, Guido, Patton, & Renn, 2009). The establishment of the participants' positive or negative adjustment at the new institution and the experienced transition can be inferred by the level of academic success the student achieves. Pascarella and Terenzini (2005) postulated that transfer students create both positive and negative interactions at the new institution with both formal and informal components that foster academic integration and encourages persistence. Students associate a positive academic fit and continued progression to the successful performance during the first academic year (D'Amico, Dika, Elling, Algozzine, & Ginn, 2014). However, negative experiences and barriers, including a low first semester performance, can interfere with the integration into the new environment and reduce the academic commitment and threaten persistence and completion (Pascarella & Tetrazzini, 2005). Discovery of predictive measures to support the positive academic integration to the university is a significant and guiding feature to this study. The incorporation of the Grit analysis or the measurement of non-cognitive

characteristics is related to the pre-transition and evaluation of the post-transition environment construct.

The next theoretical framework, Transfer Student Capital, is guided by the understanding that students who transition from a community college experience a very complex transfer process to the four-year institution (Laanan, 1998). The tenants of Transfer Student Capital are described as students who need to acquire the necessary skills to transition successfully, including knowledge of the transfer process, understanding credit transfer grade requirements and course requirements in an effort to minimize transfer shock and low academic performance after the initial transition (Laanan, Starobin, & Eggleston, 2011; Rosenberg, 2015).

A successful transfer and seamless transition process to the four-year institution can be measured by the accumulated measure of the amount of transfer capital acquired by the student (Laanan & Jain, 2017; Moser, 2013; Rosenberg, 2015). There is an increasing demand for institutions to be accountable for student performance and graduation rates by designing, implementing, and evaluating institutional effectiveness (Laanan & Jain, 2017). Students accumulate transfer capital to navigate the transfer process through a series of events including, exposure to academic advising services, academic development, appropriate perception of the transition process and positive faculty engagement at the community college (Laanan, 2007; Laanan & Jain, 2017; Laanan et al., 2011; Moser, 2013; Rosenberg, 2015; Woods, 2013). Institutional leaders need to develop a more accurate model of academic achievement and recognize the multiple measures of progression and academic success. Transfer student capital is a

significant predictor of college success, and students with higher levels of transfer capital are revealed to develop coping strategies in relation to combating the decline in the first semester academic performance (Moser, 2013).

Moser (2012) researched and confirmed nine additional constructs to increase the scope of the transfer student capital framework, including motivational and self-efficacy. Laanan et al. (2011) described the influence of transfer student persistence and academic success based on the experiences of the students at the community college before the transition to the four-year institution. The presence of elevated Grit scores may forecast the requisite formation of self-efficacy, academic persistence, and increased motivation to perform well at the senior institution. The constructs as mentioned above of transfer student capital, supported by academic skill development and increased cognitive development, in concurrence with the comparison of the transfer grade point average at the community college, and demonstrated academic persistence in the form of course registration for the next semester, may reveal correlations with Schlossberg's transitional theory and Laanan's transfer student capital (See Figure 1).

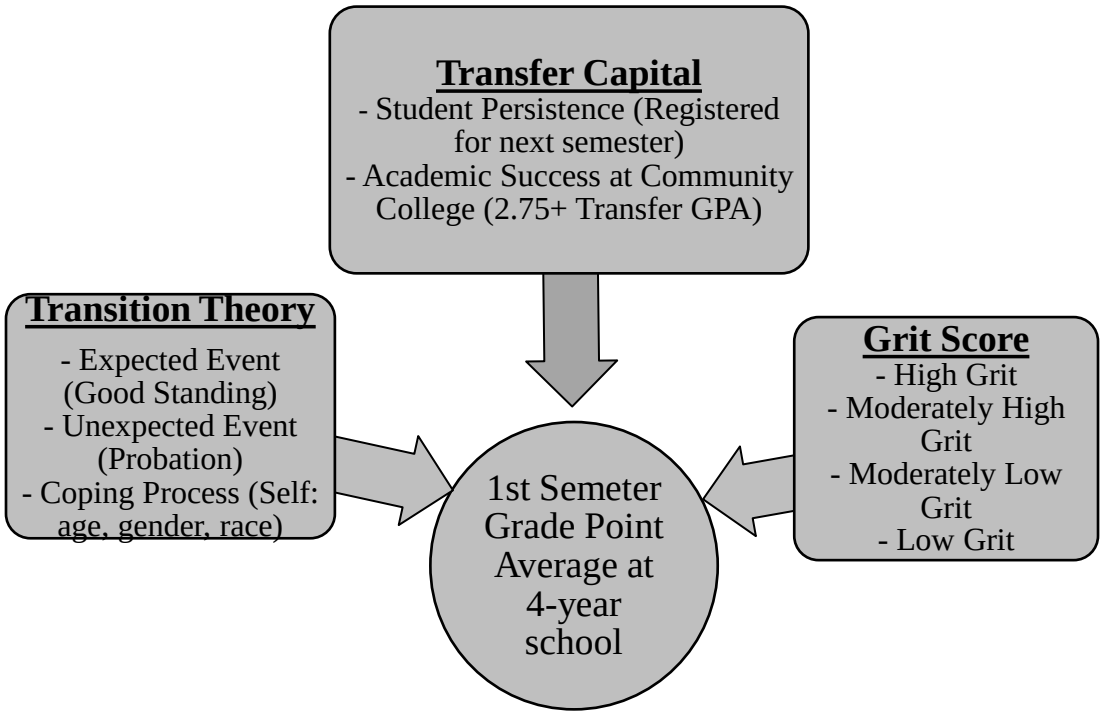

Figure 2. Theoretical Framework for the Study of Grit as a Predictor of 1st Semester GPA

Significance of Study

There is a logical, and exceptionally difficult, challenge for four-year institutions to predict the success of new incoming community college transfer students based on the complexity of their personal experience and academic preparation. Akos and Kretchmar (2017) reported that 75% of the known academic variance in college students' first-year GPA is unclear and unexplained. Chang (2014) noted that there had been very few studies conducted on the relationship between Grit and academic performance in higher education.

Previous studies on Grit and performance have primarily focused on populations outside higher education, children participating in spelling contest, military academy cadets, non-traditional adult populations and professional teachers, and limited focus on community college students (Duckworth et al., 2007; Duckworth, Quinn, & Seligman, 2009; Duckworth & Yeager, 2015; Maddi, Matthews, Kelly, Villarreal & White, 2012; Silvia, Eddington, Beaty, Nusbaum, & Kwapli, 2013). This exploratory study will seek to identify predictive measures, which have not readily been identified, to guide policymakers and institutional leaders toward supporting the successful transition of new community college students' first-year success rate and degree completion. This research is significant because the traditional quantifiable measures used by institutions have not proven to be a consistent measure to depict the academic performance of community college students at the senior institution.

There are increasing pressures from state legislators and federal lawmakers prompting higher education entities to increase graduation rates (Complete College America, 2011). While institutions are marginally focused on strategies and techniques that would improve student success and retention rates on campus, many institutional leaders are typically more focused on the on-campus research initiatives and capital funding projects. It would be innovative for policymakers and institutional administrators to discover how academic success can be measured beyond traditional cognitive metrics, such as standard grade point averages, as better predictors of initial academic success, given the challenges of increased academic rigor and potential transfer shock experienced by transfer students.

There has not been a focal point for researchers to discover how to accurately pre-identify those community college transfer students at most risk to conclude the first semester below satisfactory academic standing. There is emerging precedence to recalibrate a more accurate understanding of the combination of factors that define the reality and complexity of the transfer experience (Fink & Jenkins, 2017; Wyner, Deane, Jenkins, & Fink, 2016). The determination of Grit and a student's previous academic performance at the community college, in the form of the transfer GPA, can serve as a more predictive model to determine the academic success of new vertical transfer students while supporting persistence towards earning the bachelor's degree. Once this combination of variables is measurable, groundbreaking approaches of academic support, during the transition process, would be designed and implemented by four-year institutions. Consequently, if Grit, previous academic success at a community college in the form of the student transfer GPA and self-related coping processes are discovered to predict the academic performance of new transfer students adequately, this research study will provide new perspectives and insight for campus administrators. This information would support new initiatives to effectively develop resiliency based, and growth mindset focused, support programs directed at increasing student retention and graduation percentages. The advantage of having the capability to pre-identify those community college transfer students at higher risk of low academic performance, in concordance with self-reported low to moderate non-cognitive factors, would be an invaluable tool towards the mission of enhanced degree completion initiatives.

This study is focused on contributing to the established body of literature and research on self-reported Grit scores and transfer student academic performance, measured by the transfer grade point average and comparing the outcomes of the students' first semester academic performance. Having an improved understanding of post-transfer academic performance, by predicting the factors that may place students at risk before the arrival of the first semester, would help senior institutions create the policies and resiliency based support curriculums that will help ensure progress towards a college degree. The findings from this study will assist two-year transfer students in the seamless transition process that may help establish a positive connection with the university that may enhance the persistence towards degree attainment.

Limitations

The present study was faced with some limitations based on the student population studied. The first limitation is the self-reported measurement of Grit. There is an assumption that the participant submitting the Grit-S survey is the actual incoming transfer student and that the participant is responding truthfully and accurately to the eight questions. While this study measures the relationship of Grit as the primary non-cognitive variable, there are additional non-cognitive assessments that this study does not utilize as potential predictor variables. Next is the calculation of the transfer GPA. Although students who attend a North Carolina community college have the advantage of common course numbers, given the variation of the size of institution, class sizes and variation in instructor delivery and grading, final grading for similar courses are unable to be associated. The study intends to isolate the academic performance of students

attending a single four-year institution, which may limit the replicability of the study. This study was also limited by a one semester timeframe to observe the students' academic performance. This outcome was the sole measure to determine if the students conclude the semester on academic probation in this study. The first semester is not the universities only metric to evaluate low-performance and deploy support services. A study observing extended exposure to the support programs addressing Grit and resiliency would provide additional insight. Although the study received 225 participants, which is considered a satisfactory sample size to deliver statistical power, the prospect of selection bias could conceivably effect the final outcomes.

Definition of Terms

Associate's degree (two-year degree): A degree granted for the successful completion of a sub-baccalaureate program of studies, usually requiring at least two years (or equivalent) of full-time college-level study (U.S. Department of Education, 2019).

Bachelor's degree (four-year degree): A degree granted for the successful completion of a baccalaureate program of studies, usually requiring at least four years (or equivalent) of college-level study (U.S. Department of Education, 2019).

Community College (two-year institution): An institution offering at least a two-year program of college-level studies which terminates in an associate degree or is principally creditable toward a baccalaureate degree (U.S. Department of Education, 2019).

Grade point average (GPA): A student's overall academic performance, which is calculated as a numerical average of grades earned in all courses (Narayan, 2011).

Lateral Transfer: A student that begins their college education at one four-year institution and subsequently will transfer to a different four-year college or university before completing the initial bachelor's degree (McCormick, 2003).

Retention rate: A measure of the rate at which students persist in their educational program at an institution from the previous fall who are again enrolled in the current fall. (U.S. Department of Education, 2019).

Reverse Transfer: A student who begins at a four-year college for a minimum of one full semester, then subsequently transitions to a 2-year institution, with the likely intentions of transferring back to a 4-year institution (Townsend, 2002).

Senior institutions (four-year institution): An institution offering at least a four-year program of college-level studies primarily creditable toward a bachelor's degree (U.S. Department of Education, 2019).

Transfer credit: Credit granted toward a degree on the basis of studies completed at another college or university (Narayan, 2011).

Transfer Swirl: A student that has a pattern of enrollment between several two-year and four-year colleges during their academic career (Lester, Brown Leonard, & Mathias, 2013).

Vertical Transfer: A student who begins their higher education at a two-year institution and transfers to a four-year college or university (Kirk-Kuwaye & Kirk-Kuwaye, 2007).

Conclusion

The baccalaureate completion rate for North Carolina community college students is well below the national average (Jenkins & Fink, 2016). Innovative approaches need to be researched and studied to discover how linking information from different datasets, based on examining the patterns of course completion and Grit analysis, can assist senior level institutions to understand the transition experience from an unapproached perspective. This study investigated the impact of the transfer experience, observing different outcome measures in the hope of learning how to predict an academic outcome related to new metrics used to evaluate a student's success.

CHAPTER 2: REVIEW OF THE LITERATURE

Transfer students are learners that move from one postsecondary institution, community college, or university, to another during their academic tenure (Coston, Lord, & Monell, 2013). A report from the U.S. Census Bureau (2016) shows there has been a sizeable increase in the number of adults, 25 years or older, throughout the last 65 years that have received post-secondary education and earned some form of credential from 13 percent to approximately 59 percent. Keeley and House (1993) remarked that more students indicated beginning higher education at the community college than making a transition to a four-year institution. Horn and Skomsvold (2011) recall that 43 percent of all first-time college students began at the community college level. Based on various factors, including increased cost of tuition and competitive admissions processes, many students opt to begin the higher education process and the pursuit of a credential at the community college level, for the flexibility in class schedules surrounding work and family responsibilities and convenient location of the campus (Moser, 2013; Townsend & Wilson, 2006).

Taylor and Jain (2017) reported that 46 percent of bachelor's degree earners attended a community college at one point during the collegiate process. Horn and Skomsvold (2011) acknowledged that literature regarding transfer students reveals that many students do not persist until graduation with a bachelor's degree. Glass and Harrington (2002) remarked on a study that stated that transfer students are less likely than native students to graduate college with a bachelor's degree. A different approach to

exploring predictive measures could provide a more accurate forecast for the continual academic performance of community college transfer students during the transition to a public four-year urban research institution. The purpose of this study is to examine Grit as an outcome variable of previous transfer specific indicators and establish the relationship between self-reported Grit levels and community college student's first semester outcomes post-transfer. More specifically, the study seeks to determine the correlation between a designated non-cognitive factor (self-reported Grit score), the size and transfer focus of the previous institution (Carnegie Classification) and other transfer specific variables known at the time of admission with subsequent first-semester GPA.

