

TALENT THEME DIMENSIONS AND ACADEMIC
SUCCESS AMONG UNDERGRADUATE
AGRICULTURE AND NATURAL RESOURCES
STUDENTS

By

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Submitted to the Faculty of the
Graduate College of the
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in partial fulfillment of
the requirements for
the Degree of
DOCTOR OF PHILOSOPHY
July, 2018

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ACKNOWLEDGEMENTS

This dissertation and all of my doctoral coursework would not have been possible without the patience and support of my husband, two children, parents and dear friends. This degree was also earned by Jeff, Mackenzie, and Brandt Gazaway; they endured the demands of a working wife and mom trying to earn a Ph.D. My parents, Gary and Janice James, who instilled within me the value of higher education, never complained about my infrequent visits and only showed pride at what I have been working to achieve. The unwavering encouragement of my family as well as friends has served as an invaluable source of inspiration throughout this process.

I would also like to thank my committee: Dr. Marshall Baker, Dr. Dwayne Cartmell, Dr. Shelly Sitton, Dr. Penny Weeks, and Dr. Deb VanOverbeke. Each committee member has challenged me to develop depth and breadth in my thinking and problem-solving abilities. Their constructive criticism and feedback as well as professional advice and mentorship are immensely appreciated.

Lastly, I would like to thank Dr. Cynda Clary, Dr. Steve Damron, Dr. Karen Hickman, Dr. Deb VanOverbeke, Katie Tearney, Kristi Bishop, Jose Uscanga, Melissa Mourer, and Kassie Jo Winn-Huizar. I appreciate their encouragement throughout this process and their support as I brought concepts gleaned throughout this doctoral education experience into our daily work aimed at developing exceptional students.

Name: AMY R. GAZAWAY

Date of Degree: JULY, 2018

Title of Study: TALENT THEME DIMENSIONS AND ACADEMIC SUCCESS
AMONG UNDERGRADUATE AGRICULTURE AND NATURAL
RESOURCES STUDENTS

Major Field: AGRICULTURAL EDUCATION

Abstract: Strengths-based education initiatives have been implemented at higher education institutions world-wide as efforts to enhance student retention and degree completion. The Oklahoma State University (OSU) College of Agricultural Sciences and Natural Resources (CASNR) joined the institutions utilizing strengths identification and development practices during the fall 2008 semester. The purpose of this study was to explore the relationship between implementation of strengths initiatives by CASNR and college student success. The study was guided by five research questions: (1) Describe the pre-college and collegiate academic profile of students who matriculated with a major in CASNR and who graduated within the six-year graduation time-frame. (2) Describe the talent profile of students who matriculated with a major in CASNR and who graduated within the six-year graduation time-frame, as based on talents identified by the Clifton StrengthsFinder®. (3) What differences exist in CASNR students' specified college student success factors between dominant talent theme dimension groups? (4) What differences in first-year retention rates and six-year graduation rates exist between the classes of CASNR students preceding implementation of strengths initiatives in the AG 1011 freshmen seminar course and the classes after implementation? (5) Do the college success outcome variables predict student classification into talent theme dimension groups? Data were analyzed using descriptive statistics, ANOVA, ANCOVA, independent measures *t*-tests, and discriminant analysis procedures. It was concluded that academic and talent profiles of CASNR students who experienced the strengths identification and development interventions aligned with profiles of the overall college student population. No significant differences were found in college student success factors between talent theme dimension groups, and no significant difference was found in retention or graduation rates between pre-intervention and post-intervention populations. College student success factors showed no predictive value in distributing theme dimension groups. It was recommended that further study be conducted to evaluate theme dimension group differences and predictive value by CASNR majors and in students' freshmen, sophomore, and junior years and at graduation. It was also recommended that strengths development be integrated into other student experiences and that other assessments be explored to identify student talents.

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CHAPTER I

INTRODUCTION

In 1862, the United States Congress passed the first Morrill Act and thereby established a path for founding colleges and universities within each state, to focus on relevant education for citizens to foster a thriving future in an agricultural and industrial society (National Association of State Universities and Land-grant Colleges [NASULGC], 2008). One-hundred-nine land-grant colleges and universities currently espouse their commitment to the land-grant mission of providing a liberal education for today's knowledge-economy (NASULGC, 2008). This objective of providing a liberal education encompasses the essential values of intellectualism, responsibility and ethics, critical thinking, cultural understanding and respect, and citizenship and service (Association of American Colleges and Universities [AAC&U], 1998). However, the achievement levels of land-grant institutions fall short of the goal of educating citizens. Reported retention rates of first-time, full-time college freshmen to their second-year are currently as low as 62% at some public universities, and the six-year graduation rate among public four-year institutions is only 59% (McFarland, et al., 2017). Student persistence and degree completion rates must be improved for land-grant institutions to

successfully fulfill their mission of educating local citizens to serve as leaders of their area, state, national, and global communities.

Retention and graduation of college students is also a fiscally responsible outcome that aligns with the social responsibility of the land-grant mission. The average net annual earning premium of a bachelor's graduate in comparison to a high school graduate has fluctuated between 15% to 35% since the 1990s (Mayhew, et al., 2016; Pascarella & Terenzini, 2005). Despite economic challenges of the recent recession, including concerns about student loan debt and underemployment from a weak labor market, the median individual net income value of a college degree has remained positive (Avery & Turner, 2012; Oreopoulos & Petronijevic, 2013; Strohush & Wanner, 2015). Mayhew et al. (2016) also reported the private rate of return on investment in a bachelor's education as 12% to 14%, and described at least a 4% increase in probability of employment among bachelor's graduates in comparison to individuals without a four-year college degree.

From a public perspective of fiscal responsibility, Trostel (2010) estimated the overall rate of return on investment to society for college degree attainment at 10.3%, when considering public financial outlays for higher education costs in comparison with savings and earnings from college graduates. According to Mayhew et al. (2016), college graduates have greater access to health insurance and preventative healthcare, and they possess enhanced cognitive abilities to research challenges and make positive, informed decisions about their health. Individual benefits such as these contribute to reduced taxpayer expenditures on public assistance for college graduates in comparison to non-college graduates (Trostel, 2010). According to Trostel (2010), non-college graduates

rely more on public healthcare assistance, unemployment benefits, and childcare assistance; they are also more frequent recipients of public corrections than college graduates. Trostel (2010) also noted graduates with bachelor's degrees retire at later ages, thus contributing longer and in larger amounts to the collection of income taxes, property taxes and sales taxes throughout their lifetime.

Lack of student retention and degree completion also affects the fiscal solvency of public-supported higher education institutions, including land-grant institutions. The Education Policy Institute (2013) estimated the average financial revenue loss because of student attrition for a single public higher education institution at more than \$13 million per year based upon tuition loss alone. When considering the cost of recruiting a student and revenue lost from student fees, housing, bookstore purchases, future alumni donations, and other returns, the cost of student attrition is much higher (The Education Policy Institute, 2013). The Education Policy Institute (2013) also identified taxpayer dollars provided to institutions through government funding as an additional cost of student attrition, when those funds have been allocated to support services and programs for students not retained. Student attrition is costly; in contrast, persistence and attainment of a bachelor's degree is in the best economic interest of the individual and society.

With the largest generation of workers, the baby boomers, entering retirement and with the advancement of qualifications necessary for success in the knowledge economy, the workforce demand for college-educated, entry-level talent in communities and industries served by land-grant institutions and beyond is considerable (Wheelan, 2016). However, according to the National Center for Education Statistics (McFarland, et al.,

2017) only 36% of 25- to 34-year-olds have earned a bachelor's degree or higher, ranking the United States at sixth globally in degree attainment and eighth in number of bachelor's degrees. Comparatively, these percentages fall short of the challenge issued to higher education by President Barack Obama (2009) for the U.S. to rank first globally in degree attainment by the year 2020.

At the land-grant institution of Oklahoma State University (2015), the six-year degree completion rate of students has hovered near 60%. Additionally, The Education Policy Institute (2013) projected Oklahoma State University's annual financial loss to student attrition at more than \$22 million annually. While this retention level is equivalent to the national average (McFarland, et al., 2017), increasing degree completion rates remains a key issue and a necessity (a) to reduce state expenditures on public assistance, (b) to increase taxpayer revenue through increasing the net earnings of Oklahoma graduates, (c) to increase stewardship of the taxpayer resources provided to the public, land-grant institution, and (d) to meet the challenges of community needs and the workforce talent pipeline demands for global competitiveness.

Institutional factors influencing student retention include size, institutional control, faculty credentials and teaching orientation, funding received, resource and service allocations, and student body characteristics (Astin, 1993; Bonet & Walters, 2016; Brazzell & Reisser, 1999; Chickering and Gamson, 1987; Mayhew et al., 2016; Strahan & Crede, 2014; Tinto, 1975; Tinto, 1993). Additionally, individual student factors shown to influence student persistence and degree completion include personal attributes and academic characteristics, such as gender, grade point average (GPA) and ACT score, and personality as well as student actions like ratio of study time to social

time and class attendance (Alarcon and Edwards; 2013; Allen & Robbins, 2010; Astin, 1993; Astin, 2005; Chamorro-Premuzic & Furnham, 2008; Conard, 2006; Dollinger, Matyja & Huber, 2008; Kappe & van der Flier, 2012; Schertzer & Schertzer, 2004; Tinto, 1975; Trapmann, Hell, Hirn, & Schuler, 2007). Among college students studying in agriculture disciplines, student characteristics, such as pre-college involvement in youth agricultural programs, completion of secondary agriculture curriculum, and prior agricultural experience, have shown to influence student persistence and degree completion (Ball, Garton, and Dyer, 2001; Dyer, Breja, & Wittler, 2002; Dyer, Lacey & Osborne; 1996; Smith, Garton, and Kitchel, 2010). However, despite abundant research focused on identifying significant factors of retention and degree completion rates, the measures found to be most salient in predicting student retention and degree completion are high school GPA and ACT score (Alarcon & Edwards, 2013; Allen & Robbins, 2008; Allen & Robbins, 2010; Astin, 1993; Astin, 2005; Brashears & Baker, 2002; Dyer, Breja, & Wittler, 2002; Garton, Ball, & Dyer, 2002; Garton, Dyer & King, 2000; Mayhew et al., 2016; Smith, Garton, Killingsworth, Maxwell, & Ball, 2010). Higher education institutions continue to struggle with identifying additional influential factors of student success and making informed, research-based decisions about practices that will contribute to their desired outcomes of student academic success and persistence to graduation.

Implications of the identification and development of students' innate personal strengths upon their academic success, persistence, and degree completion has become one developing area of college student success research. However, examination of the direct connection between strengths development efforts on college campuses and key

indicators of student academic success, including GPA, student persistence, or efficient degree completion, is lacking.

Improving college student retention and degree completion is critical to fulfilling the land-grant mission of individual and community advancement and service through education. With this critical need in mind, this study sought to fill a gap in college retention and degree completion literature by investigating the contribution of strengths identification and development initiatives and of students' identified themes of talent to their college success within a land-grant college of agriculture. By adding to the literature concerning strengths education initiatives, themes of talents, and college success factors, best practices may be elucidated for both increasing student retention and graduation rates toward fulfilling the land-grant mission of producing lifelong learners and leaders for communities and the economy.

Statement of the Problem

More than 600 higher education institutions have used the Clifton StrengthsFinder® (CSF; Clifton, 2006) instrument and the associated undergraduate-student-focused *StrengthsQuest* (Clifton, Anderson & Schreiner, 2006) resources to assess and identify positive individual strengths among students (Lopez & Lewis, 2009; Louis, 2011). However, only a small number of studies have investigated and described increases in student grades or retention rates based upon participation in campus strengths education initiatives (Soria & Stubblefield, 2015a; Williamson, 2002) or studied direct relationships between students' talents identified by the Clifton StrengthsFinder® and student GPAs (Brashears & Baker, 2002; Sutton, Phillips, Lehnert, Batle & Yokomizo, 2011). Williamson (2002) reported increased GPAs among students who participated in

campus-based strengths development interventions, and Soria and Stubblefield (2015a) reported increased retention among students who identified their emerging strengths through the Clifton StrengthsFinder® and engaged in developmental strengths discussions. Sutton et al. (2011) described lower GPAs among students with an increased number of talents, or emerging strengths, related to the *Impacting* talent theme dimension, but Brashear & Baker (2002) showed no predictive value between college students' talent themes identified by the Clifton StrengthsFinder® and students' GPAs when investigating a small sample of college students studying agriculture. The number of previous studies searching for a connection between strengths and college student success is sparse, and findings and conclusions have been varied.

Undoubtedly, college student retention and degree completion rates necessitate improvement. However, the value of strengths education efforts in contributing to those objectives remains unclear. Most research to date has explored and revealed positive relationships between strengths education efforts on college campuses and students' self-understanding, confidence, academic self-efficacy, career decision-making self-efficacy, sense of belonging on campus, campus engagement, perceived leadership development, and individual growth outlook (Louis, 2011; Soria, Roberts & Reinhard, 2015; Soria & Stubblefield, 2014; Soria & Stubblefield, 2015b; Stebleton, Soria & Albecker, 2012). A multitude of studies also have positively connected these same student outcomes to student academic performance and retention (Astin, 1993; Mayhew et al., 2016; Tinto, 1975; Tinto, 2006), weaving an indirect association between strengths education efforts and college student academic success, including retention and degree completion. Whether the value of strengths in fostering student retention, performance, and degree

completion extends beyond those indirect relationships is unknown. The mixed results of the few, previously mentioned studies that have explored the direct connection lend no clarity to that question. Consequently, more research needs to be conducted to further explore a direct connection between strengths identification and development efforts and college student success to inform the merit of institutions' resource investments in strengths education as a means of increasing student academic success, retention and degree completion.

Purpose of the Study

The purpose of this study was to explore the relationship between implementation of strengths identification and development initiatives and college student success. The study investigated the relationship of students' themes of talent identified by the Clifton StrengthsFinder® assessment and college student success factors, including cumulative GPA, semesters in academic distress, number of major changes, and time to degree completion for students studying within agricultural disciplines. The study also examined the influence of the implementation of strengths identification and development initiatives on student first-year retention rates and six-year graduation rates.

Research Questions

The six research questions framing this study include

1. What characterizes the pre-college and collegiate academic profile of students who matriculated with a declared major in OSU CASNR and who graduated within the six-year graduation time-frame, including the dependent variables of students' high school GPA, ACT score, prior college academic credit earned,

cumulative college GPA, semesters in academic distress, number of academic major changes, and time to degree completion?

2. What characterizes the talent profile of students who matriculated with a declared major in CASNR and who graduated within the six-year graduation time-frame, including the two dependent variables of the frequency of talent themes identified by the Clifton StrengthsFinder® assessment among the population and the frequency of talents associated with specific talent theme dimensions?
3. What statistically significant differences exist in the criterion variables of students' cumulative GPA, semesters in academic distress, number of academic major changes, and time to degree completion among the five independent predictor variables, consisting of the four dominant talent theme dimension groups and the one divergent talent theme dimension group?
4. What statistically significant difference in the criterion variable of first-year retention rate exists between the categorical predictor variables of the classes of CASNR preceding implementation of strengths identification and development initiatives in AG 1011 and the classes after implementation of the AG 1011 strengths identification and development initiatives?
5. What statistically significant difference in the criterion variable of six-year graduation rate exists between the categorical predictor variables of the classes of CASNR preceding implementation of strengths identification and development initiatives in AG 1011 and the classes after implementation of the AG 1011 strengths identification and development initiative?

6. Do the college success outcome variables of cumulative college GPA, semesters in academic distress, number of academic major changes, and time to degree completion significantly predict the five grouping variables of the four dominant talent theme dimension groups and the one divergent talent theme dimension group?

Rationale and Significance of the Study

The College of Agricultural Sciences and Natural Resources began using the Clifton StrengthsFinder® assessment and associated strengths development content as assignments in the AG 1011 first-year seminar course required of all first semester freshmen beginning in fall 2008. At a cost of \$10 per student, the college has spent between \$4,000 and \$6,000 annually on the assessment in an effort to teach the importance of self-evaluation and to foster increased student retention and persistence to degree completion.

Despite a total investment of more than \$50,000 by CASNR, an evaluation has not been completed to determine (a) if the desired outcomes of increased retention and graduation or any changes in student academic success have been achieved since integration of the Clifton StrengthsFinder® into the freshmen seminar course or (b) if any relationship exists between students' identified themes of talent and their college success. At a time when higher education budgets have been substantially reduced and further reductions are expected, evaluation of large financial investments is necessary. The outcomes of this study may be beneficial in the decision-making process concerning continued use of strengths-based assessment as a part of the student success support efforts within the freshmen seminar course of CASNR.

Assumptions and Limitations

An assumption made as a part of this study was that students who completed the Clifton StrengthsFinder® as an assignment within AG 1011 responded to the assessment items honestly and with candor.

An additional assumption was students' top themes of talent have not changed during their degree completion timeframe in CASNR. According to Hodges and Clifton (2004), by approximately age 15 an individual's unique synaptic connections in the brain, from which talents are derived, do not substantially change. Additionally, the mean test-retest reliability among college students for all 34 themes of talent measured by the Clifton StrengthsFinder® is 0.70 (Gallup, Inc., 2006).

This study assumes that students who may have received additional strengths development coaching beyond the guidance received in the AG 1011 course exhibited no additional influences as a result of such guidance.

A substantial limitation of this study included restrictions of options for data analysis in examining the difference in college student success factors based upon students' Clifton StrengthsFinder® identified talent themes. Due to copyright ownership by Gallup, Inc., access to raw quantitative data indicative of students' theme scores was not possible, and exploration of difference was thereby limited to analyses using students' categorical talent themes as an independent variable.

As a census study of all undergraduate students enrolled in academic majors within CASNR; who completed AG 1011 during the fall 2008, fall 2009 and fall 2010 semesters; and who completed their degrees within a six-year timeframe, it is not known if the demographic makeup of the students included in this study is consistent with the

demographic composition of previous or subsequent freshmen class cohorts within CASNR. Therefore, generalizability of the findings of this study is limited.

Additionally, the restriction of only examining those successful students with declared CASNR majors as freshmen and who achieved graduation with CASNR degrees in a timely manner, limits potential insight that could be gleaned from examining other AG 1011 students from the same timeframe who did not persist or who earned their degrees in non-CASNR disciplines.

A considerable number of factors contribute to students' academic performances and decisions to persist in college. The present study was unable to statistically account for all internal and/or external confounding factors that may have influenced student performance, retention, and/or graduation, such as student illness, financial hardships, catastrophic experiences, or other such factors.

Definition of Terms

AG 1011: the first-year seminar course required of all first-semester freshmen enrolled in the OSU College of Agricultural Sciences and Natural Resources (OSU, 2016).

Academic performance: the combined outcome of a student's level of functioning, learning, and executing in accordance with objectives and expectations of his or her academic coursework, as reflected by the student's GPA (Tinto, 1975).

Clifton StrengthsFinder® (CSF; Clifton, 2006): the web-based assessment developed by Gallup, Inc., consisting of 177 matched-pair items presented in 20-second intervals to measure respondents' innate talents associated with 34 different talent areas (Gallup, Inc., 2009; Gallup, Inc., 2012; Gallup, Inc., 2014). The assessment output presents respondents with a list and description of their five most prevalent

talent areas or themes (Buckingham & Clifton, 2001; Gallup, Inc., 2006a; Gallup, Inc., 2009; Gallup, Inc., 2012; Gallup, Inc., 2014).

College student success: continuous, full-time enrollment and course completion during regular academic terms, with an earned GPA at or above a 2.0 in courses contributing to a degree plan that is completed within 12 regular-term academic semesters (six years) from the point of matriculation (Ahmed et al., 2014; American Association of State Colleges & Universities [AASCU], 2002; Ashby, 2004; Hagedorn, 2005; Laskey & Hetzel, 2011; McFarland et al., 2017; Oklahoma State University [OSU], 2016; Renzulli, 2015; Tinto, 1993).

Degree completion: fulfillment of all curricular requirements necessary for an academic credential or degree to be awarded by a higher education institution (OSU, 2016).

Time to degree completion: number of regular-term academic semesters from matriculation to degree completion (Shapiro et al., 2016).

Knowledge: facts and lessons ascertained through both instruction and experiences (Buckingham & Clifton, 2001; Clifton et al., 2006)

Major change: change in a student's academic degree program and allied course requirements as demonstrated through documentation of a new program declaration within the student's official institutional academic records (OSU, 2018).

Prior college academic credit: academic credit earned from a college or university prior to a student's matriculation as a full-time, first-time, post-secondary higher education freshman and with no more than seven credits earned after the student's

high school diploma completion (Smith, Garton, Killingsworth, Maxwell, & Ball, 2010).

Regular-term academic semester: one of two 16-week academic terms comprising the academic year during which undergraduate full-time enrollment status is equivalent to 12 academic credit hours or more (OSU, 2016).

Retention (or persistence): continuation of full-time enrollment from one regular-term academic semester to a subsequent regular-term academic semester, without interruption and in progress toward degree completion (Hagedorn, 2005; McFarland et al., 2017; Roberts, 2009; Tinto, 2006).

Semester in academic distress: a regular-term academic semester during which a student's cumulative GPA falls below the 2.0 GPA required for good standing within the institution (Ahmed et al., 2014; Laskey & Hetzel, 2011; OSU, 2016; Renzulli, 2015).

Signature theme of talent: one of an individual's five most prevalent groups of talents as assessed by and indicated through the results of the Clifton StrengthsFinder® assessment (Buckingham & Clifton, 2001; Clifton et al., 2006)

Skill: an ability to perform the process of an activity (Buckingham & Clifton, 2001; Clifton et al., 2006).

Strength: “the ability to provide consistent, near-perfect performance in a given activity” (Clifton et al., 2006, p. 4). Strengths are developed by enhancing talents with knowledge and skills (Clifton et al., 2006).

Talent: “a naturally recurring pattern of thought, feeling, or behavior that can be productively applied” (Clifton et al., 2006, p. 2).

Talent theme: “a group of related talents” (Clifton et al., 2006, p. 3).

Talent theme dimensions: four classifications of talents measured by the Clifton

StrengthsFinder® indicative of respondents’ “personal motivation (Striving), interpersonal skills (Relating), self-presentation skills (Impacting), and learning style (Thinking)” (Hayes, 2001, p. 248).

CHAPTER II

REVIEW OF LITERATURE

An educated workforce and engaged community citizens are desired commodities of a civilized Western society. They are able to contribute to economic and social stability and advancement, while also achieving similar personal objectives for those educated and engaged individuals. Land-grant institutions play a pivotal role in the development of an educated workforce and engaged public through their mission of providing a liberal education for the common citizen (NASULGC, 2008). However, to be able to succeed in providing a liberal education to the ordinary population, land-grant institutions must be successful in retaining and graduating such students, a feat with which higher education institutions have struggled for years (Tinto, 2006). College retention and graduation rates continue to lag behind expectations established by higher education administrators, state and federal governments, the contributing taxpayers, and other stakeholders. To address the challenges of a dynamic, rapidly changing marketplace and of a diverse and complex society, land-grant institutions must do better and improve the extent to which they retain, educate, and graduate knowledgeable, socially responsible citizens.

Student characteristics as well as institutional characteristics are known to influence the persistence and degree completion of college students (Astin, 1993;

Mayhew et al., 2016; Tinto, 1993). As an academic college within a land-grant institution, CASNR is a traditional and stable educational environment. The most obvious dynamic component of the college is represented by the differences present among the student population. This exploratory study used existing data on graduates of CASNR to explore if students' innate strengths, as a student characteristic, influenced success in the land-grant college of agriculture environment.

