The Examination of ACT Engage© Survey Scores and First-Time, Full-Time Undergraduate Student Retention when considering Gender, Race, and Socioeconomic Status at a private Midwestern University.

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Abstract

The purpose of this study was to examine the difference of ACT Engage© Retention Index scores and domain scores between retained and not retained first-time, full-time undergraduate students when considering gender, race, and socioeconomic status (SES) level. This study's research utilized statistical analysis techniques to determine the difference between ACT Engage© scores and retention status, gender, race, and SES status. Six research questions were posed. To address these research questions, 12 hypotheses were tested using two-factor ANOVAs. The study's sample consisted of 1,178 first-year students completing the ACT Engage© survey at a university in the Midwest during the fall academic semester.

The results from the study indicated that ACT Engage© Motivation and Skills domain scores are higher for students who are retained than not retained. The results also determined that ACT Engage© Retention Index scores are higher for those students retained over those students not retained, higher for females over males, higher for whites over minorities, and higher for high SES students over medium and low SES students. The survey did not determine any interactional effect between the independent variables on the dependent variables. The findings of this study may be used to understand the limitations of the ACT Engage© survey.

Dedication

This study is dedicated to the students who I serve each day and the colleagues with whom I am blessed to be around each day. You all are the inspiration to my work and the foundation to keep me grounded. This completed work is dedicated to my family who provided me the love and support to achieve my goal.

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I also dedicate this study to my students, who are the reason for my work and serve as my inspiration to grow each day. I thank you for allowing me to be part of your journey.

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Chapter One

Introduction

In 2009, President Barak Obama announced that by 2020, America would strive to have the highest proportion of college graduates in the world (Fry, 2017). However, in 2015, the Organization for Economic Co-operation and Development ranked the United States 10th among the 35 countries regarding the percentage of 25 to 34-year-olds who completed at least an associate degree (47%) (Fry, 2017). For the United States to have the highest proportion of college graduates by 2020, the US institutions of higher education would need to attain a degree completion of 60% or a gain of more than 13% (Fry, 2017).

According to the National Student Clearinghouse Research Center (2016), out of the approximately 1.8 million first-time, full-time college students attending universities each year, nearly 500,000 or 27% did not return to the college or university for their second year. Seidman (2005) found that only 50% of first-time, full-time college students attained their goal of receiving a bachelor's degree. The low graduation and retention rates, combined with less federal funding, have contributed to the economic issues in higher education and increased tuition cost for students at institutions of higher education (Bean, 1990; DeBerard, 2004; Watts, 2001). Also, since students and universities receive funding from federal sources, officials at the federal government have started to focus on improving graduation and retention rates (Miao, 2012). Miao (2012) identified three factors that have been critical in the focus on retention. These factors include ongoing budget cuts, stagnant graduation rates and demand for educated and skilled workers (Miao, 2012). With this change in the higher education landscape, University administrators must consider the way in which they address student retention in order to improve graduation rates.

When addressing student retention, university leaders must expand beyond conventional predictors of student retention to identify students who are at-risk for dropping out early in their college career (Le, Casillas, Robbins, & Langley, 2005). These conventional predictors of non-retention include ACT and SAT scores, high school class rank, and high school GPA (Le, Casillas, Robbins, & Langley, 2005; Robbins et al., 2004). Robbins and associates (2004) reported that the use of alternative measures should be considered instead of standardized testing since standardized tests are often criticized for the lack of fairness.

One way universities and colleges are attempting to use alternative measures is through the use of the ACT Engage© Survey (Bailey, 2012; Reason, 2009; Wilson, 2012). The ACT Engage© survey has been developed to predict retention through ten psychosocial factors (e.g., commitment to the college, goal striving, academic self-confidence, study skills, social connection, social involvement, academic discipline, general determination, communication skills, and emotional control) (King & Ndum, 2017). These ten psychosocial factors are grouped into three domains (e.g., Motivation and Skills domain, Self-Regulation domain, and Social Engagement domain). The ACT Engage© survey takes the ten psychosocial factors and provides a score and percentile ranking for each factor (ACT 2016). From these scores and rankings, the student is then assigned a Retention Index score which provides the probability of the student returning to the second year of school. However, while numerous studies (e.g., Bailey, 2012; Reason, 2009; Wilson, 2012) have examined the survey scores as a predictor of retention, few if any studies, have examined the differences in which ACT Engage© domain scores and Retention Index scores differ when considering the variables of retention status, race, gender, and socioeconomic status (SES) level. This current study examines the way in which ACT Engage© domain scores and Retention Index scores differ when considering the variables of retention

status, race, gender, and SES level for first-time, full-time undergraduate students at an institution in the midwest.

Background

The current study examines ACT Engage© scores at a private, liberal arts institution, in the Midwestern part of the United States. This University offers associate's, bachelor's, master's, and doctoral degrees on-ground in four locations in the Midwest and online. According to the University Fact Book (2018), the total enrollment for 2017 was 3,069. The enrollment at this Midwest institution includes the School of Nursing (*n*=182), the Graduate School of Education (*n*=878), the School of Professional and Graduate Studies (*n*=850), and the College of Arts and Sciences and the School of Education Undergraduate programs (*n*=1,159).

The focus of this study was entering freshman cohorts within the College of Arts and Sciences and School of Education undergraduate programs. According to the University Fact Book (2018), the entering freshman cohort of first-time, full-time students during the past six years (2012 - 2017) averaged 222 students. The first-time, full-time enrollment over the past six years (2012 - 2017) has varied from 182 to 256 students. The university has had fluctuating retention percentages between 68.1% and 81.3% of first-time, full-time undergraduate students. Fluctuating enrollments and retention trends have combined to cause the overall headcount to fluctuate from 847 students to 790 students over six years (University Fact Book, 2017). Table 1 presents the annual enrollment numbers for Midwestern University.

Table 1

2012-2017 University Enrollment Numbers

	New first-time, full-time degree-seeking undergraduate students	Total full-time degree-seeking undergraduate students
Fall 2012	202	818
Fall 2013	235	800
Fall 2014	224	818
Fall 2015	182	790
Fall 2016	238	847
Fall 2017	256	851

Note: Adapted from the "University Fact Book," 2018.

Table 2 summarizes 2012 through 2017 cohort demographics by gender status.

Table 2

2012-2017 University Enrollment Men vs. Women Students

	Number of full-time, full-time, undergraduate male students	Number of full-time, full-time, undergraduate female students
Fall 2012	114	88
Fall 2013	122	113
Fall 2014	121	103
Fall 2015	83	99
Fall 2016	122	116
Fall 2017	121	135

Note: Adapted from the "University Fact Book," 2018.

Table 3 summarizes 2012 through 2017 cohort demographics by race status.

Table 3
2012-2017 University Enrollment White vs. Minority Students

	Number of full-time, full-time, undergraduate white students	Number of full-time, full-time, undergraduate minority students
Fall 2012	155	47
Fall 2013	187	48
Fall 2014	177	47
Fall 2015	137	45
Fall 2016	154	84
Fall 2017	192	64

Note: Adapted from the "University Fact Book," 2018.

Table 4 summarizes 2012 through 2017 cohort demographics by socioeconomic status.

Table 4

2012-2017 University Enrollment Men vs. Women

	Number of full-time, full-time, undergraduate, high SES students	Number of full-time, full-time, undergraduate, medium SES students	Number of full-time, full-time, undergraduate, low SES students
Fall 2012	77	73	52
Fall 2013	115	56	64
Fall 2014	88	64	72
Fall 2015	80	45	57
Fall 2016	152	2	84
Fall 2017	66	102	88

Note: Adapted from the "University Fact Book," 2018.

Table 5 summarizes 2012 through 2017 cohort demographic and retention information.

Table 5

2012-2017 Cohort Demographic and Retention Information

	2012	2013	2014	2015	2016	2017	Average
First-Time, Full-Time Enrollment	202	235	224	182	238	256	222
Fall to Fall Overall Retention (%)	75.7%	80.0%	76.8%	79.7%	68.1%	81.3%	76.9%
Fall to Fall Female Retention (%)	81.2%	77.2%	83.4%	82.3%	73.1%	85.7%	80.4%
Fall to Fall Male Retention (%)	70.2%	82.8%	70.2%	77.1%	63.1%	76.9%	73.2%
Fall to Fall White Retention (%)	75.5%	82.4%	80.2%	85.4%	70.1%	85.4%	80.0%
Fall to Fall Minority Retention (%)	74.5%	72.9%	63.8%	62.2%	64.3%	68.8%	67.5%
Fall to Fall Low SES Student Retention (%)	73.1%	79.4%	72.2%	82.5%	59.5%	77.3%	73.3%
Fall to Fall Medium SES Student Retention (%)	79.5%	78.6%	75%	75.6%	50%	85.3%	79.5%
Fall to Fall High SES Student Retention (%)	74.0%	81.7%	81.8%	80.0%	73.7%	80.3%	78.2%

Note: Adapted from the "University Fact Book," 2018. Race status is defined by a student either classifying as white, or any other race which was grouped as minority for the purpose of this study. Socioeconomic status had three different levels: low, medium, and high. Low socioeconomic level refers to a student who is Pell Grant eligible. Medium socioeconomic level is referring to a student who is Stafford Loan eligible. Finally, high socioeconomic level refers to a student who does not qualify for either Pell Grants or Stafford Loans.

Statement of the Problem

For the state of Kansas, retention of first-time, full-time students averaged 73.5% from 2009 to 2014 (NCHEMS, 2015). Enrollment and retention of first-year students are necessary for the financial stability and growth of an institution (Noel-Levitz, 2013). While the ACT Engage© survey is used widely by universities to identify students who are at-risk for dropping out, few, if any studies have examined how the ACT engage© survey scores may differ between students' retention status, gender, race, and SES. Act Engage© survey was designed to predict

retention for first-time, full-time, undergraduate students (ACT, 2016). Studies by Bailey (2012), Reason (2009) Wilson (2012) have identified various research gaps needed to be undertaken related to the ACT Engage© survey for first-time, full-time, undergraduate students. Beyond the lack of research on ACT Engage© scores when considering race, gender or SES level, several researchers suggested recommendations for future research with the ACT Engage© survey scores to consider specific target populations such as race, gender, socioeconomic status, along with international versus domestic status, and students with disabilities (Bailey, 2012; Wilson, 2012. Reason, 2009).

Purpose of the Study

The purpose of this study was twofold: (1) to explore the difference of ACT Engage© Retention Index scores between retained and not retained first-time, full-time undergraduate students when considering gender, race, and SES level; and (2) to explore the difference between the ACT Engage© domain scores between retained and not retained first-time, full-time undergraduate students when considering gender, race, and SES level.

Significance of the Study

The ACT Engage© survey provides a report indicating the probability of first-time, full-time students being retained from fall to fall. Future research on the ACT Engage© survey needs to explore the difference between scores when considering race, gender and socioeconomic status for those students who are retained versus not retained. This study examined the differences in ACT Engage© survey scores in relation to retention rates at a Midwestern University when considering race, gender, and socioeconomic status. This study is significant in two ways. First, this study contributed to an existing gap within the body of research related to ACT Engage survey scores and retention of first-time, full-time undergraduate students related to

race, gender, and SES level. There is a dearth of research related to ACT Engage© survey scores and race, gender, and SES level (Bailey, 2012; Reason, 2009; Wilson, 2012). Second, examining the differences in ACT Engage© survey scores for the subpopulations of race, gender, and SES level provides more specific information related to retention status that can be used to design retention interventions (e.g., advising, learning communities, first-year experience curriculum) for these subpopulations at Midwestern University.

Delimitations

The researcher narrowed the focus of the study with the following delimitations:

1. The study was conducted at one private, liberal arts institution with a full-time undergraduate student population of nearly 800 students. Universities with larger populations or different geographic settings may have different outcomes.
2. The study followed a limited number of cohorts and did not track student retention beyond the student's second year, fall semester.
3. The study did not include transfer students as the ACT Engage© survey is intended for first-year students who are first-time, full-time undergraduate students.
4. The study was limited to those students who completed the ACT Engage© survey in the first-year seminar from 2012-2017.
5. The study analyzed ACT Engage© scores, student retention, and demographic information including race, gender, and socioeconomic status. Other factors such as athletic participation, residential status, and extracurricular involvement were not included in this study.

Assumptions

The study was conducted under the following assumptions:

1. Each ACT Engage© survey was administered following the procedures and guidelines governing the use of the instrument.
2. The ACT Engage© survey measures self-reported data. It was assumed the participants were truthful in their responses.

Research Questions

The study addressed the group differences between ACT Engage© domain scores and student retention through six research questions:

RQ1. To what extent did the ACT Engage© domain scores (Motivation and Skills domain, Social Engagement domain, and Self- Regulations domain) differ by retention status (retained and not retained) and gender (male and female) for first-time, full-time undergraduate students?

RQ2. To what extent did the ACT Engage© Retention Index score differ by retention status (retained and not retained) and gender (male and female) for first-time, full-time undergraduate students?

RQ3. To what extent did the ACT Engage© domain scores (Motivation and Skills domain, Social Engagement domain, and Self- Regulations domain) differ by retention status (retained and not retained) and socioeconomic level (low, medium, and high) for first-time, full-time undergraduate students?

RQ4. To what extent did the ACT Engage© Retention Index score differ by retention status (retained and not retained) and socioeconomic level (low, medium, and high) of first-time, full-time undergraduate students?