Table 2

Themes in the Literature

Theme	Citations
Transfer Students	
	Coston, Lord, and Monell (2013) Glass and Harrington (2002) Horn and Skomsvold (2011) Keeley and House (1993) Moser (2013) Taylor and Jain (2017) Townsend and Wilson (2006) U.S. Census Bureau (2016)
Characteristics of Transfer Students	
Introduction	Collins, Navarro, and Stinard (2011) Graham and Dallam (1986) Lester, Brown Leonard, and Mathias (2013) Shapiro et al. (2016) Taylor and Jain (2017) Tobolowsky and Cox (2012)
Enrollment Trends	Chrystal, Gansemer-Topf, and Laanan (2013)

Table 2 (continued)

	Crosta (2014) Juszkiewicz (2015) National Student Clearinghouse (2016a)
Reasons Students Transition	Chrystal et al. (2013) Lester et al. (2013) Townsend (2008)
Transfer Student Demographics and Performance	American Association of Community Colleges (2018) Association of Community Colleges (2017) Berger and Malaney (2003) Chrystal et al. (2013) Eggleston and Laanan (2001) Ishitani (2008) Jenkins and Fink (2016) Lester et al. (2013) National Student Clearinghouse (2015) Tobolowsky and Cox (2012)
Transfer Student Transitions	
Introduction	Chrystal et al. (2013) D'Amico, Dika, Elling, Algozzine, and Ginn (2014) de la Torre and Wells (2014) Hagedorn, Cypers, and Lester (2008) Horn and Skomsvold (2011) Jenkins and Fink (2016) National Center for Education Statistics (2011) National Student Clearinghouse (2016b) Wheeler (2018)
Role of the Institution	Berger and Malaney (2003) Dowd and Melguizo (2008) Dowd, Cheslock, and Melguizo (2008) Glass and Harrington (2002) Hagedorn et al. (2008) Horn and Skomsvold (2011) Kerby (2015) National Center for Educational Statistics (2014) Porchea, Allen, Robbins, and Phelps (2010) U.S. Census Bureau (2016) Wheeler (2017)

Table 2 (continued)

	Zhai and Newcomb (2000)
Institutional Awareness	Berger and Malaney (2003) Chrystal et al. (2013) Crosta (2014) D'Amico et al. (2014) Eggleston and Laanan (2001) Jenkins and Fink (2016)
Grit	
Introduction	Akos and Kretchmar (2017) Clark 2016 Datu, Yuen, and Chen (2017) Duckworth and Quinn (2009) Duckworth, Kirby, Tsukayama, Berstein, and Ericsson (2011) Duckworth, Peterson, Matthews, and Kelly (2007) Strayhorn (2014) Tobolowsky and Cox (2012) Wolters and Hussain (2015)
Primary Grit Dimensions	Akos and Kretchmar (2017) Bowman, Hill, Denson, and Bronkema (2015) Datu, Valdez, and King (2016) Duckworth et al. (2007) Muenks, Wigfield, Yang, and O'Neal (2017) Wolters and Hussain (2015)
Personal Grit Characteristics	Akos and Kretchmar (2017) Duckworth and Quinn (2009) Duckworth et al. (2007)
Grit Scale	Datu et al. (2016) Duckworth and Quinn (2009) Duckworth, Quinn, and Seligman (2009)
Performance Outcomes and Grit in Higher Education	Bowman et al. (2015) Clark (2016) Datu et al. (2016) Duckworth et al. (2007) Wolters and Hussain (2015)
Academic Performance	
Transfer Academic Success	Glass and Harrington (2002) Ishitani (2008)

Table 2 (continued)

	Kerby (2015)
	Zhai and Newcomb (2000)
Predictors of Performance	Glass and Harrington (2002)
	Graham and Dallam (1986)
	Ishitani (2008)
	Porchea et al. (2010)
	Zhai and Newcomb (2000)
Performance Outcomes	Graham and Dallam (1986)
	Ishitani (2008)
	Kerby (2015)
	Pennington (2006)
	Porchea et al. (2010)
	Zhai and Newcomb (2000)
Transfer Barriers and Inhibitors	
Transitional Barriers	Eggleston and Laanan (2001)
	Hills (1965)
	Tobolowsky and Cox (2012)
	Zamani (2001)
Transfer Shock	Berger and Malaney (2003)
	Coston et al. (2013)
	D'Amico et al. (2014)
	Eggleston and Laanan (2001)
	Glass and Harrington (2002)
	Graham and Dallam (1986)
	Hills (1965)
	Ishitani (2008)
	Keeley and House (1993)
	Lester et al. (2013)
	Pennington (2006)
	Townsend and Wilson (2006)
Institutional Priorities	Dowd and Melguizo (2008)
	Tobolowsky and Cox (2012)
Lack of Support	Coston et al. (2013)
	Townsend and Wilson (2006)
Transitional Support and Facilitators	
Introduction	Berger and Malaney (2003)
	Chrystal et al. (2013)
	Porchea et al. (2010)
Transfer Guidance	Coston et al. (2013)
	Datu et al. (2016)

Table 2 (continued)

	Eggleston and Laanan (2001)
	Fink and Jenkins (2017)
	Kerby (2015)
	Lester et al. (2013)
	Taylor and Jain (2017)
	Townsend and Wilson (2006)
Guided Pathways	Bailey, Jaggars, and Jenkins (2015)
	Crosta (2014)
	de la Torre and Wells (2014)
	Fink and Jenkins (2017)
	Jenkins, Lahr, and Fink (2017)
	National Student Clearinghouse (2015)
	Taylor and Jain (2017)
Articulation Agreements	Anderson, Sun, and Alfonso (2006)
	Hodara et al. (2017)
	Ignash (2012)
	Ishitani (2008)
	Townsend and Wilson (2006)
Adequate Support Services	Collins et al. (2011)
	Coston et al. (2013)
	D'Amico et al. (2014)
	Dowd and Melguizo (2008)
	Porchea et al. (2010)
Suggestions and Resolutions	Townsend and Wilson (2006)
	Zamani (2001)
Conclusion	Akos and Kretchmar (2017)
	Berger and Malaney (2003)

Characteristics of Transfer Students

Tobolowsky and Cox (2012) suggested that transfer student populations consist of an assortment of discrete and overt identities. Taylor and Jain (2017) observed that although vertical transfer is the more distinguishable form of the transfer process, it is a limited perspective of the broader landscape of how students transition between institutions. This population of students consists of traditional age or older students, part-

time versus full-time attending students, first-generation students, reverse transfer, vertical and laterally transitioning students, and transfer swirl.

Transfer swirl is described as students who have attended more than two colleges during their academic career (Lester et al., 2013). Tobolowsky and Cox (2012) approximated that 60 percent of all college participants, at every level, have enrolled and attended two or more institutions in their collegiate career. Collins, Navarro, and Stinard (2011) identified an increasing number of students who transfer at least once in their college career, formerly beginning at the community college. Figures have shown that 27 percent of all college students have attended two or more schools with the intention of earning the associate's degree within a two-year enrollment period (Shapiro et al., 2016). Graham and Dallam (1986) suggested that students who transitioned multiple institutions were possibly less likely to possess the correct motivation or connect with their academic environment. Student departure from the first institution happens for a variety of reasons beyond academic difficulty.

Enrollment Trends

Records from the National Student Clearinghouse revealed a decline in two-year public institution enrollment between 2013 and 2016 academic years, upwards of 3.5 percent during the 2014 academic year, resulting in an increase in population at four-year institutions; conversely to the spike in community college enrollment resulting from the great recession of 2007 that formerly produced a 22 percent increase (Juszkiewicz, 2015; National Student Clearinghouse, 2016a). However, despite the lowered admissions rate, matriculation of community college students into four-year schools is increasing

(Chrystal, Gansemer-Topf, & Laanan, 2013). Crosta (2014) noted there is a credible relationship between the enrollment patterns and decisions of students at the community college that translates to the performance at the four-year school and earning a bachelor's degree.

Reasons Students Transition

Chrystal et al. (2013) challenged the classical notion that students choosing to attend community college were not initially qualified to enroll in a four-year institution. Lester et al. (2013) commented that many students who choose to attend community college were opting to reserve financial resources before committing to a four-year school. Many students were making the decision solely from a financial perspective, not from a deficit in academic aptitude. Chrystal et al. (2013) discovered that almost one-third of enrolled students reported making the vertical transition from a community college to a university or college. On the other hand, one-third of college students who initially enrolled in a four-year institution consequently decided to transfer to another school, either to another senior level institution or transitioned in reverse to community college (Townsend, 2008).

Transfer Student Demographics and Performance

Most research on the transfer students experience is based on traditional models of student produced variables including demographic information and performance based data (Tobolowsky & Cox, 2012). Various historical classifications of transfer students would include characteristics of age, gender, race, ethnicity, socioeconomic status, prior academic performance, and persistence (Eggleston & Laanan, 2001). Lester et al. (2013)

emphasized that transfer students are a unique population that often have more intersecting variables, including, more likely to have a full-time job, potentially older students, have significant family obligations, or may be classified in a lower socioeconomic category.

The American Association of Community Colleges (2018) reported that 41 percent of the undergraduate student population in the U.S. have enrolled in community colleges with a vast majority of those students having aspirations of completing a four-year degree. Jenkins and Fink (2016) acknowledged that research revealed that only 29 percent of students who previously earned a two-year credential did so before the transition to a four-year school; North Carolina had a 25 percent completion rate correspondingly. The National Student Clearinghouse (2015) revealed that 42 percent of students from the state of North Carolina completed a bachelor's degree in 2015-2016 had enrolled at a community college for at least one academic term. The American Association of Community Colleges (2017) showed that 59 percent of students who enrolled at a two-year public institution, full time in fall 2010, were more likely to persist to the next school year or graduate with a bachelor’s degree. However, during the fall 2017 academic year, the bachelor's degree completion rate for students who began at the community college was only 14 percent. North Carolina, during that time, averaged among the lowest states in the nation at 10 percent (Jenkins & Fink, 2016). This strong variance in performance further solidifies that the desire to make the transition to a four-year school is not a straightforward process.

Ishitani (2008) reported that approximately 25 to 30 percent of all college students who began their higher educational pursuits at the community college successfully made the transition to the four-year institution. Considering that roughly 40 percent of all American college students begin their collegiate career at a community college, approximately 20 percent of those students successfully transitioned to a four-year institution (Chrystal et al., 2013; Eggleston & Laanan, 2001). This narrative suggests that despite a large number of students enrolled in community college, four-year schools are less likely to prefer community college students based on the perception that non-native freshman would not perform as well academically and are less likely to successfully adjust to the rigor and expectations of the four-year institutional environment (Berger & Malaney, 2003).

Transition Process

Research points to a desire that community college students make a seamless transition to a four-year school, but the reality of the transfer success rate varies heavily. The National Center for Education Statistics (2011) reported that 81 percent of community college students desire to transition to a senior institution with aims of completing a bachelor's degree, however, fall dramatically below that estimate of only 5.9 percent succeeding in that effort. Additional literature confirms that community college students have elevated hopes and desires to transition to four-year schools; however, low transition rates have been the result (Hagedorn, Cypers, & Lester, 2008; Horn & Skomsvold, 2011; Jenkins & Fink, 2016). de la Torre and Wells (2014) emphasized that community college students may encounter many unexpected factors

during the transfer process, including new campus procedures, increased academic standards, and unknown course numbers and terminology. Wheeler (2018) suggested there is a separation in the intentionality and the subsequent realism of transitioning from a community college to a senior institution.

Research has shown that the transition process has a profound effect on transfer student academic performance, such as graduation rates and retention rates, which are lower than for native first-year students. The National Student Clearinghouse (2016b) found associate's degree awardees, with no previous credentials, declined 3.2 percent from 2012 to 2015 academic year. Students who exhibited the most academic difficulty upon transfer to a new institution presented lower initial grade point averages, less academic confidence, and heightened awareness of the increased competitive nature of the senior institution (D'Amico et al., 2014). Although four-year schools have well established mechanisms of collecting quantitative data, highlighting enrollment trends, graduation rates, and tracking retention rates (Chrystal et al., 2013), less information is gathered about the personal challenges experienced during the transition process.

Role of the Institution

A crucial role of higher education institutions is to discover ways to improve retention of college students due to the diminished number of individuals choosing to enroll in college and less than half of the students who start college end up leaving school before completing a bachelor's degree (Zhai & Newcomb, 2000). Kerby (2015) identified that for the last 40 years, university and college administrators have been researching and exploring methods to improve student retention and measures to predict attrition

behaviors and patterns. Community colleges in the United States serve as a strategic entry point for certain students progressing towards four-year universities and colleges. Thirty-three percent of all college students were reported to have enrolled at a public community college at some point in their college career (Horn & Skomsvold, 2011; National Center for Educational Statistics, 2014; Wheeler, 2017).

Glass and Harrington (2002) stated that the transfer function is the most essential and foundational role of the community college system. A report from the U.S. Census Bureau (2016) notes that one of the primary roles of community colleges is to educate students with a high school diploma or less formal education. Porchea et al. (2010) elaborated that community colleges enroll and serve a disproportional level of lower academically performing students who have academic performance measures in sub-par academic rankings. Subsequently, the function of the community college has evolved while serving as an access point to the higher levels of academia (Hagedorn et al., 2008). Community colleges have a critical mission in successfully preparing students intellectually for the environment they will encounter at the senior level institution and contributes to the academic transformation required to earn a bachelor's degree, though many students do not make the transition successfully (Berger & Malaney, 2003). Glass and Harrington (2002) stated that the academic success and performance rates of community college students are an essential evaluation metric of the accomplishments of specific community colleges and their value in the transition process.

Dowd, Cheslock, and Melguizo (2008) found that community colleges were designed to serve as affordable gateways of access to four-year institutions for students

with limited financial mobility; however, students from low income and working class backgrounds were less effective at obtaining the social mobility afforded to community college undergraduates. Students from lower socioeconomic backgrounds are respectively less likely to be adequately represented at mid to upper selective four-year institutions. Dowd and Melguizo (2008) affirmed the notion that the primary function of the community college system is to support students from lower income backgrounds and those students who were less prepared to enter a four-year setting directly out of high school.

Institutional Awareness

Researchers and administrators need to be more aware of the conditions and elements that both hinder and promote graduation completion, retention rates, and academic performance of community college students who have transferred to four-year institutions (D'Amico et al., 2014). Senior institutions must become conscious of the intricacies of the various challenges that transfer students encounter and cultures that establish supportive systems that promote success and minimizes the effects of transfer shock. Crosta (2014) argued the importance of monitoring the risk factors that are predictive of attrition and dropout patterns, including being registered for the next semester. Research has shown that even students with strong transfer grade point averages could still experience a decline in academic adjustment (D'Amico et al., 2014).

Policy makers and researchers need to be cognizant of the demographics and the nature of transfer populations, including previous academic background and academic persistence to ensure designing appropriate support programs for new students (Eggleston

& Laanan, 2001). Chrystal et al. (2013) verified that four-year schools are under considerable pressure to enhance transfer student retention and graduation rates, thus needing to evaluate the lived experiences of the transfer students beyond the quantifiable data that has historically been collecting and evaluated. Jenkins and Fink (2016) suggested that the lack of standardized measures from community colleges to monitor student performance has minimized the effectiveness of four-year institutions to serve transfers and develop statewide procedures and policies accurately. Legislative oversight suggests that administrators and educators, at all levels, need to become more responsive to the concerns and the challenges of transfer students to become more proficient at successfully providing the proper support services (Berger & Malaney, 2003).

Grit

Duckworth and Quinn (2009) defined Grit as a trait level, perseverance, and passion for long-term goals. Grit is defined as perseverance and passion for long-term objectives while maintaining vigorous extended effort and interest. Grit has proven to be a reliable predictive factor of transfer student success (Clark 2016; Duckworth and Quinn 2009; Duckworth, Kirby, Tsukayama, Berstein, & Ericsson 2011; Strayhorn 2014). Researchers found that high-achieving military trainees and first-time-in-college students that display Grit overcome the urge to change course or abandon an endeavor in progress (Akos & Kretchmar, 2017; Duckworth et al., 2007).