Overview of College Success

Fifty years of research and thirty years of post-secondary educational policy have proclaimed student retention and degree completion as indicators of college success (American Association of State Colleges & Universities, 2017; Astin, 2005; The Century Foundation, 2016; Koljatic & Kuh, 2001; Kuh, 2013; Kuh, Kinzie, Schuh, & Whitt, 2011; Tinto, 1993; Tinto, 2006; The White House, 2015; The White House, 2009). Institutional retention and degree completion rates are used in comparative institutional evaluations, with institutions producing fewer transfers or dropouts and conferring higher numbers of degrees considered as superior in educational effectiveness to those with lower rates (AASCU, 2017; Astin, 2005; The Century Foundation, 2016; Tinto, 1993; The White House, 2015). Because institutional retention and degree completion rates serve as determinants of college success on the institutional level, logic infers that defining the criterion of retention (or persistence) and degree completion for the individual student is critical to differentiating between students who have personally achieved college success and those who have failed to achieve college success.

Defining Individual Retention

The definition of retention for an individual student is multifaceted concept to describe. For institutional calculation and reporting to the federal Integrated Postsecondary Education Data System (IPEDS), an individual student is considered retained if he or she is a first-time, degree-seeking student consecutively enrolled full-time from one fall semester to the following fall semester (Hagedorn, 2005; McFarland et al., 2017; Roberts, 2009). Completion of the enrolled courses and/or progress toward a degree are not considered as a part of this national norm for assessing the retention of an individual student through continuous enrollment measures (Ashby, 2004; Hagedorn, 2005). As an example, a student would be classified as a retained student for institutional retention reporting purposes, if he/she enrolled for a fall semester, withdrew from all classes for that semester prior to completion, did not enroll for the spring semester, and re-enrolled again as a fulltime student the following fall. Conversely, if a student first enrolled full-time and completed all courses successfully during the spring semester and maintained continuous fulltime enrollment with satisfactory grades, he/she would not be considered an individually retained student until the second fall semester, or the fourth overall semester of the student's enrollment. These examples illustrate the complexity of defining student success solely based upon what is designated as an individually retained student for the purpose of institutional reporting.

Part of that complexity may be clarified by discriminating between types of student departure (Astin, 2005; Bean & Eaton, 2001 : Hagedorn, 2005; Tinto, 1993). Students who depart from an institution may choose voluntarily to not persist due to low self-efficacy, lack of skills to cope with change, financial hardships, absence of family

support, poor social integration, changes in goals, or a host of other reasons (Astin, 2005; Bean & Eaton, 2001; Tinto, 1993). Non-persisting students also may be forced to depart from an institution for reasons including severe violations of student conduct policies or insufficient academic performance (Bean & Eaton, 2001; Tinto, 1993). Voluntary student departure is based on the choice of the student to leave, and involuntary student departure is based upon the choice of the institution to dismiss the student. For the purposes of this study, the type of individual student retention of focus is institutionally sanctioned student persistence and retention based upon assessment of satisfactory academic performance.

Ashby (2004) explained individual student retention broadly as making academic progress, or progress toward completion of degree requirements. Inversely, Kelley (1996) and Amhed, Cowdhury, Reahman, and Talukder (2014) described academic probation as a designation assigned to students who are not making sufficient academic progress toward degree completion based upon failure to meet or exceed academic standards of the institution. Academic progress cannot be generated, if a student fails to achieve and/or maintain minimum academic standards.

Research reveals that the academic standard below which students at most institutions are placed on academic probationary status is the achievement of a C grade point average (GPA) or better (Ahmed et al., 2014; Laskey & Hetzel, 2011; OSU, 2016; Renzulli, 2015). Renzulli (2015) described the parameters determining students' placement on academic probation at a large public university as a term GPA of 2.0 or below. Ahmed et al. (2014) outlined a cumulative GPA of 2.0 as the academic performance threshold level for assignment of students to academic probation status at

private universities. In accordance, Laskey and Hetzel (2011) defined the boundary of academic success for their study of probationary students at a mid-sized private university as a cumulative GPA of 2.0. Oklahoma State University, a large public university, also employs a cumulative GPA of 2.0 as the determinant of student academic probationary status. Using this standard, sufficient individual college success may be defined as a GPA of 2.0, allowing a student to be retained for continuation of progress toward completion of his or her educational degree program. The national average cumulative GPA for college graduates is 3.15, which is 57.50% higher than the 2.0 GPA threshold necessary for continued academic progress (Rojstaczer, 2016; Rojstaczer & Healy, 2012).

Degree Completion

As an indicator of both student retention and academic progress, degree completion rate is another common measure of college success from an institutional reporting perspective (Hagedorn, 2005). In compliance with the 1990 Student Right-to-Know Act, the National Center for Education Statistics (NCES) measures degree completion rates of institutions using the Graduation Rate Survey (GRS), which assesses student success in pursuing and earning bachelor's degrees on a six-year basis, or 150% of the typical time required to complete a bachelor's degree (AASCU, 2002; Hagedorn, 2005; McFarland et al., 2017; Tinto, 1993). This federally mandated degree completion rate for an institution incorporates two components, the number of first-time, full-time undergraduate students in an identified cohort who satisfactorily completed all academic course requirements for their respective degree programs and the six-year length of the time during which those requirements were attained (AASCU, 2002). This federally

defined calculation for institutional degree completion rates and the commendations received by institutions with higher rates lead to the assumption that for an individual bachelor's degree student, college success is equivalent to satisfactory completion of academic degree program requirements within a six-year timeframe.

Clearly two distinct quantitative benchmarks of college success exist for the individual student as influenced by the accountability measures federally assigned to four-year degree-granting institutions. College success may be defined as attainment of a 2.0 grade point average for institutional retention and completion of degree requirements within a six-year timeframe or less.

Institutional Characteristics and College Success

For 45 years, college student retention has been an extensively studied topic of educational research (Tinto, 2006). Much of the research has focused on factors of the institutional environment impacting student engagement, academic performance, retention, and degree completion (Astin, 1993; Mayhew et al., 2016; Tinto, 1975; Tinto, 1993; Tinto, 2006). Among the factors affecting student academic success and retention are organizational characteristics of an institution, attributes of the employed faculty, and features of the existing student population (Astin, 1993; Mayhew et al., 2016; Tinto, 1975; Tinto, 1993).

Research indicates an institution's organizational characteristics can influence students' academic success. Characteristics including institutional size, type of control, resources, services, facilities, activities, and budgetary priorities, among other factors, contribute to the environment within which students either integrate or do not integrate and, thereby, either succeed or depart from the institution (Astin, 1993; Bonet & Walters,

2016; Brazzell & Reisser, 1999; Chickering & Gamson, 1987; Mayhew et al., 2016; Strahan & Crede, 2014; Tinto, 1975). Many of these institutional characteristics directly affect students' cognitive and academic outcomes, including grade point average, critical thinking and problem solving skills, writing abilities, academic persistence, and bachelor's degree attainment (Astin, 1993; Bonet & Walters, 2016; Mayhew et al., 2016; Strahan & Crede, 2014; Tinto, 1975).

Tinto (1975) and Astin (1993) reported the direct negative effect of public institutional control on academic GPA and retention in comparison to the direct positive effect of private institutional control; both researchers attributed higher public institution attrition rates to lower institutional admission standards and larger student enrollment among public institutions. A review of more recent research on student persistence and degree completion by Mayhew et al. (2016) supports Tinto's (1975) and Astin's (1993) assertion, reporting no significant difference in student retention, persistence or degree attainment between public and private institutions, when accounting for differences in students' pre-college attributes impacting admission.

Astin (1993) described direct negative effects of institutional size on knowledge growth, analytical reasoning skills, and GPA, as well as on employability skills like communication abilities and leadership skills. Despite the negative effects of institutional size reported by Astin (1993), Mayhew et al. (2016) described no significant effect of institutional size on overall student retention and degree completion.

Although Tinto (1975) also acknowledged the negative impacts of large institutional size, he also stated the negative effects could be mitigated by the existence of sufficient numbers of subcultures in which students can social and academically

integrate. Many of these subcultures are functions of or supported by institutional expenditures on both instructional support and student services. Institutional provisions for and encouragement of faculty professional development enhances faculty teaching competencies in support of positive student learning and academic outcomes (Chickering & Gamson, 1987). Student services, such as first-year seminars, remediation programs, tutoring resources, student centers, recreation facilities and programs, residence halls, learning communities, and extracurricular activities, provide settings for student-to-student and student-to-faculty interactions and positively impact student satisfaction, academic behaviors, and motivation, as well as performance (Astin, 1993; Bonet & Walters, 2016; Brazzell & Reisser, 1999; Mayhew et al., 2016; Strahan & Crede, 2014). Mayhew et al. (2016) found that each \$100 increase in instructional expenditures per full-time student resulted in a 3.9% increase in probability of degree completion. Specifically for students with below average ACT scores, which in 2016 was a score of 21.9 for college-bound high school seniors (ACT, Inc., 2016), each \$100 increase in student services expenditures per full-time student resulted in a 4.1% increase in probability of degree completion (Mayhew et al., 2016). All of these structural and organizational characteristics of institutions play a key role in creating the higher education environment in which students will or will not be successful.

Chickering and Gamson (1987) professed faculty to student ratio as the area of concern instead of actual institutional size, asserting that classes with an enrollment level capable of supporting development of community among students and faculty adhere to the principles for good practice in undergraduate education. Mayhew et al. (2016)

supported the importance of low faculty to student ratios, reporting that lower faculty to student ratios result in increased degree completion rates.

Tinto (1975) asserted that another element comprising an institutional environment into which students will or will not integrate is the people of the environment, including faculty. According to Astin (1993), Kuh, Pace and Vesper (1997), and Strahan and Crede (2014), faculty-to-student interactions are one of the most influential predictors of students' academic success, personal development and satisfaction with their college experience. Faculty-to-student academic interactions afforded by low faculty-to-student ratios positively affect bachelor's degree attainment, plans to attend grad school and self-reported growth in cognitive measures (Astin, 1993; Mayhew et al., 2016). Additionally, social interactions with faculty also support student persistence (Tinto, 1975). However, Mayhew et al. (2016) conceded that not all faculty interactions are positive, as certain interactions may result from students' academic struggles.

Related to frequency and form of faculty interactions, faculty type and quality also contribute to the institutional environment and student success outcomes. Perceived clarity, organization, and overall effectiveness in teaching have been associated with increased individual course persistence, grades, and college satisfaction, as well as lower overall student attrition (Mayhew et al., 2016; Strahan & Crede, 2014). Increased levels of part-time faculty, graduate student instructors, non-tenure track faculty, and provisional faculty have been related to decreased student persistence at most institutions (Mayhew et al., 2016). Astin (1993) reported direct negative effects of the use of graduate teaching assistants on students' self-reported development of both leadership

and interpersonal skills. Mayhew et al. (2016) attributed the negative influences of these faculty types to their decreased availability for meaningful student interactions and their reduced capacity to plan and facilitate active learning experiences which require more complex evaluation; such factors are limited by frequent heavy teaching loads or other career obligations among such faculty types, which reduce time commitment to effective teaching.

Astin (1993) reported the influence of faculty orientation on student success. A faculty orientation related to humanities disciplines positively affects students' writing skills, critical thinking abilities, and degree completion rates (Astin, 1993). Independent of academic discipline, faculty research-focused orientation reveals strong effects, with negative influences on student leadership development and public speaking skill improvement and positive influences on students' standardized exam performance, such as on the LSAT and MCAT (Astin, 1993). Student-focused orientation of faculty also revealed strong effects on student development, with significant, positive, direct influences on critical thinking, problem-solving, and writing abilities as well as on intellectual self-confidence and bachelor's degree completion (Astin, 1993).

Students' peers also contribute to the institutional environment in which students will or will not achieve academic success (Astin, 1993; Mayhew et al., 2016; Tinto, 1975). Peer-to-peer academic and social interactions are essential, positive contributors to students' scholastic achievement, personal growth, and overall college satisfaction levels (Astin, 1993; Kuh et al., 1997, Strahan & Crede, 2014; Tinto, 1993). Astin (1993) and Strahan and Crede (2014) noted decreased retention rates and student satisfaction, respectively, associated with absence of student community on institution campuses.

Additionally, specific peer group characteristics have been found to influence student success. Astin (1993) reported direct positive effects of peer group socioeconomic status on students' standardized exam performance as well as on students' self-reported academic development, critical thinking and problem-solving abilities, listening skills, and graduate school readiness. Other peer characteristics have been reported as negatively influencing student development. Peer materialism has been reported to negatively impact student critical thinking skills, and peers' outside employment and specific academic majors, including agriculture, have been reported to negatively affect bachelor's degree completion rates (Astin, 1993).

Student Characteristics and College Success

In addition to institutions' environmental factors impacting student success, individual student factors also influence students' decisions to persist in college or depart from their college experience (Astin, 1993; Schertzer & Schertzer, 2004; Tinto, 1993; Tinto, 2006). Among the personal factors influencing individual student performance and persistence are factors students can control, such as class attendance, participation in co-curricular activities and hours of study time, as well as individual factors beyond students' control, such as personality variables and family background (Conard, 2006; Dollinger, Matyja & Huber, 2008; Schertzer & Schertzer, 2004; Tinto, 1975). For example, Allen and Robbins (2010) found students' precollege academic performance and achievement as well as demographic characteristics and motivation to be predictive of college students' first-year college academic performance. Allen and Robbins (2010) also found individual students' academic performance during their first year of college

and students' expressed personal interest-major congruence to have a positive effect on timely degree completion.

Among the demographic factors found to influence student retention and success are gender, race, and parent educational background. African-American racial identity (Allen & Robbins, 2010) and Mexican-American racial identity (Astin, 1993) have been correlated negatively with undergraduate academic performance. Alarcon and Edwards (2013) noted a higher probability of student departure among female college students. However, Astin (1993) reported female gender and Caucasian race as positive predictors of college student academic performance. Allen and Robbins (2010) found a negative relationship between first-year academic performance and male students as well as first generation students. First generation status and male gender have also demonstrated a negative relationship to timely degree completion (Allen & Robbins, 2010), while female gender has shown a positive relationship to timely degree completion (Kappe & van der Flier, 2012).

Student performance and achievement prior to college entry has frequently been acknowledged as predictive of students' college success and persistence, as evidenced by the strong consideration of both factors in the college admissions process (Astin, 1993; Astin, 2005; Mayhew et al., 2016). Students with achievement levels below the mean on standardized ACT exams have demonstrated higher likelihoods of institutional departure (Alarcon & Edwards, 2013). Additionally, pre-college ACT scores and high school grade point averages have been positively correlated with first-year academic performance among college students (Allen & Robbins, 2008; Allen & Robbins, 2010). Both Allen and Robbins (2008) and Astin (1993) reported students' high school GPA and

college admissions exam scores as the strongest predictors of students' college GPA. Allen and Robbins (2010) also reported a positive predictive relationship between first year academic performance and timely degree completion, suggesting an indirect positive relationship between pre-college student performance and achievement and college student degree attainment. Similarly, Astin (1993) noted high school GPA as the most compelling predictor of student degree attainment.

Students actions and choices within their college experience also impact their success and achievement. Student participation in campus clubs and organizations is positively related to retention and degree completion (Mayhew et al., 2016; Tinto, 1975). Credit hour enrollment (Mayhew et al., 2016) and hours per week committed to studying (Astin, 1993) have also been documented as positively predictive of degree attainment and academic performance, respectively. Other choices positively influencing college student performance include internships, study abroad participation, interdisciplinary course completion, and pursuit of career counseling (Astin, 1993). While choices with negative influences on students' academic success include full-time employment during college, time spent commuting to campus, and time spent partying (Astin, 1993).

Student factors such as ability, motivation, values, and personality have also shown to influence academic success, retention, and degree completion. Student satisfaction is positively affected by student-institution values congruence and student-faculty values congruence, and student satisfaction positively influences both persistence and student motivation, creating an indirect influence of students' values upon retention and motivation (Schertzer & Schertzer, 2004). Affectivity, or subjective feelings and emotions, have been documented as predictive of student retention, with positive

affectivity influencing persistence in a positive direction and negative affectivity negatively influencing student persistence (Alarcon & Edwards, 2013). The study by Alarcon and Edwards (2013) also indicated that the predictive value of affectivity increases when combined with academic ability. While combining ability or intelligence with motivational and personality factors has value in predicting college students' academic performance (Chamorro-Premuzic & Furnham, 2008; Kappe & van der Flier, 2012), Kappe and van der Flier (2012) acknowledged the decreasing influence of intelligence on academic performance with increased student age.

Students' individual personality factors influence college success both directly and indirectly. Conard (2006) found an indirect influence of *Conscientiousness* on academic performance, mediated by the direct positive predictive value of Conscientiousness on class attendance. Conscientiousness has been found to be the most positive predictive personality factor influencing students' academic performance and time to degree completion (Chamorro-Premuzic & Furnham, 2008; Kappe and van der Flier, 2012; Trapmann, Hell, Hirn, & Schuler, 2007). Neuroticism has been documented as negatively related to college student academic performance (Trapmann, et al., 2007), and the results of studies investigating the influence of the other three Big Five personality traits, *Extraversion*, *Openness to Experience*, and *Agreeableness*, on retention and degree completion have been varied (Chamorro-Premuzic & Furnham, 2008; Conard, 2006; Trapmann, et al., 2007).

Agriculture Students and College Success

Factors influencing success among college students in agriculture coincide with factors influential among the general college student population. Like the college student

population at-large, student-faculty interactions and peer interactions impact students' success. Gaspard, Burnett, and Gaspard (2011) found that college agriculture students involved in departmental student organizations and service organizations had higher GPAs in their first college semester, with the highest amount of variance attributed to departmental organization involvement. When ranking effectiveness of 18 retention strategies for African-American agriculture students, administrators at sixteen 1890 land-grant institutions ranked quality advising and mentoring, which encompass faculty-student and peer-to-peer interaction, among the top three most effective strategies for student retention (Westbrook & Alston 2007). Talbert, Larke, and Jones (1999) described the positive influence of the networking, mentoring, and one-on-one interaction facilitated through campus MANRRS organizations (Minorities in Agriculture, Natural Resources and Related Sciences) on the academic success and degree completion rates of members, reporting a 14% positive difference in six-year graduation rates between active MANRRS members and the comparable demographic group across the institution under study. However, Ball, Garton and Dyer (2001) reported no difference in agriculture college student academic performance or retention for students involved in a freshman interest group, a living-learning community where students with similar academic interests and enrolled in similar courses live together in a campus residence hall.

Like the general college student population, high school core GPA has been reported as a salient predictor of first year academic performance among college agriculture students (Garton, Ball, & Dyer, 2002; Garton, Dyer & King, 2000). Dyer et al. (2002) also showed through discriminant analysis using high school core GPA and ACT score alone that retention of college agriculture students could be predicted with an

accuracy of 63%. Brashears and Baker (2002) also supported the predictive value of ACT score and high school performance, as indicated through percentile rank, in determining likely academic success of agriculture college students. Yet, while high school GPA may have a positive, significant relationship with first year academic performance, Dyer, Breja, and Wittler (2002) described college agriculture students with higher high school class ranks and cumulative GPAs as more likely to change majors and depart from enrollment in a college of agriculture than those with lower class ranks and cumulative GPAs.

College of agriculture students beginning their first year with prior college credit have shown higher cumulative GPAs at the end of their first year (Smith et al., 2010). However, no significant variance in first year academic performance may be attributed to the prior college credit beyond what may be accounted for by high school GPA and ACT score (Smith, Garton, Killingsworth, Maxwell, & Ball, 2010). Prior college credit does show an additional influence on student persistence; Smith et al. (2010) reported a significant, positive relationship between prior college credit and both retention to sophomore year and degree completion.

Several studies have investigated the effect of prior agriculture involvement on the success of college students studying within agricultural disciplines. Moore and Braun (2005) reported that college agriculture students with no record of high school agriculture enrollment, no past FFA participation, and from non-farm/ranch backgrounds earned higher first semester GPAs and cumulative GPAs. Despite these findings, the same study also revealed students with farm backgrounds, who had completed secondary agriculture courses, and who were past FFA members were more academically efficient, with fewer

major changes and fewer enrolled semesters (Moore & Braun, 2002). Ball, Garton, and Dyer (2001) reported a significant positive effect of prior involvement in agricultural youth organizations on students' cumulative GPA at the end of their freshmen year and upon continued student enrollment for the sophomore year. Smith, Garton, and Kitchel (2010) also found a low positive effect of secondary education agriculture involvement on student academic performance, but the relationship was not statistically significant, and the effect on retention to the sophomore year was inconclusive, showing mixed results among two different samples. Despite the variations in influence reported on academic performance and retention to sophomore year, students with previous agriculture experience, past agricultural youth organization involvement, those had completed secondary agricultural education courses, and students from more rural/less populated have been described as more likely to express an intention to persist and complete undergraduate degrees in an agricultural discipline (Dyer, Breja, & Wittler, 2002; Dyer, Lacey & Osborne; 1996).

Strengths Development and College Success

While the study of academic success and retention among college students has predominantly focused upon specific barriers and characteristics precipitating academic struggle, the field of positive psychology encourages a shift in perspective (Shushok, Jr. & Hulme, 2006). Positive psychology focuses upon preserving, nurturing, and improving effective, positive individual qualities toward developing human resilience and strength (Hayes, 2001; Seligman & Csikszentmihalyi, 2000; Shushok, Jr. & Hulme, 2006). This emphasis on development of human virtues instead of the pathology of limitations and deficiencies is thought to provide individuals with a defense against adversity and also

believed to promote physical well-being (Seligman & Csikszentmihalyi, 2000; Shuchok, Jr. & Hulme, 2006). Based upon a positive psychology, strengths theory is one theory being applied by more than 600 higher education institutions in an effort to positively impact student success (Louis, 2011; Soria, Roberts, & Reinhard, 2015).

Intentional application of strengths theory by educational institutions has resulted in practices of strengths-based education, an approach aimed at revealing each students' "unique genius" while also increasing retention and degree completion rates (Gallup, Inc., 2006a; Shuchok & Hulme, 2006). With the strengths-based perspective that all students are talented and capable of learning in an environment with policies and practices supportive of talent development, these educational efforts involve purposeful planning and implementation of opportunities for assessment, teaching practices, and learning experiences to create such an environment (Gallup, Inc., 2012; Shuchok & Hulme, 2006). Among the best practices touted for strengths-based education are the use of trained strengths facilitators for strengths initiatives on campus; the formation of a community of support for talent development consisting of faculty, staff, students, and other social community members; and deliberate efforts to individually connect students with groups and organizations where they have the opportunity to both express and contribute with their strengths (Bowers & Lopez, 2010; Gallup, Inc., 2006b; Lopez & Louis, 2009; Shuchok & Hulme, 2006). Lopez and Louis (2009) also outlined five principles of strengths-based education, including (1) measurement of student talents, (2) individualized student instruction and feedback based upon students' talents and strengths, (3) networking opportunities within a supportive strengths community for both affirmation and facilitation of complementary strengths partnerships, (4) purposeful

application of strengths to learning both within and outside the classroom, and (5) active pursuit of unfamiliar experiences where further growth of strengths may be cultivated. Despite the specificity of these idealistic practices, Clabaugh (2005) encourages caution in implementing strengths-based education, expressing concern over inefficiencies, conflict between recommended individualization of instruction and the value of standardization, and the possibility of instilling false hope among students.

Publicized outcomes of strengths-based practices in education include increases in student self-confidence and hope, reduced student absences, increased academic performance, enhanced student engagement and retention, and greater sense of purpose (Bowers & Lopez, 2010; Clifton & Harter, 2003; Gallup, Inc., 2002; Gallup, Inc., 2006a; Hodges & Clifton, 2004; Schreiner & Anderson, 2005). In a summary of existing research for Gallup, Inc. (2012), Louis reported evidence of increases in self-awareness, goal directedness, perceived academic control, use of effective leadership practices, self-efficacy, student engagement, appreciation of others' differences, and academic performance and retention as a result of strengths-based initiatives and/or interventions on college campuses, as described among 25 different studies including multiple internal Gallup, Inc. studies and doctoral dissertations.