RQ5. To what extent did the ACT Engage© domain scores (Motivation and Skills domain, Social Engagement domain, and Self- Regulations domain) differ by retention status

(retained and not retained) and race (white and minority) for first-time, full-time undergraduate students?

RQ6. To what extent did the ACT Engage© Retention Index score differ by retention status (retained and not retained) and race (white and minority) for first-time, full-time undergraduate students?

Definition of Terms

Academic Success Index: Indicates the likelihood of a GPA of 2.0 or higher after the first semester at a postsecondary institution (ACT, 2015a).

Academic discipline: The amount of effort a student puts into schoolwork and the degree to which a student is hardworking and conscientious (ACT, 2015a).

Academic self-confidence: The belief in one's ability to perform well in school (ACT, 2015a).

At-risk student: A student at-risk for poor grades and dropping out, beyond measures of academic performance.

Attainment: Achieving an educational goal such as a certificate or degree.

Attrition: A decrease in the size of a cohort. Attrition occurs when students drop out (fail to re-enroll) or stop out (do not re-enroll continuously).

Commitment to college: A student's dedication to staying in college and earning a degree (ACT, 2015a).

Communication skills: Attentiveness to others' feelings and flexibility in resolving conflicts with others (ACT, 2015a).

Developmental Classes: Courses conducted to aid students who have been denied regular admission to an institution because of failure to meet specified admission and placement

requirements or because of predicted risk in meeting the requirements of college-level courses.

First-year, first-time students: Freshman students who enter the university without prior full-time postsecondary experience.

Full-time student: A student enrolled in 12 or more credit hours in a fall or spring semester.

Gender: "The socially constructed characteristics of women and men – such as norms, roles, and relationships of and between groups of women and men" (World Health Organization, n.d., p.1)**.** Defined in this study by two categories: either male or female.

General determination: The extent to which one strives to follow through on commitments and obligations (ACT, 2015a).

Goal striving: The strength of one's efforts to achieve objectives and end goals (ACT, 2015a).

Motivation and Skills Domain: Personal characteristics that help students succeed academically by focusing and maintaining energies on goal-directed activities. This domain includes the ACT Engage© survey scales of Academic Discipline, General Determination, Goal Striving, Commitment to College, and Study Skills (ACT, 2016).

Persistence: the act of continuing to enroll from semester to semester towards educational attainment. In this study, the terms persistence and retention were used interchangeably.

Race: A group of individuals who share a common culture or history. Defined in this study by two categories: white or minority.

Retention: The percentage of a given cohort that is enrolled full-time at the institution the following fall. If students drop to part-time, they were no longer consider retained within a

cohort but were considered for university headcount. Defined in this study by two categories: active or no longer attending.

Retention Index: A measure of the student's likelihood of returning the second year. This should not be interpreted as explicitly predicted probabilities of retention (ACT, 2015a).

Self-Regulation domain: Cognitive and affective processes used to monitor, regulate, and control behavior related to learning. This domain includes the ACT Engage© survey scales of Academic Self-Confidence and Steadiness (ACT, 2016).

Social activity: One's comfort in meeting and interacting with other people (ACT, 2015a).

Social connection: One's feelings of connection and involvement with the college community (ACT, 2015a).

Social Engagement domain: Interpersonal factors that influence students' successful integration or adaptation into their environment. This domain includes the ACT Engage© survey scales of Communication Skills, Social Connection, and Social Activity (ACT, 2016).

Socioeconomic Status: The social standing of an individual. It is measured as a combination of education, income and occupation (American Psychological Association, n.d.), Defined in this study by three categorical levels: low, medium, or high. Low socioeconomic level refers to a student who is Pell Grant eligible. Medium socioeconomic level is referring to a student who is Stafford Loan eligible. Finally, high socioeconomic level refers to a student who does not qualify for either Pell Grants or Stafford Loans.

Steadiness: One's responses to and management of strong feelings (ACT, 2015a).

Study skills: The extent to which students believe they know how to assess an academic problem, organize a solution, and successfully complete academic assignments (ACT, 2015a).

Organization of the Study

This study consisted of five chapters. The first chapter provided the background and statement of the problem, the purpose of the study and its significance to the knowledge base within higher education. It also included the specification of the six research questions that guided the study as well as the definition of key terminology, assumptions, and delimitations. Chapter two provides a review of literature related to retention. Chapter three describes the method used in conducting the research study and includes the research design, population of the study, sampling procedures, measurement, data collection procedures, research questions and the associated hypotheses, and limitations. Chapter four presents the results of the hypothesis testing. Chapter five provides a summary of the findings including major findings, conclusion, implications for actions, and recommendations for future.

Chapter Two

Review of Literature

This review of literature focused on three overarching areas related to the use of the ACT Engage© Survey (formally the Student Readiness Inventory or SRI) to predict retention of college students. These areas include an overview of student development and retention theories, a review of current retention practices within higher education and literature, and research related to the ability of the ACT Engage© Survey to predict retention of college students.

History of Retention Theory and Practice

The first college in the United States was Harvard, founded in 1636 (Thelin, 2004). Early higher education systems in the United States catered to very select students and offered very limited degree programs. Additionally, completions at these early institutions were rare. Universities and colleges focused more on "survival then graduation" (Demetriou & Schmidtz-Sciborski, 2011, p.1). As a result of the Morrill Land Grant of 1862 and the growth of cities and urban life in the early 1900s, more institutions of higher education were created allowing more individuals to access higher education. Emerging lifestyles and a need for scientists to work in industrialized areas led to changes in the ways knowledge was organized, resulting in more prescriptive curriculums and a desire to obtain a degree (Thelin, 2004). While there was a need to obtain a degree in the 1900s, universities were not immediately focusing on retention.

"The earliest studies of undergraduate retention in the United States occurred in the 1930s and focused on what was referred to at the time as student mortality: the failure of a student to graduate" (Demetriou & Schmidtz-Sciborski, 2011, p.1). The study of education and retention did not begin developing until the 1960s when publications such as Gekoski and

Schwartz's (1961) "Student Mortality and Related Factors" along with Panos and Astin's (1968) "Attrition Among College Students" were published. While these articles focused more on retention, they were in the context of the reasons students failed to persist as opposed to why students succeeded. Strength-based approaches to retention involve studying successful students, examining what creates successful experiences, and deciding what in return can be applied to supporting students (Demetriou & Schmidtz-Sciborski, 2011). The following retention theories evolved from student mortality and into theories for student success.

Retention theories. Alfred (1973) studied the impact that university environments had on student attrition. Alfred's research suggested that the college's personal, psychological, and financial commitment to students have a direct impact on the persistence of students. Alfred's research launched Tinto's (1987) student integration model which theorized that students who socially integrate into the campus community increase their commitment to the institution and are more likely to graduate. Tinto's model has been adapted several times over the past 40 years to include motivational variables such as goal commitment and social integration (Demetriou & Schmitz-Sciborski, 2011).

By the end of the 1970s, the number of students enrolling in higher education began to decline (Demetriou & Schmitz-Sciborski, 2011). With this decline came the emergence of enrollment management as a practice and a field of study within colleges (Demetriou & Schmidtz-Sciborski, 2011). Astin (1977), along with Bean (1980), became notable theorists during this time of transition. Astin (1977) defined college persistence as a student who completes a degree program within a specified time. Astin's research on student persistence focused on the students' behavior within a college environment while considering the students' attitude, beliefs, and personal fit on college campuses. Bean (1980) examined the importance of

background characteristics, such as prior academic performance, distance from home and socioeconomic status, as well as student satisfaction, in determining student departure from college. Pascarella and Terenzini (1979) continued this research by explaining the students' cognitive, moral, and psychosocial development. They theorized students' lack of integration into the college environment as a contributor to withdrawal. Pascarella and Terenzini found that a significant predictor of student attrition was the students' unfamiliarity with college faculty, staff, and the college processes (1979).

Astin (1984) continued this research by publishing a student development theory that organized research through three elements: input, environment, and outcomes. A student's "input" includes his/her demographics, backgrounds, and previous experiences that affect student development. Research by McDonough (2004) revealed that "students and families lack awareness and understanding of college prices and financial aid limits many students of color and low-socioeconomic status students' preparation for college. Aspirations do not develop when college seems financially unattainable" (p. 8). From the 1980s through today, research continues to note differences in retention by understanding the different inputs students bring with them, the environment which universities build to support retention and student success, and the outcomes of either successful graduation or attrition (Demetriou & Schmidtz-Sciborski, 2011).

University administrators must build an environment that is accepting of all students while allowing all students to have an equitable chance at being integrated into the university. If the university can find a way to get students involved and engaged, students are more likely to be retained (Astin, 2003; Kuh, 2007). Tinto (1987) examined the dropout behavior of students and the factors that contributed to this behavior. The level of support a student receives from either

his/her family or the institution plays a significant role in the student's academic and social integration into college. This level of support affects students' abilities to persist beyond the first semester (Tino, 1987).

Retention literature in the 1990s focused on students of color, underrepresented populations, and individuals from disadvantaged backgrounds. Tinto (1993) identified different student groups such as African American students, low-income families, adult students, and transfer students. Tinto (1993) noted that with each of these unique inputs, group-specific interventions and policies were needed. First-year experiences along with quality support services became a focal point for higher education institutions in their pursuit of improving retention and graduation rates. Universities worked to stress collaboration across campus departments, along with strategic collaborations among academic services, curriculum and instruction, student services, and financial aid processes in order to meet the needs of students and provide quality support services.

Perna and Titus (2005) found that the lower enrollment rates for African Americans and Hispanics were due, in part, to lower levels of resources available to support their college transition. Historically, minority students who graduate from high school have received less than ideal academic preparation in K-12 education (Perna and Titus, 2005). As a result of this lack of preparation, barriers to access college often limit minority students' idea of academic achievement, which is the most important determinant on whether or not students go to college (McDonough, 2004).

Finally, student outcomes are the students' knowledge, attitudes, beliefs, and values after graduation (Astin, 1984). Students depart a university early because their experience does not meet the students' expectations. "Historically underrepresented students encounter challenges

when they get to college and find it difficult to take advantage of their school's resources for learning and personal development" (Kuh, 2007, p. 17). The reason students leave school without graduating may be due to a list of reasons, but often these students did not accomplish what they expected initially or were not able to find the resources to address their needs appropriately.

Factors Related to Retention

There are many reasons why students may leave a university without graduating (Astin, 2003; Kuh, 2007; Perna and Titus, 2005, Tinto, 1994). These reasons include personal motives, lack of integration, dissatisfaction with a course or the institution, lack of preparedness, incorrect choice of course, fiscal reasons, or pursuit of a more attractive opportunity (Astin, 2003; Kuh, 2007, Perna and Titus, 2005, Tinto, 1994). Beyond these reasons, there has been research on the relationship among race, gender, and socioeconomic factors with retention (Astin, 1975; Hanover, 2010; Reason, 2009; Strayhorn, 2012, and Tinto, 1987).

Retention and race. Research related to retention and race reveals differences across racial groups. Ma, Pender, and Welch (2016) reported the gaps in college enrollment rates of recent high school graduates differ among whites (69%), blacks (61%) and Hispanics (65%). The percentage of female adults age 25 to 29 who completed at least a bachelor's degree was 24%, 18%, and 45% for blacks, Hispanics, and whites, respectively (Ma, Pender, and Welch, 2016). For males, these percentages were 19%, 13%, and 38% for blacks, Hispanics, and whites, respectively. Not only are fewer blacks and Hispanics attending college, but they are also graduating with a bachelor's degree at much lower rates than white students (Demetriou & Schmitz-Sciborski, 2011). The national conversation has shifted to focusing less on increasing

college enrollment and more on the challenging problem of supporting enrolled students through completion.

This navigation starts before students step on campus. Universities must advocate for processes and resources to support students from various racial backgrounds. Changes in the need and availability of financial aid are likely to influence who goes to which colleges (Coomes, DeBard, 2004). “Unless financial aid policies change, or we see a shift in how income is distributed, expect an even greater disparity in the enrollment patterns of lower-income students, among whom students of color and first-generation citizens are found in greater numbers” (Coomes, DeBard, 2004, p.83). Rodgers (2013) conducted a study and affirmed minority students were less likely to continue their education than other students. Financial problems were the primary indicator affecting the African American student population resulting in lower retention rates of this population. Students of color typically attend colleges where tuition and fees are lower than four-year colleges; allowing for more work hours while attending college full-time (Coomes, DeBard, 2004). Universities must work to build a culture that is welcoming to minority students, along with providing intervention strategies that promote student success on campus.

Minority groups have the highest rate of departure among college students (Hanover, 2010). Hanover (2010) found that Blacks (39.2%), multiple races (38.7%), American Indian (37.9%), and Hispanic (34.8 percent) have the highest college dropout rates of their peers in comparison to only 29.3% of whites. Asian/Pacific Islander students have the lowest dropout rate (22.4%). Minority students were more likely not to be retained because their institution would not allow them to return due to either academic or financial reasons. On the other hand, white students were more likely to withdraw voluntarily (Lambert Doran, 2015).

Retention and gender. While race has been an important factor related to graduation and retention, gender is also an important factor. Since the late 1980s, the enrollment rate for recent female graduates has consistently exceeded that of recent male graduates (Ma, Pender, and Welch, 2016). The average gender gap increased from 2% between 1985 and 1995 to 5% the following decade. Between 2005 and 2015, this gap has grown to 6% (Ma, Pender, and Welch, 2016).