Tobolowsky and Cox (2012) noted that the classic format of transfer student research focuses primarily on the experience of the actual student. Therefore, not as much research has been conducted on the peripheral knowledge gained through the transitional

experience including personal Grit or prior academic performance. Grit is described as the combination of perseverance and determination in an academic setting from a non-cognitive perspective to achieve long-term goals (Datu, Yuen, & Chen, 2017). Wolters and Hussain (2015) found that elements of Grit directly related to higher education and collegiate academic outcomes. Early research on the concept of Grit centered around its measures, validity, and the salient components that were the most effective at capturing the effects and motivations of the participants and non-cognitive measures of academic success.

Primary Grit Dimensions

Duckworth et al. (2007) conceptualize Grit as two separate dimensions consisting of perseverance of effort and consistency of interest, each incorporating its own set of constructs of abilities. Datu, Valdez, and King (2016) also referenced Grit, in higher education within a collectivist culture, as a dual dimension construct rather than a single hierarchical design and revealed perseverance of effort as the element to be more predictive of academic engagement. Wolters and Hussain (2015) depicted college students displaying perseverance of effort as having elevated self-awareness of personal diligence, resolute in completing a goal, even in the event setbacks. The authors portrayed students who reported higher levels of consistency of interest as exhibiting an extended concentration towards completing an achievement, even when presented with the opportunity to alter paths. Akos and Kretchmar (2017) reported that the two dimensions of Grit emphasized characteristics of personal stamina to finalize a task even within first-year college students. Datu et al. (2016) described the consistency of interest

as students, especially those within a collectivist society, demonstrating the ability to embrace a particular pursuit for an extended duration. Perseverance of effort is designated as the extent a participant would vigorously strive towards a goal in the presence of resistance or impediment towards the desire or goal or outcome.

Akos and Kretchmar (2017) found that perseverance of effort has been a more effective Grit component of exploring the outcome of first-year in college grade point averages, than the combination of consistency of interest combined with perseverance of effort, resulting in a less than significant measure of academic success during the first year (Wolters & Hussain, 2015). Bowman, Hill, Denson, and Bronkema (2015), while researching both selective and non-selective universities, demonstrated the relationship between the perseverance of effort construct and positive outcomes for GPA, student satisfaction, and campus adjustment. Perseverance of effort has been revealed to be a more significant indicator of academic performance, with college student populations, than consistency of interest which related less significantly to the overall Grit model (Bowman et al., 2015; Muenks, Wigfield, Yang, & O'Neal, 2017). Perseverance of effort resulted in a positive impact on the overall student academic investment and persistence toward completing a long-term goal (Datu et al., 2016).

Personal Grit Characteristics

Duckworth et al. (2007) emphasized that Grit is a defining quality reasonably evident within high achieving, highly motivated individuals, such as military cadets and spelling bee finalists, who may accomplish more objectives than moderate achieving individuals that may be less driven when controlled for equal intelligence. The essence of

Grit involves the internal commitment to persist in an activity without displaying unpredictable patterns of conceding. The importance of long-term endurance to complete or satisfy a goal within higher education, without altering the progression towards another goal, is more indicative of a person with higher levels of Grit. Duckworth et al. (2007) described individuals with Grit as having traits of achieving goals, over an extended period, exerting high volumes of stamina rather than shorter term, high intensity, efforts towards a task. Individuals with elevated levels of Grit are more predisposed to set broad, long-term goals, even when there is an absence of incremental indications of successful progression.

Akos and Kretchmar (2017) suggested novice college students with enhanced Grit are more inclined to disregard all other pursuits to focus on a singular primary objective, and Grit would be contextually concentrated in specific areas in life. Duckworth and Quinn (2009) found that adults with higher levels of Grit when compared to peers of the same age range, were less likely to make significant changes to career paths and were more likely to progress further in educational pursuits. Studies showed the implications of perseverance of effort and overall effects of Grit were minimized when students displayed a higher level of self-motivation to succeed, a natural lower tendency to procrastination and were self-regulated in academic performance.

Grit Scale

Duckworth and Quinn (2009) confirmed that the short Grit scale (Grit-S) measurement is valid and is a more efficient method to determine Grit among participants with the consistency of interest and perseverance of effort loading highest using

confirmatory factor analysis and show adequate internal consistency. The Grit-S scale measures multifaceted traits that may be predictive as a whole measure or the two primary components, perseverance of effort and consistency of interest, as predictive measures separately. Conversely, Datu et al. (2016) presented contradictory conclusions made by Duckworth et al. (2009) while examining a collectivist community; the participants were non-conforming to the previously validated theories of Grit; the constructs of Grit loaded better as two separate dimensions. Those studies showed that the correlation between a full Grit score has been insignificant when considering a traditional hierarchical Grit measure and reduced its reliability with collectivist group dynamics.

Performance Outcomes and Grit in Higher Education

Clark (2016) suggested that due to the limited Grit research conducted in higher education, primarily focused on highly successful and overachieving student populations, there exists a gap in knowledge of the predictive strength of Grit towards diverse student populations with moderate achievement profiles. Datu et al. (2016) found academic performance associated with the two primary dimensions of Grit. Grit can be utilized to explain community college student populations in relationship to first semester performance outcomes (including academic standing, and the number of earned and non-earned credits. Studies indicated that students with elevated levels of perseverance of effort, a primary Grit construct, would likely perform better in higher educational settings due to increase confidence to accomplish goals, effectively manage study habits and are less susceptible to procrastination (Wolters & Hussain, 2015). Bowman et al. (2015)

argued that there is value in research on Grit in relationship to students from non-selective institutions and the relationship to college grade point average. Duckworth et al. (2007) interpreted Grit and long-term educational pursuits as being contemporaries of each other and the endurance over an extended period is likely indicative of degree completion.

Wolters and Hussain (2015) described Grit as a set of trait type dimensions that characterized college students as likely having more diligence in completing long-term higher educational accomplishments and anticipated degree completion. Duckworth et al. (2007) noted that adult participants with higher levels of Grit were less likely to make temperamental or erratic changes in life and were more likely to persist in goals that extended over long periods. This persistence would be evident when students did not withdraw from initially difficult courses, retained their admitted major, and registered for subsequent semesters. Students with less Grit would be tempted to remove the adversity and likely withdraw from the unpleasant process. Wolters and Hussain (2015) noted that for the element of perseverance of effort to interconnect with a student's learning, academic success, and graduation, the student must perceive a personal connection between those three concepts and their educational interconnection, beliefs, and attitudes.

Academic Performance

Transfer Academic Success

Zhai and Newcomb (2000) stated that the academic performance and overall retention of transfer students after their matriculation from the community college is a primary area of interest and concern for institutions, policymakers, and students.

However, the academic performance results from many studies can reveal conflicting and inconsistent results. Ishitani (2008) also made known that when senior institutions reported on official retention and graduation rates; generally, the report concentrated primarily on first-year student cohorts and excludes the complexities of the attrition patterns and success rates of transfer students. Universities historically concentrate financial assets and state appropriated funds primarily toward traditional first-year cohorts, due to the ease of tracking first-time in college students as opposed to untraditional, yet equally valued, transfer student populations. Given the complexities and intentionality of this form of data collection, analysis, and interpretation, it would be beneficial for institutions to observe how well the campus supports transfer student populations. Kerby (2015) noted that higher education funding is becoming more directly linked to performance based outcomes and many state agencies are beginning to require specific accountability metrics from colleges and universities. This increased pressure from state and federal policymakers may create a culture which may have adverse effects on transfer student retention and degree completion rates.

Glass and Harrington (2002) reported on a study that revealed that community college students have comparable academic performance of native first-year students enrolled at a four-year institution at the conclusion of the sophomore year or lower division course coursework. These findings supported the notion that transfer students, despite the amount of experienced transfer shock, were reported to persist in the admitted major and also have higher or equal GPA's at the time of graduation (Glass & Harrington, 2002). This performance outcome may be accredited to the rate of attrition by semester,

therefore, altering the report on those students who were retained over a longer period and likely had higher levels of Grit and determination to be more successful. Ishitani (2008) shared conflicting national data from the 2003 National Center for Educational Statistics (NCES) report that concluded approximately 20 percent fewer transfer students' graduated college within a six-year timeframe.

Predictors of Performance

Despite traditional community college student research concluding lower graduation rates and lower persistence rates, very few studies have examined the direct influence or effect of first semester GPA, associated with Grit, and the persistence of transfer students. Porchea et al. (2010) shared research that suggested that academic preparation is linked directly to student's first-year grades and future transfer behavior. Yearly retention, however, is likely more directly influenced by various non-cognitive factors. Graham and Dallam (1986) measured the probation status of native students in comparison to transfer students and academic success. Transfers are highly academically diverse from their native student counterparts, they are considered to be more likely to earn lower grade point averages when compared to native students with similar academic standing, and the reported conclusions on transfer students had yielded inconsistencies and discrepancies about the measured outcomes of academic performance.

Glass and Harrington (2002) noted that research conducted in the 1990s concluded that grades earned by students at the senior institution, diligence within the major and degree completion were predicted by academic performance while attending the community college. Porchea et al. (2010) referenced studies that revealed that prior

academic performance is a likely predictor of persistence and academic success. However, few studies referenced the inclusion of the completion ratio of earned credit hours to these courses that were previously attempted. Zhai and Newcomb (2000) discussed research that revealed the significance of a transfer student's previous academic performance (transfer GPA, earned transfer hours), particularly the students previously earned grades (earned credit and non-earned credit hours), when combined with the GPA at the new institution, were stronger indicators of retention at the four-year institution. However, GPA at the previous institution, as a sole measure, resulted as a low overall indicator of retention.

Zhai and Newcomb (2000) show that studies reveal that the initial grade point average earned at the new institution is a reliable indicator of future academic performance and retention after the initial transition. Porchea et al. (2010) reported that the level of a student's academic preparation is directly correlated to the likelihood of them successfully transitioning from a community college to a four-year institution. Higher overall grade point averages after the first semester were indicative of favorable persistence rates (Ishitani, 2008). Glass and Harrington (2002) noted that those transfer students who persisted beyond the junior year, were most likely to earn a bachelor's degree and graduate.

Performance Outcomes

Graham and Dallam (1986) suggested that transfers who have successfully transitioned to the four-year institution might not perform well at the new senior institution due to lack of proper academic preparation. Academic unpreparedness is a

critical factor in forecasting low academic outcomes and increased attrition from college (Zhai & Newcomb, 2000). Graham and Dallam (1986) concluded that transfer students were more likely to be placed on institutional academic probation than native first-year students within the first year at the senior institution. Pennington (2006) stated that previous research on transfer students has shown that when paralleled with native students, in similar demographics and educational attributes, transfers performed and graduated at a lower rate than native first-year students at the senior institution.

Ishitani (2008) recounted how transfer shock had been a significant indicator in the probability that a transfer student would not return in a subsequent semester after a poor academic performance and extended duration of maintaining a marginal GPA, which were direct correlations of academic persistence. Transfer students are more likely to drop out of the senior institution within the junior year upwards of 30 percent (Graham & Dallam, 1986). Ishitani (2008) suggested student departure within the literature should be described in more detail to include multiple forms of exit criteria, including but not limited, to formal dropout, institutional transfer, first-term withdrawal, academic dismissal, and graduation. Zhai and Newcomb (2000) reported that a student's previous attributes and disposition, possibly including non-cognitive factors, have a direct influence on the students predisposed likelihood to leave school and not complete the requirements to earn a bachelor's degree.

Ishitani (2008) illustrated that when GPA is not the primary measure of success, evidence showed that graduation and retention rates for transfer students were also lower in comparison to native students who began their academic career at the four-year

institution. Graham and Dallam (1986) suggested that the inclusion of transfer GPA as a primary measure of retention assessment may be positively influenced by the attrition and departure of lower performing students, thus evaluating the GPA of the remaining enrolled transfer population as being more academically successful. Porchea et al. (2010) reported a study that reinforced that approximately 45 percent of the enrolled community college students had dropped out and less than 20 percent of the original cohort had earned a bachelor's degree. These statistics suggest many community college students have high aspirations of associate degree completion but lack the persistence for some reason to complete their goal.

Although Ishitani (2008) referenced previous studies that concluded that transfer students earned lower grade point averages at the conclusion of the first year in comparison to native first-year students, subsequent studies revealed that transfer students were generally able to recover from this deficit in GPA after becoming acclimated to their new environment. Kerby (2015) noted that the differences between those students removed from institutions due to academic reasons and those that self-select to withdraw, cannot be easily predicted or measured based on the four-year grade point average as the overarching predicting variable in retention without understanding other latent variables. The understanding of non-cognitive measures coupled with community college GPA may shed light on these additional latent variables.

Transfer Barriers and Inhibitors

Transitional Barriers

Transfer students have a variety of specific needs that potentially support a seamless transition to the senior institution, including combating negative stereotypes towards transfer students, course articulation issues, securing financial aid, difficulty with the registration process, course availability, housing challenges, and the ability to navigate academic advising and degree requirements (Eggleston & Laanan, 2001). Tobolowsky and Cox (2012) summarized that new transfer students must contend with a variety of issues and barriers including, but not limited to, a potential decline in their overall cumulative grade point average, potentially attributed to transfer shock (Hills, 1965). A possible self-inflicted barrier, originating from the student, is the propensity to make multiple assumptions about the new institution that may mislead or derail initial performance at the new school.

Tobolowsky and Cox (2012) acknowledged that transfers who make the transition from one four-year institution to another senior institution are, at times, likely less prepared and blindsided when unanticipated challenges arise; unlike vertical transfer students who likely projected experiencing some form of a transitional challenge from the community college. These encounters ranged from how to transfer and receive financial aid, new registration procedures, how to pay tuition, awareness of important deadlines and new institutional policies, and how to generally navigate the new educational and administrative landscape. These conclusions are a slight counter narrative to the notion

that only community college students are less prepared to make the transition from one institution to another.

Community college students face different, yet expected cultural shifts; including an amplified rigor of their coursework, especially within their primary curriculum, increased faculty expectations and possibly feeling somewhat displaced in their new environment. Additional challenges navigated during the exchange from the community college, included academic deficiencies, academic advising complications, campus adjustment, and financial literacy deficits that have been verified to hinder academic performance and degree completion (Eggleston & Laanan, 2001). Tobolowsky and Cox (2012) suggested informal policies possibly affecting the transition process could range from discrepancies in the evaluation of transfer credits from one program to another, inconsistent procedures imposed between academic programs and administrative units, or the possibility of less supportive personnel unconsciously biased towards transfer student populations versus native students. Zamani (2001) noted multiple explanations why students from the community college sector were less successful in their transition to the senior institution; including the marginal transfer function at the two-year school, less social engagement at the former campus, fewer meaningful interactions with staff and professors and the lack of institutional fit.