While published studies related to strengths initiatives and student success are limited in number, several of those existing have focused upon impacts to the affective domain. In a campus-wide study of first-year students, Soria and Stubblefield (2015b) found students who had greater strengths awareness as a result of participation in strengths identification and development initiatives also demonstrated a significantly greater sense of belonging on campus and positive increases in retention to the

sophomore year. Stebleton, Soria and Albecker (2012) found exposure to talent identification and development in a first-year seminar course resulted in moderate to large gains in students' confidence toward identifying their strengths, competencies and values and connecting them to future study and career options. In a study investigating academic self-efficacy among first-year college students, Soria and Stubblefield (2014) identified GPA as the strongest predictor of academic self-efficacy, but results also indicated strengths awareness as a low, positive secondary predictor of academic self-efficacy as well as student engagement. Strengths awareness has also been shown to be significantly, positively associated with college students' perceived leadership development (Soria, Roberts & Reinhard, 2015). Lastly, Louis (2011) recounted significantly higher self-theory scores, indicative of a greater growth outlook, among first-year college students who had participated in strengths development initiatives in comparison to first-year students who were only exposed to a talent identification process and who showed lower scores suggestive of a fixed mindset.

With regards to college student academic success, few studies have investigated the relationship between student talents and strengths-based education initiatives and academic performance and retention. Williamson (2002) found that first-time, first-year college students who completed the Clifton StrengthsFinder® (CSF; Clifton, 2006) as a tool for talent identification and who received follow-up strengths development training earned significantly higher first-semester GPAs than those students did not receive the talent identification and strengths development treatment. Although not statistically significant, Williamson (2002) also documented a higher number of credits earned and increased retention rate for the subsequent semester among students who received talent

identification and development interventions. Soria and Stubblefield (2015a) investigated the impact of talent awareness and strengths-based discussions upon first-year student retention to the second year and reported a significantly higher retention rate among those students with higher levels of strengths awareness; among the study participants, the odds of persisting to the second year increased by 1.364 for every unit increase in strengths awareness measure. Additionally, strengths-based discussion participation generated the greatest odds of student persistence to the sophomore year from among all factors considered in the study model of Soria and Stubblefield's (2015a) investigation.

Two studies have used the Clifton StrengthsFinder® and its associated talent theme dimensions in examining the relationship between talents or strengths and college student academic success. Sutton, Phillips, Lehnert, Batle and Yokomizo (2011) considered contributions of students' Clifton StrengthsFinder® results in conjunction with ACT score and academic self-efficacy toward predicting academic performance among two different samples. Sutton et al. (2011) found a positive predictive relationship between ACT score and college GPA for both study groups and a negative predictive relationship between the *Impacting* talent dimension score, formulated from Clifton StrengthsFinder® results, and college GPA for one group of study participants. In contrast, Brashears and Baker (2002) sought to describe the amount of variance that could be explained in first-semester GPA and cumulative GPA among 41 college students of agriculture, based upon prevailing talents defined by Clifton StrengthsFinder® talent theme dimension groups. Their results indicated traditional factors of ACT score and high school rank had greater predictive value than talent theme

dimension groups, which showed no significant predictive value (Brashear & Baker, 2002).

In conclusion, a consistent theme across articles is the need for further research related to strengths-based education practices and the impact of strengths upon student academic success (Brashears & Baker, 2002; Gallup, 2012; Louis, 2011; Shushok, Jr. & Hulme, 2006; Soria et al., 2015; Soria & Stubblefield, 2015a; Soria & Stubblefield, 2015b; Stebleton et al., 2012; Sutton et al., 2011; Williamson, 2002). It is this need and its specific application to students within a land-grant college of agriculture that this study sought to address.

Theoretical Framework

Two theories were used to frame this study – Clifton’s strengths theory (Buckingham & Clifton, 2001; Clifton & Nelson, 2010) and Holland’s theory of person-environment fit (Holland, 1973).

Strengths Theory

Strengths theory proposes that identification of one’s natural talents, development of talents into strengths through the addition of knowledge and skills, and intentional application of talents and strengths within one’s roles will result in greater productivity, fulfillment, and success (Buckingham & Clifton, 2001; Hodges & Clifton, 2004). Strengths theory also asserts individuals will experience more substantial gains and greater return on investments of energy and resources when developing talents in comparison to any gains experienced with comparable energy investments on developing weaknesses (Buckingham & Clifton, 2001; Clifton & Harter, 2003; Clifton & Nelson, 1992/2010).

An individual's natural talents, or innate patterns of thoughts and behavior, result from synaptic connections in the brain, which are strengthened throughout childhood by experiences that draw upon the behaviors they elicit (Buckingham & Clifton, 2001; Hodges & Clifton, 2004). Frequently used synaptic connections strengthen and establish talents, and this distinctive personal network of strong synaptic connections is stable by mid-adolescence (Buckingham & Clifton, 2001; Clifton & Harter, 2003; Hodges & Clifton, 2004). Those synaptic connections used less frequently during childhood and early adolescence weaken (Hodges & Clifton, 2004).

One's instinctive reactions, urges, abilities to learn quickly, and enjoyments can reveal areas of natural talent (Buckingham & Clifton, 2001; Hodges & Clifton, 2004). Additionally, talents may be identified using the popular Clifton StrengthsFinder® assessment (CSF; Clifton, 2006), that provides respondents with descriptions of their five most prevalent themes of talent from among 34 possible themes, conceptualized as enduring themes and representative of unique personal values and motivations (Gallup, Inc., 2009). The Clifton StrengthsFinder® is a web-based, talent identification assessment accessible with a provided access code at strengthsquest.com. The Clifton StrengthsFinder® uses subject responses to 177 item pairs to identify subjects' top five themes of talent from among 34 possible talent themes (Gallup, Inc., 2014). Item pairs consist of two self-descriptors inversely anchored on a five-option horizontal continuum, with "strongly describes me" representing the option at each end of the continuum and "neutral" representing the center option. Respondents are asked to select, within a 20-second time limit, the statement within each item pair best describing them as well as the extent of the accuracy of that description (Gallup, Inc., 2014). Each self-descriptor

within an individual item is related to a talent theme or themes and has an assigned value (Gallup, Inc., 2014). Should a response not be entered by a respondent within the 20-second time limit, the instrument automatically advances to the next question (Gallup, Inc., 2014). To determine a theme score, values for items linked to the same theme are aggregated and a mean is calculated (Gallup, Inc., 2014). Immediately upon completion of the web-based assessment, respondents are provided with a rank order listing and description of their five talent themes with the highest means labeled as their Top Five Signature Themes of Talent (Gallup, Inc., 2014). The ten most prevalent themes in an individual's Clifton StrengthsFinder® assessment results have been noted as consistent throughout time; however, to enable individuals to concentrate on development of their most dominant talents, the assessment report is limited to an individual's five leading talent themes (Gallup, Inc., 2009). The five most common talent themes identified among college students who have taken the Clifton StrengthsFinder® include *Achiever*, *Restorative*, *Adaptability*, *Responsibility*, and *Relator* (Gallup, Inc., 2016).

The 34 Clifton StrengthsFinder® themes of talent also may be grouped into four talent theme dimensions (Hayes, 2001). Talents in the *Relating* talent theme dimension represent respondents' relational styles; talents in the *Impacting* talent theme dimension exemplify respondents' personal presentation tendencies; talents in the *Striving* talent theme dimension characterize respondents' individual drives or motivations; and talents in the *Thinking* talent theme dimension denote respondents' approaches to learning (Brashears & Baker, 2002; Hayes, 2001; Sutton et al., 2011; Williamson, 2002). Table 1 depicts the themes of talent reported to cluster into each talent theme dimension (Brashears & Baker, 2002; Sutton et al., 2011; Williamson, 2002).

Table 1.

Talent Themes Grouped by Talent Theme Dimension

Talent Theme Dimensions			
Relating	Impacting	Striving	Thinking
Communication	Command	Achiever	Analytical
Empathy	Competition	Activator	Arranger
Harmony	Developer	Adaptability	Connectedness
Includer	Maximizer	Belief	Consistency
Individualization	Positivity	Discipline	Context
Relator	Woo	Focus	Deliberative
Responsibility		Restorative	Futuristic
		Self-assurance	Ideation
		Significance	Input
			Intellection
			Learner
			Strategic

Strengths theory emphasizes the importance of optimizing identified natural talents to result in the consistent, predictable, near-perfect execution of strengths while managing weaknesses (Bowers & Lopez, 2010; Buckingham & Clifton, 2001; Clifton & Harter, 2003; Clifton & Nelson, 1992/2010). Talents are developed into strengths through knowledge arising from both facts and experiences as well as through acquisition of skills (Bowers & Lopez, 2010; Buckingham & Clifton, 2001; Clifton & Harter, 2003; Clifton & Nelson, 1992/2010; Gallup, Inc., 2006a). Therefore, while talents are enduring, innate patterns of behavior, strengths, or optimal functioning, may be cultivated from identified talents by using additional effort and fresh approaches (Buckingham & Clifton, 2001; Louis, 2011). During continual strengths development and strengths-based

living progression, strengths theory urges management of weaknesses, which impede the optimal performance of strengths; weakness management may occur through forming complementary partnerships, using strengths to overpower weaknesses, seeking to improve to an acceptable competency level, or completely ceasing weakness-associated activities (Buckingham & Clifton, 2001).

Person-Environment Fit Theory

Holland's theory of person-environment fit (P-E fit) encompasses four fundamental assumptions (Holland, 1973). First, Holland postulated that people can be differentiated by their similarity to six distinct personality types (Holland, 1959; Holland, 1973): realistic, investigative, artistic, social, enterprising, and conventional (Holland, 1973). *Realistic, R*, types prefer systematic, regimented manipulation of tangible things more than engagement with people (Holland, 1973; Reardon & Lenz, 2015). *Investigative, I*, types seek to understand phenomena through creative exploration and observation (Holland, 1973; Reardon & Lenz, 2015). Individuals with *Artistic, A*, personality types desire to express themselves through unsystematic performances, free ideas, or creative forms (Holland, 1973; Reardon & Lenz, 2015). *Social, S*, types prefer interactions with others to teach, support, nurture, or assist (Holland, 1973; Reardon & Lenz, 2015). People with *Enterprising, E*, personalities also prefer interactions with people, but their instinctive drive centers upon management of interactions to persuade and attain goals (Holland, 1973; Reardon & Lenz, 2015). Lastly, *Conventional, C*, types favor engaging with data to create and/or enact methodical processes and explicit standards (Holland, 1973; Reardon & Lenz, 2015). In addition to defining these personality types for people, Holland also theorized that environments can be described

by their likeness to six model environments which correspond to the previously described personality types: realistic, investigative, artistic, social, enterprising, and conventional (Holland, 1959; Holland, 1966; Holland, 1973).

The third assumption of Holland's theory claims that individuals seek environments conducive to expressing their mindsets and values, applying their talents and capabilities, and contributing through compatible roles (Holland, 1959; Holland, 1973). The final primary assumption proclaims that an individual's behavior is a function of the interaction between the person and the environment (Holland, 1959; Holland, 1973). Four secondary assumptions further expound these two fundamental assumptions: consistency, calculus, differentiation, and congruence. Consistency refers to Holland's assumption that individuals and environments may be characterized by primary, secondary, and tertiary types represented by a three-letter code, and some of those types of personalities are more closely related than others (Holland, 1973; Reardon & Lenz, 2015). Calculus refers to how the relationships of the different types may be depicted by a hexagonal model with different types anchored at each angle of the hexagon in the order of RIASEC, as illustrated in Figure 1 (Holland, 1973; Holland & Messer, 2013; Reardon & Lenz, 2015). The distance between any two types on the model is proportional to the relationship between the two types, with shorter distances indicating stronger relationships (Holland, 1973; Holland & Messer, 2013; Reardon & Lenz, 2015). The secondary assumption of congruence contends that individuals thrive in environments compatible to their type (Holland, 1959; Holland, 1973). The assumption of congruence also makes use of Holland's hexagonal model by proposing that the more spatially aligned an environment's type is on the hexagon with the location

of an individual's personality type on the hexagon, the higher the congruence between the person and the environment (Reardon & Lenz, 2015). Finally, the assumption of differentiation maintains that some individuals and environments have more strongly pronounced types than others; the more prominent the type, the more differentiated the person or environment is (Holland, 1959; Holland, 1973; Reardon & Lenz, 2015).

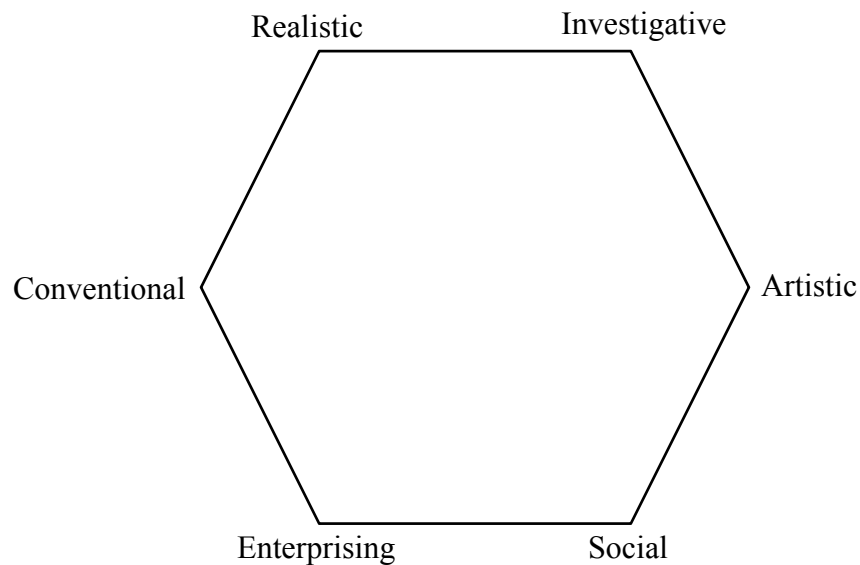


Figure 1. Holland's RIASEC hexagonal model representing relationships between personality and environment types. Adapted from *Self-Directed Search Professional Manual* (p. 41), by J. L. Holland & M. A. Messer, 2013, Lutz, FL; PAR. Copyright 2013 by PAR, Inc.

Academic disciplines may also be described and differentiated based upon the six types of Holland's P-E fit theory (Holland, 1966; Holland & Messer, 2017; Reardon & Lenz, 2015). The *Educational Opportunities Finder* (Holland & Messer, 2017) is an academic type classification resource based upon Holland's P-E fit theory. Within CASNR, 16 major disciplines and more than 50 study concentrations representing diverse academic programs, including scientific subjects, business fields, and creative disciplines,

are offered (OSU, 2016). The academic type classification for the areas of study administered through CASNR, are presented in Table 2.

Table 2.

CASNR Academic Majors and Corresponding Holland Type Codes

CASNR Major	Corresponding Holland Code
Agribusiness	REC
Agricultural Communications	AER
Agricultural Economics	EIC
Agricultural Education	REI
Agricultural Leadership	SEC
Animal Science	IRE
Biochemistry & Molecular Biology	IRS
Biosystems Engineering	IER
Entomology	IRE
Environmental Science	IRC
Food Science	ISR
Horticulture	IRS
Landscape Architecture	IER
Landscape Management	RCE
Natural Resource Ecology & Management	IRE
Plant & Soil Sciences	IRS

Note. R = Realistic, I = Investigative, A = Artistic, S = Social, E = Enterprising, C = Conventional

Holland, J. L., & Messer, M. A. (2017)

The Relationship between Strengths and P-E Fit

According to Clifton et al. (2006), talent themes identified by the Clifton StrengthsFinder® among college students are also correlated to five of the six Holland personality types – Investigative, Artistic, Social, Enterprising, and Conventional. While

each theme of talent does not have a three-letter Holland code, 25 of the 34 themes of talent identified by the Clifton StrengthsFinder® correlate to one or more of the Holland types, as depicted in Table 3 (Clifton, et al., 2006). Holland's Realistic type is the only type to which no talent themes are statistically related (Clifton, et al., 2006).

Table 3.

Clifton StrengthsFinder® Talent Themes and Related Holland Personality Types

Talent Theme	Related Holland Types*
Achiever	C
Activator	A, C, S
Adaptability	A
Analytical	C, I
Arranger	E, S
Belief	S
Command	A, E
Communication	A, E, S
Competition	E
Connectedness	S
Consistency	C
Developer	S
Discipline	C
Empathy	S
Focus	C
Harmony	C
Ideation	A, I
Includer	S
Input	A
Positivity	A, E, S
Relator	S
Responsibility	C
Self-Assurance	A, E
Strategic	A
Woo	A, E, S

Note. I = Investigative, A = Artistic, S = Social, E = Enterprising, C = Conventional. Holland type letters listed in alphabetical order. No CSF themes are statistically related to Holland's Realistic (R) type (Clifton, et al., 2006)

The significant relationships of academic majors to Holland types and Holland types to Clifton StrengthsFinder® themes of talent, implies that Clifton StrengthsFinder® themes of talent may be an additional means of characterizing an academic environment in addition to describing the talents of individuals.

Conceptual Framework

The foundation of this study focused on the alignment of assumptions of type between strengths theory and person-environment fit theory. Both theories assert that individuals may be described based upon resemblance to types characterized by innate thoughts, feelings, attitudes, preferences, and behaviors. Also essential to this study's framework were the two similar contentions of the theories regarding optimal functioning. Person-environment theory proclaims that behavior reflects the interaction between person and environment and that greater person-environment congruence equates to improved individual functioning (Holland, 1959; Holland, 1973). Strengths theory contends that individuals will be more productive and successful in environments compatible to the use of their innate talents and strengths (Buckingham & Clifton, 2001; Clifton & Nelson, 2010). Therefore, given the reported relationship between Holland personality types and talent themes identified by the Clifton StrengthsFinder® (Clifton et al., 2006) and the similar declaration of each theory related to optimal individual functioning in well-suited environments, the model outlined in Figure 2 could be used to depict the relationship between strengths theory and person-environment theory.

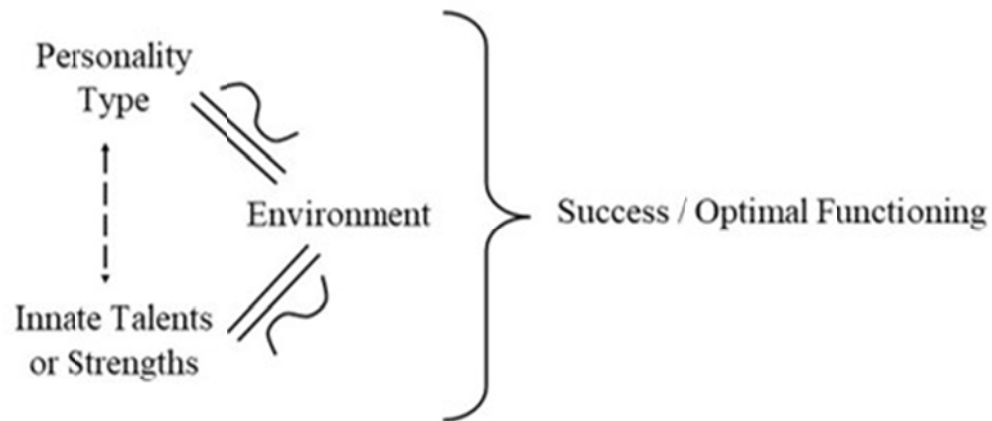


Figure 2. The relationship between Holland’s personality types and strengths in producing personal success.

Based upon the model in Figure 2, the question arises as to if successful students achieve academic success in part because of environments conducive to the development and application of their talents. One could conjecture that students with a substantial representation of talents characteristic of Holland types that correspond to the types of a specific academic major would be more likely thrive in that academic environment. For example, the three-letter Holland code for the undergraduate major of Agricultural Communications is AER (Holland & Messer, 2017). Two of the three Holland personality types represented by the Holland code AER have been correlated to the Clifton StrengthsFinder® themes of *Command*, *Communication*, *Positivity*, *Self-Assurance*, and *Woo*. Therefore, the academic environment of the Agricultural Communications discipline may be expected to be characteristically supportive of, or congruent with, students who have these talent themes within their top themes of talent, leading to an expectation high academic performance in the major from such students. The model implies that academic environments where students have experienced

academic success may be categorized as nurturing of specific Clifton StrengthsFinder® talents, in the same way as academic environments have been classified by Holland type.

This study aimed to investigate the proposed model in Figure 2 by examining successful students in CASNR. The categorical independent variables of interest in this study were students' Clifton StrengthsFinder® identified talent type, the environment of CASNR, and the timeframes of pre-strengths identification and development intervention and post- pre-strengths identification and development intervention. The dependent variables of interest, representative of the levels of functioning or congruence between students' talent type and the CASNR environment, were the college student success factors of cumulative GPA, semesters in academic distress, number of academic major changes, and time to degree completion, as well as CASNR first-year retention rates and six-year graduation rates. Through investigation of any statistical differences between students of different talent types on the identified measures of college student success, this study explored if the CASNR environment had greater congruence with any particular student talent type. The study also sought to determine any significant predictive value of college student success toward student talent types to further explore the concept of person-environment congruence based upon talents within the CASNR environment. Lastly, the study explored differences in the first-year retention and graduation rates both before and after implementation of a strengths identification and development initiative in the CASNR environment.

CHAPTER III

METHODOLOGY

This research study used a descriptive non-experimental quantitative design to examine the relationship between education initiatives based upon strengths theory (Buckingham & Clifton, 2001; Clifton & Nelson, 2010) and college student success within the framework of person-environment fit (P-E fit; Holland, 1973). Specifically, the study explored possible connections between the categorical independent predictor variables of student talent themes identified by the Clifton StrengthsFinder® (CSF; Clifton, 2006) and the dependent criterion variables of cumulative GPA, semesters in academic distress, major changes, and time to degree completion for college students studying in agricultural disciplines. The study also described academic and talent profiles of CASNR students who matriculated during a three-year period and completed degrees within six years, and the study examined any differences in the quantitative criterion variables of student first-year retention rates and graduation rates since the implementation of strengths identification and development intervention in the first-year seminar course beginning in fall 2008. The six research questions examined by this study were

1. What characterizes the pre-college and collegiate academic profile of students who matriculated with a declared major in OSU CASNR and who graduated

within the six-year graduation time-frame, including the dependent variables of students' high school GPA, ACT score, prior college academic credit earned, cumulative college GPA, semesters in academic distress, number of academic major changes, and time to degree completion?

2. What characterizes the talent profile of students who matriculated with a declared major in CASNR and who graduated within the six-year graduation time-frame, including the two dependent variables of the frequency of talent themes identified by the Clifton StrengthsFinder® assessment among the population and the frequency of talents associated with specific talent theme dimensions?
3. What statistically significant differences exist in the criterion variables of students' cumulative GPA, semesters in academic distress, number of academic major changes, and time to degree completion among the five independent predictor variables, consisting of the four dominant talent theme dimension groups and the one divergent talent theme dimension group?
4. What statistically significant difference in the criterion variable of first-year retention rate exists between the categorical predictor variables of the classes of CASNR preceding implementation of strengths identification and development initiatives in AG 1011 and the classes after implementation of the AG 1011 strengths identification and development initiatives?
5. What statistically significant difference in the criterion variable of six-year graduation rate exists between the categorical predictor variables of the classes of CASNR preceding implementation of strengths identification and development

initiatives in AG 1011 and the classes after implementation of the AG 1011 strengths identification and development initiative?

6. Do the college success outcome variables of cumulative college GPA, semesters in academic distress, number of academic major changes, and time to degree completion significantly predict the five grouping variables of the four dominant talent theme dimension groups and the one divergent talent theme dimension group?