Along with women enrolling at higher rates, Hanover (2010) reported a higher percentage of males (34.2%) leave college in comparison to females (28.4%). While research continues to reveal a gender gap, little research has been done to determine the reason for this gap. Research results have been mixed regarding the influence of a student's gender on retention (Astin, 1975; Hanover, 2010; Reason, 2009; and Tinto, 1987). Astin (1975) and Tinto (1987) found gender was significantly related to whether a student was retained. Reason (2009) reported relatively consistent findings that gender was predictive of retention with women more likely to be retained than men. In contradiction though, "a large retention study conducted using data from ACT, Inc., found that gender failed to reach significance in the multivariate models, however in a simple model was a significant predictor" (Reason, 2009, p. 180). These results indicated that gender interacts with other variables in the models rather than directly playing a single role in students' retention. Pascarella and Terenzini (1983) explained this interaction could be due to social factors versus academic reasons. Academic integration was found to be more influential among men while social integration had a stronger direct influence on retention among women.

Sommers (2001) found that males have more discipline problems where females are more likely to pay attention in class, work with others, organize and keep track of homework and seek help from others. Evers and Mancuso (2006) related their findings to differences in socialization

patterns. “They conclude that the education system rewards characteristics more typically found in women, such as obedience, concentration and self- control” (Severiens and ten Dam, 2011, p.455). Jorgensen et al. (2009) arrived at a similar conclusion on the basis of research using the Student Readiness Inventory. Males scored lower on academic discipline and communication skills. They also scored lower on motivation. Woodfield et al. (2006) stated that the most frequent explanation for gender differences refers to differences in learner identity: women work harder and more consistently than men. Trueman and Hartley (1996) added to this conclusion by explaining gender differences in academic performance as a result of women’s better time management skills. Finally, gender differences in higher education are related to goals. Grebennikov and Skaines (2009) argued that women find academic goals more important than men, and they place a greater value on higher education, mainly because women need to better prepare themselves in order to have the same chances in the job market.

Retention and socioeconomic factors. Kalsner (1991) studied the reasons for drop-out and determined that only 15% of students drop-out because of academic reasons. Based on this finding, Kalsner believed that there were many other reasons behind student drop-out. One of those reasons was the cost of education. Financial aid plays a role in assisting students’ ability to continue in college until graduation. The federal government uses the Estimated Family Contribution (EFC) to evaluate a family’s ability to contribute to a student’s education when determining the level of aid a student receives. (Lambert Doran, 2015). Having access to enough financial support through student aid improves a student’s chance of graduation (DesJardin, 2002). Horn, Peter, and Rooney (2002) identified the most common risk factor of drop-out as financial stress. Students who are independent financially from their families or those working fulltime are less likely to persist to graduation (Horn, Peter, and Rooney, 2002).

Students whose families have a history of college attendance on average come from middle-and upper-class families and typically feel confident in their decision to attend college (Lambert Doran, 2015). Conversations and expectations about college attendance are generally part of family life. Conversely, for students whose families do not have a history of college attendance, the decision to attend college is typically not automatic or expected. Students struggle weighing the costs and benefits of attending college versus working full time to help supplement the family income. Rendon Linares & Munoz (2011) introduced the validation theory with particular applicability to low-income students enrolled in higher education.

> Students question if they are “college material," which often stems from past invalidation in their prior schooling experiences. Many of these students hail from communities where college graduates are scarce. Consequently, they have few role models and friends in their communities who can help them navigate the college-going process (i.e., filling out college admissions and financial aid applications, taking college entrance exams, selecting appropriate programs) (Rendon Linares & Munoz, 2011, pg. 12).

While college involvement is the desired activity for these students, they are often unaware of the opportunities and resources as they do not know what questions to ask. For students whose families do not have a history of attending college, institutional validation can be the key to attaining success in college.

The gaps across socioeconomic groups are areas of growth needed to achieve the promise of equal opportunity for all. In 2016, Ma, Pender, and Welch reported that 82% of high school graduates from the highest income quintile (above $100,010) enrolled immediately in college. This enrollment rate for high income is compared to 62% of those from the middle-income quintile ($37,000 - $60,300) and 58% of those from the lowest income quintile (below $20,582).

As reported previously, students from lower socioeconomic status (SES) groups graduate at lower rates than those from higher SES groups. Universities must work to provide greater ease in applying to college while providing avenues for accessing financial aid (McDonough, 2004; Perna and Titus, 2005).

The Advisory Committee on Student Financial Assistance, stated the gap between those who can afford to go to college and those who cannot afford to go to college has been "exacerbated by shifts in private and state-based financial aid awards from the need to merit and from grants to loans, and the decreasing purchasing power of Pell Grants" (Coomes, DeBard, 2004, p. 74). Hanover (2010) found the top three reasons students leave private, not-for-profit schools were either financial reasons (24.5%), work-related (16.5%) or family status changes (14.9%). All three of these have a direct relationship to socioeconomic values.

Increasing completion rates requires resources and support for both students and the institutions in which they enroll. As Kuh (2008) and Rendon Linares & Munoz (2011) reported, retention requires more personalized guidance about how to apply, what to study, along with more organized paths into college. Academic validation is one way to cover this support. Academic validation occurs when university employees act to assist students while trusting the student's ability to learn (Rendon Linares & Munoz, 2011). "In classrooms, faculty create learning experiences that affirm the real possibility that students can be successful" (Rendon Linares & Munoz, 2011, pg. 18). This belief is accomplished when faculty emphasize the notion that what students know and bring to the classroom is valuable. Students interpersonal validation occurs when employees act to foster students' personal development and social adjustment (Rendon Linares & Munoz, 2011). Employees affirm students as persons, not just as students. Faculty do not detach themselves from students but rather build supporting, caring relationships

with students and allow students to be successful. When this validation is accomplished, successful retention can occur (Rendon Linares & Munoz, 2011).

Importance of Retention Practices

Since 2000, the national percentage of first-year students who have returned for the second year fell from 75.1% to 71.8% (ACT, 2015b). Addressing this decrease in retention is important for higher education as retention and graduation of students have a direct impact on not only the future of the institution but the future of students (Bean, 1990; Caumont, 2014; Ma, Pender, & Welch, 2016; Watts, 2001). While higher education improves the lives of Americans along with the American economy, Fishman, Ekowo, and Ezeugo (2017) reported that tuition and fees have been rising much faster than the rate of inflation. "From 2006 to today, the Consumer Price Index for tuition and fees increased 63 percent, compared with 21 percent for all other items (such as food, energy, and housing)" (Fishman, Ekowo, and Ezeugo, 2017, p. 26). Students and families are not only feeling the crunch over the price of tuition and fees, but the cost of textbooks and housing have increased 88 percent and 51 percent, respectively, over the past ten years (Fishman, Ekowo, and Ezeugo, 2017).

With the current economics of the U.S., it is important for institutions of higher learning to implement best practices related to retention within a university. "Best practices are referred to in benchmarking as typically the finest examples of the process, program delivery, or method in a given area that produces the highest known quality of outcomes" (Bresciani., Zelna, & Anderson, 2004, p. 46). Members of the Hanover Research Council (2010) found the most successful retention practices and programs for four-year, private colleges included freshman seminars and orientations, integration of advising within first-year transition programs, the use of advising interventions with selected student populations, and the use of learning assistance

centers. Table 6 presents the top 16 best practices with their mean contribution to retention.

Table 6

Practices with Highest Mean Contribution to Retention, Four-Year Private Colleges

	Mean Contribution
Freshman Seminar/ University 101 (Credit)	3.9
Integration of Advising with First Year Transition Programs	3.9
Advising Interventions with Selected Student Populations	3.8
Increased Advising Staff	3.8
Comprehensive Learning Assistance Center/Lab	3.8
Internships	3.7
Learning Communities	3.7
Reading Center/Lab	3.7
Tutoring Program	3.7
Faculty Mentoring	3.7
Extended Freshman Orientation (non-credit)	3.6
Extended Freshman Orientation (credit)	3.6
Freshman Seminar/University 101 (non-credit)	3.6
Summer Bridge Program	3.6
Program for Honors Students	3.6
Required On-Campus Housing for Freshman	3.6

Note: Adapted from "Best Practices," 2010.

Selingo (2015) surveyed a random sample of 4,108 enrollment leaders at 326 not-for-profit institutions on what retention programs, services, curricular offerings, and interventions were offered at their institutions. Retention practices with the highest incident rates to promote student success at four-year private colleges are listed in Table 7.

Table 7
Activities Most Used to Promote Student Success, Four-Year Private Colleges

	% of Institutions Using
Orientation	98%
Academic Tutoring or Coaching	87%
Midterm Academic Progress Alert	82%
Intervention Alert System	81%
Writing or Study Skills Programs	79%
First-Year Program	72%
Career Exploration Programs	72%
Freshman Seminar	68%
Mentoring Programs	63%
Improving Student Awareness of Key Services	62%
Degree Planning	59%
Faculty Instructional Development	53%
Placement and Assessment Programs	52%
Intrusive Advising	46%
Living and Learning Communities	42%
Professional Advising	36%
Summer Bridge Programs	36%
Monitoring of Gateway Courses	27%

Note: Adapted from "Student Success," 2015.

While there are many retention programs from which to choose, it takes a university system to create its specialized approach to retention. Selingo (2015) identified five approaches universities use to improve student success: comprehensive strategy, basic strategy, first-year strategy, graduation strategy, and academic strategy. Within each of these strategies, there are multiple practices and programs that exist. A comprehensive strategy refers to the student success efforts that span from the first year throughout graduation including academic and nonacademic strategies. The basic strategy denotes the emphasis on the basics of student success

while focusing on the implementation of only a few other retention initiatives. The first-year strategy indicates a focus on maintaining students through only the first year. A graduation strategy refers to the institution's balance on retention and graduation. Finally, the academic strategy signifies a strong focus on curricular elements of students' success (Selingo, 2015). Table 8 includes the practices used in each strategy. Table 9 presents the percentage of overall institutions using each strategy.

Table 8

Common Practices of Each Strategy to Retention and Student Success

	Comprehensive	Basic	First-Year	Graduation
Academic Tutoring or Coaching	X		X	X
Audits of Transfer transcripts	X			
Career Exploration Programs	X		X	X
Debt and Financial Management Programs	X			
Degree Planning	X		X	X
Faculty Instructional Development	X	X		
Financial Aid Counseling Prior to Enrollment	X			
First-Year Program	X			X
Freshman Seminar	X			X
Improving Student Awareness of Key Services	X		X	
Intervention Alert System	X		X	X
Intrusive Advising	X			
Living and Learning Communities	X			
Mandatory Notification of Grades			X	
Mentoring Programs	X		X	
Midterm Academic Progress Alert	X		X	
Monitoring of Gateway Courses	X			
Orientation	X	X	X	X

Placement and Assessment Programs	X		
Professional Advising	X		X
Re-enrollment Outreach	X		
Revisions to Academic Policies	X		
Summer Bridge Programs	X		
Writing or Study Skills Programs	X	X	X

Note: Adapted from "Student Success," 2015.

Table 9

Five Approaches to Retention and Student Success

	% of All Institutions Using	% of Small Privates Using
Comprehensive Strategy	26%	19%
Basic Strategy	17%	43%
First-Year Strategy	23%	48%
Graduation Strategy	22%	11%
Academic Strategy	12%	54%

Note: Adapted from "Student Success," 2015.

According to previous research, each institution has varying retention practices. Midwestern University's current practices regarding retention are outlined in Table 10.

Table 10

Midwestern University's Current Retention Practices

Initiative	Implemented (X)	Not Implemented (X)
Academic Tutoring or Coaching	X	
Audits of Transfer transcripts	X	
Career Exploration Programs	X	
Degree Planning	X	
Faculty Instructional Development	X	
Financial Aid Counseling Prior to Enrollment	X	
First-Year Program	X	
Freshman Seminar	X	

Improving Student Awareness of Key Services	X	
Intervention Alert System	X	
Mandatory Notification of Grades	X	
Orientation	X	
Placement and Assessment Programs	X	
Revisions to Academic Policies	X	
Summer Bridge Programs	X	
Writing or Study Skills Programs	X	
Debt and Financial Management Programs		X
Intrusive Advising		X
Living and Learning Communities		X
Mentoring Programs		X
Midterm Academic Progress Alert		X
Monitoring of Gateway Courses		X
Professional Advising		X
Re-enrollment Outreach		X

Note: Adapted from C. Bailey, personal communication, November 11, 2017.

Recently, psychosocial traits have become a primary way of examining retention theory and identifying those students with inadequate academic preparation. Robbins et al. (2004) identified nine broad constructs of psychosocial and study skill factors: achievement motivation, academic goals, institutional commitment, perceived social support, social involvement, academic self-efficacy, general self-concept, academic-related skills, and contextual influences (including financial support, size of institutions, and institutional selectivity). After controlling for standardized achievement testing and other background factors (e.g., high school GPA and demographics), there was substantial evidence psychosocial and study skill predictors contribute to incremental validity for predicting retention. From this research, ACT created the Student

Readiness Inventory (SRI), which officially rebranded as the ACT Engage© Survey in 2012 (ACT, personal communication, November 22, 2017).