Transfer Shock

Transfer shock is defined as the decline in academic performance in the first semester grade point average after the initial transition from a community college to a four-year institution (Berger & Malaney, 2003; D'Amico et al., 2014; Eggleston &

Laanan, 2001; Graham & Dallam, 1986; Hills, 1965; Ishitani, 2008; Keeley & House, 1993). Coston et al. (2013) defined transfer shock as the distress experienced by transfer students during the initial transition year, which creates stressful encounters that interfere with the adjustment process from the community college to the senior institution. Transfer shock was discovered to have a correlation to a student's first semester academic performance as well as long-term graduation success and persistence at the four-year institution (Pennington, 2006).

Transfer shock is loosely measured as a difference between the cumulative transfer grade point average earned at the community college and the first semester grades earned at the new senior institution. The score differential between the two evaluations determines the amount of the transfer shock experienced by the student (Pennington, 2006). The underlying assumption of transfer shock that merely calculates the difference in the cumulative community college GPA and the first semester at the senior institution can be misleading. Pennington (2006) noted that transfer shock could be measured in a variety of formats. Due to a variety of factors that cannot be controlled for, including, differentials in the grading scales between institutions and the element of the community college grades are a cumulative score over multiple semesters whereas the four-year institution is a limited one term assessment of performance (Pennington, 2006). Hills (1965) suggested that the level of transfer shock is relative to the rigor of the new senior institution from junior college and a direct reflection on the likelihood of earning a bachelor's degree.

Townsend and Wilson (2006) attributed transfer shock to the shift in the institutional culture from the community college to the larger setting of a university. Pennington (2006) suggested that predictors of transfer shock were, students who matriculate from community colleges were more likely to experience academic decline, community colleges may be less rigorous and perhaps do not require the same level of academic demand, and the academic experience at the community college may not align with more intellectually rigorous four-year institutions. This discord has been especially prevalent in those students whose prior academic performance was less than a 2.50 at their respective community college (D'Amico et al., 2014; Glass & Harrington, 2002). Hills (1965) suggested that the students who attended community college may have a deficit mindset with their capability to perform well in college and this may contribute to the onset of transfer shock. Despite the investigated and confirmed existence of transfer shock, minimal discussion has emerged to understand the causes for this academic phenomenon, nor the relationship to other demographic and performance variables (Pennington, 2006).

Students who persist despite the influence of transfer shock can perform well academically and in due course have comparable grade point averages as native students (Coston et al., 2013). Hills (1965) noted a moderate level of recovery from transfer shock at the conclusion of the second semester after the transition to the four-year school. Graham and Dallam (1986) reported transfer GPA's recovered from the initial transfer shock after the first year and returned to the levels similar to pre-transfer. However, there were very few institutions that examined the consequences of transfer shock and the

inconsistency of GPA's as it relates to future persistence and potential attrition (Ishitani, 2008). The academic standing of a student within the junior year, having earned 60 total credit hours, were decisive factors in receiving higher first semester grades, and were less likely to be in academic jeopardy and having an increased probability of graduation (Keeley & House, 1993). Students who possessed the appropriate levels of expected effort to be successful at the four-year institutions were more likely to experience less transfer shock and were more motivated to achieve academically (Lester et al., 2013). Keeley and House (1993) recommended a method to minimize the effect of transfer shock in the form of institutional services that support the positive transition of new students to the institution; especially students more vulnerable to the adverse effects of lower first semester performance.

Institutional Priorities

Tobolowsky and Cox (2012) revealed that although transfer students are a known population to administrators, this population remained less prioritized to the full-time, first-time students. Institutions must challenge specific policies, and confront the access barriers infringed upon transfer students, including procedural and informational barriers (Dowd & Melguizo, 2008). The bureaucratic atmosphere of a new institution potentially creates challenges for many community college transfer students who could experience cultural dissonance with the stricter policy enforcement associated with four-year schools in comparison to a more lenient environment at the community college. Both formal and informal policies embedded in the structure set forth by an institution can systematically interfere in the support that universities can provide in the seamless transition of new

students (Tobolowsky & Cox, 2012). Formal policies may consist of ambiguous campus policies or rules, inconsistent guidelines for acceptance into specific majors and competitive programs, the availability of critical courses, and individualized transitional support.

Lack of Support

Townsend and Wilson (2006) observed that typical transfer student research had been traditionally conducted at the institutional level and exclusively focused on quantitative measures of academic success, generally concentrating on the first semester grade point average. Coston et al. (2013) acknowledged that many institutions offer services and resources that are generally disconnected and siloed and do not offer an effective or efficient method for providing comprehensive support to new transfers, thus leaving them frustrated and isolated as they attempt to navigate a new environment. Coston et al. (2013) referenced previous research that discovered that transfer students have much higher attrition rates, dropout rate and stop out rates than native students. Multiple studies have shown that community college transfers, after a successful transition, found the new four-year institution was unsettling and misaligned with their thoughts on the college experience (Townsend & Wilson, 2006). This discontentment left many transfer students feeling unsupported and deficient in the guidance necessary to reach their academic potential and less likely to register for the subsequent semester.

Transitional Support and Facilitators

Porchea et al. (2010) illustrated that due to the combination of low associate degree completion and minimized successful transfer rates to four-year institutions; there

is a need and a role for senior institutions to discover the factors hindering the success of community college transfer students. Chrystal et al. (2013) noted essential responsibilities of the receiving senior institution, included online resources that are transparent that facilitate the ease of understanding the number of transfer credits accepted, the requirements for degree completion, and the articulation of eligible transfer courses. Studies have shown that the students who were better informed and prepared with knowledge of the transfer process were the most likely to perform well academically and the most satisfied with the transitional process (Berger & Malaney, 2003). This research confirmed that information presented by the receiving institutions should be transparent, accurate, and easily accessible to minimize confusion and unnecessary barriers to the transfer process (Chrystal et al., 2013).

Transfer Guidance

Coston et al. (2013) summarized that transfer students need additional information and guidance on the services that are available, adequate access to those services, and proper guidance on how to utilize and locate the necessary support to minimize the complexities of services offered at universities and colleges. Kerby (2015) recommended that colleges and universities need to create and nurture environments that cultivate educational resiliency within students and develop a campus philosophy that provides appropriate levels of academic protections that can foster learning. Townsend and Wilson (2006) suggested that four-year institutions bear a responsibility to community college students to support the seamless transition to the institution. Institutional leaders that prioritize transfer initiatives build awareness of critical issues,

develop support for students pre-transfer, during the transition, and post-transfer to help ensure dedicated support (Fink & Jenkins, 2017; Taylor & Jain, 2017). Lester et al. (2013) suggested that academic engagement with an emphasis on academic challenge might be more indicative of transfer student success and retention in contrast to the classical research of transfer students. Dedicated educational modules and unique support programs explicitly suited for transfer students, could be instrumental in elevating academic performance, increased retention, and associate degree completion for those students who display lower levels of perseverance orientation (Eggleston & Laanan, 2001; Datu et al., 2016).

Guided Pathways

Forty-five percent of all 2015-2016 community college students took more than two and a half or more years to transfer to a senior institution (National Student Clearinghouse, 2015). Crosta (2014) suggested that community college students follow specifically designated course sequencing or "pathway" to increase the number of earned credit hours and improve bachelor degree completion. Guided pathways, meta-majors, or sequential curriculum maps have been utilized to create structured support programs for community college students (Jenkins, Lahr, & Fink, 2017). These pathways can allow students to navigate their intended major efficiently.

de la Torre and Wells (2014) implied that elements of guided pathways, such as standardized transfer guides, can create solid course selection options for students to ensure alignment with degree requirements. Guided pathways are initiatives developed by institutions and statewide entities that have formulated sequential courses that provide

students with structured navigation towards completing the bachelor's degree (Bailey, Jaggars, & Jenkins, 2015). The guided pathways initiatives have suggested that dedicated partnerships between two-year and four-year schools would create specialized support mechanisms to help guide students towards minimalizing credit loss and improved degree completion (Fink & Jenkins, 2017). Thus, the pathway of transition should entail more flexibility to support the complex needs and requirements of transfer students (Taylor & Jain, 2017).

Articulation Agreements

Townsend and Wilson (2006) noted the traditional manner of transfer student research had centered on the importance of both academic and social integration as a means to measure the academic success and likelihood of degree completion from a four-year institution. Townsend and Wilson (2006) claimed that the critical function to award articulated credit had been a profoundly significant concern facing the four-year institution. Ishitani (2008) suggested a reason undergraduates transition from a community college to a specific four-year institution resides in the strength of the curriculum and the articulation of credits that align with the desired major or course of study. When students are granted the maximum provision of the coursework they have completed, they are less likely to feel as though time was misused at the previous institution. Designated institutions have begun to research the inclusion of applied associate’s degrees into the articulation agreement policies. Ignash (2012) argues that applied associate degrees can be a vehicle to increasing bachelor degree attainment once the perceptions of an applied and academic curriculum are clarified. Hodara et al. (2017)

note that some state governing systems have established lower division course articulation guidelines and common (or uniform) course numbering systems to support credit mobility and the seamless transition of incoming transfer students into an admitted major. Despite the proponents of statewide articulation agreements to guide policies on transfer credits, few studies have confirmed the increase in bachelor's degrees as a result of this implementation (Anderson, Sun, & Alfonso, 2006).

Adequate Support Services

Transfer centers can provide the appropriate support and advocacy for transfer students who may be continuing or newly entering the institution by creating shared services and programming that would ease the transitional process. These centers would ideally be one stop departments that can provide comprehensive support to the variety of possible questions, concerns, and needs of transfer students; seamlessly connecting them to the resources that can provide insight on admissions criteria, transfer credits, degree requirements, and financial aid (Collins et al., 2011). Coston et al. (2013) discussed how previous studies have shown that when students perceive connectedness to the faculty and meaningful interactions, this increases academic satisfaction and connection to the campus. D'Amico et al. (2014) noted a positive indicator of previous transfer success and adjustment yielded higher grade point averages for students post transition to a new institution. Townsend and Wilson (2006) declared that based on previous studies that focused on the combination of academic success and social integration; institutional leaders have historically leveraged transfer student success initiatives around first-year seminars, and transfer learning communities, with the assumption of improved retention

and degree completion. They proposed that three transitional elements would support the success of transfer students and the likelihood of a seamless transition to the receiving institution, which included, dual advising by the sending and receiving institutions, a comprehensive transfer orientation process, and access to both social functions and academic support services to facilitate the transition process. The notion that early identification of student risk coupled with the appropriate deployment of support programs and early intervention strategies would enhance the probability of transfer student academic success (Porchea et al., 2010).

Suggestions and Resolutions

Zamani (2001) suggested a strategy that community colleges can utilize by facilitating a better transitional experience along with confronting the barriers that exist for students. Also, four-year and two-year institutions can develop specialized collaborations and partnerships to enhance the performance of transfer students. State legislation can guide articulation agreements and supplementary transfer policies to increase the accessibility and utilization of community colleges in response to criticism of rising tuition costs that affect mid to lower income households, along with enhanced language into existing articulation policies to include curricular alignment, common course numbering, guaranteed admissions policies, and equivalent foundational courses (Dowd & Melguizo, 2008). Lastly, Zamani (2001) suggested that both two-year and four-year schools should consider alternative methods to address the multiple challenges that transfer students experience in new and creative ways that directly support the needs of the students from an institutional, structural transitional service.

Conclusion

Beyond high school, academic performance and standardized test scores, which have proven to be predictive for incoming students first-year grade point average, much is unknown that accounts for more than three-quarters of the variation that contributes to the academic performance of new transfer students (Akos & Kretchmar, 2017). Berger and Malaney (2003) illustrate that most established research on transfer student achievement has been based on GPA as a primary indicator of successful adjustment. However, there is more evidence of additional factors that serve as good predictors of academic success and retention. Likewise, they suggested that to have a comprehensive understanding of the transitional and adjustment process there needs to be a better concept of both the academic and social constructs that support a students transition to the four-year institution. With the provided literature, institutional stakeholders and practitioners that work directly with transfer students become aware of the risks and challenges facing community college transfers and can design and implement policies and support features to improve the academic performance and survivability of new transfers at their institution (see Table 2). Potentially knowing the prior performance risk profile of transfer students, and Grit assessment, institutions can take proactive measures to improve the transitional experience, improve educational resources, and provide training to administrators and professional staff on best practices to guide the students with predisposed risk behaviors and patterns.

CHAPTER THREE: METHODOLOGY

Introduction

This chapter describes the research methodology used to examine the research questions. This chapter will also describe the participants of this exploratory study, the instrumentation that was used, the data collection process, and the statistical treatment used to analyze the data. The purpose of this quantitative study is to investigate Grit as an outcome variable of previous transfer specific indicators and discern the association between transfer students' prior academic experiences, demographics and community college characteristics to self-reported Grit. Additionally, students' self-reported Grit was used to predict new incoming community college students' first-semester academic performance with the intent to improve first-semester outcomes and first-year retention rates within a four-year setting.

Research Design

This exploratory study used a correlational research design to examine the research questions. A correlational research design is non-experimental in which relationships are assessed without manipulating the predictor variables or randomly assigning participants into different conditions. A simultaneous multiple regression approach was used to depict the relationships in the study. Multiple regression can be utilized on data sets when the predictor variables may be correlated with each other and yet be slightly related to the outcome variable (Tabachnick & Fidell, 2007). This

provided a quantifiable illustration of the association and the contributions of the predictor variables in terms of explained variance.

Research Questions

This exploratory study examined incoming community college transfer students' internal measure of Grit and its association to the first semester grades after the transition from a community college setting to a four-year institution. This study investigated Grit and other predictor variables in relation to the students' earned grade point average at the conclusion of the first semester after transfer and the students' academic standing at the end of the first semester. In this exploratory study, the following research questions guided this inquiry:

1. How do prior academic experience, transfer student demographics and community college Carnegie Classification relate to transfer students' composite Grit score?
2. How do individual Grit score dimensions (POE and COI), prior academic experience, transfer student demographics and community college Carnegie Classification relate to transfer students' first semester grade point average?

A summary of the research questions, predictor variables, outcome variables, and statistical tests are provided in Table 3.

Table 3

Summary of Research Questions and Methods

Research Questions	Predictor Variables	Outcome Variables	Statistical Test
Q1. How do prior academic experience, transfer student demographics and community college Carnegie Classification relate to transfer students' composite Grit score?	Prior Academic Experience: Transfer GPA; Associate degree completion (Y/N); Number of Transfer Credit Hours Demographic Information: Age; Race; Gender; Admitted major (STEM, Non-STEM, Undeclared) Institutional background: Carnegie classification (size & focus of community college)	Composite Grit Score	Multiple Linear Regression
Q2. How do individual Grit score dimensions (POE and COI), prior academic experience, transfer student demographics and community college Carnegie Classification relate to transfer students' first semester grade point average?	Academic Performance: Grit Score: Grit (POE) Score Grit (COI) Score Prior Academic Experience: Transfer GPA; Associate degree completion (Y/N); Number of Transfer Credit Hours Demographic Information: Age; Race; Gender; Admitted major (STEM, Non-STEM, Undeclared) Institutional background: Carnegie classification (size & focus of community college)	1st Semester Grade Point Average	Multiple Linear Regression

Sample and Population

The sample in this study consisted of Fall 2018 incoming community college transfer students. All new Fall 2018 transfer students to a large southeastern university for the stated term, approximately 3,000, were invited to participate in the research study by email invitation and were provided a link to the Grit-S survey. Students were asked to submit an electronic consent form on the initial screen of the survey. Once completing the survey, students were given the opportunity to submit their contact information for a drawing to win a $50 Amazon gift card as an incentive for their participation in the study.