Research Participants

The study was conducted on the main campus of a public, four-year, land-grant university, Oklahoma State University (OSU), and specifically within the College of Agricultural Sciences and Natural Resources (CASNR). The CASNR represents one of six undergraduate academic colleges. Total undergraduate university enrollment is 20,320 students, and total undergraduate enrollment in CASNR is 2,716 students (Institutional Research & Information Management [IRIM], 2017).

This study was a census study of all undergraduate students who (a) matriculated in academic majors within CASNR, (b) completed AG 1011 during the fall 2008, fall 2009 and fall 2010 semesters, and (c) earned their bachelor's degree within 12 regular-term academic semesters ($N=551$). Initial course enrollment in AG 1011 throughout fall 2008, fall 2009 and fall 2010 semesters totaled 1,124 students. However, 104 students were excluded from the study population because either their declared majors at matriculation and enrollment in AG 1011 were not among the 16 major disciplines of CASNR or because their discipline at matriculation was designated as undecided or without a declared major. Of the remaining students enrolled in AG 1011 during the

designated semesters, 278 were excluded from the study because they did not persist to degree completion of a bachelors degree, 180 were excluded because they completed bachelor's degrees from disciplines outside of CASNR, one was excluded because the student perished while his degree was in progress, and 10 were excluded from the study because they completed CASNR degrees beyond the six-year timeframe. All 551 students with declared agricultural majors at matriculation who completed degrees in agricultural disciplines and who completed AG 1011 during the designated semesters were included in this study.

The demographic breakdown of the study population included 234 males (42.47%) and 317 females (57.53%), with 550 students in the age range of 17 to 21 years of age and one student at 28 years of age during the time of enrollment in AG 1011. Other characteristics of the population included racial and ethnic backgrounds of 81.31% White, 8.53% Native Americans or Alaskan Natives, 7.08% Multiracial, 0.91% Hispanic, 0.72% Black, 0.18% Asian or Pacific Islander, and 1.27% Unknown.

Instrumentation

During their enrollment in AG 1011, students were assigned access codes to complete the Clifton StrengthsFinder® assessment (CSF; Clifton, 2006) in a self-directed manner as a part of a self-assessment, goal-setting, and strengths development lesson (see Appendix B and Appendix C for instructional materials). Results for each respondent were immediately recorded in the Gallup, Inc. database and were accessible by the strengths administrator for CASNR, who also served as the primary investigator of this study.

The Clifton StrengthsFinder® assessment and its related copyrights and intellectual property are the assets of and protected by Gallup, Inc. Due to this protection and the web-based nature of the instrument, a copy of the Clifton StrengthsFinder® is not included in the appendices.

Clifton StrengthsFinder® Reliability

Internal consistency assesses the relationship of instrument items designed to assess the same talent theme to each other, as opposed to the extent of their relationship to items measuring a different talent theme. Internal consistency of talent themes appraised by the Clifton StrengthsFinder® and as measured by Cronbach's alpha ranged from 0.52 to 0.79 across three different random samples, with *ns* of 46,902; 2,219; and 250,000 (Gallup, Inc., 2014). Seventeen of the 34 themes of talent consistently showed an alpha score below the 0.70 threshold of minimum acceptable internal reliability across all three samples (Johnson & Christensen, 2014; Loewenthal, 2004). In a study of 438 college students, internal consistency measures for the 34 Clifton StrengthsFinder® themes of talent ranged from 0.42 to 0.80 with a mean alpha score of 0.61 and median alpha score of 0.63 (Gallup, Inc., 2006a). Gallup, Inc. attributes the lower than desired internal consistency levels to the low number of Clifton StrengthsFinder® instrument items associated with each theme and to the intentional design of some instrument items to be related to more than one theme of talent assessed by the Clifton StrengthsFinder® (Gallup, Inc., 2014; Gallup, Inc., 2006a).

Test-retest reliability assesses the extent of participants' response stability over time and is measured through a correlation, with $r = 1.0$ indicating a perfect test-retest reliability score. Three-month and six-month test-retest reliability correlations for the 34

themes of talent ranged from 0.50 to 0.82 and from 0.48 to 0.80, respectively, across a sample of 2,219 respondents to the Clifton StrengthsFinder® (Gallup, Inc., 2014). Only nine of the 34 themes of talent consistently indicated a correlation less than the minimum desired level of 0.70 (Loewenthal, 2004). In a Gallup, Inc (2006a) study of 438 college students, test-retest reliabilities for the 34 themes of talent ranged from 0.52 to 0.84 after eight to 12 weeks, with the mean test-retest correlation at 0.70.

Modest reported internal consistency and test-retest reliability coefficients for the Clifton StrengthsFinder® were recognized as a limitation to the validity of this study. Further investigation and evaluation of the reliability of the Clifton StrengthsFinder® was not possible because of the proprietary nature of studies conducted by researchers at Gallup, Inc., during the development and assessment of the Clifton StrengthsFinder® instrument. However, because of the widespread use of the Clifton StrengthsFinder® instrument for talent identification on more than 600 higher education campuses, including the adoption in AG 1011, the use of talent themes identified by the Clifton StrengthsFinder® as a categorical independent predictor variable for this exploratory study continued.

Clifton StrengthsFinder® Validity

Construct validity of the Clifton StrengthsFinder® talent themes has been evaluated through a hierarchical cluster analysis, using items from two independent theme pairs until all independent theme pairs were evaluated (Gallup, Inc., 2014). The cluster analysis showed 99% of all possible theme pairs had a cluster percentage greater than O'Neil, Sireci, and Huff's (2004) minimum acceptability threshold of 70% (Gallup, Inc., 2014). Additionally, relationships between the themes of the Clifton

StrengthsFinder® and the Big Five scale of personality (Goldberg, 1999) have been assessed and have shown moderate to moderately strong correlations ($r = 0.50$ to $r = 0.71$) between 12 Clifton StrengthsFinder® talent themes and comparable personality dimensions of the Big Five (Gallup, Inc., 2014). For a sample of 438 college students, correlations of students' Clifton StrengthsFinder® results with scores on California Psychological Inventory (CPI-260; Gough, 1996) and 16PF (Cattell, 1993) yielded significant correlations in 93.40% of the 137 predicted relationships between Clifton StrengthsFinder® themes and CPI-260 or 16PF results (Gallup, Inc., 2006a). This evidence supports the Clifton StrengthsFinder® as a valid assessment for talent identification.

Validity of Talent Theme Dimension Groups

Hayes (2001) indicated the 34 themes of talent identified by the Clifton StrengthsFinder® also cluster into four talent theme dimensions, as previously delineated in Table 1. While these groupings were provided by Gallup, Inc., for use in three previous research studies referencing the convergence of the 34 Clifton StrengthsFinder® themes within the four talent theme dimensions (Brashears & Baker, 2002; Sutton et al., 2011; Williamson, 2002), no published quantitative measure of construct validity for these groupings is currently accessible, and requests to Gallup, Inc., for validity data was denied because of the proprietary nature of all Gallup, Inc., research. The limitation placed on the overall validity of this study because of inadequate evidence supporting the construct validity of the talent theme dimensions was recognized. However, because of the precedent of using the theme dimensions within the examination of college student success factors in previous studies (Brashears & Baker, 2002; Sutton et al., 2011;

Williamson, 2002), the talent theme dimensions were selected as an categorical independent variable for this study.

Design and Procedure

Following approval of this descriptive non-experimental quantitative study by the OSU Institutional Review Board for Human Subjects Research (see Appendix A for a copy of the approval for IRB Application AG1639), the AG 1011 enrollment lists for the fall 2008, fall 2009 and fall 2010 semesters were requested and obtained through the OSU Office of Institutional Research and Information Management (IRIM). Students' first year seminar enrollment term, major at time of course enrollment, major at graduation, graduation term, number of regular terms attempted at the institution, cumulative institutional grade point average (GPA), number of regular terms with term GPA below the 2.0 GPA required for good standing, the number of filed academic major changes, ACT composite score, high school GPA, number of collegiate credits earned prior to matriculation into CASNR, sex, birthdate, ethnicity, and race also were obtained. Top Five Signature Themes of Talent results of all students who completed the assignment were obtained through the strengths administrator in CASNR, and assessment results were matched with students' institutional records using both student first and last names, email addresses, and assessment completion dates.

Following the matching process, students with undeclared majors, enrolled students with declared majors not within CASNR, students who graduated from majors outside of CASNR, and students who did not complete their undergraduate degree programs were removed from the data file. Identifiable names and student numbers were removed from the remaining subject records, and each subject was assigned a unique

identifier. Collectively, 551 first-time freshmen students with declared academic majors in CASNR during the first semester of their freshmen year completed the StrengthsFinder® assessment as a part of the freshmen seminar course during the fall 2008, fall 2009, and fall 2010 semesters and also later completed an academic degree within CASNR. Their records were compiled for analysis into a single data file.

Additionally, first-year retention rates for students majoring within CASNR were obtained from published *Student Profile* reports on the IRIM website. Retention rates were acquired for the years 2001 through 2014. Graduation rates of students majoring within CASNR also were acquired from the IRIM *Student Profile* reports. Graduation rates were obtained for the years 2011 through 2016, a timeframe inclusive of the fall 2008, fall 2009, and fall 2010 freshmen students who first experienced the strengths identification and development interventions in AG 1011 as well as inclusive of three freshmen classes preceding the implementation of the strengths identification and development intervention.

Participants' top five themes of talent from the Clifton StrengthsFinder® were coded in accordance with the respective talent theme dimension for each talent theme. Participants' talents corresponding to the Relating dimension were coded with an *R*, Impacting talents were coded with an *I*, Striving talents were coded with an *S*, and Thinking talents were coded with a *T*. Based upon the five-letter codes representing the talent theme dimensions of students' top five talent themes, each student was then assigned to a talent theme dimension group. Participants with three or more talents in the Relating dimension were assigned to the dominant *R* talent theme dimension group. Participants with three or more talents in the Impacting dimension were assigned to the

dominant *I* talent theme dimension group. Participants with three or more talents in the Striving dimension were assigned to the dominant *S* talent theme dimension group, and participants with three or more talents in the Thinking dimension were assigned to the dominant *T* talent theme dimension group. Participant with no more than two talents among their top five talent themes associated with any single talent theme dimension were assigned to a *Divergent* talent theme dimension group. A summary of the five different talent theme dimension groups is provided in Table 4.

Table 4.

Talent Theme Dimension Groups of Study Participants

Assigned Talent Theme Dimension Group	Dimension Codes among Participants' Top Five Themes of Talent
Group R (Dominant Relating)	≥ 3 talents in Relating dimension
Group I (Dominant Impacting)	≥ 3 talents in Impacting dimension
Group S (Dominant Striving)	≥ 3 talents in Striving dimension
Group T (Dominant Thinking)	≥ 3 talents in Thinking dimension
Group D (Divergent)	≤ 2 talents in any single talent theme dimension

Data Analysis

Throughout the data analysis procedures outlined for each of the six research questions, Statistical Package for Social Sciences (SPSS©) version 21 for Windows was used to perform the statistical processes.

Research Question 1

To answer the first research question, descriptive statistics including means and standard deviations were analyzed for the dependent variables of high school GPA, ACT score, prior college academic credit earned, cumulative college GPA, semesters in academic distress, number of academic major changes, and time to degree completion.

Research Question 2

Frequencies and rankings of the 34 different Clifton StrengthsFinder® themes among the population were examined, as were frequencies and rankings of talent theme dimension groups of the student participants to answer the second research question.

Research Question 3

To ascertain differences in college success factors of GPA, semesters in academic distress, number of academic major changes, and time to degree completion based upon Clifton StrengthsFinder® talent theme dimension groups, either a one-way analysis of variance (ANOVA) or an analysis of covariance (ANCOVA) was conducted for each college success factor. Because a review of previous research revealed the high school GPA and ACT score as strong predictors of students' college GPA (Allen & Robins, 2008; Astin, 1993; Garton et al., 2002), ANCOVA with high school GPA and ACT score used as covariates was employed to examine any significant differences in cumulative GPA between talent theme dimension groups. Similarly, because Smith et al. (2010) found a significant relationship between earned prior college academic credit and degree completion, ANCOVA was chosen as the analysis to investigate any significant differences in time to degree completion between talent theme dimension groups, with number of hours earned in prior college academic credit included as the covariate. Correlations between high school GPA and ACT score and college cumulative GPA and correlations between prior college academic credit hours and time to degree completion were examined to justify the decision of the chosen statistical analyses. For discovering significant differences in number of major changes and in number of semesters in distress between talent theme dimension groups, ANOVA was the analysis employed.

As is necessary before conducting any statistical analysis, an evaluation of the assumptions relevant to the analyses was conducted. Independence among the variables of the study was assumed. The central limit theorem assumes normality for sample sizes more than 30. With $N = 551$, normality of the population analyzed in this study was also assumed. In conducting each analysis, Levene's test was used to verify homogeneity of variance of the population.

Analysis of variance is a statistical analysis used to investigate significant differences between means of more than two groups on the same dependent variable, and ANCOVA is a similar statistical analysis also employed to explore significant differences between means of more than two groups on the same dependent variable, but when the group means have been adjusted to control for covariate influences (Field, 2013; Frey, 2016; Kachigan, 1991). In this study, the qualitative independent variable for each analysis was each student's talent theme dimension group – Dominant *R*, Dominant *I*, Dominant *S*, Dominant *T* or Divergent. College cumulative GPA, number of semesters in academic distress, number of academic major changes, and time to degree completion served as a dependent variable for each of the four analyses.

To reveal where any differences were in the models, *post hoc* procedures were completed as a part of the ANOVAs for number of semesters in academic distress and number of academic major changes. Because of the unequal group sizes of the talent theme dimension groups, ranging from 14 participants to 335 participants, Hochberg's GT2 and Games-Howell were employed as *post hoc* procedures. Hochberg's GT2 is a *post hoc* pairwise analysis designed specifically for instances where groups sizes of an ANOVA are unequal, and Games-Howell is a multiple comparison *post hoc* procedure

that is both accurate with large, unequal sample sizes and that was specifically designed for occasions in which population variances may differ (Field, 2013). For the ANOVAs, omega squared (ω^2) was calculated as an indicator of the effect size (Field, 2013).

Post hoc procedures for ANCOVAs available in SPSS 21 are limited, as *post hoc*s are not intended for conditions where covariates are included in the analyses (Field, 2013). To elucidate the location of any differences in the models for the ANCOVAs, a difference contrast procedure was used for comparison purposes, comparing the mean of each talent theme dimension group to the mean effect of all other talent theme dimension groups (Field, 2013). As an additional layer of comparisons and despite unequal group sizes, the Bonferroni *post hoc* procedure option was selected from the few available options for the ANCOVA with cumulative GPA as the dependent variable because Levene's test indicated the assumption of homogeneity of variances across groups had been met (Field, 2013). For the ANCOVA with time to degree completion as the dependent variable, Tukey's LSD was used as a less conservative *post hoc* comparison because of the differences in variances across groups indicated by Levene's test statistic (Field, 2013). For both ANCOVAs, partial eta squared (partial η^2) was calculated as an effect size measure to determine the proportion of variance explained by the model and not explained by the covariate of the analysis (Field, 2013).

Research Question 4

To reveal any significant differences in first-year retention rates since the implementation of strengths identification and development initiatives in AG 1011, retention rates for seven pre-intervention years and retention rates for seven post-intervention years were analyzed by conducting an independent measures *t*-test. The

seven year timeframe was chosen because retention rates for CASNR were only publicly published for seven years preceding the implementation of the strengths intervention in AG 1011.

Research Question 5

To disclose any significant differences in graduation rates since the implementation of strengths identification and development initiatives in AG 1011, graduation rates for three years pre-intervention and graduation rates for three years post-intervention were analyzed by conducting an independent measures *t*-test. At the time of the study only three years of post-intervention, six-year graduation rates were available, as other freshmen classes exposed to the intervention had not yet reached the six-year threshold for graduation rate calculation.

An independent measures *t*-test is a statistical analysis of variance used to investigate differences between means of two groups with different participants in each group (Field, 2013; Frey, 2016). An independent measures *t*-test was used to compare pre-intervention first-year retention rates from years 2001 through 2007 to post-intervention rates first-year retention rates from years 2008 through 2014. Similarly, another independent measures *t*-test was used to compare pre-intervention six-year graduation rates from years 2011 through 2013 to post-intervention six-year graduation rates from years 2014 through 2016. Independent variables for the analyses were the pre- and post-intervention groups and the dependent variables were the documented first-year retention rates and six-year graduation rates. Effect size was evaluated using Cohen's *d*, which was determined using the *t* values obtained from each independent measures *t*-test analysis.

Research Question 6

To determine the predictive relationship between participants' talent theme dimension groups and participants' cumulative GPA, number of semesters in academic distress, number of academic major changes, and time to degree completion, a discriminant analysis was performed. Discriminant analysis is a statistical method used to determine predictive relationships between criterion variables and quantitative predictor variables (Kachigan, 1991). In the present study, the categorical criterion variables, also referred to as grouping variables (Field, 2013), are the five groups of subjects based upon their talent theme dimension profile: dominant *R*, dominant *I*, dominant *S*, dominant *T*, and divergent *D*. The quantitative predictor variables, also referred to as independents, variates, and discriminating variables (Field, 2013; Klecka, 1980), are GPA, number of semesters in academic distress, number of academic major changes, and time to degree completion. Discriminant analysis reveals criterion group differences in relation to the predictor variables, the extent of those differences, and the variables contributing most to differentiation of the criterion groups (Klecka, 1980). Discriminant analysis also generates canonical discriminant functions, mathematical equations which represent combinations of predictor variables to forecast the criterion group an unclassified subject most closely resembles (Klecka, 1980).

The design of the study complies with the requirements and key assumptions of discriminant analysis. The categorical criterion groups are mutually exclusive, with individual subjects belonging to only one criterion group; the number of quantitative predictor variables used to evaluate each subject is greater than one; the number of participants exceeds the number of predictor variables by more than two; and none of the

predictor variables are linear combination of other predictor variables (Kachigan, 1991; Klecka, 1980). Because the study is a census study of all undergraduate freshmen students with academic majors in CASNR who completed AG 1011 between fall 2008 and fall 2010 semesters and later also completed agricultural degrees, the correlation between any two of the four quantitative predictor variables for the study subjects is equal to the correlation between any two predictor variables within the population (Kachigan, 1991). Also because the study is a census study, the variance of each predictor variable among the subjects of the study is equivalent to variance of each predictor variable within the population (Kachigan, 1991).

Using outputs from the discriminant analysis performed using SPSS, the amount of variance between talent theme dimension groups accounted for by each variate or predictor variable was revealed as well as the effect size, indicated by the square of the canonical correlation (Field, 2013). The discriminant analysis output also revealed any significance of the models in discriminating groups based upon the predictor variables combined and in isolation (Field, 2013). The canonical variate correlation coefficients indicated the relative contribution of each predictor variable to the differentiation of groups (Field, 2013).

CHAPTER IV

FINDINGS

Retention and graduation of college students is important on personal, institutional, and societal levels. Preparing and educated workforce as well as a civically engaged and socially responsible society are core objectives of the land-grant mission (NASULGC, 2008). Economically, increasing individual income levels and government tax collections while also decreasing demand for social services, using higher education resources more efficiently, and meeting industry talent needs, are all positive outcomes of retaining students and producing bachelor's graduates (Avery & Turner, 2012; The Education Policy Institute, 2013; Mayhew et al., 2016; Oreopoulos & Petronijevic, 2013; Strohush & Wanner, 2015; Trostel, 2010; Wheelan, 2016). This study sought to examine a student retention initiative of CASNR and contribute to the literature elucidating effective practices to support college student retention and graduation.

Since 2008, CASNR has used the Clifton StrengthsFinder® (CSF; Clifton, 2006) as a talent identification assessment and as a part of an intervention in AG 1011 to develop students' talents toward achieving academic success and persisting through degree completion. This study investigated the relationship between students' talent themes identified by the Clifton StrengthsFinder® and college

student success factors of GPA, semesters in academic distress, major changes, and time to degree completion. The study also explored any differences in student retention and graduation since the implementation of the strengths identification and development intervention. Specifically, the research questions for this study were:

1. What characterizes the pre-college and collegiate academic profile of students who matriculated with a declared major in OSU CASNR and who graduated within the six-year graduation time-frame, including the dependent variables of students' high school GPA, ACT score, prior college academic credit earned, cumulative college GPA, semesters in academic distress, number of academic major changes, and time to degree completion?
2. What characterizes the talent profile of students who matriculated with a declared major in CASNR and who graduated within the six-year graduation time-frame, including the two dependent variables of the frequency of talent themes identified by the Clifton StrengthsFinder® assessment among the population and the frequency of talents associated with specific talent theme dimensions?
3. What statistically significant differences exist in the criterion variables of students' cumulative GPA, semesters in academic distress, number of academic major changes, and time to degree completion among the five independent predictor variables, consisting of the four dominant talent theme dimension groups and the one divergent talent theme dimension group?
4. What statistically significant difference in the criterion variable of first-year retention rate exists between the categorical predictor variables of the classes of CASNR preceding implementation of strengths identification and development

initiatives in AG 1011 and the classes after implementation of the AG 1011 strengths identification and development initiatives?

5. What statistically significant difference in the criterion variable of six-year graduation rate exists between the categorical predictor variables of the classes of CASNR preceding implementation of strengths identification and development initiatives in AG 1011 and the classes after implementation of the AG 1011 strengths identification and development initiative?
6. Do the college success outcome variables of cumulative college GPA, semesters in academic distress, number of academic major changes, and time to degree completion significantly predict the five grouping variables of the four dominant talent theme dimension groups and the one divergent talent theme dimension group?

The Academic Profile of CASNR Students

Contributing to the first research question and the description of CASNR students' academic profile, Table 5 reveals the means and standard deviations of pre-college factors influential of the college student success factors investigated in this study. Table 5.

Means and Standard Deviations of Pre-college Factors Influencing College Success

Variable	\bar{X}	<i>SD</i>
High School GPA	3.74	0.27
ACT Score	24.61	4.00
Number of Prior College Academic Credit	8.22	9.78

The mean high school GPA was a 3.74 ($SD = 0.27$) and mean ACT score was a 24.61 ($SD = 4.00$) for fall 2008, fall 2009, and fall 2010 first-year freshmen in CASNR. The mean number of prior college academic credits completed before matriculation as a student in CASNR was 8.22 ($SD = 9.78$).

As summarized in Table 6, CASNR graduates who were enrolled in the fall 2008, fall 2009, and fall 2010 sections of AG 1011 had a mean cumulative GPA at graduation of 3.26 ($SD = 0.46$) and a mean time to degree completion of 8.29 semesters ($SD = 1.19$). The mean number of semesters in academic distress among the graduates was 0.09 ($SD = 0.43$), and the mean number of academic major changes among the graduates was 0.81 ($SD = 0.94$).

Table 6.

Means and Standard Deviations of College Success Factors

Variable	\bar{X}	SD
Cumulative College GPA	3.26	0.46
Semesters in Academic Distress	0.09	0.43
Academic Major Changes	0.81	0.94
Time to Degree Completion (semesters)	8.29	1.19

Note. GPA = Undergraduate Grade Point Average

The Talent Profile of CASNR Students

Findings related to the second research question concerning the talent profile of CASNR students reveals a diverse talent profile for the graduates investigated within this study, as illustrated in Table 7 and Table 8. Clifton StrengthsFinder® results indicating the 551 participants' top five talent themes were analyzed for a total of 2,755 data points.

Table 7.