Historical Review of ACT Engage© Survey

With national retention rates declining, ACT Engage© survey was developed by American College Testing (ACT) to measure students' psychological readiness for college and identify student populations needing individualized support in the transition to postsecondary institutions. Studies by Allen, Robbins, Casillas, & Oh (2008), Le et al.(20050, Robbins et al. (2004), and Robbins et al. (2006) found the use of the ACT Engage© survey, along with well-designed intervention programs at postsecondary institutions, improved retention. The development of the ACT Engage© survey evolved from the Robbins et al. (2004) meta-analysis of 109 studies examining the relationship between psychological attributes, study skill factors, and college outcomes. Robbins et al.'s (2004) research had two purposes: to bring together the literature of college success theories and constructs to "increase the understanding of the relative efficacy of psychological, social, and study skill constructs on college success" (p. 261), and to explore the relationship of the constructs to academic achievement by examining a variety of study skills and psychological factors in calculating student retention. Robbins et al.'s meta-analysis study was the first to examine academic achievement and psychological domains.

Robbins et al. (2004) examined if specific predictors correlated to specific outcomes. Multiple regression models were utilized to examine to what extent study skill factors predicted academic success and retention. The result of the 197 correlations for retention criteria and the 270 correlations for academic success criteria found that study skill factors (e.g., academic goals, commitment to the institution, social support and involvement, and academic self-efficacy)

positively correlated to retention. These same four study skill factors also had a positive correlation to academic success, but not as strong (Robbins et al., 2004).

Robbins et al. (2004) continued their research and controlled for the effects of traditional predictors (high school grade-point average, standardized entrance exams, and socioeconomic status) with persistence. After controlling for these traditional predictors, three psychosocial constructs of academic self-efficacy, achievement motivation, and academic goals were found to predict academic performance. Six constructs—academic goals, academic self-efficacy, institutional commitment, academic-related skills, social support, and social involvement – predicted persistence. Robbins et al. developed three higher-order constructs: motivation, academic-related skills, and social engagement as a composite of psychosocial and academic-related skill predictors. Table 11 presents the original concept of the ACT Engage© survey model.

Table 11

Original Conceptual Model for the ACT Engage© survey

Domain	Construct	Definition
Motivation	Conscientiousness	The extent to which a student is self-disciplined, achievement-oriented, responsible, and careful.
	Goal focus	The extent to which a student has functional, well-defined academic goals and is committed to achieving these goals.
	Academic self-confidence	The extent to which a student has confidence in his or her academic abilities and is willing to use these abilities to cope with academic challenges.
Academic-related skills	Study skills	The ability to develop effective strategies and habits for learning in an academic environment.
	Problem-solving skills	The ability to use a process of identifying an obstacle, considering solutions, making decisions, and taking appropriate action that results in positive outcomes.
	Communication skills	The ability to exchange information effectively with others.
	Emotional control skills	The ability to understand and effectively manage one's emotions.
Social engagement	Teamwork	The ability to work collaboratively with others.
	Social Activity	The ability to develop and maintain relationships with others.
	Social connection	The extent to which a student (a) feels connected to his or her environment, and (b) has available social resources.

Note. Adapted from "Motivational and skills, social, and self-management predictors of college outcomes: Constructing the Student Readiness Inventory," by Le et al., 2005, *Educational and Psychological Measurement, 65,* p. 487.

Seeking to develop a comprehensive psychosocial and skills inventory for predicting college success, Le, Casillas, Robbins, and Langley (2005) reconstructed the ACT Engage© survey from a study using a rational, empirical methodology from the previous work of Robbins

et al. (2004). The goal was to "develop an inventory of psychosocial and skill factors that (a) captured higher-order constructs, (b) included constructs missing that may be predictive of college success, and (c) established the foundation for the construct validation process of the resulting inventory" (Le, Casillas, Robbins, and Langley, 2005, p. 483).

Le et al. (2005) defined Robbins et al.'s (2004) three higher-order constructs by including additional constructs not originally examined by the meta-analysis. Using a construct validation approach, Le et al. (2005) developed interest scales and sought feedback from professional experts on the appropriateness of the items based on the constructs. Sample assessments were administered to secondary and postsecondary students. Using a second-order factor analysis and revisions based on confirmatory analysis, the researchers developed a higher-order scale structure. The final draft was then administered to participants at 50 institutions (22 high schools, 22 community colleges, and 6 four-year universities), which returned 5,970 usable questionnaires for four steps of data analysis: exploratory factor analysis, confirmatory factor analysis, analysis for scale properties determination, and second-order analysis (Le et al., 2005).

As a result of this work, Le et al. (2005) determined ten first-order factors, of which six (commitment to the college, goal striving, academic self-confidence, study skills, social connection, and social involvement) were similar to Robbins et al.'s (2004) study. The other four factors (academic discipline, general determination, communication skills, and emotional control) were based on Le et al.'s (2005) study. These ten factors were modified from the original concept to be grouped into three domains: the Motivation and Skills domain, Social Engagement domain, and Self-Regulation domain (Le et al., 2005).

Using Le et al.'s (2005) work, survey designers at ACT developed the ACT Engage© survey to identify students at-risk of attrition and unsuccessful academic performance (ACT,

2010). Utilizing the ACT Engage© survey, ACT tested 14,000 students at 48 colleges and universities and followed the students through their postsecondary careers. The results validated the ACT Engage© survey as a predictor of retention and academic performance beyond traditional academic achievement measures (Allen, Robbins, Casillas, & Oh, 2008; Robbins et al., 2006). Table 12 presents the final ACT Engage© survey domains, scales, and definitions. Campus-specific implementation results are the next important piece when considering the history of the ACT Engage© survey.

Table 12

ACT Engage© Survey Domains, Subscales, and Definitions

Domain	Subscales	Definition
Motivation and Skills	Academic discipline	The amount of effort you put into your schoolwork, and the degree to which you see yourself as hardworking and conscientious.
	Commitment to college	Your commitment to staying in college and getting a degree.
	Communication skills	How attentive you are to others' feelings and how flexible you are in resolving conflicts with others.
	Study skills	The extent to which you believe you know how to assess an academic problem, organize a solution, and successfully complete academic assignments.
	General determination	The extent to which you strive to follow through on commitments and obligations.
	Goal striving	The strength of your efforts to achieve your objectives and end goals.
Social Engagement	Social activity	How comfortable you feel meeting and interacting with other people.
	Social connection	One's feelings of connection and involvement with the school community.

Self-Regulation	Steadiness	Your responses to strong feelings and how you manage those feelings.
	Academic self-confidence	The extent to which you believe you can perform well in school.

Note. Adapted from "ACT Engage© College User's Guide," by ACT, 2015a

Application of the ACT Engage© Survey.

During the summer and fall of 2006, the administration at Northern Arizona University (NAU), a four-year public institution of nearly 13,000 undergraduate full-time students, required all incoming students (n = 3,400) to complete the ACT Engage© survey. They received a total of 2,487 useable questionnaires. NAU witnessed a 30% dropout rate the previous year, and as a result, required the ACT Engage© survey to be used to identify early at-risk students. The ACT Engage© survey was dispensed to new students during summer orientation, which allowed early identification of at-risk students in order to provide follow-up meetings with academic support staff. These meetings were used to match areas of concerns with specific campus resources. A matrix of campus offices and organizations were developed to assist academic advisors in connecting students with appropriate resources based on individual scores. It was concluded that at-risk students who met with academic support staff were more likely to use available resources, have higher success rates, and complete their first year than those at-risk students who did not attend a meeting. Students who met with support staff were more likely to be retained (68%) and less likely to be on academic probation (19%) in comparison to students who did not participate in retention meetings (62% retained; 25% on academic probation) (ACT, 2010).

Wilson (2009) administered the ACT Engage© survey to all new students at the University of North Texas, a four-year public research institution of 35,000 students. The goal was to identify students with the highest risk of academic difficulties early in their college career

in order to provide an individualized approach to help these at-risk students succeed through the first semester and build a foundation for their postsecondary career. During the first quarter of the semester, identified students met with student support services for one-on-one interventions and were provided an overview of campus services connecting ACT Engage© survey scores to campus resources. This study provided results that were statistically significant. Seventy-three percentage of students who participated in interventions remained in good standing through the fall semester compared to 63% who did not participate in the intervention meeting. First semester GPAs of students receiving the intervention (2.24) were higher than those who did not receive the intervention (2.14). Finally, 93% of the students participating in interventions returned for the spring semester versus 89% who did not participate in these interventions (Wilson, 2012).

Allen (2009), administered the ACT Engage© survey to at-risk students (n=55) during their first year in college. The study assisted Utah State University in building an intervention model that met individual students' specific needs. After implementing the interventions, administrators at Utah State found their retention mean index (76.65) was significantly greater than national Retention Index (72.30). In addition, Allen (2009) found the ACT Engage© survey was a "very effective tool" for identifying students who may drop out due to social engagement reasons. Recommendations from Allen's 2009 study suggested that the university continue using the survey while requiring all students to complete the inventory. Along with this recommendation, there was also a recommendation to design a one credit hour class that would address at-risk recommendations (Allen, 2009).

Bailey (2012) utilized the ACT Engage© survey to identify at-risk students (n = 829) during the first-year in college to determine if there was a correlation between ACT Engage©

survey retention scores and Baker University's actual retention rates. Taking a post hoc quasi-experimental approach, the researcher compared ACT Engage© survey domain scores to academically successful and unsuccessful students and retained and not retained students. Bailey (2012) concluded that a relationship existed between ACT Engage© survey retention scores and actual retention rates. Motivation Skills domain scores and Self-Regulation domain scores were significantly higher for retained students. The Social Engagement domain did not show a statistically significant relationship between retained and not retained students. Findings were discussed in terms of student success along with retention status' in the postsecondary institutions (Bailey, 2012).

Summary

Through all empirical research completed previously with the ACT Engage© Survey, very limited research has been completed on the difference in ACT Engage© scores on retention when considering race, gender, or socioeconomic status. This study explored the difference of ACT Engage© scores between retained and not retained first-time, full-time undergraduate students when considering gender, race, and SES level.

Chapter Three

Methods

This research was an extension of Bailey's (2012) research. While Bailey studied overall student retention and academic success, this descriptive, quantitative study examined the differences in ACT Engage© survey scores in relation to retention rates at a Midwestern University when considering race, gender, and socioeconomic status. This chapter provides an overview of the research methodology utilized in this study including descriptions of the research design, selection of participants, measurement, data collection procedures, data analysis and hypothesis testing, and limitations.

Research Design

The quantitative methodology used in this study involved a quasi-experimental method to measure the differences between variables. Quasi-experimental research methods are used when individuals are not randomly assigned to the procedure (Creswell, 2014). The dependent variables in this study were ACT Engage© survey domain scores, and ACT Engage© survey Retention Index scores. The independent variables were retention status, race, gender, and socioeconomic status. The categorical variable of race included white or minority. The categorical variable of gender included male or female. The categorical variable of socioeconomic status included low SES (Pell Grants recipients), medium SES (Stafford Loan recipients), and high SES (no Pell Grants or Stafford Loan recipients). The categorical variable of retention status included either retained or not retained as full-time students from fall to fall. The continuous variables included ACT Engage© domain scores and ACT Engage© Retention Index scores.

Selection of Participants

Archival data were used for this study including all first-year, full-time students enrolled at the Midwestern University during fall 2012 to fall 2017 years (*n*=1337). For cohorts 2012-2017, students completed the ACT Engage© survey as part of their first-year experience class as an assignment. Students were to complete the assignment in the first three weeks of the class. After the deadline passed, all scores were posted to ACT for scoring analysis. Within a week, ACT returned three reports to the University. Students from these cohorts who did not complete the ACT Engage© survey were not included in this study (*n*=146). Also, students whose ACT Engage© survey scores were flagged by ACT as providing an unusual pattern of responses were removed (*n*=13) as the scores based on these responses may not accurately reflect the student's skills and/or level of predictive success (ACT, 2010).

Measurement

The ACT Engage© survey was selected as the instrument for this study. The ACT Engage© survey measures psychological features that are linked to retention (Le et al., 2005; Robbins et al., 2004). The ACT Engage© survey consists of 108 questions (see Appendix B), which uses a 5-point Likert scale from "Strongly Agree" to "Strongly Disagree" to assess responses across three domains incorporating the ten subscales outlined in Table 13. Statements are written from the first-person point of view and represent the ten ACT Engage© survey subscales; however, the subscale statements are scattered throughout the entire survey. Scattering like statements throughout the assessment allows for scores to be checked for consistency and reliability.

The ten subscales are grouped into three domains. The Motivation and Skills domain have six subscales, the Social Engagement domain have two subscales, and the Self-Regulation

domain have two subscales. There are ten to twelve questions outlined for each of the subscales as outlined by Table 14. A score for the domain is calculated by summing the scores on each individual question assigned to the domain. From this cumulative domain score, scores are reported in terms of percentiles. The percentile shares the approximate percentage of students in schools like those who took the ACT Engage and scored at or below the score. Scales highlighted in red are areas that have a low score or percentile, which shares an area of focus on development as the student continues his/her education.