All new North Carolina community college transfer students, from an expected incoming transfer class of over 3,000 people, approximately 66 percent or 1,980 students, would be eligible to satisfy the inclusion criteria to participate in the study. On average, 62 percent of the incoming class consists of transfer students from a North Carolina community college (Institutional Research, UNC Charlotte, 2017). Therefore, this study it is estimated that approximately 1,900 North Carolina community college transfer students were eligible to participate in this study; with a projected 20 percent response rate, would produce approximately 380 participants. Results from this study may not be generalized or characterized by samples from other universities with different admissions criteria and student characteristics. Convenience sampling is a non-random sampling technique, and participants of a study are purposefully identified by the researcher to obtain information on a particular group that meet specific criteria and are administratively accessible (Emerson, 2015; Etikan, Musa, & Alkassim, 2015). A sample size of 200 participants or more is recommended for model fit (Chen, Lin, Chuang, & Chen, 2017; Jenatabadi, 2015; Weston & Gore, 2006). This study received 225 full

participants, which was adequate for detecting a moderate effect size. While the sample size provided sufficient statistical power to detect a moderate relationship, there is the potential for selection bias that could influence the final results.

This exploratory study was conducted in a Metropolitan urban research University in the southeastern United States. Of the 28,721 undergraduate student population, 51 percent were men, and 49 percent of the students were women (Institutional Research, UNC Charlotte, 2017). The institution's population consisted primarily of Caucasian students at 57%, 15.5% African American, 8% Hispanic, 5% Asian, and 13% of the students were coded as multiracial or other ethnicities. Participant characteristics are reported in Table 4. The majority of the participants were women (60%). Caucasian students constituted the largest racial group (60%) while Asian, African American, Hispanic, and Multiracial students were evenly distributed. The average age was 18 to 24 years old (80%). Ninety-two percent of the community college transfers, in this study, for the Fall 2018 academic entry term averaged between 30 and 89 credit hours. This is to say that an overwhelming number of students that chose to participate had an academic standing classified as either sophomore or junior. However, more than half of this group had not completed their associate degree (56%). The students that completed a credential before the transition, most, completed the Associate of Arts, which is the more academically flexible associate degree in the North Carolina community college system.

Table 4

Numbers and Percentages of Demographic Variables among Participants (N=225)

Variable	Frequency	Percent
Gender		
Men	89	39.6%
Women	136	60.4%
Race/Ethnicity		
Asian/Pacific Islander	18	8%
African America	21	9%
Caucasian	135	60%
Hispanic	29	13%
Multiracial	22	10%
Age		
18 to 24 years old	179	79.5%
25 to 39 years old	37	16.5%
40 years or older	9	4%
Transfer Academic Standing (Freshman, Sophomore, Junior, Senior)		
less than 30 total credit hours	15	7%
30 to 59 total credit hours	105	47%
60 to 89 total credit hours	102	45%
90+ total credit hours	3	1%
Associate Degree Completion		
Associate of Arts	59	26.2%
Associate of Science	28	12.5%
Applied Associate of Science	11	4.9%
No Associate Degree Completed	127	56.4%

Instrumentation and Measures

Grit-S

The instrument used during the data collection process was the Grit-S scale (Duckworth & Quinn, 2009). The Grit survey was developed by Angela Duckworth to measure how strongly participants believe they work towards a specific goal and how well they continue to pursue a goal over an extended period of time (Duckworth et al., 2007). The Grit-S scale, which was used for this study, has eight questions that are measured on a five-point Likert scale ranging from 1 (*not like me*) up to 5 (*very much like me*) and is based on two sub-scales of perseverance of effort and consistency of interest, each sub-scale has four questions (Duckworth & Quinn, 2009). The Consistency of Interest scores were reverse coded to account for the inverse nature of the scoring rubric. Higher total scores indicate that the participant was deemed to have higher overall Grit (Duckworth & Quinn, 2009). The points calculated for each question on the Grit scale are totaled and averaged by the eight survey questions to calculate the raw score for Grit. The survey typically takes less than five minutes to complete.

The Grit-S survey is a short version of the original 12-question Grit-O instrument. Datu et al. (2016) noted that previous research had revealed the Grit-O measures showed high internal consistency. Additional research has shown that the Grit-S scale provides equivalent results of the Grit-O assessment (Duckworth & Quinn, 2009). Datu et al. (2016) explain that the Grit-S perseverance of effort and consistency of interest dimensions show moderate reliability coefficients. The short scale version of the Grit survey was utilized based on research by Duckworth and Quinn (2009) that concluded

that the Grit-S scale was a more efficient method to measure Grit and having suitable internal consistency.

Duckworth and Quinn (2009) discussed how the Grit-S scale has an acceptable range of internal consistency with Cronbach's alpha measuring between 0.73 and 0.83, based on standardized items among multiple studied populations. Strayhorn (2014) notes that Grit-S has documented research that confirms its validity and reliability. The Grit-S dimensions, perseverance of effort (α=0.78) and consistency of interests (α=0.84), report moderate reliability coefficients, construct validity, predictive validity and internal consistency (α=0.85) (Datu et al., 2016; Duckworth et al., 2007; Duckworth and Quinn 2009; Strayhorn, 2014). Based on previous data, the suggested score cuts were provided to quantify and interpret the Grit scores (see Table 5).

Table 5

Model of Grit Score and Grit Level

Grit Score	Grit Level
8-15	Low Grit
16-23	Moderately Low Grit
24-31	Moderately High Grit
32-40	High Grit

Carnegie Classifications

The Carnegie Classification of Institutions of Higher Education is the structure for defining institutional groupings, missions, and focus in the United States higher education (The Carnegie Foundation for the Advancement of Teaching, 2001). The Indiana University Center for Postsecondary Research (n.d.) notes that the classifications

are designed to be used as a guiding measure to analyze specific institution size and geographic location, student populations, and background of the teaching faculty. For this exploratory study, only community colleges that offer associate degrees and certificate programs were utilized. The basic Carnegie classifications, size, and institutional focus constituted the predictor variable (see Table 6). These qualitative variables were dummy coded to use in all statistical models.

Table 6

Numbers and Percentages of Community College Carnegie Classification

Variable	Participant Enrollment	Percent
Carnegie Classification		
Very large size / High Transfer	109	48.4%
Large Size / High transfer, High vocational & technical, Mixed transfer/Vocational & technical	15	6.7%
Medium size / High transfer, High vocational & technical, Mixed transfer/Vocational & Technical	63	28%
Small size / High transfer, High vocational & technical, Mixed transfer/Vocational & Technical	38	16.9%

Data Collection

The data were collected after the researcher received IRB permission from the university's review board. Students were recruited by email invitations from the University Transfer Center email account, from the researcher and Director of the University Transfer Center, to participate with a link to the Grit survey. Web surveys

provide a low-cost distribution to a large population of students (Couper, 2000). Dillman, Smyth, and Christian (2009) noted that internet-based surveys are a more efficient method for capturing participant attitudes and behaviors and participants are more likely to provide more significant detail on internet based surveys than written surveys. Participants were provided with the informed consent, the purpose of the study, the estimated time to complete the survey, the risks and benefits of being a participant in the study, and assurance of the confidential nature of the study and the handling of their information. Participants were allotted seven weeks to complete the survey during the Fall 2018 semester. Dillman et al. (2009) suggested that response rates could be increased with repeated contact with participants. Additional intervallic survey invitations were distributed to any participants that had not completed the survey to increase response rates. The first follow up email sent one week after the initial email and the additional follow up emails were conducted at two weeks intervals throughout the remainders of the semester. Participant informed consent was received and confirmed on the initial page of the survey. The survey collected data from all incoming transfer students.

Community college students were sorted and then separated by the last attended institution type to isolate the community college size and transfer focus needed for the survey. Responses to the Grit survey were shared with an independent data analyst, and the identifiable student information was redacted. Background information and academic record fields were cross-matched by the Office of Institutional Research about the submitted Grit score and matching student identification and email address. The de-identified data included all student demographic information. The first semester GPA,

prior academic experience, and academic performance were requested from the Office of Institutional Research to match performance data.

The researcher collected the responses to the Grit survey through a secure online survey portal. Campus Labs provides an easily accessible website to capture survey responses. The responses from the participants were downloaded to Excel and imported to SPSS for analysis. The Grit survey was distributed verbatim from the open source version of the Grit-S scale from Duckworth and Quinn (2009) and included all of the original instructions. Grit item responses were averaged into a mean score with high scores indicate greater levels of grit and low scores indicate low levels of Grit. Grade point average, transfer grade point average, Grit score, number of earned credit hours, number of transfer credit hours and age were continuous variables; all other variables were coded and assigned a nominal variable. Participant data (Student name, Student ID number and email address information) were replaced with pseudonyms (e.g., Participant 1, Participant 2, Participant 3) and was stored and handled as Level 2-Confidential/Sensitive information and stored in a secured location with limited access. No participant data were identifiable or placed at risk once collected by the researcher for this study. At the conclusion of the survey deployment, the survey link was deactivated, and the six winners of the gift cards were contacted to receive their incentive for completing the survey.

Data Analysis

The data were collected from an internet based survey platform and downloaded for use in a data analysis software program. Statistical analysis was conducted using

Statistical Package for the Social Sciences (SPSS) version 25 for data screening and descriptive statistical analysis. Descriptive analysis was conducted to calculate the mean scores, standard deviation, correlations, and skewness coefficients for all predictor and outcome variables in the study. All data were screened before analyzing the inferential statistics. The screening process includes reviewing all variables for accurate entry and association with represented scale, missing values, and outliers. Cronbach's alpha reliability estimates and the correlations between the observed variables were calculated using SPSS version 25.

Multiple Regression Analysis

In this exploratory study, multiple linear regression was used to analyze the data. Multiple regression is utilized to assess the relationship of a single outcome variable and multiple predictor variables (Tabachnick & Fidell, 2007). A multiple regression analysis will allow the researcher to operate under the intention of prediction (Tabachnick & Fidell, 2007). A simultaneous multiple regression equation is utilized to assess the robust relationship of a single observed variable and additional measured variables (Jenatabadi, 2015; Kellar & Kelivn, 2013; Tabachnick & Fidell, 2007). All underlying assumptions for multiple regression were met before conducting the model, including multivariate normality test, evaluation for outliers, independence of residuals, evaluation of linearity, test for homoscedasticity, absence of multicollinearity and evaluation of high leverage and influence points. In this study, the two multiple linear regression analyses tested the relationships between the predictor variables (e.g., academic performance matrices, transfer student demographics, community college background performance and Grit

with the outcome variable (e.g., first semester grade point average) In the first multiple regression analysis, the composite Grit score was the outcome variable. In the second multiple regression analysis, first semester grade point average was the outcome variable (see Figure 3 & Figure 4).

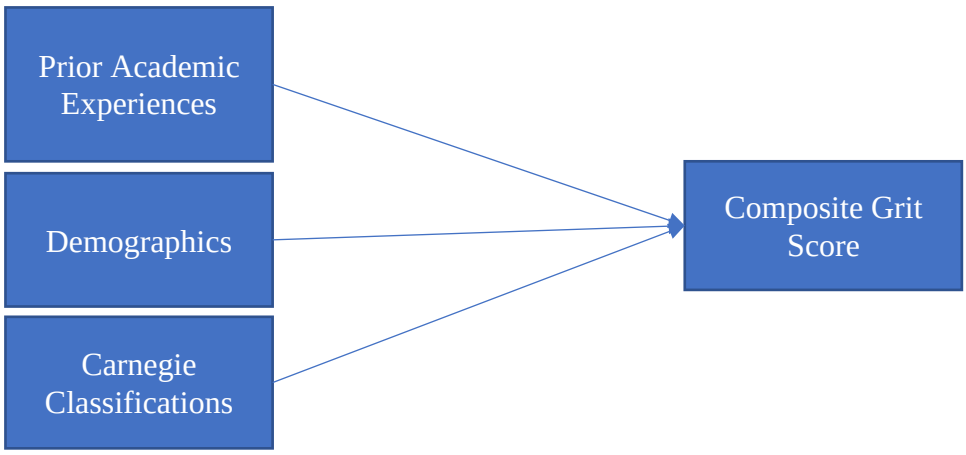

Figure 3. Conceptual Model of Multiple Regression to Predict Composite Grit Score

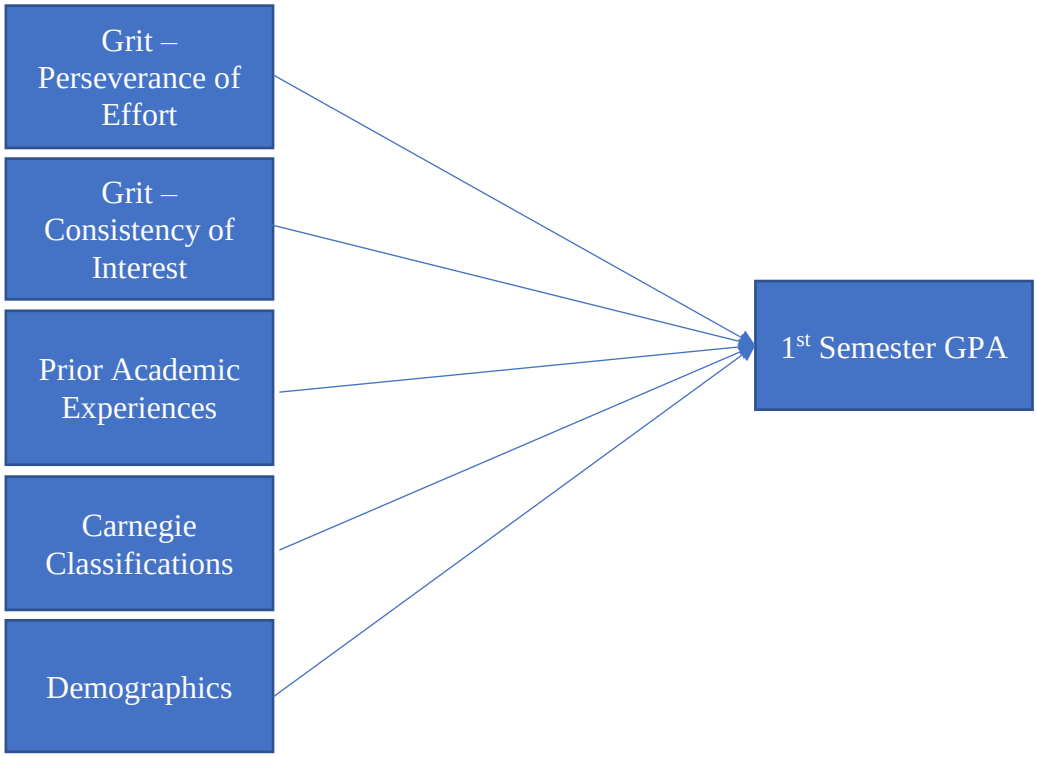

Figure 4. Conceptual Model of Multiple Regression to Predict First Semester GPA

Conclusion

The study sought to address the issue of senior institutions discovery of useful metrics through the results of this exploratory study by examining Grit and other predictor variables in relationship to the first semester academic performance. A correlational research design was used to address the research problem. In this chapter, the research questions, population sampling, and demographics were described. Also, the instrumentation and measures used to analyze the data were described, including the Grit-

S scale and the Carnegie Classification. Data collection procedures and data analyses are discussed. Multiple regression was used as the inferential statistical procedure for this study. The screening procedures that were applied to ensure accuracy and reliability were also described. The findings and quantitative results of the study are described in the next chapter.