Frequencies and Percentages of Talent Themes among CASNR Graduates

Talent Theme	<i>f</i>	% of Graduates
Achiever	230	41.74%
Responsibility	155	28.13%
Harmony	147	26.68%
Adaptability	142	25.77%
Competition	142	25.77%
Restorative	138	25.05%
Learner	107	19.42%
Relator	104	18.87%
Includer	99	17.97%
Input	95	17.24%
Belief	89	16.15%
Consistency	89	16.15%
Communication	86	15.61%
Positivity	81	14.70%
Futuristic	78	14.16%
Strategic	78	14.16%
Deliberative	77	13.97%
Woo	73	13.25%
Empathy	70	12.70%
Individualization	70	12.70%
Developer	62	11.25%
Focus	57	10.34%
Arranger	51	9.26%
Context	50	9.07%
Intellection	48	8.71%
Discipline	46	8.35%
Command	45	8.17%
Significance	44	7.99%
Maximizer	43	7.80%
Analytical	40	7.26%
Activator	39	7.08%
Ideation	31	5.63%
Self-Assurance	29	5.26%
Connectedness	20	3.63%

Table 8.

Frequencies and Percentages of Talent Theme Dimension Groups among CASNR

Graduates

Talent Theme Dimension Group	<i>f</i>	% of Graduates
Relating Theme Dimension Group	61	11.07%
Impacting Theme Dimension Group	14	2.54%
Striving Theme Dimension Group	63	11.43%
Thinking Theme Dimension Group	78	14.16%
Divergent Theme Dimensions Group	335	60.80%

The most prevalent talent theme, present among 41.74% of the study population, was the Achiever talent theme. Five additional top talent themes present in more than 25% of the CASNR study population included Responsibility (28.13%), Harmony (26.68%), Adaptability (25.77%), Competition (25.77%), and Restorative (25.05%). The Connectedness talent theme, present among only 3.63% of the study population, was revealed as the least common talent theme. With regard to talent theme dimension groups, 60.80% of the study population were among the Divergent group, with no more than two of their top five talent themes deriving from a single talent theme dimension. Among the four dominant talent theme dimension groups, the Thinking or learning style dominant dimension was pervasive, with 14.16% of the study population having three or more of their top five talents associated with the dimension. The prevalence of graduates with three or more talents in the Relating dimension of interpersonal aptitudes and in the personal motivation dimension of Striving were comparable, with 11.07% and 11.43% of the population respectively. However, graduates with three or more self-presentation

talents in the Impacting talent dimension were scarce, representing only 2.54% of the study population.

College Student Success Factors and Talent Themes

To address the third research question exploring any differences in college success factors of GPA, semesters in academic distress, number of academic major changes, and time to degree completion between Clifton StrengthsFinder® talent theme dimension groups, ANOVA and ANCOVA analyses were used. Table 9 presents the results of these analyses to elucidate any differences in college success factors between Clifton StrengthsFinder® talent theme dimension groups.

Table 9.

Means, Standard Deviations, and Univariate F Ratios for Discriminating Variables

Discriminating Variables	Group R	Group I	Group S	Group T	Group D	F Ratio	Exact <i>p</i>
Cumulative GPA							
<i>EMM</i>	3.20	3.19	3.26	3.23	3.30	1.31	.27
<i>SE</i>	0.05	0.01	0.05	0.04	0.02		
Semesters in Academic Distress							
\bar{X}	0.03	0.14	0.13	0.10	0.08	0.48	.75
<i>SD</i>	0.26	0.36	0.49	0.57	0.40		
Academic Major Changes							
\bar{X}	0.72	0.93	0.97	0.58	0.85	1.98	.10
<i>SD</i>	0.97	0.92	1.03	0.85	0.94		
Degree Completion Efficiency							
<i>EMM</i>	8.26	8.12	8.18	8.34	8.31	0.31	.87
<i>SE</i>	0.14	0.30	0.14	0.13	0.06		

Note. \bar{X} =Mean. SD=Standard Deviation. EMM=Estimated Marginal Means. SE=Standard Error. **p* < .05

Pearson correlation analysis revealed moderate to strong correlations between the pre-college student characteristics of high school GPA and ACT score and college cumulative GPA for this population of students ($r = 0.51$ and $r = 0.48$, $p < .01$, respectively). As a result, the prior effects of high school GPA and ACT score were removed via analysis of covariance (ANCOVA) to obtain a more powerful test in analyzing the effects of talent theme dimension groups on students' cumulative GPA. Results [$F(4, 512) = 1.31$, $p = .27$, partial $\eta^2 = .01$] indicated that CASNR students did not significantly differ in their cumulative GPA according to their particular talent theme dimension group, once high school GPA and ACT were controlled.

Further addressing the third research question, semesters in academic distress for each talent theme dimension group were analyzed by conducting a one-way analysis of variance (ANOVA). Results [$F(4, 550) = 0.48$, $p = .75$, $\omega^2 = -.004$] showed no significant difference in students' number of semesters in academic distress based upon students' specific talent theme dimension group. Based upon the calculation of effect size (ω^2), only 0.4% of the variance in semesters in academic distress was explained by students' talent theme dimension group, reiterating the effect of talent theme dimension group as both statistically and practically insignificant.

Number of academic major changes for each talent theme dimension group were also analyzed using the ANOVA procedure in response to the third research question. Results [$F(4, 550) = 1.98$, $p = .10$, $\omega^2 = .007$] revealed no significant difference in students' number of academic major changes when comparing the five specific talent theme dimension groups. However, in reviewing the means of each group, the mean number of major changes for students within the Thinking talent theme dimension group

($\bar{X} = 0.58$) was noticeably lower than the means of the other groups and with a smaller standard deviation. However, with a calculated effect size (ω^2) of 0.007, only 0.7% of the variance in number of academic major changes may be explained by the talent theme dimension group to which students' belong. Again, the effect of talent theme dimension group presented as insignificant, both statistically and practically.

Similar to the analysis for cumulative GPA, data analysis exposed a moderate correlation between prior college academic credit earned and time to degree completion for this population of students ($r = -0.35, p < .01$). Accordingly, the prior effect of prior college academic credit earned was eliminated via ANCOVA to achieve a more sensitive test of the influence of talent theme dimension groups on students' time to degree completion as the final analysis for the third research question. When prior college academic credit was controlled, results [$F(4, 545) = 0.31, p = .87, \text{partial } \eta^2 = .002$] suggested that CASNR students did not significantly differ in their time to degree completion according to their particular talent theme dimension group.

Pre- and Post-Intervention College Student Success

Results related to the fourth and fifth research questions, probing any significant changes in first-year retention rates and six-year graduation rates since implementation of strengths identification and development initiatives in AG 1011, are delineated by independent measures *t*-test outcomes summarized in Table 10.

Table 10.

*Independent Measures t-Test between Pre- and Post- Strengths Development Intervention
Retention and Graduation Rates*

Rate Under Investigation	Pre-Strengths Intervention		Post-Strengths Intervention		<i>t</i>	<i>p</i>
	\bar{X}	<i>SD</i>	\bar{X}	<i>SD</i>		
First-year Retention Rate	82.63	3.30	83.74	2.45	-0.72	.49
Six-Year Graduation Rate	66.93	4.16	68.43	1.50	-0.59	.59

Note. \bar{X} =Mean. *SD*=Standard Deviation. $p < .05$

The mean first-year retention rate of students in CASNR in the seven years prior to the implementation of the strengths development intervention in AG 1011 was 82.63 ($SD = 3.30$), and the mean first-year retention rate in the seven years following the intervention in the course was 83.74 ($SD = 2.45$). This difference, -1.11, 95% CI [-4.50, 2.27], was not significant $t(12) = -0.72$, $p = .49$. Despite lack of statistical significance, the measure of the effect size using Cohen’s *d* represented a small- to medium-sized effect, $d = 0.35$.

The mean six-year graduation rate of CASNR students in the corresponding graduation years prior to the implementation of the AG 1011 strengths intervention in the course was 66.93 ($SD = 4.16$), and the mean six-year graduation rate in the corresponding graduation years following the implementation of the strengths development intervention was 68.43 ($SD = 1.50$). This difference, -1.50, 95% CI [-8.60, 5.60], was also not significant $t(4) = -0.59$, $p = .59$. The effect size signified a small- to medium-sized effect, $d = 0.37$.

College Student Success and Talent Theme Predictions

Discriminant analysis was used to assess the last research question of predictability of college success factors among CASNR's bachelor's graduates based upon by Clifton StrengthsFinder® talent theme dimension groups. Cumulative GPA, semesters in academic distress, academic major changes, and time to degree completion were used as discriminating variables, and talent theme dimension group served as the group variable. Although the first discriminant function explained 64.30% of the variance and the second discriminant function explained 27.10% of the variance, the effect sizes of both functions were small (canonical $R^2 = 0.02$ and canonical $R^2 = 0.01$, respectively). As detailed in Table 11, the correlations between the college success factors and the discriminant functions revealed that cumulative GPA, semesters in academic distress, academic major changes, and time to degree completion loaded differently onto all four functions. Canonical variate correlations for cumulative GPA ranged from $r = -0.40$ to $r = 0.62$. Canonical variate correlations for semesters in academic distress ranged from $r = -.57$ to $r = 0.63$. Correlations for academic major changes ranged from $r = -0.71$ to $r = 0.55$, and canonical variate correlations for time to degree completion ranged from $r = -0.29$ to $r = 0.88$. Overall, the four variates did not significantly discriminate the group in combination [$\lambda = 0.97$, $\chi^2(16) = 18.55$, $p = .29$]. Additionally, Table 12 details the means of the discriminant function scores, or centroids, by talent theme dimension group for each of the calculated functions; centroid values further revealed the varied suitability of each discriminant function for each of the theme dimension groups.

Table 11.

Structure Coefficients and Standardized Discriminant Function Coefficients for Discriminating Variables

Variables	Function 1		Function 2		Function 3		Function 4	
	Structure Coefficients	Standardized Discriminant Function Coefficients	Structure Coefficients	Standardized Discriminant Function Coefficients	Structure Coefficients	Standardized Discriminant Function Coefficients	Structure Coefficients	Standardized Discriminant Function Coefficients
Cumulative GPA	0.62	0.77	0.41	0.58	0.54	0.54	-0.40	0.02
Semesters in Academic Distress	-0.01	0.32	0.52	0.72	-0.57	-0.55	0.63	0.50
Academic Major Changes	-0.71	-0.76	0.55	0.53	0.42	0.42	0.13	-0.07
Degree Completion Efficiency	-0.07	0.23	-0.29	-0.33	0.38	0.58	0.88	0.80

Table 12.

Centroids by Talent Theme Dimension Group for Each Function

Theme Dimension Group	Function			
	1	2	3	4
Dominant Relating	-.07	-.25	-.01	.00
Dominant Impacting	-.30	.00	-.22	.00
Dominant Striving	-.18	.11	-.06	-.00
Dominant Thinking	.33	.01	-.06	-.00
Divergent	-.02	.02	.04	.00

Summary of Findings

An outline of the findings relevant to each of the six research questions inherent to this study were presented in Chapter IV. The findings discussed include:

- In answer to Research Question 1, mean and standard deviations for pre-college factors and college success factors were determined. The mean high school GPA was a 3.74 ($SD = 0.27$), the mean ACT score was a 24.61 ($SD = 4.00$), the mean number of prior college academic credits was 8.22 ($SD = 9.78$), the mean number of college semesters in academic distress 0.09 ($SD = 0.43$), the mean number of academic major changes was 0.81 ($SD = 0.94$), the mean college cumulative GPA was 3.26 ($SD = 0.46$), and the mean time to degree completion was 8.29 semesters ($SD = 1.19$).
- In answer to Research Question 2, the six most common talent themes, present in more than 25% of the CASNR study population, were Achiever (41.74%), Responsibility (28.13%), Harmony (26.68%), Adaptability (25.77%), Competition (25.77%), and Restorative (25.05%). The Connectedness theme was

the least common (3.63%). When clustered into talent theme dimension groups, the Divergent group, with members possessing no more than two talents from a single talent theme dimension in their Top Five Signature Themes profiles, comprised 60.80% of the study population. The Relating, Striving, and Thinking talent theme dimension groups were similar in their representation among the study population at 11.07%, 11.43%, and 14.16%, respectively. The Impacting talent theme dimension group represented only 2.54% of the study population, the least dominant talent theme dimension group within the study population.

- In answer to Research Question 3, no statistically significant differences were found in students' cumulative GPA, semesters in academic distress, number of academic major changes, or time to degree completion as a function of membership in one of the five talent theme dimension groups, although the number of academic major changes was noticeably lower among participants in the Thinking theme dimension group.
- In answer to Research Question 4, no statistically significant difference was found in first-year retention rates when comparing rates in years prior to the implementation of the strengths intervention in AG 1011 with rates in the years after the implementation of the intervention. However, a small to medium effect size ($d = 0.35$) was revealed in the analysis of the first-year retention rates.
- In answer to Research Question 5, no statistically significant difference was found in six-year graduation rates when comparing rates for students from years prior to the implementation of the strengths intervention in AG 1011 with rates for students from the years after the implementation of the intervention. However, a

small to medium effect size ($d = 0.37$) was discovered in the analysis of the six-year graduation rates.

- In answer to Research Question 6, the four variates of cumulative college GPA, semesters in academic distress, number of academic major changes, and time to degree completion did not significantly predict discrimination of the group into membership within the talent theme dimension groups.

Chapter V will extend these findings by deriving conclusions from the analyses, contemplating implications, and making recommendations for future research and practice.

CHAPTER V

SUMMARY, CONCLUSIONS, IMPLICATIONS, RECOMMENDATIONS, AND DISCUSSION

Higher education institutions need to improve college student retention and degree completion rates for the benefit of individual students and society as a whole. Financially, improved degree completion rates are associated with more efficient use of taxpayer resources contributed to higher education (The Education Policy Institute, 2013), less demand for costly social support services by graduates (Trostel, 2010), and higher lifetime earnings and tax contributions among graduates (Mayhew, Rockenbach, Bowman, Seifert, Wolniak, Pascarella, & Terenzini., 2016; Pascarella & Terenzini, 2005). Additionally, retention and graduation of college students on the land-grant college and university campuses fulfills a critical role of the land-grant mission by producing a liberally educated workforce of civically engaged and responsible leaders for society (NASULGC, 2008), a mission that cannot be attained if students do not persist to degree completion.

The literature has cited a multitude of personal student factors and institutional environmental factors as influential toward student retention and graduation, and the initiatives on college and university campuses in support of increasing these rates are nearly as diverse as the personal and environmental factors cited. Strengths theory

(Buckingham & Clifton, 2001; Clifton & Nelson, 2010) and associated strengths identification and development initiatives have become a popular approach to foster student persistence to graduation. However, evidence revealing the relationship between students' talents identified through strengths interventions and specific college success factors is sparse. Most of the existing research connects only student participation in strengths initiatives to retention, instead investigating retention in relationship to identified student talents (Gallup, 2012; Schreiner & Anderson, 2005; Soria & Stubblefield, 2015a; Soria & Stubblefield, 2015b). Additionally, evidence of the further connection between strengths initiatives and degree completion is lacking.

This exploratory study sought to contribute to filling this literature gap by examining the academic and talent profiles of student participants in a strengths identification and development initiative, assessing differences in retention and degree completion rates before and after the implementation of such initiatives, and by exploring any potential differences in and predictive relationship between students' specific talent profiles and college success factors. This study was framed by six research questions:

1. What characterizes the pre-college and collegiate academic profile of students who matriculated with a declared major in OSU CASNR and who graduated within the six-year graduation time-frame, including the dependent variables of students' high school GPA, ACT score, prior college academic credit earned, cumulative college GPA, semesters in academic distress, number of academic major changes, and time to degree completion?
2. What characterizes the talent profile of students who matriculated with a declared major in CASNR and who graduated within the six-year graduation time-frame,

including the two dependent variables of the frequency of talent themes identified by the Clifton StrengthsFinder® assessment among the population and the frequency of talents associated with specific talent theme dimensions?

3. What statistically significant differences exist in the criterion variables of students' cumulative GPA, semesters in academic distress, number of academic major changes, and time to degree completion among the five independent predictor variables, consisting of the four dominant talent theme dimension groups and the one divergent talent theme dimension group?
4. What statistically significant difference in the criterion variable of first-year retention rate exists between the categorical predictor variables of the classes of CASNR preceding implementation of strengths identification and development initiatives in AG 1011 and the classes after implementation of the AG 1011 strengths identification and development initiatives?
5. What statistically significant difference in the criterion variable of six-year graduation rate exists between the categorical predictor variables of the classes of CASNR preceding implementation of strengths identification and development initiatives in AG 1011 and the classes after implementation of the AG 1011 strengths identification and development initiative?
6. Do the college success outcome variables of cumulative college GPA, semesters in academic distress, number of academic major changes, and time to degree completion significantly predict the five grouping variables of the four dominant talent theme dimension groups and the one divergent talent theme dimension group?

Methods

This study was a descriptive non-experimental quantitative study. The categorical independent variables for this study were students' Clifton StrengthsFinder® identified talent themes, the environment of CASNR, and the timeframes of pre-strengths identification and development intervention and post- pre-strengths identification and development intervention. The dependent variables of interest were the college student success factors of cumulative GPA, semesters in academic distress, number of academic major changes, and time to degree completion, as well as CASNR first-year retention rates and six-year graduation rates.

All undergraduate students who (a) matriculated in academic majors within CASNR, (b) completed AG 1011 during the fall 2008, fall 2009 and fall 2010 semesters, and (c) earned their bachelor's degree within 12 regular term semesters ($N=551$) were included in the study. Existing records of students' Top Five Signature Themes of Talent identified by the Clifton StrengthsFinder® assessment (CSF; Clifton, 2006), a 177-item web-based assessment taken as a part of an assignment in AG 1011, were obtained from CASNR. Additionally, students' academic major at time of course enrollment, major at graduation, graduation term, number of regular terms attempted at the institution, cumulative grade point average (GPA), number of regular terms with term GPA below a 2.0 GPA, number of academic major changes, ACT score, high school GPA, number of prior college academic credits earned, and demographic characteristics were obtained through records of the OSU Office of Institutional Research and Information Management (IRIM). Published first-year retention rates for CASNR from 2001 through 2014 were also secured from the *Student Profile* reports on the IRIM website, and

published CASNR graduation rates for the years 2011 through 2016 were also acquired from the online IRIM *Student Profile* reports.

Statistical Package for Social Sciences (SPSS©) version 21 for Windows was used to analyze all data and reduce human error in the data analysis processes. Calculation of descriptive statistics was the analysis used for Research Question 1 and 2. One-way analysis of variance (ANOVA) and analysis of covariance (ANCOVA) were the analyses used for Research Question 3. Independent measures *t*-tests were the analyses used for Research Question 4 and 5, and discriminant analysis was the analysis used for Research Question 6. For each analysis, all assumptions were tested and found defensible.

Summary of Findings

For each research question, findings were summarized.

Research Question 1

Research Question 1 described the pre-college and collegiate academic profile of students who matriculated with a declared major in CASNR during fall 2008, fall 2009, and fall 2010 and who graduated within the six-year graduation time-frame.

Means and standard deviations for the pre-college and collegiate academic variables, including high school GPA, ACT score, prior college academic credit earned, cumulative college GPA, semesters in academic distress, number of academic major changes, and time to degree completion are summarized in Table 13.

Table 13.

Pre-college and Collegiate Academic Profile of OSU CASNR Graduates

Variable	\bar{X}	<i>SD</i>
High School GPA	3.74	0.27
ACT Score	24.61	4.00
Prior College Academic Credits Earned	8.22	9.78
Cumulative College GPA	3.26	0.46
Semesters in Academic Distress	0.09	0.43
Academic Major Changes	0.81	0.94
Time to Degree Completion (semesters)	8.29	1.19

Note. GPA = Undergraduate Grade Point Average

Research Question 2

Research Question 2 described the talent profile of students who matriculated with a declared major in CASNR during fall 2008, fall 2009, and fall 2010 and who graduated within the six-year graduation time-frame. Top Five Signature Themes of Talent identified by the Clifton StrengthsFinder® were obtained for each student, totaling 2,755 talent data points for the 551 graduates, and descriptive statistics analyzed. The six most prevalent talent themes among the study population, were Achiever (41.74%), Responsibility (28.13%), Harmony (26.68%), Adaptability (25.77%), Competition (25.77%), and Restorative (25.05%). The least dominant talent theme in the study population was Connectedness (3.63%). The Impacting talent theme dimension group represented the smallest proportion of the study population (2.54%) when participants were clustered into theme dimension groups based upon their identified talent themes. Conversely, the leading talent theme dimension group was the Divergent group at

60.80% of the study population and consisting of participants with no more than two of their top five talent themes deriving from a single talent theme dimension.

Research Question 3

Research Question 3 examined what differences existed in students' cumulative GPA, semesters in academic distress, number of academic major changes, and time to degree completion between the five talent theme dimension groups. ANOVA analyses for semesters in academic distress and number of academic majors changes were conducted. Results for the ANOVA exploring differences in semesters in academic distress [$F(4, 550) = 0.48, p = .75, \omega^2 = -.004$] showed no significant difference between the five talent theme dimension groups. Results for the ANOVA examining differences in number of academic majors changes [$F(4, 550) = 1.98, p = .10, \omega^2 = .007$] also showed no significant difference between the five talent theme dimension groups.

ANCOVA analyses for cumulative GPA and time to degree completion were conducted, with high school GPA and ACT score used as covariates and prior college academic credit used as a covariate on the analyses respectively. Results for the ANCOVA exploring differences in cumulative GPA [$F(4, 512) = 1.31, p = .27, \text{partial } \eta^2 = .01$] indicated that CASNR students did not significantly differ between the five talent theme dimension groups. Results for the ANCOVA assessing differences in time to degree completion [$F(4, 545) = 0.31, p = .87, \text{partial } \eta^2 = .002$] also suggested no significant difference between the five talent theme dimension groups.

Research Question 4

Research Question 4 investigated what differences existed in first-year retention rates between CASNR student populations prior to the implementation of strengths

identification and development initiatives in AG 1011 and after the implementation of the strengths initiatives. The mean first-year retention rate of CASNR students prior to the implementation of the strengths intervention in AG 1011 was 82.63 ($SD = 3.30$), and the mean first-year retention following the implementation of the intervention was 83.74 ($SD = 2.45$), resulting in a statistically insignificant difference, -1.11 , 95% CI $[-4.50, 2.27]$, $t(12) = -0.72$, $p = .49$.

Research Question 5

Research Question 5 examined what differences emerged in six-year graduation rates between CASNR student populations prior to the implementation of strengths identification and development initiatives in AG 1011 and after the implementation of the strengths initiatives. The mean six-year graduation rate of CASNR students prior to the implementation of the AG 1011 strengths identification and development intervention was 66.93 ($SD = 4.16$), and the mean six-year graduation rate for students in graduation years following the intervention was 68.43 ($SD = 1.50$), also resulting in a statistically insignificant difference, -1.50 , 95% CI $[-8.60, 5.60]$, $t(4) = -0.59$, $p = .59$.

Research Question 6

Research Question 6 explored if cumulative college GPA, semesters in academic distress, number of academic major changes, and time to degree completion could significantly predict participant inclusion in the five talent theme dimension groups. A discriminant analysis was conducted with cumulative GPA, semesters in academic distress, academic major changes, and time to degree completion as discriminating variables and talent theme dimension group as the grouping variable. The correlations between the college success factors and the discriminant functions showed that

cumulative GPA, semesters in academic distress, academic major changes, and time to degree completion loaded differently onto all four functions in the analysis, and the four variates did not significantly discriminate the talent theme dimension groups in combination [$\lambda = 0.97$, $\chi^2(16) = 18.55$, $p = .29$].