Table 13

ACT Engage© Domains and Subset ACT Engage© Scales

Domain	Subset ACT Engage© Scales
Motivation and Skills (6 subscales)	Academic discipline
	Commitment to college
	Communication skills
	Study skills
	General determination
	Goal striving
Social Engagement (2 subscales)	Social activity
	Social connection
Self-Regulation (2 subscales)	Steadiness
	Academic self-confidence

Note. Adapted from "ACT Engage© College User's Guide," by ACT, 2015a

The ACT Engage© survey has been shown to predict a student's academic success and retention through the first year (ACT, 2015a; ACT, 2016; Robbins et al., 2009). The reliability estimates for the ACT Engage© survey were calculated using the total sample of participating

students (n=144,770) (ACT 2016). ACT Engage© scores demonstrate moderate to high internal consistency reliability by Cronbach's coefficient alpha (range = .81 to .88, mean *a*=.87). Table 14 outlines the internal consistency reliability of ACT Engage© Scales

Table 14

Internal Consistency Reliability of ACT Engage© Scales

Subset ACT Engage© Scales	**No. of Items**	**Subset ACT Engage© Scales**	**Alpha**
Academic discipline	10	10-60	0.88
Commitment to college	10	10-60	0.88
Communication skills	10	10-60	0.82
Study skills	12	12-72	0.88
General determination	11	11-66	0.87
Goal striving	10	10-60	0.86
Social activity	10	10-60	0.88
Social connection	11	11-66	0.81
Steadiness	12	12-72	0.85
Academic self-confidence	12	12-72	0.87

Note. Adapted from "*Development and validation of ACT Engage*©" by ACT, 2016

Additional analyses were conducted to assess test-retest reliability of ACT Engage© over four-time intervals: 0-2 months, 3-8 months, 9-15 months, and 16-32 months. Test-retest correlations decreased as time intervals increased, suggesting that psychosocial factors change during the first two years of college (ACT, 2016). Table 15 outlines the test-retest statistics for ACT Engage©.

Table 15

Test-Retest Statistics for ACT Engage© Scales

Subset ACT Engage© Scales	Time Interval (Months)	N	r
Academic discipline	0-2	2379	0.75
	3-8	1402	0.63
	9-15	431	0.67
	16-32	262	0.59
Commitment to college	0-2	2381	0.70
	3-8	1402	0.56
	9-15	431	0.50
	16-32	264	0.44
Communication skills	0-2	2371	0.70
	3-8	1402	0.66
	9-15	431	0.61
	16-32	262	0.51
Study skills	0-2	2366	0.75
	3-8	1398	0.64
	9-15	429	0.63
	16-32	260	0.47
General determination	0-2	2373	0.70
	3-8	1402	0.62
	9-15	431	0.63
	16-32	262	0.59
Goal striving	0-2	2360	0.73
	3-8	1397	0.66
	9-15	429	0.60
	16-32	261	0.59
Social activity	0-2	2376	0.82
	3-8	1402	0.74
	9-15	431	0.75
	16-32	264	0.67

Social connection	0-2	2372	0.76
	3-8	1402	0.65
	9-15	431	0.63
	16-32	263	0.56
Steadiness	0-2	2377	0.80
	3-8	1401	0.69
	9-15	431	0.66
	16-32	263	0.62
Academic self-confidence	0-2	2357	0.78
	3-8	1397	0.70
	9-15	429	0.70
	16-32	261	0.65

Note. Adapted from "*Development and validation of ACT Engage*©" by ACT, 2016

Forty-eight postsecondary institutions (n=14,464 participants) were recruited by the researchers at ACT (ACT, 2016) to validate the ACT Engage©. These institutions ranged in geographical location, demographic composition, and selectivity. In addition, the researchers at ACT had access to the students' ACT scores and the grade point average (GPA) and retention information for each student at the end of the first and second semester. For each institution, ACT Engage© scores were significant predictors of student success and retention, even after controlling for the institution, demographic effects, and prior academic achievement. (ACT, 2016). Table 16 outlines the correlation between ACT Engage© subscales, first-year cumulative college GPA, second-year college retention, and 4-year degree completion.

Table 16

Correlations between ACT Engage© Scales, First-Year Cumulative College GPA, Second-Year College Retention, and 4-Year Degree Completion

Subset ACT Engage© Scales	First-Year GPA	Year 2 Retention	Degree Completion
Academic discipline	.23*	.04*	.13*
Commitment to college	.08*	.01	.05
Communication skills	.05*	-.03*	.01
Study skills	.03*	-.06*	0.0
General determination	.1*	-.03*	0.04*
Goal striving	.03*	-.04*	-.01
Social activity	.01	-.03*	.01
Social connection	.02	.03*	.04*
Steadiness	.05*	-.04*	.01
Academic self-confidence	.16*	-.01	.05*

Note. Adapted from "*Development and validation of ACT Engage*©" by ACT, 2016. N=14,371. Correlations of 0.02 or greater are significant at $p < .05$. Correlations of 0.04 or greater are significant at $p < .001$. Degree completion is 4-year degree completion.

Categorical variables that were included in the study were race (white or minority), gender (male or female), and socioeconomic status (low, medium, high). Race and gender were collected through the Admissions application to the university. The socioeconomic status was established through the FAFSA and financial award process. All information is submitted and recorded to the Office of Institutional Research on the 20th day of the academic year as is the case for all institutional data.

Data Collection Procedures

Archival data from the Midwestern institution were used for this study. The administration of the ACT Engage© survey occurred prior to the initiation of this study; therefore, existing ACT Engage scores, retention data, and demographic information on race, gender, and socioeconomic level were collected. Completing the ACT Engage© survey is an

assignment of the first-year experience class, which all first-time, full-time students are required to complete. Students completed the ACT Engage© during the first three weeks of their first semester for academic credit. After the deadline passed, all scores were posted to ACT for scoring analysis. Within a week, the researchers at ACT returned three reports to the University: (1) Advisor report (Appendix C); (2) Student report (Appendix D); and (3) Institution Aggregate Report (Appendix E). Advisor reports were placed in the student advising folders, and student reports were given to the advisor to deliver to the student during a one-on-one meeting. The Institution Aggregate reports were filed for further analysis within an institutional repository with other cohort years.

The IRB application (Appendix F) was sent to the Baker University Institutional Review Board (IRB) (Appendix G) on March 1, 2019. The IRB granted use of archived ACT Engage© data (Appendix H) and a subsequent request for the information was sent to the Director of Institutional Research on March 2, 2019 (Appendix I). On March 5, 2019, the Director of Institutional Research provided archived ACT Engage© data, retention data, and demographic information for students (Appendix J). ACT Engage© scores, which are stored in Excel format, and enrollment statuses along with demographic information were cross-tabulated. All student names were removed prior to any analysis to maintain the confidentiality of the student data.

Data Analysis and Hypothesis Testing

The following section includes the six research questions, the associated hypotheses, and the analyses.

RQ1. To what extent did ACT Engage© domain scores (Motivation and Skills domain, Social Engagement domain, and Self- Regulations domain) differ by retention status (retained and not retained) and gender (male and female) for first-time, full-time undergraduate students?

H1. There was a difference in ACT Engage© Motivation and Skills domain scores between retained and not retained students for males and females.

H2. There was a difference in ACT Engage© Social Engagement domain scores between retained and not retained students for males and females.

H3. There was a difference in ACT Engage© Self- Regulations domain scores between retained and not retained students for males and females.

Three two-way ANOVAs were conducted, one for each hypothesis in RQ1. For each analysis, the categorical independent variables were gender and retention status and the dependent variable was the domain score. The level of significance was set at .05.

RQ2. To what extent did the ACT Engage© Retention Index score differ by retention status (retained and not retained) and gender (male and female) for first-time, full-time undergraduate students?

H1. There was a difference in ACT Engage© Retention Index scores between retained and not retained students for males and females.

A two-way ANOVA was conducted to test RQ2. The categorical independent variables were gender and retention status and the dependent variable was the ACT Engage© Retention Index score. The level of significance was set at .05.

RQ3. To what extent did the ACT Engage© domain scores (Motivation and Skills domain, Social Engagement domain, and Self- Regulations domain) differ by retention status (retained and not retained) and socioeconomic level (low, medium, and high) for first-time, full-time undergraduate students?

H1. There was a difference in ACT Engage© Motivation and Skills domain between retained and not retained students for low SES, medium SES, and high SES.

H2. There was a difference in ACT Engage© Social Engagement domain scores between retained and not retained students for low SES, medium SES, and high SES.

H3. There was a difference in ACT Engage© Self- Regulations domain scores between retained and not retained students for low SES, medium SES, and high SES.

Three two-way ANOVAs were conducted, one for each hypothesis in RQ3. For each analysis, the categorical independent variables were socioeconomic levels and retention status and the dependent variable was the ACT Engage© domain score. The level of significance was set at .05.

RQ4. To what extent did the ACT Engage© Retention Index score differ by retention status (retained and not retained) and socioeconomic level (low, medium, and high) of first-time, full-time undergraduate students?

H1. There was a difference in ACT Engage© Retention Index scores between retained and not retained students for low SES, medium SES, and high SES.

A two-way ANOVA was conducted to test RQ4. The categorical independent variables were socioeconomic level and retention status and the dependent variable was the ACT Engage© Retention Index score. The level of significance was set at .05.

RQ5. To what extent did the ACT Engage© domain scores (Motivation and Skills domain, Social Engagement domain, and Self- Regulations domain) differ by retention status (retained and not retained) and race (white and minority) for first-time, full-time undergraduate students?

H1. There was a difference in ACT Engage© Motivation and Skills domain scores between retained and not retained students for white and minority students.

H2. There was a difference in ACT Engage© Social Engagement domain scores between retained and not retained students for white and minority students.

H3. There was a difference in ACT Engage© Self- Regulations domain scores between retained and not retained students for white and minority students.

A two-way ANOVA was conducted on each of the three hypotheses to test RQ5. The categorical independent variables were race and retention status and the dependent variable was the ACT Engage© domain scores. The level of significance was set at .05.

RQ6. To what extent did the ACT Engage© Retention Index score differ by retention status (retained and not retained) and race (white and minority) for first-time, full-time undergraduate students?

H1. There was a difference in ACT Engage© Retention Index score between retained and not retained students for white and minority students.

A two-way ANOVA was conducted to test RQ6. The categorical independent variables were race and retention status and the dependent variable was the ACT Engage© Retention Index score. The level of significance was set at .05.

Limitations

Lunenburg and Irby (2008) defined limitations as "factors that may have an effect on the interpretation of the findings or on the generalizability of the results" (p. 133) and are generally "not under the control of the researcher" (p. 133). This study had the following limitations:

1. The sample size was limited to students who could be considered first-time, full-time, undergraduate students.
2. The sample was limited to a small, private, liberal-arts university in the midwestern part of the United States.

3. Minority was limited to all races except students who identified as white.
4. Socioeconomic status was limited to the definitions as classified by Free Application for Financial Student Aid.
5. If the Levene's Test of Equality of Error Variance is violated, results can still be interpreted due to ANOVA being robust enough, but caution should be taken in the interpretation of results.

Summary

This post-hoc quasi-experimental quantitative study examined the difference in ACT Engage© Retention Index scores and ACT Engage© domain scores between retained and not retained first-time, full-time undergraduate students when considering gender, race, and SES level at Midwestern University. Data were examined in the aggregate cohort group (2012-2017) and individual cohort years. The results of the six-hypothesis test are presented in Chapter Four.

Chapter Four

Results

This study examined ACT Engage© scores between retained and not retained first-time, full-time undergraduate students (*n*=1337) when considering gender, race, and SES level. Results for each cohort in the study (2012, 2013, 2014, 2015, 2016, 2017) were aggregated and organized according to the research questions posed for this study.

Descriptive Statistics

Of the 1,337 first-time, full-time undergraduate students, 146 students did not complete the ACT Engage© survey and were not included in this study. Students whose ACT Engage© survey scores were flagged by ACT as providing an unusual pattern of responses were removed (*n*=13) as the scores based on these responses may not accurately reflect the student's skills or level of predictive success (ACT, 2010). After these students were removed, 1,178 students completed the ACT Engage© survey during their first three weeks of their first-year experience class. Student cohort data were categorized into four sections: (a) retention through the following fall semester, (b) race, (c) gender, and (d) socioeconomic status.

Table 17 contains the aggregate descriptive statistic by retention status for this study:

Table 17

Descriptive Statistics for Retention Status

	Frequency	Percentage
Not retained	243	20.6%
Retained	935	79.4%
Total	1178	100%

Table 18 shows the aggregate descriptive statistic by gender for this study:

Table 18

Descriptive Statistics for Gender

	Frequency	Percentage
Female	617	52.4%
Male	561	47.6%
Total	1178	100%

Table 19 contains the aggregate descriptive statistic by race for this study:

Table 19

Descriptive Statistics for Race

	Frequency	Percentage
White	898	76.2%
Minority	280	23.8%
Total	1178	100%

Table 20 contains the aggregate descriptive statistic for SES for this study:

Table 20

Descriptive Statistics for Socioeconomic Status (SES)

	Frequency	Percentage
Low SES	363	30.8%
Medium SES	270	22.9%
High SES	545	46.3%
Total	1178	100%

Table 21 contains the aggregate descriptive statistic for ACT Engage© scores for this study:

Table 21

Descriptive Statistics for ACT Engage© Scores

	Motivation and Skills Domain	Social Engagement domain	Self-Regulation domain	Retention Index
M	53.843	47.706	52.172	0.793
SD	5.102	7.782	7.644	0.079

Note. M is the abbreviation for mean, and *SD* is the abbreviation for standard deviation.

The research questions and hypothesis below address the difference of ACT Engage© scores between retained and not retained first-time, full-time undergraduate students when considering gender, race, and SES level.

Hypothesis Testing

RQ1. To what extent did ACT Engage© domain scores (Motivation and Skills domain, Social Engagement domain, and Self- Regulations domain) differ by retention status (retained and not retained) and gender (male and female) for first-time, full-time undergraduate students?