CHAPTER FOUR: RESULTS

Overview

This chapter provides a synopsis of the quantitative results of the study. The chapter is divided into five sections. Composite Grit scores are examined as an outcome variable and as a predictor variable using multiple regression analyses. More specifically, the study seeks to determine the correlation between a designated non-cognitive factor (self-reported Grit score), the size and transfer focus of the previous institution (Carnegie Classification) and other transfer specific variables known at the time of admission with subsequent first-semester GPA.

The two research questions were, how do prior academic experience, transfer student demographics and community college Carnegie Classification relate to transfer students' composite Grit score? Second was, how do individual Grit score dimensions (POE and COI), prior academic experience, transfer student demographics and community college Carnegie Classification relate to transfer students' first semester grade point average? The first section, reliability of the instrument, contains information about the internal reliability of the Grit-S instrument, next a descriptive analysis of the study is demonstrated for context of the community college students that participated in the survey. The third section, data screening, will discuss the steps taken before analyzing the data, next bivariate correlations were measured to determine the significant relationships between individual variables, the fifth and final section will discuss the multiple regression models for each dimension of Grit. The purpose of this exploratory

study is to examine Grit as an outcome variable of previous transfer specific indicators and establish the relationship between self-reported Grit levels and community college student's first semester outcomes post-transfer. This chapter will then conclude with a summary of the results.

Reliability of Instrument

This section will provide information regarding the Grit-S instrument internal reliability for this study. Chronbach's alpha was used to determine the reliability of the revised 8-item Grit-S survey (Duckworth & Quinn, 2009). Total scores on the Grit-S for this study ranged from 15 to 40 and had a mean score of 28.71 (SD = 4.85), which indicated moderate levels of perceived overall Grit. Before the primary analyses, the Consistency of Interest scores was reverse coded in the scoring rubric (study survey questions 8, 11, 13, and 14). The Cronbach's alpha internal measurement for this study reached acceptable reliability (α = 0.76) for the community college students that completed the full Grit-S assessment. Cronbach alpha for the four Perseverance of Effort questions reached marginal reliability, α = 0.60, and the four Consistency of Interest questions reached acceptable reliability at α = 0.76. These estimates demonstrated an adequate internal consistency consistent with previous studies that measured Grit-S (see Table 7). Although the internal reliability assessment for the present study was consistent with the literature on the total Grit-S scores, the internal consistency associated with the perseverance of effort and the consistency of interest dimensions were noticeably lower than the reported measures in the literature.

Table 7

Cronbach's Alpha, Means, and Scale Statistics

Instrument	Participants	Cronbach's Alpha	Mean	Variance	SD	N of Items
Grit-S	225	.756	28.71	23.60	4.858	8
Grit (POE)	225	.597	16.14	5.49	2.354	4
Grit (COI)	225	.755	12.56	11.42	3.380	4

Sample Characteristics

As stated in Chapter 3, approximately 62 percent of the incoming transfer student population consists of students that attended North Carolina community colleges (Institutional Research, UNC Charlotte, 2017). Of all of the incoming transfer students entering for the Fall 2018 semester, 1,987 transitioned from North Carolina Community Colleges, which was 67 percent of the total incoming student population for Fall 2018 (Institutional Research, UNC Charlotte, 2019). Two hundred seventy-two incoming community college transfers participated in the study resulting in a response rate of 13.6%. Out of this total, 225 students (83%) fully responded to the Grit-S survey and corresponding assessment questions. An analysis of partial completers of the full assessment revealed that 47 students (17%) did not complete enough of the Grit-S survey questions to deem them inclusive in the study sample.

The average age of the students in the sample was 24 (*SD* = 6.77). The range of ages in the sample was 19 to 66 (see Table 8). The sample consisted of a higher proportion of women students 60.4% (*n* = 136) than men 39.6% (*n* = 89). The majority of the students transferred from very large sized, high transfer and mixed transfer focused,

community colleges 48.4% (*n* = 109), with 6.7% (*n* = 15) transferring from large, high transfer and mixed transfer focused, community colleges, 28% (*n* = 63) from medium sized, high transfer and mixed transfer focused, community colleges and 16.9% (*n* = 38) from small to very small, high transfer and mixed transfer focused, community colleges according to the community college Carnegie Classification ranking system. Upon evaluation of the participating sample, 43.6% (*n* = 98) of the students completed a credentialed program of study, either an associate of arts, an associate of science or associate in applied science degree, before transferring to the new institution. For evaluation purposes in this study, the associate of arts, the associate of science, and the associate in applied science degree were combined to indicate that the student earned a credential before transfer.

Table 8

Descriptive Statistics

Variable	N	Min	Max	M	SD
Age	225	19	66	23.56	6.770
COI Score	225	4	20	12.56	3.380
POE Score	225	9	20	16.14	2.345
Composite Grit-S Score	225	15	40	28.71	4.858
Transfer Hours	225	24	117	53.86	15.565
Transfer GPA	225	2.14	4.00	3.1201	.501
1st Term GPA**	225	.25	16.00	9.6947	4.002

Variable Definitions

To conduct the multiple linear regression with categorical variables, dummy codes were created to run the analysis. Entering a categorical variable into a multiple linear regression does not produce an accurate output for a regression model. Thus,

dummy variables that represent the categorical groupings were created. Categorical variables with more than two values were separated into predictor variables and reference variable. The reference variable chosen was the category most likely to affect the outcome variable in the regression model. The dummy variable classification and corresponding values are displayed in Table 9.

Table 9

Dummy Coded Variables

Variable Category	Dummy Coded Variable	Value
Associates Degree	Associates Degree	Value: 1 Associate degree earned, 0 No degree earned
Gender	Gender	Value: 1 Men; 0 Women
Admitted Major	Major	Value: 1 STEM Major, 0 Non-STEM Major
Race	Caucasian	Value: 0 Race Reference Variable
Race	African American	Value: 1; All others: 0
Race	Hispanic	Value: 1; All others : 0
Race	Asian	Value: 1; All others: 0
Race	Other Races	Value: 1; All others: 0
Carnegie Classification	Very Large Carnegie	Value: 0 Carnegie Classification Reference Group
Carnegie Classification	Small Carnegie	Value: 1; All others: 0
Carnegie Classification	Medium Carnegie	Value: 1; All others: 0
Carnegie Classification	Large Carnegie	Value: 1; All others: 0

Screening Data

The Statistical Package for Social Sciences (SPSS) version 25 was utilized for the screening process before analyzing the data. There were no missing data points for any of

the variables evaluated in the sample (Laerd Statistics, 2015c). The assumptions for multiple linear regression were tested before conducting the final analysis of the variables. An evaluation of the linear relationship between the outcome variables and all of the predictor variables was conducted to ensure the assumption of linearity (Tabachnick & Fidell, 2007). This was estimated by observing the scatterplot of the studentized residuals against the unstandardized predicted values and partial regression plots of the continuous variables (Laerd Statistics, 2015b). After visual inspection of the scatterplot of the residuals, the determination was that the variables were not suggesting a linear relationship. The histogram for the outcome variable suggested that the data was moderately negatively skewed. To improve the linear relationship between variables, the outcome variable was transformed to improve the relationship between the collective predictor variables and the first semester grade point average (Laerd Statistics, 2015d). The square transformation was used to slightly improve the residual scatterplot (Laerd Statistics, 2015d). After a second visual inspection, the scatterplot was improved, suggesting a weaker, yet acceptable linear relationship.

The next assumption tested was the test for homoscedasticity. The visual inspection of the residual studentized residuals in comparison to the unstandardized predicted values pattern was found to be acceptable, and the variance is close to equal for all values of the outcome variable (Laerd Statistics, 2015b). The subsequent assumption test is used to confirm the absence of multicollinearity. It was important to make certain that none of the predictor variables in the study were highly correlated with one another. Although there was an anticipation that the primary Grit dimensions (POE and COI) may

have been more highly correlated, they were measured at a satisfactory level (r = .421). None of the predictor variables were evaluated to be highly correlated, with Transfer Credit Hours and the completion of an Associate Degree as the only other moderate correlation (r = .437). Also, the variance inflation factor (VIF) coefficient was evaluated to determine any likely collinearity issues (Laerd Statistics, 2015b; Tabachnick & Fidell, 2007). After inspection of all VIF tables, it was determined that there was no existence of multicollinearity.

The test for assumptions for unusual points was evaluated using three indicators, inspection of outliers, high leverage points, and highly influential points (Laerd Statistics, 2015b). The examination for outliers was performed by visual inspection of the studentized deleted residuals values, and all cases were measured less than ± 3 standard deviations limitations. The high leverage points were measure by evaluation of participant case leverage values (Laerd Statistics, 2015b). All cases were measured at 0.2 or less, which is considered an acceptable value. The highly influential points assumption test was calculated by the Cook's Distance values, and all cases passed this influence assumption test (Laerd Statistics, 2015a; Laerd Statistics, 2015b). Therefore, no cases were removed based on being considered outliers, high leverage points, or highly influential points.

The residual check for normality was the final assumption test performed in the study (Laerd Statistics, 2015a; Laerd Statistics, 2015b). Histograms of standardized residuals, P-P Plots, and Q-Q Plots for the outcome variable were evaluated for

approximately normal distribution. Upon visual inspection, the residuals were determined to be approximately normally distributed for each set of regression models.

Bivariate Correlations

A Pearson product-moment correlation coefficient was conducted using the predictor variables and the outcome variable to provide a Pearson correlation matrix displayed in Table 10. There were statically significant correlations between the first semester GPA and Total Grit Score (r = .139, p < .001), Transfer GPA (r = .357, p < .001), and students Age (r = .191, p < .001), which were all positively correlated, however, the students that attended Small Carnegie institutions showed a negative correlation (r = -.176, p < .001). There was an additional statically significant correlations between the first semester GPA and Perseverance of Effort (r = .153, p < .05). Students total Grit score was positively statistically significant to Transfer GPA (r =. 200, p < .001), Total Transfer Hours (r = .134, p < .05) and the students Age (r = .168, p < .001). Further notable positive significant relationships existed between Consistency of Interest and Transfer GPA (r = .175, p < .001), Total Transfer (credit) Hours (r = .133, p < .05), student Age (r = .154, p < .05) and between the Transfer GPA and Perseverance of Effort (r =. 163, p < .05).

Table 10

Pearson Product-moment Correlation Coefficient Matrix among Variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. 1st Term GPA	1													
2. Total Grit S Score	.139*	1												
3. Transfer GPA	.357**	.200**	1											
4. Transfer Hours	.081	.134*	.058	1										
5. Associates Degree	.086	.042	.098	.437**	1									
6. Age	.191**	.168**	.053	.383**	.160	1								
7. Gender (Men)	.029	-.084	.034	.040	-.032	-.031	1							
8. Major (STEM)	.035	.056	.070	.149*	.006	.175**	.353**	1						
9. African American	.035	.086	-.143*	.001	.026	.141*	-.041	-.065	1					
10. Hispanic	-.021	-.023	-.048	.018	.197**	-.052	-.040	-.019	-.123	1				
11. Asian	-.124*	-.060	-.098	-.111	-.094	-.095	.096	.070	-.095	-.113	1			
12. Other Races	-.050	.066	-.034	.107	.073	-.005	.009	-.011	-.106	-.127	-.097	1		
13. Small Carnegie	-.176**	-.007	.038	.093	.059	-.053	.024	.008	.059	-.103	.086	.051	1	
14. Medium Carnegie	.056	.040	.045	.113*	.151*	.015	.002	.126	-.064	-.004	-.074	-.039	-.281	1
15. Large Carnegie	.098	.075	.019	-.011	-.091	-.049	.039	-.038	-.024	.004	-.013	.152*	-.120	-.167

Note. **Indicates significant correlation at $p < .01$ level (2-tailed)
*Indicates significant correlation at $p < .05$ level (2-tailed)

Multiple Regression Analyses

After the initial evaluation of the variables, two multiple linear regression analyses were conducted to determine the relationship between the first semester grade point average, grit, and the additional predictor variables. The research questions guiding this study were the following: (1) how do prior academic experience, transfer student demographics and community college Carnegie Classification relate to transfer students' composite Grit score? and (2) how do individual Grit score dimensions (POE and COI), prior academic experience, transfer student demographics and community college Carnegie Classification relate to transfer students' first semester grade point average?

A multiple linear regression was run to predict the composite Grit score of community college transfer students based on indicators related to prior academic experiences, demographic variables, and the size and transfer focus of the student attended. The unstandardized regression coefficients (*B*) and intercept, the standardized regression coefficients (β), standard error, and *p*-values are reported in Table 13. Linearity was confirmed by partial regression plots and a plot of studentized residuals against the predicted values. Visual inspection established there was homoscedasticity, as assessed by plotting of studentized residuals versus unstandardized predicted values. There was an absence of multicollinearity, as calculated by tolerance values greater than 0.1. There were no studentized deleted residuals greater than ± 3 standard deviations, or leverage values greater than 0.2, and no values for Cook's distance above 1. The assumption of normality was met after examination of acceptable Q-Q Plot output. The multiple regression model statistically significantly predicted the composite Grit score, $F_{(13, 211)} = 1.882$, $p < .05$, $R^2 = .104$ (see Table 11 & 12). The R^2 value demonstrates that

the predictor variables in the analysis accounted for 10.4% of the variance in the composite Grit score after transferring to a new institution (see Table 12). One predictor variable was statistically significant, Transfer GPA (p = .002). Transfer GPA had a positive relationship with post-transfer composite Grit scores. All other predictor variables were not statistically significant (see Table 13).