Conclusions

Based upon the findings of this study

1. The academic profile of the population of fall 2008, fall 2009, and fall 2010 freshmen students with a declared CASNR major and who graduated within 12 regular-term academic semesters is equivalent to or better than the academic profile of the national average college student.
2. The talent profile of the population of fall 2008, fall 2009, and fall 2010 freshmen students with a declared CASNR major and who graduated within 12 regular-term academic semesters, is similar to the talents of all higher education students who have completed the Clifton StrengthsFinder® and in accordance with expected theme distributions.
3. College student success, as documented by students' earned cumulative GPA, semesters in academic distress, number of academic major changes, or time to degree completion, does not differ between talent theme dimension groups for this study population.
4. First-year retention rates show no positive difference when comparing rates from years when students have participated in a strengths identification and development intervention with years when students have not participated in such strengths initiatives.

5. Six-year graduation rates show no positive difference when comparing rates from years when graduates have participated in a strengths identification and development intervention in AG 1011 with years when students have not participated in such strengths initiatives.
6. College student success factors cannot be used to predict Clifton StrengthsFinder® talent theme dimensions in this population.

Conclusions, Implications, and Recommendations

Conclusion 1: The academic profile of the population of fall 2008, fall 2009, and fall 2010 freshmen students with a declared CASNR major and who graduated within 12 regular-term academic semesters is equivalent to or better than the academic profile of the national average college student.

In 2016, ACT, Inc. published a 21.9 as the average ACT composite score across the U.S. for college-bound high school seniors. The mean ACT score for the CASNR study population exceeded this average by nearly three points ($\bar{X} = 24.61$, $SD = 4.00$), placing the study population ahead of the current national average. The national average ACT score for high school seniors includes the scores of college-bound students who intend to pursue higher education at a wide variety of institutions with admissions standards equivalent to, more rigorous than, and less demanding than those of Oklahoma State University, which accounts for part of the difference between the two scores. The average ACT score of all OSU student populations, in contrast and including that of the study population, should be at or above a 24 because of the OSU admissions requirements for the ACT (OSU, 2016). The mean ACT score of the CASNR study population aligns with this expectation and exceeds the national average.

In examining cumulative college GPA, the national average college GPA is 3.15 on a 4.0 scale (Rojstaczer, 2016; Rojstaczer & Healy, 2012). The mean cumulative GPA of the CASNR student population in this study was a 3.26 GPA ($SD = 0.46$). While academic performance evaluation standards vary by institution and instructor, the findings compared with the national average suggest the study population had a stronger academic performance in their college career than the national average of college students. Another possible explanation for the higher grade point average among the CASNR study population could be grade inflation on the OSU campus, or the phenomenon of awarding higher grades than what students deserve (Rojstaczer & Healy, 2012). However, further research comparing grading standards and practices of OSU faculty to the standards and practices of faculty on comparable campuses and from similar programs would have to be conducted to determine if grade inflation could be a contributing factor. Without knowledge from such a study, the reasonable explanation for the difference remains a stronger academic performance among the CASNR study population than the national average of college students.

With regards to time to degree completion, eight semesters is the normal, expected timeframe for college students to complete a four-year, baccalaureate degree (AASCU, 2002; Hagedorn, 2005; McFarland et al., 2017; Tinto, 1993). The findings of this study presented a CASNR population with a mean time to degree completion of 8.29 semesters ($SD = 1.19$), a number in alignment with traditional expectations of degree completion and well within the six-year graduation rate by which higher education institutions are evaluated (AASCU, 2002; Hagedorn, 2005; McFarland et al., 2017; Tinto, 1993).

The number of semesters with a semester GPA below a 2.0 experienced by the study population was negligible ($\bar{X} = 0.09$, $SD = 0.43$), and the population's mean number of academic major changes was fewer than one change ($\bar{X} = 0.81$, $SD = 0.94$). These findings support the depiction of the CASNR study population as a population of college students with an academic profile equivalent to or better than the profile of the average U.S. college student.

The compilation of these descriptive statistics for the CASNR graduates who were enrolled in AG 1011 during fall 2008, fall 2009, and fall 2010 generates the question of what differences may exist between the academic profile of the current study's participants and the academic profile of other students enrolled in AG 1011 during the same semesters but who complete their baccalaureate degrees within academic disciplines outside of CASNR. Were their decisions to change majors to non-CASNR disciplines based upon semesters in academic distress? What was the mean number of major changes they experienced prior to degree completion? Were differences present in their pre-college academic performance, ACT scores, or amount of prior college credit earned? Based upon the concept of person-environment theory, knowledge of such differences between the academic profile of the current CASNR study population and those graduates who transitioned to and graduated from other CASNR academic programs, could provide further insight into the academic type of student who successfully persists to graduation in CASNR.

A noteworthy limitation of this study was the focus on the examination of successful students. Encouraged by Anderson's (2006) charge to work from a perspective of students' strengths, this study intentionally explored potential differences

among students who persisted and achieved degree completion. However, the findings of the study participants' academic profile also generate the question of what pre-college and college differences may exist in academic factors between the current CASNR study population and those students enrolled in AG 1011 during the same timeframe but who did not persist to degree completion. What was the average length of time before attrition? How many major changes and/or semesters in academic distress did they experience prior to leaving the institution? What were the differences in pre-college academic performance? Again, knowledge of such differences between the academic profile of the current, academically successful CASNR study population and those graduates who did not persist in their CASNR academic program or at OSU, could afford further understanding of the academic type of student who is likely to persist to degree completion in CASNR.

Another viable area for further research includes the co-curricular involvement profile of CASNR graduates who complete degrees within the six-year timeframe. Student involvement in campus organizations and activities have been cited as positively influencing retention and degree completion (Gaspard et al., 2011; 2011 Mayhew et al., 2016; Tinto, 1975). Therefore, the co-curricular involvement profile of (a) students who both matriculated and completed degrees as CASNR students, (b) students who matriculated in CASNR academic programs but who completed degrees in non-CASNR programs, and (c) students who matriculated in CASNR programs but did not persist to degree completion could suggest further common characteristics of students likely to be retained to graduation as CASNR students. While such research has promise in adding to the understanding of successful CASNR graduates, no widely-adopted, systematic

process currently exists for documenting and tracking student co-curricular participation from matriculation through graduation on the OSU campus or in CASNR. Development and widespread implementation of a co-curricular documentation process for CASNR students is encouraged to allow for further examination of the co-curricular profiles of various CASNR student populations.

While this study was purely a descriptive non-experimental study aimed at describing population characteristics and examining possible relationships associated with the specific CASNR student population investigated, the academic profile characteristics of the CASNR study population could be considered, along with the population's demographic characteristics and talent profile characteristics, in comparing the findings of this study with other similar student populations.

Conclusion 2: The talent profile of the population of fall 2008, fall 2009, and fall 2010 freshmen students with a declared CASNR major and who graduated within 12 regular-term academic semesters, is similar to the talents of all higher education students who have completed the Clifton StrengthsFinder® and in accordance with expected theme distributions.

Gallup, Inc. (2016) published the complete frequencies of all 34 Clifton StrengthsFinder® talent themes identified among higher education student respondents. The four most prevalent talent themes among the higher education population of students, Achiever, Restorative, Adaptability, and Responsibility, also characterize four of the most dominant talent themes within the CASNR study population. The remaining two talent themes in the CASNR populations' most dominant themes which are present within more than 25% of the study population, Harmony and Competition, rank within

the top half of the higher education respondents' theme ranking of all 34 talent themes (Gallup, Inc., 2016). Additionally, According to Schreiner (Gallup, Inc., 2006a), Achiever, Harmony, and Responsibility are more predominant among college women than men. The CASNR study population consisted of 57.53% women and 42.47% men, therefore these three talent themes were expected to appear as more predominant in the CASNR population. Similarly, Adaptability has been documented as being more common among Caucasian college students than students of other ethnicities (Gallup, Inc., 2006a). With the CASNR study population encompassing 81.31% Caucasian participants, a higher frequency of the Adaptability talent theme among the study population was expected. The alignment of the talents themes identified within the CASNR population with the overall higher education student population and with outcomes of talent theme demographic research among college students supports the assertion of strengths theory that the Clifton StrengthsFinder® assessment (CSF; Clifton, 2006) is a valid tool for measuring individuals' talent themes.

Gallup, Inc. (2009) acknowledged that in reliability studies, Clifton StrengthsFinder® respondents' ten most prevalent themes have shown consistency throughout time with some re-ordering of talents occurring within the top ten in subsequent administrations. However, because the current study was based on a single administration of the Clifton StrengthsFinder® assessment and because the assessment output only reports respondents' top five themes for that administration, only five of each study participants' most salient talents were able to be included in the analyses. Knowing the diversity of experiences students encounter and the personal development that occurs during students' college careers (Mayhew et al., 2016; Pascarella & Terenzini, 2005),

additional administrations of the Clifton StrengthsFinder® assessment at key points in students' college career could result in additional student talents being identified through their Clifton StrengthsFinder® outputs because of changes in student circumstances and perspectives and the talents being applied at those points in time. More comprehensive identification of students' leading talent themes could provide a more complete description of the talent profile of CASNR students and could provide a basis for further comparison of the CASNR student population to the general higher education student population referenced in the Gallup, Inc. report (2016). Consequently, additional administrations of the Clifton StrengthsFinder® assessment to CASNR students throughout their undergraduate experience are recommended.

In comparing how the frequencies of talent themes cluster into talent theme dimension groups within the overall higher education population versus the CASNR study population, themes clustering in the Impacting talent theme dimension group depict the themes least dominant among both populations. This clustering phenomenon indicates in both the CASNR study population and in the overall higher education student population, self-presentation talents are least prevalent and talent themes indicative of motivation, learning style, and relationship-building are more dominant (Hayes, 2001). Given the extensive research support for positive influences of motivation, learning style, and relationship building on college student academic performance and retention (Chamorro-Premuzic & Furnham, 2008; Cano, 1999; Garton et al., 2000; Garton et al., 2002; Kappe & van der Flier, 2012; Mayhew et al., 2016; Tinto, 1975), the higher presence of talents associated with these student characteristics and lower presence of talents associated with self-presentation is not surprising.

Like the descriptive statistics for the academic profile, the amalgamation of the CASNR graduates' talent profile based upon the descriptive statistics of Clifton StrengthsFinder® talent themes identified among students who were enrolled in AG 1011 during fall 2008, fall 2009, and fall 2010 provokes the question of what differences may exist between the talent profile of the CASNR study participants and the talent profile of other students enrolled in AG 1011 during the same semesters who complete their baccalaureate degrees outside of CASNR or who did not persist to graduation in any discipline at OSU. Were other Clifton StrengthsFinder® talent themes more dominant among the non-CASNR graduates or among non-persisters in comparison to this study's CASNR graduates? Do the talent themes of the non-CASNR graduates or non-persisters sort into talent theme dimension groups consistent with the prominence of the talent theme dimension groups among this study's CASNR graduates, or are different groups more prominent? Additional research into the differences between the talent profiles of the current CASNR study population in comparison to students who did not persist and to those graduates who graduated from non-CASNR academic programs could provide further understanding of the types of talents most congruent to the environment of CASNR and supportive of student persistence to graduation within the agricultural and natural resources college.

Again, this study was intended solely as a descriptive non-experimental study, aimed at describing characteristics of the CASNR study population and examining possible relationships emerging from the population under examination. These talent profile characteristics could be useful, along with additional population demographics and the academic profile of the population, in comparing the findings of this study with

other student populations. As mentioned in Chapter I, the relationship between students' Clifton StrengthsFinder® identified talent themes and individual college student success factors may not be transferrable to other populations with dissimilar demographics, academic profiles, and talent profiles.

Conclusion 3: College student success, as documented by students' earned cumulative GPA, semesters in academic distress, number of academic major changes, or time to degree completion, does not differ between talent theme dimension groups for this study population.

The assumption of congruence in Holland's person-environment theory (P-E fit; Holland, 1973) asserts that when individuals work within an environment conducive to expressing and applying the mindset, values, and talents associated with their personality type, their behavioral functioning thrives. Similarly, strengths theory postulates that individuals will achieve greater productivity, satisfaction, and success through experiences amenable to intentional application of their innate strengths (Buckingham & Clifton, 2001; Hodges & Clifton, 2004). Since college student retention and degree completion have been well documented as fundamental elements of college academic success (AASCU, 2017; Astin, 2005; The Century Foundation, 2016; Koljatic & Kuh, 2001; Kuh, 2013; Kuh, Kinzie, Schuh, & Whitt, 2011; Tinto, 1993; Tinto, 2006; The White House, 2015; The White House, 2009) and since the retention and graduation of the CASNR participants in the study document their achievement of such success, it follows that the CASNR environment would be one compatible with all study participants' Holland personality types and application of their Clifton StrengthsFinder® identified strengths. The lack of any statistically significant differences in the specific

college student success factors of cumulative GPA, number of major changes, semesters in distress, and time to degree completion between talent theme dimension groups, comprised of participants who have all achieved retention and graduation success, supports this claim. Further, it implies that the CASNR educational environment is one where students of diverse talents and personality types have an equal chance to thrive in accordance with both strengths theory (Buckingham & Clifton, 2001; Hodges & Clifton, 2004) and P-E fit theory (Holland, 1973).

While no statistically significant difference in students' number of academic major changes was revealed when comparing the five specific talent theme dimension groups, the mean number of major changes for students within the Thinking talent theme dimension group ($\bar{X} = 0.58$) was discernibly lower than the means of the other talent theme dimension groups ($\bar{X} = 0.72$ for Group R, $\bar{X} = 0.93$ for Group I, $\bar{X} = 0.97$ for Group S, and $\bar{X} = 0.85$ for Group D). Additionally, the significance value for the ANOVA analysis comparing the means of academic major changes between the talent theme dimension groups ($p = .10$) was closer to the acceptable significance level of .05 than the analyses for the other college success factors. These two indicators suggest further research into differences in academic major changes between theme dimension groups may be warranted. Could it be that students in the Thinking talent theme dimension were more decided in their direction upon matriculation and experienced less dramatic major changes to similar majors when the major change occurred? In addition, could it be that students in other talent theme dimension groups changed more frequently to distinctly different CASNR disciplines? To what extent did participants in any talent theme dimension group change their academic major to a different CASNR discipline but then

return to their original discipline with an additional academic major change? Again, further study is needed to investigate these questions.

The limitation of this study in examining only students who achieved success through persistence and degree completion leads to the need for further investigation of CASNR student populations in progress of college success and not just at achievement. For example, because all CASNR graduates must achieve a minimum cumulative GPA of 2.0 by graduation and must have earned a minimum 2.0 GPA in upper-division coursework (OSU, 2016), the possible range of cumulative GPA among participants of the present study is more limited than the possible range of cumulative GPA for students in progress toward degree completion. If the same CASNR student population had been examined at developmental points throughout their college journey, such as at the end of their freshmen, sophomore, and junior years, in addition to at the point of degree completion, would differences have been detected between talent theme dimension groups in cumulative GPA, number of academic major changes, or semesters in academic distress at those key points? To answer this question, additional research is recommended to investigate possible differences in students' academic college success factors at the conclusion of students' freshmen, sophomore, and junior years in relation to students' talent theme dimension group membership.

Additionally, because of the positive influence of student involvement on retention and degree completion (Gaspard et al., 2011; 2011Mayhew et al., 2016; Tinto, 1975), further research is also recommended to examine differences in students' co-curricular involvement between talent theme dimension groups at the conclusion of students' freshmen, sophomore, and junior years, as well as at graduation. Although no

widely-adopted, comprehensive, systematic means currently exists on the OSU campus or in CASNR for tracking student co-curricular involvement in activities like student organizations, undergraduate research, study abroad, community service, and other activities, such a system is needed and would allow for examination of differences in co-curricular involvement between talent theme dimension groups at key developmental points throughout students' college experience to better reveal the supportive nature of the CASNR environment at these points.

The lack of difference in college student success factors between talent theme dimension groups is further supported by the diversity of the classification of academic disciplines within CASNR. The 16 different academic majors comprising the CASNR environment include representation of all six Holland types as depicted in Table 2, increasing the likelihood of individuals with varying personality types finding congruence or "fit" among the CASNR academic options. As shown in Table 3, five of the six Holland types are also associated with 25 of the Clifton StrengthsFinder® talent themes (Clifton, et al., 2006). Among those 25 talent themes linked to Holland's types are 13 of the talent themes most common among the CASNR study population, evidenced by their presence among the top 50% in the ranking of all 34 theme frequencies among the CASNR study population. Again, these connections between CASNR majors and Holland types and the links between Holland types and 13 of the top talent themes present among the CASNR study population denote a widespread indirect relationship of congruence between the CASNR academic environment and the study population's diverse talents, again supporting the concept that students possessing a broad range of talents have the potential to succeed in the CASNR environment.

Additionally, this substantiation of P-E fit theory (Holland, 1973) and strengths theory (Buckingham & Clifton, 2001; Hodges & Clifton, 2004) within CASNR support the advancement of the land-grant mission of providing education for a diverse array of citizens (NASULGC, 2008).

The lack of difference in college student success factors between talent theme dimension groups when examining the CASNR study population inclusive of all CASNR majors, however, generates the question of whether differences would have been observed had the population been further divided and analyzed by academic major. Collectively, the 16 different academic majors within CASNR are inclusive of all Holland types and several Clifton StrengthsFinder® themes, but if narrowed to the major level, that diversity would decrease. For example, Agricultural Education has the Holland code of REI (Holland & Messer, 2017), which according to Clifton et al. (2006), relates only to the talent themes of Analytical, Arranger, Command, Communication, Competition, Ideation, Positivity, Self-Assurance, and Woo. Twenty-five talent themes are not related to the Agricultural Education major. Additionally, the talents of the Agricultural Education major comprise 66.67% of those talents clustered in the Impacting talent theme dimension group but represent much lower proportions of the Relating talent theme dimension group (14.29%), the Striving talent theme dimension group (11.11%) and the Thinking talent theme dimension group (25.00%) (Brashears & Baker, 2002; Hayes, 2001; Sutton et al., 2011; Williamson, 2002). Would Agricultural Education majors in the Impacting talent theme dimension group have stronger academic college student success factors than Agricultural Education majors in other talent theme dimension groups? If a system existed to document co-curricular student involvement,

would Agricultural Education majors in the Impacting talent theme dimension group differ from Agricultural Education majors in other talent theme dimension groups in their co-curricular involvement? Would any difference in academic and co-curricular college student success factors between talent theme dimension groups for Agricultural Education majors be varied when examined at key developmental points throughout students' college experience? These questions demonstrate the need for further research to discern differences by academic major or discipline in CASNR students' academic and co-curricular college student success factors between talent theme dimension groups and at the key points of students' freshmen, sophomore, and junior years, as well as at graduation.

With the emphasis provided on exploring academic and co-curricular college success factors at key points throughout students' undergraduate education, an additional recommendation for practice is integration of intentional strengths development opportunities and interventions throughout students' entire college experiences. The five principles of strengths-based education outlined by Lopez and Louis (2009) advocate for holistic integration of strengths development efforts into academic and co-curricular experiences, and the retention studies by Soria & Stubblefield (2015a, 2015b) support the value of such integration. An assumption of this study was that students who may have received additional strengths development coaching beyond the guidance received in the AG 1011 course exhibited no additional influences as a result of such guidance; however that assumption is not realistic. Currently, a small number of CASNR faculty use the Clifton StrengthsFinder® assessment and related assignments within their classes or as a framework for team development for student groups they advise. However, students'

encounters with strengths development efforts are not equivalent across all disciplines or classifications. To enable more depth in the examination of strengths identification and development initiatives upon students' college success, CASNR student services administrators should collaborate with faculty and commit to further incorporating strengths development opportunities and interventions beyond the two dedicated class periods of AG 1011 and consistently throughout students' entire undergraduate experience both in and outside of the classroom. Purposeful efforts to integrate strengths development systematically throughout the curriculum and within co-curricular involvement would further enhance students' individual strengths development by providing more consistent access to relevant knowledge, skills, and opportunities for application, and such efforts would allow for more valid investigation of the influence of strengths development upon students' college success by minimizing differences in the strengths development efforts to which students have been exposed.

Another possible explanation of the lack of statistical significance in differences between college student success factors of talent theme dimension groups is that by graduation the students' development of their natural talents has evolved in such a way as to enable application of those strengths in environments with less congruence to their talents. Strengths theory proposes that individuals develop their natural talents into strengths, or the capacity for near-perfect performance, through acquisition of knowledge and skills (Bowers & Lopez, 2010; Buckingham & Clifton, 2001; Clifton & Harter, 2003; Clifton & Nelson, 1992/2010; Gallup, Inc., 2006a). In this strengths development process, Buckingham & Clifton (2001) also assert that one strategy individuals learn to use in managing their weaknesses is to overpower and address weakness demands using

the talents they possess. Given that the intended outcomes of college experiences are learning and skill development, the possibility exists that throughout CASNR students' college careers their innate talents are refined into strengths with knowledge and skill acquisition, thereby fostering their ability to successfully persist and graduate by employing their well-developed personal strengths to successfully navigate weakness demands of incongruent academic environments. This possible explanation for students' demonstrated success indicates a flaw in the model proposed in Figure 2; due to the weakness management strategies of the strengths theory (Buckingham & Clifton, 2001), it is impossible to delineate whether students' successful functioning and achievement of degree completion resulted from congruence between their innate talents and the CASNR environment or if the success resulted despite incongruence with the CASNR environment and because of refinement of their talents into strengths that could manage or overwhelm the weakness demands of the incongruent environment.

Findings of this study do contradict those of Sutton et al. (2011), who found a negative relationship between levels of Impacting talents among college students and the students' college GPAs. However, the study sample in Sutton et al. (2011) consisted of college sophomores and juniors, whose innate talents may not have been as well-developed with knowledge and skill as the graduated seniors reflected in the present study, again supporting the need for further research at developmental milestones of a students' college experience. Additionally, the influence of environmental congruence is unknown in the study by Sutton et al. (2011), as academic majors were not reported for the study participants.

Conclusion 4: First-year retention rates show no positive difference when comparing rates from years when students have participated in a strengths identification and development intervention with years when students have not participated in such strengths initiatives.

Increases in student retention have been a hallmark claim of Gallup, Inc. in marketing their strength education resources to higher education campuses, and multiple studies have reported statistically significant increases in persistence or retention among students who have participated in strengths identification and development initiatives (Soria & Stubblefield, 2015a; Soria & Stubblefield, 2015b; Williamson, 2002). Increases in student retention as an outcome of participation in strengths identification and development initiatives would be a rational expectation based upon the strengths theory principle that refinement of strengths increases individuals' ability to achieve near perfect performance and mitigate weaknesses (Bowers & Lopez, 2010; Buckingham & Clifton, 2001; Clifton & Harter, 2003; Clifton & Nelson, 1992/2010).

In the present study, the first-year retention rates of CASNR freshmen in the years after implementation of the strengths identification and development initiative in AG 1011 were slightly higher than the retention rates of CASNR freshmen in the years prior to implementation of the initiative; however, the difference in first-year retention rates was not a statistically significant increase. A small- to medium-effect size measured by Cohen's d ($d = 0.35$) suggests the possibility of an effect approaching practical significance, raising questions about the findings.

Only seven years of first-year retention rates post-strengths initiative implementation were available to include in the data analysis, limiting the scope of the

analysis and questioning if the findings would be different were additional pre-intervention and post-intervention retention rates available to include in the analysis. The two Soria and Stubblefield studies (2015a; 2015b) also examined first-year retention differences, but data analysis was conducted at the subject level instead of using actual retention rates, providing a greater number of data points and stronger analysis. Both studies found significant increases in retention resulting from student engagement with strengths interventions (Soria & Stubblefield, 2015a; Soria & Stubblefield, 2015b). Conversely, because the Williamson (2002) study evaluated only fall semester to spring semester retention of first-year students, comparison of the current study's findings to the Williamson (2002) study are not plausible. Further analysis using retention data of individual students included in both the pre- and post-strengths intervention study populations, instead of aggregated retention rates, is recommended to more accurately reveal any true difference in first-year retention between students who experienced the AG 1011 strengths intervention and those who did not.