***H1*.** There was a difference in ACT Engage© Motivation and Skills domain scores between retained and not retained students for males and females.

For hypothesis one, a two-factor analysis of variance (ANOVA) was conducted to analyze the interaction between two independent variables. These independent variables included the categorical variables of retention status and gender with the numerical dependent variable as the Motivation and Skills domain scores. The two-factor ANOVA can be used to test three hypotheses including a main effect for retention status, a main effect for gender, and a two-way interaction effect (retention status x gender). All hypothesis testing was conducted at $\alpha = .05$. H1 had 59 outliers that were excluded from the analysis.

The results of the two-way ANOVA pertaining to H1 showed that there was not a significant main effect for retention status, with an $F(1,1115) = .757$, $p = .384$. The Motivation and Skills domain score did not differ between retained and not retained students.

A significant main effect for gender was detected with an $F(1,1115) = 9.769$ $p = .002$ and the effect size was small rendering a partial eta squared value of .009. The Motivation and Skills domain score differed between male and female students with female students ($M = 54.870$) having significantly higher Motivation and Skills domain score than male students ($M = 53.884$).

There was not a significant interaction between retention status and gender identified with an $F(1,1115) = .685$, $p = .408$. The effect of gender on the Motivation and Skills domain score was not related to retention status. H1 was not supported. The analysis results for factorial ANOVA are summarized in Table 22, and the descriptive statistics such as means and standard deviations from the analysis can be found in Table 23.

Table 22

Summary of Two-Way ANOVA for Retention Status and Gender

Variable and Source	*df*	*MS*	*F*	*p*	η^2
Retention Status	1	13.336	.757	.384	.001
Gender	1	172.446	9.769	.002	.009
Retention Status x Gender	1	12.097	.685	.408	.001
Error	1115				

Table 23

Descriptive Statistics for DV Motivation and Skills score by IV Retention Status and IV Gender

Effects	Not Retained			Retained			Total		
Gender	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
Male	114	53.877	4.543	402	53.891	4.251	516	53.888	4.312
Female	108	54.602	4.023	495	55.137	4.117	603	55.042	4.102
Total	222	54.230	4.304	897	54.579	4.221	1119	54.509	4.238

***H2*.** There was a difference in ACT Engage© Social Engagement domain scores between retained and not retained students for males and females.

For hypothesis two, a two-factor analysis of variance (ANOVA) was conducted to analyze the interaction between two independent variables. These independent variables included the categorical variables of retention status and gender with the numerical dependent variable as the Social Engagement domain scores. The two-factor ANOVA can be used to test three hypotheses including a main effect for retention status, a main effect for gender, and a two-way interaction effect (retention status x gender). All hypothesis testing was conducted at $\alpha = .05$. H2 had 31 outliers that were excluded from the analysis.

The results of the two-way ANOVA results pertaining to H2 showed that there was not a significant main effect for retention status, with an $F(1,1143) = 3.466$, $p = .063$. The Social Engagement domain score did not differ between retained and not retained students.

A significant main effect for gender was not detected with an $F(1,1143) = 1.232$ $p = .267$. The Social Engagement domain score did not differ between male and female students.

There was not a significant interaction between retention status and gender identified with an $F(1, 1143) = .046$, $p = .830$. The effect of gender on the Social Engagement domain score was not related to retention status. H2 was not supported. The analysis results for factorial ANOVA are summarized in Table 24, and the descriptive statistics such as means and standard deviations from the analysis can be found in Table 25.

Table 24

Summary of Two-Way ANOVA for Retention Status and Gender

Variable and Source	*df*	*MS*	*F*	*p*	η^2
Retention Status	1	172.688	3.466	.063	.003
Gender	1	61.378	1.232	.267	.001
Retention Status x Gender	1	2.303	.046	.830	.000
Error	*1143*				

Table 25

Descriptive Statistics for DV Social Engagement score by IV Retention Status and IV Gender

Effects	Not Retained			Retained			Total		
Gender	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
Male	128	47.250	7.574	422	48.102	6.833	550	47.904	7.015
Female	108	47.713	7.170	489	48.787	7.086	597	48.593	7.107
Total	236	47.462	7.380	911	48.470	6.975	1147	48.262	7.068

H3. There was a difference in ACT Engage© Self- Regulations domain scores between retained and not retained students for males and females.

For hypothesis three, a two-factor analysis of variance (ANOVA) was conducted to analyze the interaction between two independent variables. These independent variables included the categorical variables of retention status and gender with the numerical dependent variable as the Self-Regulation domain scores. The two-factor ANOVA can be used to test three hypotheses including a main effect for retention status, a main effect for gender, and a two-way interaction effect (retention status x gender). All hypothesis testing was conducted at $\alpha = .05$. H1 had 31 outliers that were excluded from the analysis.

The results of the two-way ANOVA results pertaining to H3 showed that there was not a significant main effect for retention status, with an $F(1,1143) = .339$, $p = .561$. The Self-Regulation domain score did not differ between retained and not retained students.

A significant main effect for gender was not detected with an $F(1,1143) = 2.372$ $p = .124$. The Self-Regulation domain score did not differ between male and female students.

There was not a significant interaction between retention status and gender identified with an $F(1, 1143) = 1.612$, $p = .204$. The effect of gender on the Self-Regulation domain score was not related to retention status. H3 was not supported. The analysis results for factorial ANOVA are summarized in Table 26, and the descriptive statistics such as means and standard deviations from the analysis can be found in Table 27.

Table 26

Summary of Two-Way ANOVA for Retention Status and Gender

Variable and Source	*df*	*MS*	*F*	*p*	η^2
Retention Status	1	16.980	.339	.561	.000
Gender	1	118.923	2.372	.124	.002
Retention Status x Gender	1	80.850	1.612	.204	.001
Error	*1143*				

Table 27

Descriptive Statistics for DV Self-Regulation by IV Retention Status and IV Gender

Effects	Not Retained			Retained			Total		
Gender	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
Male	125	52.480	7.643	422	53.443	6.913	547	52.047	7.091
Female	109	52.339	6.828	491	51.982	7.130	600	52.048	7.072
Total	234	52.415	7.259	913	52.657	7.065	1147	52.608	7.102

RQ2. To what extent did the ACT Engage© Retention Index score differ by retention status (retained and not retained) and gender (male and female) for first-time, full-time undergraduate students?

***H1*.** There was a difference in ACT Engage© Retention Index scores between retained and not retained students for males and females.

For hypothesis one, a two-factor analysis of variance (ANOVA) was conducted to analyze the interaction between two independent variables. These independent variables included the categorical variables of retention status and gender with the numerical dependent variable as the Retention Index score. The two-factor ANOVA can be used to test three hypotheses including a main effect for retention status, a main effect for gender, and a two-way interaction effect (retention status x gender). All hypothesis testing was conducted at $\alpha = .05$. H1 had 56 outliers that were excluded from the analysis. Levene's Test of Equality of Error Variance was violated as one of the three assumptions (e.g. normality, homogeneity, and independence of cases) must be tested before interpreting results. Due to violation of homogeneity, caution should be taken with interpreting results.

A significant main effect for retention status was detected with an $F(1,1118) = 46.337$ $p = .000$ and the effect size was small rendering a partial eta squared value of .040. The Retention Index score differed significantly between retained and not retained students with retained students being significantly higher ($M = .808$) than not retained students ($M = .777$).

A significant main effect for gender was detected with an $F(1,1118) = 16.480$ $p < .001$ and the effect size was small rendering a partial eta squared value of .015. The Retention Index score differed between male and female students with female students ($M = .802$) having significantly higher Retention Index scores than male students ($M = .783$).

There was not a significant interaction between retention status and gender identified with an $F(1,1118) = 1.316$, $p = .252$. The effect of gender on the Retention Index score was not related to retention status. H1 was not supported. The analysis results for factorial ANOVA are summarized in Table 28, and the descriptive statistics such as means and standard deviations from the analysis can be found in Table 29.

Table 28

Summary of Two-Way ANOVA for Retention Status and Gender

Variable and Source	*df*	*MS*	*F*	*p*	η^2
Retention Status	1	.175	46.337	.000	.040
Gender	1	.062	16.480	.000	.015
Retention Status x Gender	1	.005	1.316	.252	.001
Error	1118				

Table 29

Descriptive Statistics for DV Retention Index score *by IV Retention Status and IV Gender*

Effects	Not Retained			Retained			Total		
Gender	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
Male	111	.765	.070	409	.802	.064	520	.794	.067
Female	108	.789	.061	494	.815	.067	602	.810	.058
Total	219	.777	.067	903	.809	.061	1122	.803	.063

RQ3. To what extent did the ACT Engage© domain scores (Motivation and Skills domain, Social Engagement domain, and Self- Regulations domain) differ by retention status (retained and not retained) and socioeconomic level (low, medium, and high) for first-time, full-time undergraduate students?

***H1*.** There was a difference in ACT Engage© Motivation and Skills domain between retained and not retained students for low SES, medium SES, and high SES.

For hypothesis one, a two-factor analysis of variance (ANOVA) was conducted to analyze the interaction between two independent variables. These independent variables included the categorical variables of retention status and SES with the numerical dependent variable as the Motivation and Skills domain scores. The two-factor ANOVA can be used to test three hypotheses including a main effect for retention status, a main effect for SES, and a two-way interaction effect (retention status x SES). All hypothesis testing was conducted at $\alpha = .05$. H1 had 59 outliers that were excluded from the analysis.

The results of the two-way ANOVA pertaining to H1 showed that there was not a significant main effect for retention status, with an $F(1,1113) = 1.432$, $p = .232$. The Motivation and Skills domain score did not differ between retained and not retained students.

A significant main effect for SES was not detected with an $F(2,1113) = .352$ $p = .703$. The Motivation and Skills domain score did not differ among low SES, medium SES, and high SES students.

There was not a significant interaction between retention status and SES identified with an $F(2,1113) = .205$, $p = .815$. The effect of SES on the Motivation and Skills domain score was not related to retention status. H1 was not supported. The analysis results for factorial ANOVA are summarized in Table 30, and the descriptive statistics such as means and standard deviations from the analysis can be found in Table 31.

Table 30

Summary of Two-Way ANOVA for Retention Status and SES

Variable and Source	*df*	*MS*	*F*	*p*	η^2
Retention Status	1	25.768	1.432	.232	.001
SES	2	6.345	.352	.703	. 001
Retention Status x Gender	2	3.693	.205	.815	.000
Error	1113				

Table 31

Descriptive Statistics for DV Motivation and Skills score by IV Retention Status and IV Gender

Effects	Not Retained			Retained			Total		
SES	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
Low	76	54.118	4.436	266	54.399	4.111	342	54.336	4.180
Medium	48	53.958	3.585	206	54.675	4.398	254	54.539	4.259
High	98	54.449	4.546	425	54.645	4.208	523	54.608	4.269
Total	222	54.230	4.303	897	54.579	4.221	1119	54.509	4.238

H2. There was a difference in ACT Engage© Social Engagement domain scores between retained and not retained students for low SES, medium SES, and high SES.

For hypothesis two, a two-factor analysis of variance (ANOVA) was conducted to analyze the interaction between two independent variables. These independent variables included the categorical variables of retention status and SES with the numerical dependent variable as the Social Engagement domain scores. The two-factor ANOVA can be used to test three hypotheses including a main effect for retention status, a main effect for SES, and a two-way interaction effect (retention status x SES). All hypothesis testing was conducted at $\alpha = .05$. H2 had 31 outliers that were excluded from the analysis.

The results of the two-way ANOVA pertaining to H2 showed that there was not a significant main effect for retention status, with an $F(1,1141) = 2.916$, $p = .088$. The Social Engagement domain score did not differ between retained and not retained students.

A significant main effect for SES was not detected with an ($2,1141$) = 1.220 p = .296. The Social Engagement domain score did not differ among low SES, medium SES, and high SES students.

There was not a significant interaction between retention status and SES identified with an $F(2,1141) = .659$, $p = .518$. The effect of SES on the Social Engagement domain score was not related to retention status. H2 was not supported. The analysis results for factorial ANOVA are summarized in Table 32, and the descriptive statistics such as means and standard deviations from the analysis can be found in Table 33.

Table 32

Summary of Two-Way ANOVA for Retention Status and SES

Variable and Source	*df*	*MS*	*F*	*p*	η^2
Retention Status	1	144.777	2.916	.088	.003
SES	2	60.556	1.220	.296	. 002
Retention Status x Gender	2	32.713	.659	.518	.001
Error	1113				

Table 33

Descriptive Statistics for DV Motivation and Skills score by IV Retention Status and IV Gender

Effects	Not Retained			Retained			Total		
SES	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
Low	80	47.313	7.827	264	47.724	7.160	344	47.398	7.309
Medium	52	47.519	8.108	212	48.722	7.120	264	48.485	7.325
High	104	47.548	6.686	435	48.982	6.733	539	48.705	6.741
Total	236	47.462	7.380	911	48.470	6.975	1147	48.262	7.068

H3. There was a difference in ACT Engage© Self- Regulations domain scores between retained and not retained students for low SES, medium SES, and high SES.

For hypothesis three, a two-factor analysis of variance (ANOVA) was conducted to analyze the interaction between two independent variables. These independent variables included the categorical variables of retention status and SES with the numerical dependent variable as the Self-Regulation domain scores. The two-factor ANOVA can be used to test three hypotheses including a main effect for retention status, a main effect for SES, and a two-way interaction effect (retention status x SES). All hypothesis testing was conducted at $\alpha = .05$. H3 had 31 outliers that were excluded from the analysis.