Table 11

ANOVA[a] Output for Composite Grit

Model		Sum of Square	df	Mean Square	F	Sig.
1	Regression	549.391	13	42.261	1.882	.034[b]
	Residual	4737.249	211	22.451		
	Total	5286.640	224			

a. Dependent Variable: Composite Grit (Total) Score

b. Predictors: (Constant), Large Carnegie School, Hispanic Student Dummy, Total Transfer Hours, New Gender, Transfer GPA, Small Carnegie School, African American Student Dummy, Asian Student Dummy, Other Races Student Dummy, Medium Carnegie School, New Major Classification, Actual Age, Earned any Associates Degree

Table 12

Model Summary for Composite Grit

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.322[a]	.104	.049	4.738	2.153

a. Predictors: (Constant), Large Carnegie School, Hispanic Student Dummy, Total Transfer Hours, New Gender, Transfer GPA, Small Carnegie School, African American Student Dummy, Asian Student Dummy, Other Races Student Dummy, Medium Carnegie School, New Major Classification, Actual Age, Earned any Associates Degree

b. Dependent Variable: Composite Grit (Total) Score

Table 13

Multiple Regression Predicting Composite Grit

		B	SE_B	β	Sig.
1	(Constant)	18.899	2.495		.000
	Transfer GPA	2.055	.656	.212	.002
	Total Transfer Hours	.027	.025	.087	.277
	Associates Degree (Earned)	-.482	.744	-.049	.518
	Age	.077	.053	.107	.148
	Gender (Men)	-1.105	.698	-.112	.115
	Major (STEM)	.569	.746	.055	.446
	African American	1.955	1.151	.117	.091
	Hispanic	.321	1.011	.022	.751
	Asian	.148	1.221	.008	.904
	Other Races	1.236	1.120	.076	.271
	Small Carnegie	.000	.923	.000	1.000
	Medium Carnegie	.470	.777	.044	.545
	Large Carnegie	1.510	1.332	.078	.258

a. Outcome Variable: Composite Grit (Total) Score

A multiple regression model was run to predict the second research question, the relationship between individual Grit score dimensions (perseverance of effort and consistency of interest), prior academic experience, student demographics, and the size and transfer focus of the community college the student attended and the first term GPA. The unstandardized regression coefficients (*B*) and intercept, the standardized regression coefficients (β), standard error, and *p*-values are reported in Table 16.

The predictive model was statistically significant and was a viable predictor of first semester GPA, $F_{(15, 209)} = 3.752$, $p < .001$, $R^2 = .212$ (see Table 14 & 15). The R^2 value demonstrates that the predictor variables in the analysis accounted for 21.2% of the variance in first semester GPA after transferring to a new four-year institution (see Table 15).

Three predictor variables were statistically significant, Transfer GPA ($p < .001$), Age ($p = .041$), and small Carnegie classified community colleges ($p = .011$). Having a higher transfer GPA and being an older student in age had positive relationships with first semester GPA, whereas attending a small community college had a negative relationship with first semester grade point average when compared to very large community college. All other predictor variables were not statistically significant (see Table 16). The primary Grit dimensions were not deemed sustainable predictors of transfer first semester GPA when incorporated into a simultaneous model.

Table 14

ANOVA[a] Output for 1st Term GPA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	761.496	15	50.766	3.752	.000[b]
	Residual	2827.558	209	13.529		
	Total	3589.054	224			

a. Dependent Variable: 1st Term GPA* (square transformation performed)
b. Predictors: (Constant), Large Carnegie School, Hispanic Student Dummy, Total Transfer Hours, New Gender, Transfer GPA, Small Carnegie School, African American Student Dummy, POE Score, Asian Student Dummy, Other Races Student Dummy, Medium Carnegie School, New Major Classification, Actual Age, COI Score, Earned any Associates Degree

Table 15

Model Summary for 1st Term GPA

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.461[a]	.212	.156	3.67818	2.006

a. Predictors: (Constant), Large Carnegie School, Hispanic Student Dummy, Total Transfer Hours, New Gender, Transfer GPA, Small Carnegie School, African American Student Dummy, POE Score, Asian Student Dummy, Other Races Student Dummy, Medium Carnegie School, New Major Classification, Actual Age, COI Score, Earned any Associates Degree

b. Dependent Variable: 1st Term GPA* (square transformation performed)

Table 16

Multiple Regression Predicting GPA

	B	SE_B	β	Sig.
(Constant)	-2.288	2.417		.345
POE Score	.105	.119	.062	.377
COI Score	-.016	.084	-.013	.853
Transfer GPA	2.739	.521	.343	<.001
Transfer Hours	-2.433	.019	.000	.999
Associates Degree (Earned)	.384	.581	.048	.510
Age	.085	.041	.143	.041
Gender (Man)	.342	.545	.042	.531
Major (STEM)	-.142	.580	-.017	.807
African American	.883	.911	.064	.333
Hispanic	-.318	.787	-.027	.686
Asian	-.793	.957	-.054	.408
Other Races	-.624	.879	-.046	.478
Small Carnegie	-1.830	.717	-.172	.011
Medium Carnegie	-.043	.604	-.005	.943
Large Carnegie	1.304	1.041	.081	.212

a. Outcome Variable: 1st Term GPA* (square transformation performed)

Conclusion

Chapter 4 displays the results of this study, which was conducted to discern how Grit serves as an outcome variable in relationship to prior academic experiences and to discover the predictors of first semester academic achievement of community college transfer students measured by first semester grades in relationship to Grit, upon transition

to a four-year institution. The purpose of this exploratory research study was to investigate Grit as an outcome variable of previous transfer specific indicators and examine variables related to Grit, student demographics, previous academic performance and the size of the community college categorized by the Carnegie classification system and community college student's first semester outcomes post-transfer. The study included first semester transfer students from North Carolina community colleges who enrolled in a public four-year urban research institution during the Fall 2018 semester. Descriptive statistics were utilized to demonstrate a comprehensive assessment of the students that participated in the study. An exploration of the demographic data reveals that the majority of the 225 participants were women, likely 18 to 24 years of age, transferring with at least sophomore academic standing (30+ credit hours) and attended a large to very large community college. The data analysis consisted of two multiple linear regression models and to determine the level of significance that occurred between the predictor variables and the outcome variables. This chapter also examined the internal reliability of the Grit-S instrument used within the study and confirmed that the survey demonstrated strong reliability.

The first research question was: how do prior academic experience, transfer student demographics, and community college Carnegie Classification relate to transfer students' composite Grit score? Multiple regression was utilized to analyze the data, and the results indicated that only Transfer GPA was statistically significant. Even though the remaining variables were not deemed as individually sustainable predictors, the overall model successfully projected the transfer student composite Grit score. These results

suggest that transfer students with higher transferrable grades were likely to possess a higher overall Grit score during the first semester after the transition to a four-year institution.

The second research question was: How do individual Grit score dimensions (POE and COI), prior academic experience, transfer student demographic characteristics and community college Carnegie Classification relate to transfer students' first semester grade point average? Multiple regression was used to evaluate the data, and the results indicated that Transfer GPA, Age, and Small Carnegie classified community colleges were statistically significant. Transfer GPA and older students had positive relationships with first semester GPA; however, attending a small Carnegie classified community college had a negative relationship with the first semester academic performance. Although the separated Grit dimensions were not deemed sustainable predictors of transfer student first semester GPA, the overall model was statistically significant and is a feasible predictor of first semester GPA post transition to a four-year institution. This outcome suggests that the separate Grit dimensions were not any more predictive than the combined Grit score for first semester community college transfer students when all variables are accounted for simultaneously.

CHAPTER FIVE: CONCLUSION

Overview

The purpose of the exploratory study was to research, a non-cognitive measure, Grit (Akos & Kretchmar, 2017; Datu et al., 2017; Duckworth & Yeager, 2015; Wolters & Hussain, 2015; Zhai & Newcomb, 2000), that intersected with other college related attributes and personal characteristics that could support the forecasting of a community college students academic performance, post-transfer to a new four-year institution. In doing so, this study expands the previous literature and research on Grit (Akos & Kretchmar, 2017; Bowman et al., 2015; Chang, 2014; Datu et al., 2017; Duckworth et al., 2007; Duckworth & Yeager, 2015; Maddi, et al., 2012; Muenks et al., 2017; Silvia et al., 2013;Wolters & Hussain, 2015; Zhai & Newcomb, 2000) by examining community college transfer student populations. Transfer student academic performance has been extensively researched from a variety of angles; however, very limited historical research on the intersectionality of Grit as a predictive factor.

This study investigated Grit as both an outcome variable of transfer student academic performance and previous experiences in college and also as a method to discover the connection between transfer students' previous academic experience, their demographic makeup, and the type of community colleges they previously attended in relationship to the students' self-reported Grit assessment and their academic performance during the first semester at a four-year university. A correlational, exploratory design was used to evaluate a multivariate analysis of the predictor and

outcome variables. This closing chapter summarizes the overall study, followed by a commentary of the findings, recommendations for educational policy and procedures and practice. The chapter ends with recommendations for further research and a conclusion.

Discussion

Previous studies have independently investigated Grit, transfer student academic performance and retention, and graduation metrics. However, there have been very few studies that have sought to understand the relationship between Grit and specifically community college transfer student academic performance. Transfer students have been grouped together as a singular population irrespective of the complex categories related to the transfer student population. These studies historically researched only the previous academic performance, including Grit and GPA, as predictor variables that would gauge probable future academic retention and graduation (Bowman et al., 2015; Datu et al., 2016; Ishitani, 2008; Porchea et al., 2010; Zhai & Newcomb, 2000). Other studies suggested that despite the performance at the community college level, incoming transfers were likely to experience academic difficulty and may face barriers to success due to the increased rigor at a new institution (de la Torre and Wells, 2014; Graham & Dallam, 1986; Ishitani, 2008; Lazarowicz, 2015; Pennington, 2006; Tobolowsky & Cox, 2012; Townsend, 2008; Zhai & Newcomb, 2000). This study sought to expand upon this previous research by incorporating tenants of Schlossberg's Transition and Laanan's Transfer Capital theories, as noted in Chapter 2.

Proponents of Grit have attested to the predictive nature of the Grit survey to provide a different measure of comprehending student success and academic performance

(Chang, 2014; Duckworth et al., 2007; Duckworth & Yeager, 2015; Maddi et al., 2012; Silvia et al., 2013). Grit has been researched from a variety of viewpoints, but few studies from the transfer student perspective. The complexities of the transfer student experience and the malleable nature of Grit (Duckworth, 2016; Farrington et al., 2012; Kamenetz, 2016) make unlocking the predictive properties of non-cognitive research more attractive to higher education professionals. Additional research has suggested that alternatives to traditional aptitude assessments and cognitive standards should be measured to ascertain holistic academic success (Duckworth & Allred, 2012; Hiss & Franks 2014). As noted in Chapter 2, this study sought to detect if the presence of higher Grit is a guiding concept and indication of performance at a senior institution.

As noted in Chapter 2, Schlossberg's Transition theory suggests that transfer students will experience their academic success as layers of both expected and unexpected performance outcomes and will utilize personal coping strategies to navigate their initial transition to a new environment. By investigating the correlation between Grit, transfer student attributes, and previous transfer experiences as indicator variables, this particular study set out to connect the outcomes found in previous research studies and provide a connected pathway to additional measures of transfer student preparation, support, and measurement of continuous academic performance and success. Schlossberg's Transition theory references the four S model, specifically the coping process of *Self*, which can dictate a students' academic success. Transition theory tenants guided the incorporation the demographic indicator variables, age at transfer, race, and gender.

Also, this study was conducted to address the gap in the literature by providing an investigation between the intersection of Grit and previous community college experience, skills, and performance. Laanan's Transfer Capital theory suggests that transfers experience a very complex transition process to four-year schools (Laanan, 2007). The guiding tenants of Transfer Capital for this study were student persistence and academic success. The incorporation of Transfer GPA as a previous academic indicator variable was guided by Transfer Capital theory. It should be noted, Student Persistence, which consisted of students registering for the next semester, was also evaluated in this study. However, due to the very large percentage of students involved in the study that registered for the next Spring 2019 semester (96.4%), was deemed to alter the overall analysis of the current study and was eliminated as a variable. The results of this study, using an exploratory correlational design, in association with the existing literature, are presented by addressing the findings related to each research question and their relationship to previous scholarship.

Research Question 1: How do prior academic experience, transfer student demographics, and community college Carnegie Classification relate to transfer students' composite Grit score? The first research question sought to understand how Grit is an outcome variable based on the prior achievements transfer students bring with them to a four-year institution, their experiences based on the size and transfer intensity of their previous community college, and specific demographic indicators associated with Schlossberg's Transition theory. The findings suggested that the investigated predictor

variables had a very small impact on the composite Grit score. However, one statically significant variable emerged.

A higher transfer grade point average was the sole predictor of a higher composite Grit score. It was unclear why Transfer GPA was the singular significant predictor even though the bivariate correlation matrix revealed a very high relationship between first semester GPA, total transfer hours, the students' age, and the total Grit score collectively, when the other previous academic experience variables are included in the regression model. In the resulting evaluation of these indicator variables, they were not strong predictors of Grit. Although current research has suggested that Grit can be deemed a predictor of academic success in higher education settings (Akos & Kretchmar, 2017; Duckworth, Peterson, Matthews, & Kelly, 2017), this has not initially translated into a significant predictor of Grit for new community college transfer students.

Grit based on the 8-item Grit-Short scale (Grit-S), based on previous research, was promoted as an indicator of academic performance in higher education settings (Clark 2016; Duckworth & Quinn 2009; Duckworth, et al., 2007; Duckworth, et al., 2011; Strayhorn 2014; Wolters & Hussain; 2015). However, there were also a few studies that directly contradicted those findings and challenged the notion that Grit was a positive indicator of academic performance and reported that Grit actually resulted in a poor fit within the researched model (Credé, Tynan, & Harms, 2017; Muenks et al., 2016). The current study has also shown comparable results and Grit was not a significant variable within the regression model. This finding would indicate that Grit, in relationship to

community college transfers, is not a standalone outcome variable related to academic performance even with the strong bivariate correlation.

The results from the study also revealed that earning an associate degree was not a significant indicator of the composite Grit score. Although previous studies on earning a credential was related to future academic progression (Ignash, 2012; Jenkins & Fink; 2016; The National Student Clearinghouse, 2016b; Shapiro et al., 2016; U.S. Census Bureau, 2016; U.S. Department of Education, 2017) it was not determined a strong predictor variable for the community college students of this study. This was an interesting outcome considering that Grit has been associated with stronger academic performance in previous research (Akos & Kretchmar, 2017; Bowman et al., 2015; Chang, 2014; Chrystal et al., 2013; Duckworth et al., 2007; Datu et al., 2016; Datu et al., 2017; Eggleston & Laanan, 2001; Perkins-Gough, 2013), however, proved to not be a viable significant variable. This was a different outcome based on this research considering 76.4% (n= 127) of the participants in this study transitioned before completing any credential. Given that Grit was not an outcome variable based on completion of an associate degree may be an indication that Grit is layered with more internal resiliency structures and performance factors than the simple completion of a degree as an indicator of persistence or progression.

Research Question 2: How do individual Grit score dimensions (POE and COI), prior academic experience, transfer student demographics and community college Carnegie Classification relate to transfer students first semester grade point average? The second research question sought to understand how transfer students' first

semester academic performance is an outcome of the two subscales of Grit, previous transfer academic experiences, various demographic indicators, and the size and transfer mission of the community college the student previously attended before transitioning to a four-year school. The model suggested that the predictor variables to determine the first semester GPA had a very small relationship. Additionally, the ANOVA concluded that the explained variance was statistically significant in understanding the first semester GPA.