Another contributing factor to the differences in findings between Soria and Stubblefield's notable strengths-based retention studies (2015a; 2015b) and the present study involves the extent and duration of the strengths identification and talent development initiatives enacted. In the current CASNR study, strengths identification and development interventions formally occurred as a part of AG 1011 during two designated class meetings within the first eight weeks of students' initial semester on the OSU campus. The strengths identification and development initiatives examined as a part of the two Soria and Stubblefield (2015a; 2015b) studies were integrated into multiple environments across a campus, including orientation programs, classes, and

advising, and were facilitated throughout an entire semester timeframe. The statistically significant retention increases noted in the Soria and Stubblefield (2015a; 2015b) studies in comparison to the current study provide support for the strengths theory supposition that talents are honed into strengths through knowledge, skill, and application, which the strengths initiatives of the Soria and Stubblefield (2015a; 2015b) studies provided across a wider array of campus environments congruent to different student talents than the strengths initiatives of the CASNR study. Soria and Stubblefield's (2015a; 2015b) findings, thereby, also lend further support for the recommendation of integrating strengths development more systematically across the academic and co-curricular experiences of students' entire undergraduate education.

Conclusion 5: Six-year graduation rates show no positive difference when comparing rates from years when graduates have participated in a strengths identification and development intervention in AG 1011 with years when students have not participated in such strengths initiatives.

Shushok & Hulme (2006) proclaimed that a goal of strengths education is degree completion. However, while research efforts have supported statistically significant increases in retention rates from strengths initiatives on college campuses (Soria & Stubblefield, 2015a; Soria & Stubblefield, 2015b; Williamson, 2002) and while degree completion cannot be attained without successful retention, no study has identified a direct connection between strengths identification and development participation and increased degree completion rates.

Within the framework of P-E fit theory (Holland, 1973) and strengths theory (Buckingham & Clifton, 2001; Hodges & Clifton, 2004), an expected increase in

graduation rates resulting from participation in strengths identification and development initiatives would be logical. A fundamental assumption of P-E fit theory (Holland, 1973) is that individuals gravitate toward environments congruent with their Holland personality type, and strengths theory (Buckingham & Clifton, 2001; Hodges & Clifton, 2004) contends that individual productivity increases in situations where innate strengths may be constructively applied. Therefore, a reasonable inference based upon the documented relationship between Holland personality types and Clifton StrengthsFinder® identified strengths is that students with strengths identified and honed through strengths education initiatives will gravitate toward and experience success in congruent academic environments.

The findings of this study did not support such an extrapolation from theory. No statistically significant difference was found when comparing available CASNR graduation rates in the three years following implementation of the strengths initiatives in AG 1011 with the CASNR graduation rate data available prior to the implementation of the initiatives. Graduation rates for CASNR students following the implementation of the strengths interventions did increase from the pre-intervention levels with a revealed small- to medium- effect size implying some practical difference. However, the increase was not statistically significant. Similar to the comparison analysis of retention rates, a limited number of years of graduation rates were available to include in the data analysis because of the six-year threshold upon which graduation rates are determined, and this limited data availability restricted the scope of the analysis. With possible practical difference suggested by the effect size of the current study's findings, the possibility exists that the statistical findings of difference in graduation rates would be different were

additional years of pre-intervention and post-intervention graduation rates available to include in an analysis of students graduation achievement pre- and post-intervention. Statistical difference could also be different if data analysis were conducted at the subject level to provide a greater number of data points and stronger analysis instead of using aggregated graduation rates as the data points in the comparison analysis of pre- and post-intervention graduation attainment. Further investigation using degree completion data of individual students included in both the pre- and post-strengths intervention study populations, instead of aggregated graduation rates, is recommended to more precisely expose any true variation in six-year graduation between students who experienced the AG 1011 strengths intervention and those who completed the course before the strengths intervention was included in the course curriculum.

Conclusion 6: College student success factors cannot be used to predict Clifton StrengthsFinder® talent theme dimensions in this population.

The findings of this study support the findings of Brashears and Baker (2002), that talent theme dimensions have no predictive value on GPA for students in an agricultural college. Both studies also substantiate assumptions of Holland's person-environment theory (P-E fit; Holland, 1973) and strengths theory (Buckingham & Clifton, 2001; Hodges & Clifton, 2004). Agricultural colleges, including CASNR, contain academic disciplines that are diverse, as represented by the Holland type codes of the CASNR disciplines in Table 2. Undoubtedly, the CASNR graduates comprising the population for this study represent a diverse array of talents, with the distribution of their talents presented in Table 7. Many of the Clifton StrengthsFinder® talents identified among the CASNR study population have been linked to personality types defined by

Holland's P-E fit theory (Clifton, et al., 2006) as indicated in Table 3. Achievements of persistence and degree completion among CASNR graduates signify their successful academic functioning within their academic environment. According to Holland (1973), idyllic functioning stems from students studying within an academic environment congruent with expressing their personality type. Because of the accomplishment of graduation achieved by the CASNR study population, theory suggests that the environment of OSU CASNR is congruent with the personality types as well as with the associated talent themes of the study participants. The successful functioning of the entire CASNR study population, resulting from that congruence between the populations' talent themes and the CASNR environment, prevented measures of the college success factors, including GPA, number of academic major changes, number of semesters in distress, and time to degree completion, from discriminating between talent theme dimension groups. Stated another way, given the diversity of the CASNR student population with regards to identified talents and related personality types and given the diversity of CASNR academic program types, congruence between students and the overall CASNR environment as well as students' academic success was likely and eliminated the predictive value of college student success factors in determining students' talent dimension groups. If the CASNR graduate data were segregated and analyzed specifically by academic disciplines, thereby reducing the diversity of the environmental frame and the probability of P-E fit or congruence, findings could be different.

Another possible explanation for the lack of significant predictive value of college success factors in differentiating talent theme dimension groups of CASNR graduates is the time of measurement of those college success factors. The CASNR graduates have

experienced a variety of knowledge and skill enhancement opportunities by graduation, which when coupled with the strengths identification and development intervention in AG 1011, leads to the refinement of strengths, or the ability to achieve optimal functioning, in accordance to strengths theory (Buckingham & Clifton, 2001; Hodges & Clifton, 2004). At optimal performance in a congruent environment, which incorporates weakness management, college student success factors like cumulative GPA, number of major changes, semesters in distress, and time to degree completion, are not likely to predict talents theme dimension groups. However, the consideration of predictive value of college success factors like GPA at more developmental milestones throughout the collegiate experience, such as within a student's second semester of their first-year freshmen experience or at the conclusion of students' sophomore and junior years, may demonstrate different findings in differentiating talent theme dimension groups because students' strengths may not be as well-developed.

As referenced in Chapter II, multiple institutional factors and student factors have been identified as contributing to student success. Among these influential factors, especially for college agriculture students, are institutional opportunities for student-to-faculty and peer-to-peer interaction via co-curricular involvement in activities such as student organizations (Gaspard et al., 2011; 2011Mayhew et al., 2016; Tinto, 1975). The lack of significant predictive value in using academic college success factors to separate CASNR graduates into talent theme dimension groups could also be a function of the specific factors chosen to consider in the analysis of prediction. Incorporating quantitative data into the model representing CASNR student co-curricular engagement levels with student organizations, undergraduate research, study abroad experiences,

competitive teams, and/or service projects, all of which facilitate student-to-faculty and peer-to-peer interaction may have provided greater predictive value in separating out the talent theme dimension groups.

Similar to the other conclusions, this conclusion leads to a recommendation for practice and need for further study. A comprehensive, systematic means for quantitatively tracking CASNR student co-curricular involvement is needed to allow inclusion of these important co-curricular factors in retention and degree completion research and assessment, such as their predictive value in discriminating talent theme dimension groups. Additionally, further examination of the predictive value of academic and co-curricular college success outcome variables in discriminating between talent theme dimension groups is warranted by analyzing participant data within academic major populations and at key developmental points of students' freshmen, sophomore, and junior years as well as at graduation.

Again, findings of this study contradict those of Sutton et al. (2011), who found a negative predictive relationship between the Impacting talent theme dimension and students' college GPAs. As previously mentioned, however, comparison of the Sutton et al. (2011) study with the present study is restricted by the differences in the populations studied. The Sutton et al. (2011) study population was comprised of college sophomores and juniors, whereas the present study population represented CASNR graduates with baccalaureate degrees. Sutton et al. (2011) also does not describe the academic frame of the study population, further questioning comparative value based upon the study's unknown disciplinary environmental context.

Other Recommendations for Research and Practice

Based upon the findings of this study, two additional recommendations for research and practice beyond those previously defined are outlined in the paragraphs that follow.

The College of Agricultural Sciences and Natural Resources has a substantial representation of transfer students among its student population (OSU, 2017). Because transfer students are not enrolled in AG 1011 or any other uniformly common CASNR course, this student population currently does not have the opportunity to systematically participate in a curricular strengths identification and development opportunity, despite the need to also support transfer student retention and graduation as well as the success of students who matriculated as freshmen at OSU (OSU, 2017). Because of their lack of inclusion in any systematic strengths identification and development initiative, the impact of such an initiative on the CASNR transfer student population is also unknown. Development of a consistent method for providing transfer students with opportunities for both curricular and co-curricular strengths identification and development opportunities is needed. Additionally, research is needed to examine:

1. If the academic and talent profiles of CASNR transfer students differ from students who matriculate in CASNR as freshmen,
2. If any differences in academic and co-curricular college student success factors exist between talent theme dimension groups for transfer students,
3. If academic and co-curricular college student success factors have predictive value in discriminating between talent theme dimension groups for CASNR transfer students, and

4. If any differences in or predictive value of transfer student academic and co-curricular college student success factors is dissimilar from any difference or predictive value revealed in further research of the population of students who matriculated in CASNR as freshmen.

Despite widespread use of the Clifton StrengthsFinder® assessment on college and university campuses, the internal consistency of the assessment is lower than acceptable levels and test-retest reliability coefficients for the Clifton StrengthsFinder® talent themes are moderate at best. Additionally, information clarifying the equations used in scoring the assessment in order to determine dominant talents as well as information describing quantitative measures that support construct validity for the talent theme dimensions are inaccessible due to the copyright protection of all Gallup, Inc. strengths data and research. These facts place limitations on confidence in the Clifton StrengthsFinder® assessment as a valid tool for identifying students' talents. Consequently, faculty and student services administrators should research other assessment options in an effort to identify a more valid and reliable instrument that may be used as a part of strengths education initiatives to more accurately identify students' innate talents.

Discussion

Institutional investment in student development enhances student retention and degree completion (Mayhew et al., 2016). Viewed as an investment in student development and as a practice aimed at helping students understand how their innate thoughts, feelings, and behaviors interact with their college environment, the implementation of strengths identification and development initiatives in AG 1011 is a

worthwhile practice. While the statistical value of the current practice of using the Clifton StrengthsFinder® assessment and its curricular resources may not be supported by this study, similar efforts align with the institutional practices that support successful student integration on campus (Astin, 1993; Tinto, 1975; Tinto, 1993). In other words, helping student understand themselves and how they interact with their institution is an effective practice supportive of student persistence and degree completion (Astin, 1993; Tinto, 1975; Tinto, 1993). In this regard, CASNR is making a meaningful effort; using a program other than the Clifton StrengthsFinder® may simply provide a better platform for measuring the statistical influence of such efforts.

In reflecting upon the conceptual model proposed in Figure 2, this study did not provide definitive support for the model. While both the lack of statistical difference in academic college student success factors between talent theme dimension groups and the lack of predictive value of college student success factors in discriminating between talent dimension groups supported the model by indicating probable congruence through successful academic functioning in the CASNR environment, the possibility of students with well-developed strengths using those strengths to succeed in a potentially incongruent environment exposed a flaw in the model. With well-developed strengths, students may achieve optimal functioning in environments of varying congruence levels because of their ability to manage the demands of any weaknesses using their strengths; of course, natural preferences will attract individuals to more congruent environments, but success may still be achieved within those environments that are less congruent with an individual's talents or strengths (Buckingham & Clifton, 2001).

Concluding Remarks

In an economic environment where knowledge increases at a rapid rate and change is frequent, college graduates with their abilities to learn and apply that learning are an essential commodity for industry, community, and personal success (Mayhew et al., 2016; Trostel, 2010; Wheelan, 2016). To nurture the proliferation of college-educated workers while also efficiently using their institutional resources, higher education administrators, faculty, and staff must make prudent decisions about the investments allocated to student retention and degree completion interventions. Strengths-based education efforts have been widely implemented across a multitude of higher education institutions as one of those interventions (Louis, 2011; Soria, Roberts, & Reinhard, 2015). The concept of strengths-based education as a retention and degree completion intervention is supported by both strengths theory (Buckingham & Clifton, 2001; Hodges & Clifton, 2004) and person-environment theory (P-E fit; Holland, 1973), and some preliminary research studies corroborate the value of strengths identification and development initiatives with college students to promote student satisfaction and success. However, as public funding for higher education continues to shrink, more evidence is needed than what could be gleaned from this study to confirm the cost benefit of institutional expenditures on strengths-based efforts using the Clifton StrengthsFinder® assessment and its curricular resources. By continuing to investigate endeavors to enhance student retention and graduation, including strengths-based efforts as described in the multiple recommendations for further research derived from this study, CASNR will demonstrate an enduring commitment to resource stewardship,

student success, and to the land-grant mission of educating citizens and advancing economies for the good of ever-developing communities.

REFERENCES

- ACT, Inc. (2016). *The ACT profile report - National*. Iowa City, IA: Unknown author.
- Retrieved from
https://www.act.org/content/dam/act/unsecured/documents/P_99_999999_N_S_N00_ACT-GCPR_National.pdf
- Ahmed, J. U., Cowdhury, H. K., Rahman, S., & Talukder, M. H. (2014). Academic probation: An empirical study of private university students. *Research in Education, (92)*, 1-17.
- Alarcon, G. M., & Edwards, J. M. (2013). Ability and motivation: Assessing individual factors that contribute to university retention. *Journal of Educational Psychology, 105*(1), 129-137.
- Allen, J., & Robbins, S. B. (2008). Prediction of college major persistence based on vocational interests, academic preparation, and first-year academic performance. *Research in Higher Education, 49*, 62-79.
- Allen, J., & Robbins, S. B. (2010). Effects of interest-major congruence, motivation, and academic performance on timely degree attainment. *Journal of Counseling Psychology, 57*(1), 23-35.

- American Association of State Colleges and Universities. (2002). *Accountability and graduation rates: Seeing the forest and the trees*. Washington, DC. Retrieved from <https://files.eric.ed.gov/fulltext/ED474375.pdf>
- American Association of State Colleges and Universities. (2017). *Top 10 higher education state policy issues for 2017*. Washington, DC: Harnisch, T. L., & Opalich, D. Retrieved from <http://www.aascu.org/policy/publications/policy-matters/Top10Issues2017.pdf>
- Anderson, E. C. (2006). If we want to boost retention and achievement, we need to work from student strengths, not weaknesses. *About Campus*, 11(4), 4-5.
- Ashby, A. (2004). Monitoring student retention in the Open University: Definition, measurement, interpretation, and action. *Open Learning*, 19(1), 65-77.
- Association of American Colleges and Universities. (1998). *Statement on liberal education*. Retrieved from <https://www.aacu.org/about/statements/liberal-education>.
- Astin, A. W. (1993). *What matters in college? Four critical years revisited*. San Francisco, CA: Jossey-Bass.
- Astin, A. W. (2005). Making sense of degree completion rates. *Journal of College Student Retention*, 7(1-2), 5-17.
- Avery, C., & Turner, S. (2012). Student loans: Do college students borrow too much--or not enough?. *Journal of Economic Perspectives*, 26(1), 165-92

- Ball, A. L., Garton, B. L., & Dyer, J. E. (2001). The influence of communities and 4-H/FFA participation on college of agriculture students' academic performance and retention. *Journal of Agricultural Education, 42*(4), 54-62.
- Ball, A. L., Garton, B. L., & Dyer, J. E. (2001). The influence of communities and 4-H/FFA participation on college of agriculture students' academic performance and retention. *Journal of Agricultural Education, 42*(4), 54-62.
- Bean, J., & Eaton, S. B. (2001). The psychology underlying successful retention practices. *Journal of College Student Retention, 3*(1), 73-89.
- Bonet, G., & Walters, B. (2016). High impact practices: Student engagement and retention. *College Student Journal, 50*(2), 224-235.
- Bowers, K. M., & Lopez, S. J. (2010). Capitalizing on personal strengths in college. *Journal of College and Character, 11*(1), 1-11.
- Brashears, M.T., & Baker, M. (2002). The relationship between individual talents and college success factors. *Proceedings of the Western Region Agricultural Education Research Conference, April 24-27, Spokane, WA.*
- Brazzell, J. C., & Reisser, L. (1999). Creating inclusive communities. In G.S. Blimling & E. J. Whitt & Associates (Eds.), *Good practice in student affairs: Principles to foster student learning* (157-177). San Francisco, CA: Jossey-Bass Publishers.
- Buckingham, M., & Clifton, D. O. (2001). *Now, discover your strengths*. New York, NY: The Free Press.
- Cano, J. (1999). The relationship between learning style, academic major, and academic performance of college students. *Journal of Agricultural Education, 40*(10), 30-37.

- Cattell, R. B., Cattell, A. K., & Cattell, H. E. P. (1993). *16PF fifth edition questionnaire*. Champaign, IL: Institute for Personality and Ability Testing.
- The Century Foundation. (2016). *Why performance-based college funding doesn't work*. Washington, DC: Hillman, N. Retrieved from <https://tcf.org/content/report/why-performance-based-college-funding-doesnt-work/>
- Chamorro-Premuzic, T., & Furnham, A. (2008). Personality, intelligence and approaches to learning as predictors of academic performance. *Personality and Individual Differences, 44*(7), 1596-1603.
- Chickering, A. W., & Gamson, Z. F. (1987). Seven principles for good practice in undergraduate education. *AAHE bulletin, 3*, 7.
- Clabaugh, G. K. (2005). Strengths-based education: Probing its limits. *Educational Horizons, 83*(3), 166-170.
- Clifton, D. O. (2006). *Revised Clifton StrengthsFinder (CSF)* [Web-based assessment instrument]. Princeton, NJ: Gallup, Inc.
- Clifton, D. O., Anderson, E. C., & Schreiner, L. A. (2006). *StrengthsQuest*. New York, NY: Gallup Press.
- Clifton, D. O. & Harter, J.K. (2003). Investing in strengths. In A. K. S. Cameron, B. J. E. Dutton, & C. R. E. Quinn (eds.), *Positive organizational scholarship: Foundations of a new discipline* (pp. 111-121). San Francisco: Berrett-Koehler Publishers, Inc.
- Clifton, D. O., & Nelson, P. (2010). *Soar with your strengths*. New York, NY: Bantam Books. (Original work published in 1992)

- Conard, M. A. (2006). Aptitude is not enough: How personality and behavior predict academic performance. *Journal of Research in Personality, 40*, 339-346.
- Dollinger, S. J., Matyja, A. M., & Huber, J. L. (2008). Which factors best account for academic success: Those which college students can control or those they cannot? *Journal of Research in Personality, 42*(4), 872-885.
- Dyer, J. E., Breja, L. M., & Wittler, P. S. H. (2002). Predictors of student retention in colleges of agriculture. Retrieved from <https://files.eric.ed.gov/fulltext/ED462290.pdf>.
- Dyer, J. E., Lacey, R., & Osborne, E. W. (1996). Attitudes of University of Illinois college of agriculture freshmen toward agriculture. *Journal of Agricultural Education, 37*(3), 33-42.
- The Education Policy Institute. (2013). *The cost of college attrition at four-year colleges & universities*. Virginia Beach, VA: Raisman, N. A.
- Feldman, K. A., Smart, J. C., & Ethington, C. A. (1999). Major field and person-environment fit. *The Journal of Higher Education, 70*(6), 642-669.
- Field, A. (2013). *Discovering statistics using IBM SPSS statistics* (4th ed.). Los Angeles, CA: Sage Publications.
- Frey, B. B. (2016). *There's a stats for that!* Thousand Oaks, CA: Sage Publications, Inc.
- Gallup, Inc. (2002). *Talent 101: Self-discovery helps students adjust*. Washington, DC: Crabtree. S. Retrieved from <http://news.gallup.com/poll/7378/talent-101-selfdiscovery-helps-students-adjust.aspx>
- Gallup, Inc. (2006a). *A technical report on the Clifton StrengthsFinder® with college students*. Omaha, NE: Schreiner, L. A.

- Gallup, Inc. (2006b). *Developing students to be their best*. Washington, DC: Braskamp, L. B. Retrieved from <https://www.strengthsquest.com/192524/developing-students-best.aspx>
- Gallup, Inc. (2009). *The Clifton StrengthsFinder 2.0 technical report: Development and validation*. Washington, DC: Asplund, J., Lopez, S., Hodges, T., & Harter, J.
- Gallup, Inc. (2012). *The Clifton StrengthsFinder® and student strengths development* (2nd ed.). Omaha, NE: Louis, M. C.
- Gallup, Inc. (2014). *The Clifton StrengthsFinder 2.0 technical report: Development and validation* (2nd ed.). Washington, DC: Asplund, J., Sangeeta Agrawal, S., Hodges, T., Harter, J., & Lopez, S.
- Gallup, Inc. (2016). *CliftonStrengths theme frequency report* (November 2016). Washington, DC: McCarville, B. Retrieved from <https://www.strengthsquest.com/198197/snapshot-cliftonstrengths-theme-frequencies-higher-education.aspx>
- Garton, B. L., Ball, A. L., & Dyer, J. E. (2002). The academic performance and retention of college of agriculture students. *Journal of Agricultural Education*, 43(1), 46-56.
- Garton, B. L., Dyer, J. E., & King, B. O. (2000). The use of learning styles and admissions criteria in predicting academic performance and retention of college freshmen. *Journal of Agricultural Education*, 41(2), 46-53.

- Gaspard, M. B., Burnett, M. F., & Gaspard, C. P. (2011). The influence of self-esteem and selected demographic characteristics on first semester academic achievement of students enrolled in a college of agriculture. *Journal of Agricultural Education*, 52(4), 76-86.
- Goldberg, L. R. (1999). A broad-bandwidth, public domain, personality inventory measuring the lower-level facets of several five-factor models. *Personality Psychology in Europe*, 7(1), 7-28.
- Gough, H. G. (1996). *CPI manual* (3rd ed.). Palo Alto, CA: Consulting Psychologist Press.
- Hagedorn, L. S. (2005). How to define retention: A new look at an old problem. In A. Seidman (Ed.), *College student retention: Formula for success* (pp 89-105). Westport, CT: Prager Publishers.
- Hayes, T. L. (2001). Appendix: A technical report on StrengthsFinder. In M. Buckingham & D. O. Clifton, *Now, discover your strengths* (pp. 247-258). New York, NY: The Free Press.
- Hodges, T. D., & Clifton, D. O. (2004). Strengths-based development in practice. In P. A. Linley & S. Joseph (Eds.), *Positive Psychology in Practice* (pp. 256-268). Hoboken, NJ: John Wiley & Sons, Inc.
- Hodges, T. D., & Harter, J. K. (2005). A review of the theory and research underlying the StrengthsQuest program for students. *Educational Horizons*, 83(3), 190-201.
- Holland, J. L. (1959). A theory of vocational choice. *Journal of Counseling Psychology*, 6(1), 35-45.