The results of the two-way ANOVA pertaining to H3 showed that there was not a significant main effect for retention status, with an $F(1,1141) = .261$, $p = .610$. The Self-Regulation domain score did not differ between retained and not retained students.

A significant main effect for SES was not detected with an $(2,1141) = .473$ $p = .623$. The Self-Regulation domain score did not differ among low SES, medium SES, and high SES students.

There was not a significant interaction between retention status and SES identified with an $F(2,1141) = .061$, $p = .941$. The effect of SES on the Self-Regulation domain score was not related to retention status. H3 was not supported. The analysis results for factorial ANOVA are summarized in Table 34, and the descriptive statistics such as means and standard deviations from the analysis can be found in Table 35.

Table 34

Summary of Two-Way ANOVA for Retention Status and SES

Variable and Source	*df*	*MS*	*F*	*p*	η^2
Retention Status	1	13.205	.261	.610	.000
SES	2	23.995	.473	.623	. 001
Retention Status x Gender	2	3.088	.061	.941	.000
Error	1141				

Table 35

Descriptive Statistics for DV Self-Regulation score by IV Retention Status and IV Gender

Effects	Not Retained			Retained			Total		
SES	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
Low	81	52.148	6.918	271	52.376	6.983	352	52.324	6.959
Medium	50	52.100	6.741	212	52.642	7.195	262	52.538	7.101
High	103	52.777	7.796	430	52.812	7.061	533	52.829	7.202
Total	234	52.415	7.259	913	52.657	7.065	1147	52.608	7.102

RQ4. To what extent did the ACT Engage© Retention Index score differ by retention status (retained and not retained) and socioeconomic level (low, medium, and high) of first-time, full-time undergraduate students?

***H1*.** There was a difference in ACT Engage© Retention Index scores between retained and not retained students for low SES, medium SES, and high SES.

For hypothesis one, a two-factor analysis of variance (ANOVA) was conducted to analyze the interaction between two independent variables. These independent variables included

the categorical variables of retention status and SES with the numerical dependent variable as the Retention Index score. The two-factor ANOVA can be used to test three hypotheses including a main effect for retention status, a main effect for gender, and a two-way interaction effect (retention status x SES). All hypothesis testing was conducted at $\alpha = .05$. H1 had 60 outliers that were excluded from the analysis.

A significant main effect for retention status was detected with an $F(1,1112) = 41.901$ $p < .001$ and the effect size was small rendering a partial eta squared value of .036. The Retention Index score differed significantly between retained and not retained students with retained students being significantly higher ($M = .807$) than not retained students ($M = .776$).

A significant main effect for SES was detected with an $F(2,1112) = 6.744$ $p = .001$ and the effect size was small rendering a partial eta squared value of .012. The Retention Index score differed between at least one pair of comparison. A follow-up post hoc was conducted to determine which pairs of means were different. The Hochberg's GT2 post hoc procedure was conducted at $\alpha = .05$ due to different sample size in groups. Two of the differences were statistically significant. The mean of Retention Index score for low SES students ($M = .782$) was significantly lower than the mean of Retention Index score for high SES students ($M = .801$). The mean of Retention Index score for medium SES students ($M = .792$) was significantly lower than the mean of Retention Index score for high SES students ($M = .801$). Therefore, generally speaking, among the students from the three SES levels, high SES students had the higher retention status than students from both the medium and low SES levels. However, students in the low and medium SES levels did not have a difference in their retention status.

There was not a significant interaction between retention status and SES identified with an $F(2,1112) = .743$, $p = .476$. The effect of SES on the Retention Index score was not related to

retention status. H1 was not supported. The analysis results for factorial ANOVA are summarized in Table 36, and the descriptive statistics such as means and standard deviations from the analysis can be found in Table 37.

Table 36

Summary of Two-Way ANOVA for Retention Status and SES

Variable and Source	*df*	*MS*	*F*	*p*	η^2
Retention Status	1	.154	41.901	.000	.036
SES	2	.025	6.744	.001	.012
Retention Status x SES	2	.003	.743	.476	.001
Error	1112				

Table 37

Descriptive Statistics for DV Retention Index score *by IV Retention Status and IV SES*

Effects	Not Retained			Retained			Total		
SES	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
Low	74	.768	.066	267	.796	.058	341	.790	.061
Medium	48	.779	067	208	.805	.058	256	.780	.060
High	97	.782	.067	424	.821	.060	521	.813	.063
Total	219	.777	.067	899	.810	.060	1118	.803	.063

RQ5. To what extent did the ACT Engage© domain scores (Motivation and Skills domain, Social Engagement domain, and Self- Regulations domain) differ by retention status (retained and not retained) and race (white and minority) for first-time, full-time undergraduate students?

H1. There was a difference in ACT Engage© Motivation and Skills domain scores between retained and not retained students for white and minority students.

For hypothesis one, a two-factor analysis of variance (ANOVA) was conducted to analyze the interaction between two independent variables. These independent variables included the categorical variables of retention status and race with the numerical dependent variable as the Motivation and Skills domain scores. The two-factor ANOVA can be used to test three hypotheses including a main effect for retention status, a main effect for race, and a two-way interaction effect (retention status x race). All hypothesis testing was conducted at $\alpha = .05$. H1 had 59 outliers that were excluded from the analysis.

The results of the two-way ANOVA results pertaining to H1 showed that there was not a significant main effect for retention status, with an $F(1,1115) = 1.121$, $p = .290$. The Motivation and Skills domain score did not differ between retained and not retained students.

The results of the two-way ANOVA results pertaining to H1 showed that there was not a significant main effect for race, with an $F(1,1115) = 1.032$, $p = .310$. The Motivation and Skills domain score did not differ between white and minority students.

There was not a significant interaction between retention status and race identified with an $F(1,1115) = .008$, $p = .928$. The effect of race on the Motivation and Skills domain score was not related to retention status. H1 was not supported. The analysis results for factorial ANOVA are summarized in Table 38, and the descriptive statistics such as means and standard deviations from the analysis can be found in Table 39.

Table 38

Summary of Two-Way ANOVA for Retention Status and Gender

Variable and Source	*df*	*MS*	*F*	*p*	η^2
Retention Status	1	20.137	1.121	.290	.001
Race	1	18.550	1.032	.310	.001
Retention Status x Race	1	.147	.008	.928	.000
Error	1115				

Table 39

Descriptive Statistics for DV Motivation and Skills score by IV Retention Status and IV Gender

Effects	Not Retained			Retained			Total		
Gender	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
White	151	54.106	4.321	701	54.508	4.199	852	52.437	4.221
Minority	71	54.493	4.286	196	54.832	4.299	267	54.742	4.290
Total	222	54.230	4.304	897	54.579	4.221	1119	54.509	4.238

***H2*.** There was a difference in ACT Engage© Social Engagement domain scores between retained and not retained students for white and minority students.

For hypothesis two, a two-factor analysis of variance (ANOVA) was conducted to analyze the interaction between two independent variables. These independent variables included the categorical variables of retention status and race with the numerical dependent variable as the Social Engagement domain scores. The two-factor ANOVA can be used to test three hypotheses including a main effect for retention status, a main effect for race, and a two-way interaction

effect (retention status x race). All hypothesis testing was conducted at α = .05. H2 had 32 outliers that excluded from the analysis.

The results of the two-way ANOVA results pertaining to H2 showed that there was not a significant main effect for retention status, with an $F(1,1142) = 2.525$, $p = .112$. The Social Engagement domain score did not differ between retained and not retained students.

The results of the two-way ANOVA results pertaining to H2 showed that there was not a significant main effect for race, with an $F(1, 1142) = .386$, $p = .535$. The Social Engagement domain score did not differ between white and minority students.

There was not a significant interaction between retention status and race identified with an $F(1,1142) = .008$, $p = .928$. The effect of race on the Social Engagement domain score was not related to retention status. H1 was not supported. The analysis results for factorial ANOVA are summarized in Table 40, and the descriptive statistics such as means and standard deviations from the analysis can be found in Table 41.

Table 40

Summary of Two-Way ANOVA for Retention Status and Gender

Variable and Source	*df*	*MS*	*F*	*p*	η^2
Retention Status	1	125.216	2.525	.112	.002
Race	1	19.116	.386	.535	.000
Retention Status x Race	1	.409	.008	.928	.000
Error	1142				

Table 41

Descriptive Statistics for DV Social Engagement score by IV Retention Status and IV Gender

Effects	Not Retained			Retained			Total		
Gender	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
White	161	47.677	7.159	720	48.533	6.927	881	48.377	6.974
Minority	74	47.270	7.557	191	48.230	7.163	265	47.962	7.274
Total	235	47.549	7.273	911	48.470	6.975	1146	48.281	7.043

H3. There was a difference in ACT Engage© Self- Regulations domain scores between retained and not retained students for white and minority students.

For hypothesis three, a two-factor analysis of variance (ANOVA) was conducted to analyze the interaction between two independent variables. These independent variables included the categorical variables of retention status and race with the numerical dependent variable as the Self-Regulation domain scores. The two-factor ANOVA can be used to test three hypotheses including a main effect for retention status, a main effect for race, and a two-way interaction effect (retention status x race). All hypothesis testing was conducted at $\alpha = .05$. H2 had 31 outliers that were excluded from the analysis.

The results of the two-way ANOVA results pertaining to H3 showed that there was not a significant main effect for retention status, with an $F(1,1143) = .339$, $p = .560$. The Self-Regulation domain score did not differ between retained and not retained students.

The results of the two-way ANOVA results pertaining to H3 showed that there was not a significant main effect for race, with an $F(1, 1143) = .682$, $p = .409$. The Self-Regulation domain score did not differ between white and minority students.

There was not a significant interaction between retention status and race identified with an $F(1, 1143) = .032$, $p = .858$. The effect of race on the Self-Regulation domain score was not related to retention status. H1 was not supported. The analysis results for factorial ANOVA are summarized in Table 42, and the descriptive statistics such as means and standard deviations from the analysis can be found in Table 43

Table 42

Summary of Two-Way ANOVA for Retention Status and Gender

Variable and Source	*df*	*MS*	*F*	*p*	η^2
Retention Status	1	17.147	.339	.560	.000
Race	1	34.474	.682	.409	.001
Retention Status x Race	1	1.621	.032	.858	.000
Error	1143				

Table 43

Descriptive Statistics for DV Self-Regulation score by IV Retention Status and IV Gender

Effects	Not Retained			Retained			Total		
Gender	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
White	161	52.298	7.521	714	52.531	7.009	875	52.488	7.102
Minority	73	52.671	6.690	199	53.111	7.262	272	52.993	7.104
Total	234	52.415	7.259	913	52.657	7.065	1147	52.608	7.102

RQ6. To what extent did the ACT Engage© Retention Index score differ by retention status (retained and not retained) and race (white and minority) for first-time, full-time undergraduate students?

H1. There was a difference in ACT Engage© Retention Index score between retained and not retained students for white and minority students.

For hypothesis one, a two-factor analysis of variance (ANOVA) was conducted to analyze the interaction between two independent variables. These independent variables included the categorical variables of retention status and race with the numerical dependent variable as the Retention Index score. The two-factor ANOVA can be used to test three hypotheses including a main effect for retention status, a main effect for gender, and a two-way interaction effect (retention status x gender). All hypothesis testing was conducted at $\alpha = .05$. H1 had 60 outliers that were excluded from the analysis.

A significant main effect for retention status was detected with an $F(1,1114) = 30.258$ $p < .001$ and the effect size was small rendering a partial eta squared value of .026. The Retention Index score differed significantly between retained and not retained students with retained students being significantly higher ($M = .801$) than not retained students ($M = .773$).

A significant main effect for race was detected with an $F(1, 1114) = 23.830$ $p < .001$ and the effect size was small rendering a partial eta squared value of .021. The Retention Index score differed significantly between white and minority students with white students being significantly higher ($M = .779$) than minority students ($M = .775$).

There was not a significant interaction between retention status and race identified with an $F(1,1114) = 1.208$, $p = .272$. The effect of race on the Retention Index score was not related to retention status. H1 was not supported. The analysis results for factorial ANOVA are summarized in Table 44, and the descriptive statistics such as means and standard deviations from the analysis can be found in Table 45.

Table 44

Summary of Two-Way ANOVA for Retention Status and Gender

Variable and Source	*df*	*MS*	*F*	*p*	η^2
Retention Status	1	.110	30.258	.000	.026
Race	1	.086	23.830	.000	.021
Retention Status x Race	1	.004	1.208	.272	.001
Error	1114				

Table 45

Descriptive Statistics for DV Retention Index score *by IV Retention Status and IV Gender*

Effects	Not Retained			Retained			Total		
Race	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
White	150	.783	.065	714	.816	.059	864	.810	.061
Minority	69	.764	.068	185	.786	.059	254	.780	.062
Total	219	.777	.067	899	.810	.060	1118	.803	.063

Summary

For Motivation and Skills domain scores, the results suggested that female students had significantly higher scores than male students, but the scores are the same between retained and not retained students, white and minority students, and students with different SES levels. For Social Engagement domain scores, the results suggested the scores are the same between retained and not retained students, female and male students, white and minority students, and students with different SES levels. For Self-Regulation domain scores, the results suggested the scores are the same between retained and not retained students, female and male students, white and minority students, and students with different SES levels. For the Retention Index score, the

results suggested that retained students had significantly higher Retention Index scores than not retained students, female students had significantly higher Retention Index scores than male students, white students had significantly higher Retention Index scores than minority students. High SES students had significantly higher scores than medium SES and low SES students, but the scores are the same between medium SES and low SES. There was no significant interaction effect detected in any of the analyses.