Being an older student, at the time of transfer, was deemed to be a positive predictor along with a higher transfer GPA, which was also a significant indicator of the first semester GPA. Similar to the first regression model, the bivariate correlation between the first semester GPA and Perseverance of Effort (POE) was found to be significant in addition to transfer GPA and the students' age. However, when the collection of variables are introduced into the multiple linear regression model, the individual predictors do not indicate strong overall significance. These findings are consistent with previous studies that concluded that a large majority of the variance that explains the first-year GPA in relationship to Grit as unknown and unaccounted for in current research studies (Akos & Kretchmar, 2017; Clark; 2016; Fink & Jenkins, 2017; Wyner et al., 2016). The findings also indicated that attending a small to very small, high transfer and mixed transfer focused, community colleges was deemed a negative indicator of the first semester GPA. The relationship of academic performance in association with the Carnegie Classification of the originating community college is a variable that has been absent with other Grit related and overall transfer student related

research. Further analysis of the academic preparation that happens between the varying levels of community colleges, even though they educate on a common course curriculum, could be a valuable addition to future understanding of Grit development, the transfer student experience, and the transition process to a new institution.

The results from the two sub-dimensions of Grit reveled an interesting and unexpected conclusion although many of the previous studies have found that Perseverance of Effort as a strong indicator of higher education academic performance (Akos & Kretchmar, 2017; Bowman et al., 2015; Muenks et al., 2017; Wolters & Hussain, 2015) it was not a strong predictor variable for the participants of this study. Although other researchers (Bowman et al., 2015; Datu et al., 2016) found that constructs of Grit loaded better as two separate dimensions, the perseverance of effort dimension nor the consistency of interest retained any significance with the current study of community college students. This could be due to the very complex nature of how transfer students, even thoughts that originate from community college backgrounds, are comprised with various backgrounds, personal experiences and varying levels of personal capital and support.

Understanding the Carnegie classification, and transfer focus of the community college a student transitioned from was a unique predictor variable from any of the previous research conducted. It was presumed that students that attended small community colleges might have more difficulty with the transition to a larger institution. Previous studies indicated the environment during the evaluation was a viable condition, participants in military academy, collectivist communities and competitive competitions

(Datu et al., 2016; Duckworth et al., 2007; Duckworth et al., 2009; Maddi, et al., 2012; Silvia, et al., 2013). This variable was not a significant indication of first semester grades; this may be an indication that when students may encounter barriers to success may be related more than just the size and transfer focus of the previous institution and may harbor many other undisclosed factors.

Overall, the results of the study found that Grit, Carnegie Classification, and most of the specified transfer related variables did not demonstrate a strong relationship with academic performance. These diminished findings are in alignment with deciphering the complex factors that can explain the performance indicator of transfer students. (Chang, 2014; Fink & Jenkins, 2017; Wayne et al., 2016). In the end, the dominant indicator that emerged from previous transfer experiences was transfer GPA, which predicted both composite Grit score and first semester GPA at a four-year institution.

Criticisms of Grit

Several studies have pursued Grit as a unique identifier to support the forecasting and performance outcomes across populations within higher education. The relevance and construct validity of Grit have been challenged by several research studies and assessments of the two dimensions of Grit (POE and COI), in addition to the composite Grit score. Multiple studies have characterized Grit as being indistinguishable and overly related to conscientiousness, threatening its relevance as an objective and relevant non-cognitive factor (Credé et al., 2017; Kamenetz, 2016; Muenks et al., 2016). Conscientiousness has been characterized as a personality trait that is not malleable and has been noted as being a particular non-cognitive skill that cannot be developed over

time and not able to be developed with additional influence or instruction (Credé et al., 2017; Kamenetz, 2016). Conscientiousness was not a factor that was directly measured within the context of this research study and was not evaluated in the findings. Although Grit was not deemed to be a significant factor in this study, as noted previously, it is the belief of the researcher that the infusion of the appropriate non-cognitive measures, including Grit, guided academic pathways, and specifically designed enhancement programs can support the needs of transfer students, in an effort to increase retention and academic performance.

Another contradiction to the relevance of Grit are the perspectives that provide support to the arguments questioning the construct validity of Grit based on other studies (Credé et al., 2017; Muenks et al., 2016). Some of the primary arguments towards Grit as a primary variable for transfer student success were highlighted in a meta-analytic analysis by Credé et al. (2017), first outlining that the two sub-dimensions of Grit are diminished in their ability to predict academic performance, next, that Grit had a very poor outcome in relationship to retention measures, and a final implication that the worthiness of Grit would be limited as a significant indicator of future performance and retention measures. Despite the multiple contradictions to Grit and the findings within in a study that concluded that Grit was just as likely to be a positive indicator of traditional cognitive measures by Credé et al. (2017), and other researchers (Kamenetz, 2016; Muenks et al., 2016) that challenge that Grit is indistinguishable to conscientiousness, it is the belief of the researcher that Grit is a malleable skill worth further research (Duckworth, 2016; Farrington et al., 2012; Kamenetz, 2016) and that it can potentially be

a collective measure of higher educational academic performance. However, as noted earlier, the complexities of the transfer student experience make discovering the correct combination of non-cognitive factors very elusive and more valuable of discovery to higher education stakeholder and policymakers.

Recommendations for Educational Policy and Practice

The findings of this study add to the literature on transfer student success and Grit by providing empirical research on variables that contribute to composite Grit score analysis and community college student transitional academic performance. This study will suggest a few empirical implications for higher education administrators, policymakers, and higher education professionals.

Results from this study confirm that transfer grade point average is a significant predictive factor for the first semester GPA and the initial academic performance measure of new transfer students coming from a community college (Bowman et al., 2015; Porchea et al., 2010; Wolters & Hussain, 2015). The likely interpretation of this indicator variable is that the more academic momentum the student develops by exhibiting a continued pattern of successfully passing courses, while at the community college, the student is likely to perceive themselves as being more prepared to transition to a new institution. The student will subsequently strive for a higher first semester GPA based on this history of performance. Institutions should be intentional about providing appropriate research opportunities to the discovery of further predictive measures of transfer student success at their respective institutions, as well as confirmation of presumed prescriptive indicators (Akos & Kretchmar, 2017; Datu et al., 2016; Lazarowicz, 2015). This will

show a commitment to the inclusive student body beyond the classical measures of academic success for students who are first-time in college students, also known as freshmen.

Additionally, based on the results of this study revealing no relationship to Grit, previous academic experiences, including the completion of an associate degree, or the number of accumulated transfer credits, and the non-association with almost all of the demographic variables as being non-significant factors of transfer student success, the researcher suggests a data-driven policy implementation. Institutions should commit to discovering meaningful, holistic, data-informed performance, and engagement metrics for successful community college transfer students. This combination of unique information can then be compared and assessed to future incoming community college transfer students. These performance measures can be captured, validated, and consistently calculated in a manner, similar to the literature and research related to Transfer Capital, as noted in Chapter 2. This information can guide policymakers with more reliable retention data and performance projections. Holistic indicators of success, in addition to academic performance, such as career development, emotional development, and engagement, and financial literacy need to be explored.

There is a rising awareness of the complexities of transfer student success initiatives and the necessity to refine the most accurate predictors of success and eliminate challenges and barriers (Fink & Jenkins, 2017; Kerby, 2015; Taylor & Jain, 2017; Wyner et al., 2016). The development of meaningful metrics of students' success and the investment in the data management infrastructure, institutional capacity for

growth and the development of new support initiatives that reject arbitrary policies that create unnecessary or unnecessary barriers to success.

Next, a recommendation for educational policy would be for institutions to implement intentional data mining initiatives that can disclose the issues with low retention and graduation rates of the incoming transfer student population at their institutions and provide indicators that can predict and prescribe academic performance and sustained success (Chrystal et al., 2013; Datu et al., 2016; Eggleston & Laanan, 2001; Handel & Williams, 2012; Kerby, 2015; 2012; Shapiro et al., 2016). This study established that Grit was not a significant indicator of first semester GPA or a significant outcome measure of performance for new transfer students. However, that does not mean that Grit, in combination with other non-cognitive and cognitive factors, once interlaced together to reveal a holistic and intersectional practice and needs of transfer students, cannot ultimately be one of many measurable factors that can provide institutions with the correct combination to support their students (Dweck, 2010; Fitzgerald & Laurian-Fitzgerald, 2016; Ivcevic & Brackett, 2014; Perkins-Gough, 2013).

This study revealed that students that attended Carnegie classified small to very small community colleges before transferring to a large university were likely to have 1.8 points lower first semester GPA. The final recommendation for educational policy would be collaborations and partnerships with Carnegie classified small to very small, high transfer and mixed transfer focused, primary feeder and regional community colleges and four-year institution in this study to developed curriculum alignment initiatives, design appropriate guided pathways and engage in earlier career development programming

(Bailey et al., 2015; Crosta, 2014; Jenkins, Lahr, & Fink, 2017; Lester et al., 2013). Community colleges can survey student Grit perspectives while still within their first semester or first year. The infusion of guided academic pathways and Grit enhancement programs at the community college level can support the evaluation of student performance. Institutions can monitor specific gateway or critical completion courses while students are within the early stages of their collegiate career and have an earlier and possibly more significant impact that can boost a student's academic momentum and efficacy. Campuses need to commit to long-term and sustainable partnerships and ongoing research prospects that can guide campus leadership and policymakers towards discovering how students learn and process information to increase academic performance and comprehensive success.

This study adds to the growing body of research on Grit and a broadening definition of community college student academic performance and success. Overall, student success is much more than tests, grades, retention, and persistence. Academic success has expanded into educational equity, students' social and professional mobility, and the development of academic and career competencies that can serve the student well beyond their tenure on any college campus.

Recommendations for Future Research

Although this study contributes to the existing body of research on community college transfer students, college student success, and Grit, there are a multitude of opportunities for further research that can clarify or improve the understanding of these topics. Given that Grit was not determined to be directly correlated with community

college student first semester academic performance in this study, the researcher suggests that several additional areas should be investigated on this topic. In an effort discover the correlation between the complexities of the community college transition and transfer experiences, the predictive nature of accurately measured performance indicators can guide policymakers to organize and successfully deploy the programming needed to revolutionize community college transfer academic performance. The opportunities for future research are as follows.

First, the findings of this study were conducted with community college transfers selected to enroll in one specific institution, it is possible that the results of the study would have different outcomes if it measured students in other states that have various community college structures and academic experiences or a study using a different set of indicator variables (Bowman et al., 2015; Clark, 2016; Datu et al., 2016). Next, the findings of this study were unable to determine the relationship between Grit and first semester academic performance. Grit, as the primary non-cognitive factor, was found to not be a significant indicator of collegiate performance in this study. Future research should analyze a multi-dimensional model of non-cognitive measures, that includes Grit and possibly growth mindset, resilience, or conscientiousness, which can examine additional malleable skills that students are thought to be able to learn and develop (Dweck, 2008; Dweck, 2010; Fitzgerald & Laurian-Fitzgerald, 2016; Perkins-Gough, 2013). This could create a more robust understanding of how additional non-cognitive measures are possibly related to student success metrics and indicators. Also, by combining these types of indicators, this may capture multiple angles of the holistic

nature and complexities of the community college transfer student experiences and ultimate performance.

Additionally, the findings related to this study revealed that transfer GPA and age were the primary indicators of academic performance. This may suggest that as the students mature academically and have established a pattern of success, they may be the factors that are developing Grit throughout their tenure in college. A study could be conducted during the initial community college enrollment or registration process to evaluate a students' Grit upon initial entrance to college. This would allow for a more accurate and earlier evaluation of students' true Grit self-evaluation before the onset of increased rigor and coping strategies developed during one's collegiate academic career. Also, this could improve in the truthfulness and self-reporting limitations of the Grit assessment, possibly minimizing concerns related to self-report methodology (e.g., truthfulness, reflective thought process, response bias, or social appearance). This adjustment in timing and deployment of the survey may offer a more enriched data capture on younger students, with fewer Grit tendencies and who would be less likely to survive to the vertical transfer stage having developed more resiliency and who would have possibly learned more adaptive skills to perform well in college (Glass & Harrington, 2002; Kerby, 2015; Porchea et al., 2010). Assessing Grit earlier can also allow for Grit development for those students that align with community college research and would not persist to reaching the transfer stage or may have stopped out or have been academically suspended due to the lack of Grit to sustain them through difficulty and challenges.

Last, this study only conducted an analysis of the first semester performance of incoming community college transfer students and is limited in the understanding of how students performed after the first year and beyond. The researcher suggests conducting a longitudinal study on the transfer students beyond the first semester. Literature has shown that once students have persisted beyond the initial semesters at the new institution, their academic performance mimics the achievement of native students once the initial transfer shock has subsided (Coston et al., 2013; Glass & Harrington, 2002). However, additional research has shown transfer students do not persist to graduation (Eggleston & Laanan, 2001; Jenkins & Fink, 2016; Laanan et al., 2011; Skomsvold 2011; The American Association of Community Colleges, 2018). This type of study could reveal the stage when Grit abilities expand and enhance academic performance after the first semester to a senior institution. This aggregate data could decipher the timing or circumstances when Grit diminishes and students do not persist after the first semester and why they do not persist through critical stages to graduation more effectively. Earlier development of Grit may reduce transfer shock to a further degree. Future researchers may find value in replicating this study, as a long-term performance and academic predictive indicator for community college transfer students and monitor them all after the first year, possibly through graduation, or their exit from the institution. This study may provide more insight into the data captured upon initial entry to the university.

Concluding Remarks

The intent of this research study was to discover how a non-cognitive skill could be attributed to the transitional and academic success of North Carolina community

college transfer students. The study sought to begin untangling the conundrum surrounding the complexities of the transitional process with the hope of establishing how to increase Grit within new transfer students. As a result of the primary finding that Grit did not demonstrate a strong relationship with academic performance, this affirms that more research, from a variety of perspectives, will be necessary to unravel the various angles of community college student academic achievement and degree completion post-transfer.

The findings of the study determined that Grit is not a strong outcome indicator of previous collegiate experiences, nor is it a strong enough indicator of community college student first semester GPA at the university level. It is important to note that although this study strongly advocates that alternative forms of evaluating community college student performance be revealed; institutions should be exceptionally cautious in unilaterally abandoning classical evaluation measures of predicted performance. Policymakers should not subjugate various populations as not having enough Grit to be successful or magnify those with more Grit as being more likely to flourish. Institutions and entities dedicated to higher education achievement need to continue seeking effective metrics that are both predictive and supportive of new transfers who are vulnerable to academically underperforming upon entering the university.

Future research can contribute to the growing body of literature and can help discover strategies that will increase retention and graduation rates among community college transfer students. This study can provide some additional context and insight on Grit, and its sub-dimensions, and on community college transfer students. This study

intends to expand the conversation of non-cognitive skills and college student academic performance that can usher a breakthrough in the national conversation of transfer student success.

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