- Holland, J. L. (1966). A psychological classification scheme for vocations and major fields. *Journal of Counseling Psychology, 13*(3), 278-288.
- Holland, J. L. (1973). *Making vocational choices*. Englewood Cliffs, NJ: Prentice-Hall, Inc.
- Holland, J. L., & Messer, M. A. (2013). *Self-Directed Search professional manual*. Lutz, FL; PAR, Inc.
- Holland, J. L., & Messer, M. A. (2017). *SDS educational opportunities finder*. Lutz, FL: PAR, Inc.
- Institutional Research & Information Management. (2017). *Student profile*. Stillwater, OK: Oklahoma State University.
- Johnson, R. B., & Christensen, L. (2014). *Educational research: Quantitative, qualitative, and mixed approaches* (5th ed.). Thousand Oaks, CA: SAGE Publications, Inc.
- Kachigan, S. K. (1991). *Multivariate statistical analysis: A conceptual introduction* (2nd ed.). New York, NY: Radius Press.
- Kappe, R., & van der Flier, H. (2012). Predicting academic success in higher education: What's more important than being smart? *European Journal of Psychology of Education, 27*, 605-619.
- Kelley, K. N. (1996). Causes, reactions, and consequences of academic probation: A theoretical model. *NACADA Journal, 16*(1), 28-34.
- Klecka, William R. (1980). *Discriminant analysis: Quantitative applications in the social sciences series* (Vol. 19). Thousand Oaks, CA: Sage Publications.

- Koljatic, M., & Kuh, G. D. (2001). A longitudinal assessment of college student engagement in good practices in undergraduate education. *Higher Education, 41*, 351-371.
- Kuh, G. D. (2013). Promise in action: Examples of institutional success. *New Directions in Higher Education, (161)*, 81-90.
- Kuh, G. D., Kinzie, J., Schuh, J. H., & Whitt, E. J. (2011). Fostering student success in hard times. *Change: The Magazine of Higher Learning, 43(4)*, 13-19.
- Kuh, G. D., Pace, C. R., & Vesper, N. (1997). The development of process indicators to estimate student gains associated with good practices in undergraduate education. *Research in Higher Education, 38(4)*, 435-454.
- Laskey, M. L., & Hetzel, C. J. (2011). Investigating factors related to retention of at-risk college students. *Learning Assistance Review, 16(1)*, 31-43.
- Lopez, S. J., & Louis, M. C. (2009). The principles of strengths-based education. *Journal of College and Character, 10(4)*, 1-8.
- Louis, M. C. (2011). Strengths interventions in higher education: The effect of identification versus development approaches on implicit self-theory. *The Journal of Positive Psychology, 6(3)*, 204-215.
- Lowenthal, K. M. (2004). *An introduction to psychological tests and scales* (2nd ed.). Hove, UK: Psychology Press.

- Mayhew, M. J., Rockenbach, A. N., Bowman, N. A., Seifert, T. A., Wolniak, G. C., Pascarella, E. T., & Terenzini, P. T. (2016). *How college affects students: 21st century evidence that higher education works* (3rd ed.). San Francisco, CA: Jossey-Bass.
- McFarland, J., Hussar, B., de Brey, C., Snyder, T., Wang, X., Wilkinson-Flicker, S., Gebrekristos, S., Zhang, J., Rathbun, A., Barmer, A., Bullock Mann, F., & Hinz, S. (2017). *The condition of education 2017* (NCES 2017-144). U.S. Department of Education. Washington, DC: National Center for Education Statistics. Retrieved August 8, 2017 from <https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2017144>.
- Moore, L. L., & Braun, S. L. (2005). Academic achievement and efficiency of college of agricultural and life sciences students: A multi-year study. In E. A. Moore & D. Krueger (Eds.), *Proceedings of the 2005 American Association for Agricultural Education National Research Conference* (pp. 184-198). San Antonio, TX: American Association for Agricultural Education.
- National Association of State Universities and Land-grant Colleges. (2008). *The land-grant tradition*. Washington, DC: NASULGC
- Obama, B. (2009). *Remarks of President Barack Obama—Address to Joint Session of Congress*. Retrieved from <https://obamawhitehouse.archives.gov/the-press-office/remarks-president-barack-obama-address-joint-session-congress>.

- Oklahoma State University. (2015). *Five-year academic ledger: Stillwater campus*. Stillwater, OK: Institutional Research and Information Management. Retrieved from <https://irim.okstate.edu/sites/default/files/AcademicLedgers/oklahomastateuniversity.pdf>.
- Oklahoma State University. (2016). *Oklahoma State University 2016-2017 university catalog*. Stillwater, OK: Oklahoma Department of Career & Technology Education.
- Oklahoma State University. (2017). *Student profile*. Stillwater, OK: Institutional Research and Information Management. Retrieved from <https://irim.okstate.edu/StudentProfile>.
- Oklahoma State University. (2018). *Transcripts and academic records FAQ [web site]*. Retrieved from <https://registrar.okstate.edu/FAQ-Transcripts-Academic-Records>.
- O'Neil, T., Sireci, S. G., & Huff, K. L. (2004). Evaluating the consistency of test content across two successive administrations of a state-mandated science assessment. *Educational Assessment, 9*(3-4), 129-151.
- Oreopoulos, P., & Petronijevic, U. (2013). Making college worth it: A review of the returns to higher education. *The Future of Children, 23*(1), 41-65.
- Pascarella, E. T., & Terenzini, P. T. (2005). *How college affects students* (Vol. 2). K. A. Feldman (Ed.). San Francisco, CA: Jossey-Bass.
- Reardon, R. C., & Lenz, J. G. (2015). *Handbook for using the self-directed search: Integrating RIASEC and CIP theories in practice*. Lutz, FL: PAR, Inc.

- Renzulli, S. J. (2015). Using learning strategies to improve the academic performance of university students on academic probation. *NACADA Journal*, 35(1), 29-41.
- Roberts, J. G. (2009). *Student satisfaction and persistence—A study of factors which are vital to student retention* (Unpublished doctoral dissertation). University of Southern Mississippi, Hattiesburg, MS. Retrieved from <http://argo.library.okstate.edu/login?url=https://search-proquest-com.argo.library.okstate.edu/docview/304996925?accountid=4117>
- Rojstaczer, S., & Healy, C. (2012). Where A is ordinary: The evolution of American college and university grading, 1940–2009. *Teachers College Record*, 114(7), retrieved from <http://www.gradeinflation.com/tcr2012grading.pdf>.
- Rojstaczer, S. (2016). *Grade inflation at American colleges and universities*. Retrieved from <http://www.gradeinflation.com/>.
- Schertzer, C. B., & Schertzer, S. M. B. (2004). Student satisfaction and retention: A conceptual model. *Journal of Marketing for Higher Education*, 14(1), 79-91.
- Schreiner, L. A., & Anderson, E. C. (2005). Strengths-based advising: A new lens for higher education. *NACADA Journal*, 25(2), 20-29.
- Seligman, M. E. P., & Csikszentmihalyi, M. (2000). Positive psychology: An introduction. In M. Csikszentmihalyi, *Flow and the Foundations of Positive Psychology* (pp. 279-298). Dordrecht, Netherlands: Springer.

- Shapiro, D., Dundar, A., Wakhungu, P.K., Yuan, X., Nathan, A., & Hwang, Y. (2016). *Time to degree: A national view of the time enrolled and elapsed for associate and bachelor's degree earners* (Signature Report No. 11). Herndon, VA: National Student Clearinghouse Research Center. Retrieved from <https://nscresearchcenter.org/signaturereport11/>
- Shushok, Jr., F., & Hulme, E. (2006). What's right with you: Helping students find and use their personal strengths. *About Campus*, 11(4), 2-8.
- Smith, A. R., Garton, B. L., Killingsworth, J. L., Maxwell, L. D., & Ball, A. L. (2010). Does prior college credit matter? A longitudinal investigation of academic success, retention, and degree completion. *Journal of Agricultural Education*, 51(3), 76-87.
- Smith, A. R., Garton, B. L., & Kitchel, T. J. (2010). Beyond mere enrollment: Level of youth organization participation as a predictor of collegiate academic success and retention. *Journal of Agricultural Education*, 51(2), 24-35.
- Soria, K. M., & Stubblefield, R. (2014). First-year college students' strengths awareness: Building a foundation for student engagement and academic excellence. *Journal of The First-Year Experience & Students in Transition*, 26(2), 69-88.
- Soria, K. M., Roberts, J. E., & Reinhard, A. P. (2015). First-year college students' strengths awareness and perceived leadership development. *Journal of Student Affairs Research and Practice*, 52(1), 89-103.
- Soria, K. M., & Stubblefield, R. (2015a). Building a strengths-based campus to support student retention. *Journal of College Student Development*, 56(6), 626-631.

- Soria, K. M., & Stubblefield, R. (2015b). Knowing me, knowing you: Building strengths awareness, belonging, and persistence in higher education. *Journal of College Student Retention: Research, Theory & Practice*, 17(3), 351-372.
- Stebbleton, M. J., Soria, K. M., & Albecker, A. (2012). Integrating strengths-based education into a first-year experience curriculum. *Journal of College and Character*, 13(2), 1-8.
- Strahan, S., & Crede, M. (2014). Satisfaction with college: Re-examining its structure and its relationships with the intent to remain in college and academic performance. *Journal of College Student Retention*, 16(4), 537-561.
- Strohush, V., & Wanner, J. (2015). College degree for everyone?. *International Advances in Economic Research*, 21(3), 261-273.
- Sutton, G. W., Phillips, S., Lehnert, A. B., Bartle, B. W., & Yokomizo, P. (2011). Strengths assessment, academic self-efficacy, and learning outcomes in a Christian university sample. *Journal of Psychology & Christianity*, 30(1), 28-36.
- Talbert, B. A., Larke, Jr., A., & Jones, W. A. (1999). Using a student organization to increase participation and success of minorities in agricultural disciplines. *Peabody Journal of Education*, 74(2), 90-104.
- Tinto, V. (1975) Dropout from higher education: A theoretical synthesis of recent research. *Review of Educational Research*, 45(1), 89-125.
- Tinto, V. (1993). *Leaving college: Rethinking the causes and cures of student leaving* (2nd ed.). Chicago, IL: University of Chicago Press.
- Tinto, V. (2006). Research and practice of student retention: What's next? *Journal of College Student Retention*, 8(1), 1-19.

- Trapmann, S., Hell, B., Hirn, J. W., & Schuler, H. (2007). Meta-analysis of the relationship between the Big Five and academic success at university. *Journal of Psychology, 215*(2); 132-151.
- Trostel, P. A. (2010). The fiscal impacts of college attainment. *Research in Higher Education, 51*, 220-247.
- Westbrook, J. R., & Alston, A. J. (2007). Recruitment and retention strategies utilized by 1890 land grant institutions in relation to African American students. *Journal of Agricultural Education, 48*(3), 123-134.
- Wheelan, B. S. (2016). Challenges for policy and standards for adult and higher education. *New Directions for Adult and Continuing Education, 149*, 83-92.
- The White House, Office of the Press Secretary. (2009, March 09). *Fact sheet: Expanding the promise of education in America* [Press release]. Retrieved May 20, 2017, from <https://obamawhitehouse.archives.gov/the-press-office/fact-sheet-expanding-promise-education-america>
- The White House, Office of the Press Secretary. (2015, September 12). *Fact sheet: Empowering students to choose the college that is right for them* [Press release]. Retrieved May 20, 2017, from <https://obamawhitehouse.archives.gov/the-press-office/fact-sheet-expanding-promise-education-america>
- Williamson, J. S. (2002). *Assessing student strengths: Academic performance and persistence of first-time college students at a private church-affiliated college* (Doctoral dissertation). Retrieved from Digital Commons at Olivet Nazarene University, http://digitalcommons.olivet.edu/facp_sgcs/1

APPENDICES

APPENDIX A

INSTITUTIONAL REVIEW BOARD APPROVAL FORM

Oklahoma State University Institutional Review Board

Date: Friday, December 02, 2016
IRB Application No AG1639
Proposal Title: Themes of Talent, Leadership Domains and Academic Success among College Students

Reviewed and Processed as: Exempt

Status Recommended by Reviewer(s): Approved Protocol Expires: 12/1/2019

Principal Investigator(s):

Amy Gazaway 136 Ag Hall Stillwater, OK 74078	Marshall A. Baker 458 Ag Hall Stillwater, OK 74078
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The IRB application referenced above has been approved. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in section 45 CFR 46.

The final versions of any printed recruitment, consent and assent documents bearing the IRB approval stamp are attached to this letter. These are the versions that must be used during the study.

As Principal Investigator, it is your responsibility to do the following:

- 1Conduct this study exactly as it has been approved. Any modifications to the research protocol must be submitted with the appropriate signatures for IRB approval. Protocol modifications requiring approval may include changes to the title, PI advisor, funding status or sponsor, subject population composition or size, recruitment, inclusion/exclusion criteria, research site, research procedures and consent/assent process or forms.
- 2Submit a request for continuation if the study extends beyond the approval period. This continuation must receive IRB review and approval before the research can continue.
- 3Report any adverse events to the IRB Chair promptly. Adverse events are those which are unanticipated and impact the subjects during the course of the research; and
- 4Notify the IRB office in writing when your research project is complete.

Please note that approved protocols are subject to monitoring by the IRB and that the IRB office has the authority to inspect research records associated with this protocol at any time. If you have questions about the IRB procedures or need any assistance from the Board, please contact Dawnett Watkins 219 Scott Hall (phone: 405-744-5700, dawnett.watkins@okstate.edu).

Sincerely,



Hugh Crethar, Chair
Institutional Review Board

APPENDIX B

INSTRUCTIONAL MATERIALS FOR INTRODUCTORY STRENGTHS LESSON


Discovering Your Strengths

A Key to Living as Your Best Self




Importance of Self-Assessment

- It allows you to know your capabilities.
- It provides a baseline for growth and improvement.
- It provides a foundation for becoming your best self and being able to best exert your influence.







Self-Assessment

Get out a pen/pencil and piece of paper



Put the following 5 animals in order from the one you like the most to the one you like the least.
(1 = I like this one the most, 5 = I like this one the least.)







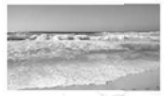






Your rank represents the importance of...

- Horse = your family
- Pig = having money
- Tiger = being proud of yourself
- Sheep = finding love
- Cow = doing well in school



Write one word that describes each of the following:

Your description of the

Dog = how you feel about your own personality

Cat = how you would describe your best friend

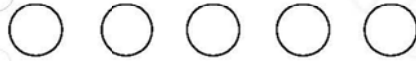
Rat = how you think about people you dislike

Soda = how you feel about the world

Sea = how you think about your own life



Write the name of a person you know well next to the color that best fits them. Use a person only once!



The people in your life represented...

Yellow = someone you'll never forget

Orange = someone you consider a true friend

Red = someone you really love

White = someone you are very close to

Green = someone you will remember forever



What does it mean?

- This one was just for fun—not a valid self-assessment
- We probably all had different answers
- We all have different likes, dislikes, comfort zones, preferences
- Together, these things are what makes us unique
- We also have different combinations of natural talents and strengths
- This natural preference—how we prefer to function—is what allows you to be your best self



Self-Assessment is Important. To reiterate:

- It allows you to know your capabilities
- It provides a baseline for improvement
- It provides a basis for exercising influence



Individuals who are their own best selves & develop personal strengths

- Are more optimistic about their future
- Have a higher sense of well-being
- Students also persist in school, earn more credits and have higher GPAs



Marcus Buckingham

Successful personal development and management consultant discusses:

So What's Stopping You?



Your turn.

Think about the last 3 to 7 days, what activities have you...

- Looked forward to
- Been successful in, and/or
- Have brought you satisfaction/happiness?

Write three to four answers down on a piece of paper.



Turn To Your Neighbor – 2 to 3 minutes

Discuss the talents or strengths you may have



Assignment

Gallup StrengthsQuest:
The Clifton StrengthsFinder



Things to Know Before Taking the Clifton StrengthsFinder...

- The StrengthsFinder is an assessment, not a test. There are no right or wrong answers, and there is no perfect score or grade.
- It takes about 45 minutes to take.
- Each question is timed. You get 20 seconds to respond. The more questions you answer, the more accurate your response.
- Respond in a genuine way – not how you want to be or how you want others to perceive you.
- Recommend using your OSU email as your user name.
- If you have taken the StrengthsFinder before, you must use a different email address than you previously used.



What to Turn in

- Clifton StrengthsFinder Report

When you have completed the assessment:

1. **Print out your Signature Theme Report**
2. **Read the report**
3. **Highlight the parts of each of your Top Five Talent Theme descriptions that best describe you.**
4. **Put your name on your report**
5. **Turn in to your SAM in class on Oct. 4/Oct. 5 (Week 7, Day 2).**

*** This assignment will need to be completed in order to complete the Strengths part 2 assignment next week.



If you have problems with your Strengths Code OR Account Login...

- **FIRST** – Check to be sure you...
 - Typed your code correctly
 - Typed your email correctly
 - Used the right email address to log back in
- **SECOND** – Use the Account Assistance link at the bottom of the page to retrieve a forgotten password
- **THIRD** - Contact StrengthsQuest Help Desk at 1-888-211-4049 or e-mail strengthsquesthelp@gallup.com
- **FOURTH** – Contact Amy Gazaway in the Student Success Center for help or a different code
- All provided codes are **NEW** codes purchased from Gallup, Inc.



Questions

"Educating the mind without educating the heart is no education at all."
— Aristotle



APPENDIX C

INSTRUCTIONAL MATERIALS FOR STRENGTHS DEVELOPMENT LESSON



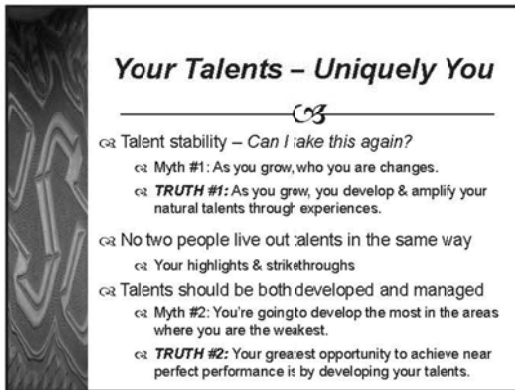
Strengths Development & Your Future



Facts About Strengths



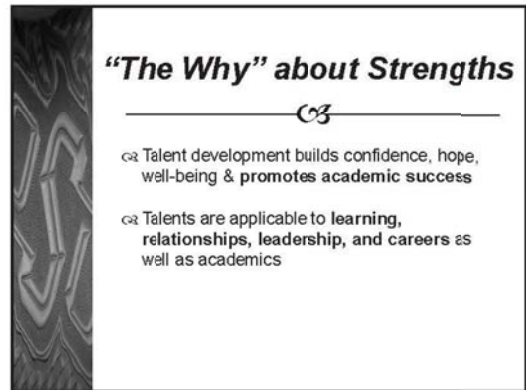
- ☞ Strength = Talent X (Skill + Knowledge)
- ☞ StrengthsFinder Results = Top 5 Themes of Talent
- ☞ Talents = keys to achievement, personal excellence, living as your best self



Your Talents – Uniquely You



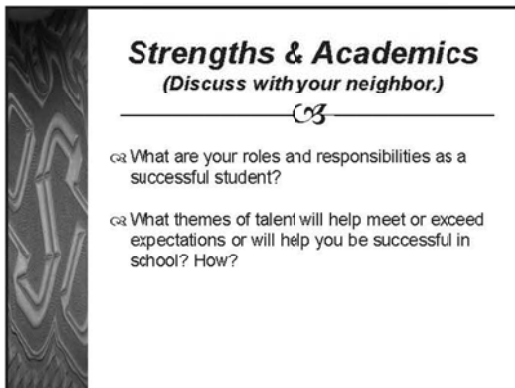
- ☞ Talent stability – *Can I make this again?*
 - ☞ Myth #1: As you grow, who you are changes.
 - ☞ **TRUTH #1:** As you grow, you develop & amplify your natural talents through experiences.
- ☞ No two people live out talents in the same way
 - ☞ Your highlights & strikeouts
- ☞ Talents should be both developed and managed
 - ☞ Myth #2: You're going to develop the most in the areas where you are the weakest.
 - ☞ **TRUTH #2:** Your greatest opportunity to achieve near perfect performance is by developing your talents.



"The Why" about Strengths



- ☞ Talent development builds confidence, hope, well-being & promotes academic success
- ☞ Talents are applicable to learning, relationships, leadership, and careers as well as academics

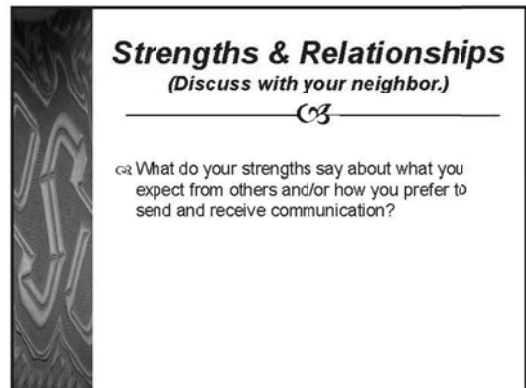


Strengths & Academics

(Discuss with your neighbor.)



- ☞ What are your roles and responsibilities as a successful student?
- ☞ What themes of talent will help meet or exceed expectations or will help you be successful in school? How?



Strengths & Relationships

(Discuss with your neighbor.)



- ☞ What do your strengths say about what you expect from others and/or how you prefer to send and receive communication?

Strengths & Relationships

(Discuss with your neighbor.)



- ☞ How would you and your neighbor work together using your talents?
- ☞ How would the combination of your talents create synergy and/or possible conflict?

Why Strengths Matter in Career Development



- ☞ Employees who develop and use their strengths...
 - ☞ Have a higher sense of well-being, including fewer accidents and sick days
 - ☞ Are more satisfied with their jobs, are more successful and earn higher incomes

Strengths & Careers

(Discuss with your neighbor.)



- ☞ How do you expect to use, contribute with, and further develop your talents in your chosen career field?
- ☞ What amount of your projected career field will be talent-building vs. energy-draining for you?
- ☞ From a talent or strengths perspective, is this career field a good "fit" for you? Why or why not?

Now what?



Putting Your Strengths to Work

Goal Setting the SMART Way



- ☞ **Specific** (Who? What? Where?)
- ☞ **Measurable**
- ☞ **Action-oriented** (How?)
- ☞ **Realistic**
- ☞ **Time-bound** (When?)

Goal Setting & Talents



- ☞ What are SMART goals you have for academics, relationship building and career development?
- ☞ How will you use your talents to achieve your goals?
- ☞ How will you keep your weaknesses from getting in the way?

www.strengthsquest.com

Your Reports | Your Action Items | Activities & Resources | E-Books

VITA

Amy Raynee Gazaway

Candidate for the Degree of

Doctor of Philosophy

Dissertation: TALENT THEME DIMENSIONS AND ACADEMIC SUCCESS
AMONG UNDERGRADUATE AGRICULTURE STUDENTS

Major Field: Agricultural Education

Biographical:

Education:

Completed the requirements for the Doctor of Philosophy in Agricultural Education at Oklahoma State University, Stillwater, Oklahoma in July, 2018.

Completed the requirements for the Master of Science in Counseling and Student Personnel at Oklahoma State University, Stillwater, Oklahoma in 2004.

Completed the requirements for the Bachelor of Science in Animal Science and Agricultural Education at Oklahoma State University, Stillwater, Oklahoma in 1997.

Experience:

Coordinator for Career Development and Student Success, College of Agricultural Sciences and Natural Resources, Oklahoma State University, Stillwater, Oklahoma (January 2000 to Present).

University Representative, Oklahoma State University, Stillwater, Oklahoma (August 1998 to January 2000).

Agricultural Education Instructor, Tecumseh Public Schools, Tecumseh, Oklahoma (August 1997 to July 1998).

Professional Memberships: American Association for Agricultural Education, Association of Leadership Educators