Chapter Five

Interpretation and Recommendations

Postsecondary institutions have traditionally focused on student enrollment at the expense of student retention and student success (Culver, 2011). However, college and university administrators have found that it is more cost effective to focus on student success (graduation rates) and student retention than enrollment of first-time, full-time students. As a result of this change in focus, many postsecondary institutions are trying to find a method to predict student retention through the use of instruments such as the ACT Engage© Survey (Bailey, 2012; Reason, 2009; Wilson, 2012). This study examined ACT Engage© Survey Scores on First-Time, Full-Time Undergraduate Student Retention when considering Gender, Race, and Socioeconomic Status at a private Midwestern University. This chapter begins with an overview of the problem, reiterates the study purpose and methodology, provides hypothesis testing, and covers findings related to the literature. The chapter concludes with implications for action and future research recommendations.

Study Summary

This section provides a summary of the study including an overview of the problem. The purpose statement and research questions that guided the work of the study are identified. The methodology is reviewed, and major findings are presented from the hypothesis testing.

Overview of the problem. According to the National Student Clearinghouse Research Center (2016), out of the approximately 1.8 million first-time, full-time college students attending universities each year, nearly 500,000 or 27% did not return to the college or university for their second year. While the ACT Engage© survey is used widely by universities to identify students who are at-risk for dropping out, few, if any studies have examined the differences in

ACT Engage© survey scores in relation to retention rates when considering race, gender, and socioeconomic level. Various research studies identified these gaps as important areas to be studied in future research (Bailey, 2012; Reason, 2009; Wilson, 2012).

The question which remains to be understood is why students leave their university. Student development and retention theory attribute student attrition to cognitive, moral, and psychosocial development (Pascarella & Terenzini, 1979; Bean, 1980; Robbins et al., 2004). Hanover (2010) published the"Best Practices in Student Retention," which ranked freshman seminar and the integration of advising with first-year transition programs as being the most effective retention tools. Being able to incorporate the ACT Engage© survey results into the student's advising and transition program theoretically should be a research-based approached to improve retention. As Robbins and associates (2004) detailed, psychosocial skills contribute to predicting student retention. However, an examination of the ACT Engage© Survey scores of first-time, full-time undergraduate student retention interact with actual retention status when considering gender, race, and socioeconomic status is still to be determined.

Purpose statement and research questions. The purpose of this study was twofold: (1) to explore the difference of ACT Engage© Retention Index scores between retained and not retained first-time, full-time undergraduate students when considering gender, race, and SES level; and (2) to explore the difference of the ACT Engage© domain scores between retained and not retained first-time, full-time undergraduate students when considering gender, race, and SES level. Six research questions were posted.

Review of the methodology. Student ACT Engage© survey scores (n=1,178) were analyzed through multiple two-factor analyses of variance (ANOVA). The two-factor ANOVA was used to test three hypotheses including a main effect for independent variable one, a main

effect for independent variable two, and a two-way interaction effect (independent variable one x independent variable two). The dependent variables in this study were ACT Engage© survey domain scores, and ACT Engage© survey Retention Index scores. The independent variables were retention status (retained or not retained), race (white or minority), gender (male or female), and socioeconomic status (low, medium, or high SES). Twelve hypotheses were tested utilizing two-factor ANOVAs to address six research questions.

Major findings. There were three major findings to this study: (1) Results of hypothesis testing for the Motivation and Skills domain scores indicated that female students had significantly higher scores than male students; however, the Motivation and Skills domain scores were the same between retained and not retained students, white and minority students, and students from different SES levels. Results for both the Social Engagement and the Self-Regulation domains indicated the scores in these domains were the same between retained and not retained students, female and male students, white and minority students, and students with different SES levels; (2) Results of hypothesis testing for the Retention Index scores indicated that retained students had significantly higher Retention Index scores than not retained students. Female students had significantly higher Retention Index scores than male students, and white students had significantly higher Retention Index scores than minority students. High SES students had significantly higher Retention Index scores than students from both medium SES and low SES levels. However, the Retention Index scores were not different between medium SES and low SES students; (3) Through the entirety of the study, there was no significant interaction effect detected in any of the analysis between retention status, gender, race, and SES levels when considering ACT Engage© survey domain scores or ACT Engage© survey Retention Index scores.

Findings Related to the Literature

This study expanded the body of knowledge related to ACT Engage© Survey scores and first-time, full-time undergraduate student retention when considering gender, race, and socioeconomic status. There is a dearth of research related to ACT Engage survey scores when considering race, gender, and SES level. This study is an extension of Bailey's (2012) research in conjunction with Allen (2009), which found that Motivation and Skills domain scores were higher for those students retained versus not retained. The current study suggested that female students scored significantly higher than male students on Motivation and Skills domain scores. Jorgensen et al. (2009) found men scored lower on motivation, academic discipline, and communication, which would relate to the constructs included the Motivation and Skills domain in the ACT Engage© Survey.

The Retention Index score is a measure of the student's likelihood of returning the second year. The results of this study indicated that female students had significantly higher Retention Index scores than male students, but that there was never a simultaneous effect between gender and retention status. Reason (2009) found that gender failed to reach significance when multiple variables were considered, but in a simple model when a single variable was considered, gender was a significant predictor of retention. Pascarella and Terenzini (1983) suggested the reason women might be retained higher than men could be due to social factors (e.g., social activity, social connection, etc.) versus academic reasons (e.g., academic preparation, academic discipline, academic self-confidence, etc.). Qualitative studies will be needed in future research to provide a more comprehensive explanation in the difference in scores.

This research confirmed white students had significantly higher Retention Index scores than minority students. Research by Hanover (2010) found that minority student groups have the

highest rate of departure among college students. Doran (2015) found that minority students were more likely not to be retained because their institution would not allow them to return due to either academic or financial reasons, while white students were more likely to withdraw voluntarily. Unfortunately, this study did not identify why minorities have a lower Retention Index score than whites, but this understanding could be examined through future qualitative research.

This research found High SES students had significantly higher Retention Index scores than medium SES and low SES students. Horn, Peter, and Rooney (2002) identified the most common risk factor of dropping-out of college was financial stress. Having access to enough financial support through student aid improves a student's chance of graduation (DesJardin, 2002). The findings of this current study were consistent with the findings of Horn, et. al., (2002) and DesJardin (2002) since students from high SES backgrounds were retained at significantly higher rates than students from medium and low SES backgrounds, while a difference could not be established between students from medium and low SES backgrounds.

Conclusions

This section concludes the examination of ACT Engage© Survey Scores on first-time, full-time undergraduate student retention when considering gender, race, and socioeconomic status at a private Midwestern University. Implications for action for the university are identified as well as recommendations for future research on the topic are summarized. Concluding remarks are included to complete the section.

Implications for action. The results of this study have implications for continued research and improvements for student retention. Within higher education practices, it will be

important to expand comprehensive campus resources of student services to connect students to appropriate resources based on their ACT Engage© survey results.

Matrices of campus resources and Engage Domains. Bailey (2012) determined the development of a crosswalk or matrix of student services to domain scores was essential for connecting students to appropriate resources. Figure 1 contains the campus resources matched with the ten ACT Engage© scales. X indicated the initiatives that Midwestern University currently usees to address the specific ACT Engage© survey scale.

	Academic Discipline	Commitment to College	Communication Skills	Study Skills	General Determination	Goal Striving	Social Activity	Social Connection	Steadiness	Academic Self-Confidence
Academic Advising	X	X		X	X	X			X	X
Athletics & Athletic Support Services	X	X	X	X		X	X	X	X	X
BK101	X		X	X	X	X	X	X	X	X
Campus Minister		X					X	X		
Career Services		X	X	X	X	X				X
Counseling Center			X			X			X	X
Diversity & Inclusion		X					X	X		
Fraternity/Sorority Life				X			X	X		
Intramurals		X					X	X		
Residence Life services			X				X	X	X	
Student Life & Activities Office		X				X	X	X		
Student Academic Success Center	X	X	X	X	X	X			X	X

Figure 1. Midwestern University Student Services and ACT Engage© Score Resources. Adapted from the ACT Engage© College User's Guide. Bailey (2012), and C. Bailey, personal communication, April 15, 2019.

Training for academic advisors and first-year experience instructors. Training for academic advisors has continued to develop as intrusive advising research has evolved. Academic advising is the only structured activity on the campus in which all students have the opportunity for one-to-one interaction with a concerned representative of the institution (Habley, 1994). Tinto (1987) indicated that advisors have to understand the student holistically in order for retention initiatives to be effective. Academic advising is the very core of successful institutional efforts to educate and retain students. For this reason, academic advising, as described by Habley (1994), should be viewed as the center of retention services and not just one of the various isolated services provided for students. Academic advisors provide students with the needed connection to the various campus services and supply the essential academic connection between these services and the students. Also, academic advisors offer students the personal connection to the institution that is vital to student retention and student success (Habley, 1994).

Intrusive advising has become a buzzword in higher education. According to Varney (2007), intrusive advising is a more proactive approached that is holistic in nature. Intrusive advising involves intentional contact with students to develop a caring and beneficial relationship that leads to increased student persistence (Varney 2007). Intrusive advising differs from the more traditional prescriptive and developmental models of advising because advisors are not only helpful and encouraging of students, but they proactively make the initial contact with students (Varney, 2007). When advisors make connections and show interest in students, they can become the reason a student decides to stay in school. In addition, contacting students may help students identify problems and provide students with problem-solving strategies to address these problems.

At Midwestern University, BK 101 instructors are academic advisors to the students in their class. BK 101 is an extended orientation, for-credit course offered during the student's first semester. The ACT Engage© Survey is included in this course. Currently advisors are provided with voluntary training throughout the year. However, advisor participation to date in these training opportunities was inconsistent. As part of advisor training, ongoing educational sessions should be required throughout the year. Training should include using the ACT Engage© results along with the important aspects of intrusive advisors as identified by Varney (2007). Varney identified the following areas as critical to advisor training: 1) university resources; 2) university programs; 3) accessibility of advisors; 4) student wellbeing and success; 5) student progress monitoring; 6) advising etiquette; 7) communication techniques.

Recommendations for future research. Students leave an institution for different reasons. The results of this study found that gender, race, or SES did not have an effect on ACT Engage© domain scores or on Retention Index scores. Further study of retention should encompass diverse demographics such as individuals categorized under the Americans with Disability Act, traditional versus non-traditional students, or athletes. Students in these demographic categories may be among those who fall into an at-risk for not being retained.

Financial Aid counseling prior to enrollment along with debt and financial management programs are two common practices of retention strategies (Selingo, 2015). Midwestern University does not currently have debt and financial management programs which could be a strategy to consider in future research (C. Bailey, personal communication, November 11, 2017). Addressing student financial constraints could be a concern regarding the gap in high SES to medium and low SES students, but without further research no valid conclusion can be reached.

This study was based on quantitative data. Incorporating qualitative data with student interviews after completing the ACT Engage© and after receiving results would help determine a student's understanding of self and reported data and suggestions. Using control and experimental groups to determine the effectiveness of the ACT Engage© survey results on conversations and interventions may assist in developing an institution's retention plan.

Concluding remarks. This study contributed to an existing gap in the retention literature related to ACT Engage© scores and retention status when considering gender, race, and SES level. The findings of this study determined that while motivation and skills scores were higher for those retained versus not retained, there was not a difference in Social Engagement and Self-Regulation domain scores for retained and not retained students, white and minority students, and students in the three SES levels. The results indicated that retained students have a higher Retention Index score than those students who were not retained, Along with this conclusion, retained students had significantly higher Retention Index scores than not retained students, female students had significantly higher Retention Index scores than male students, and white students had significantly higher Retention Index scores than minority students. Finally, students in the high SES levels had significantly higher Retention Index scores than students in medium SES and low SES levels, but the Retention Index scores were not different between students in the medium SES and students in the low SES. Finally, the results indicated there was no interaction effect between race, gender, and SES when considering ACT Engage© scores.

Student retention is a critical area being addressed by postsecondary administrators. Lack of student retention is a shared failure between the student and the institution. As competitive market choices increase and enrollment numbers continue to decline, tuition-driven institutions will continue to seek ways to assess and improve retention.

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Appendices

Appendix A: Request and Approval for Dissertation Replication & Expansion

CB

Cassy Bailey
Monday, October 23, 2017 at 10:12 PM
To: Randy Flowers

Thanks, Randy! Yes, it is time to repeat the dissertation with the new information. Additionally, one of my main recommendations was to change the time of when we administered the SRI/Engage. AND the University did change that from the summer to the first 3 weeks of class. I will be interested to know if that makes any data differences as well.

Thanks, Cassy

From: Randy Flowers
Sent: Tuesday, October 17, 2017 8:12:23 PM
To: Cassy Bailey
Subject: Dissertation Permission

It has been requested that I need to get in writing that I may replicate your dissertation study. I will be building off your study by seeing if race, gender, and SES levels are contributing factors when looking at Engage scores and if they predict retention.

If I could receive this permission in writing, I'd greatly appreciate it.

Thanks,

Randy Flowers
Assistant Dean of Students & Director of Student Life
Baker University
(785)594-8304

Appendix B: ACT Engage© Questionnaire

1. I'm a responsible person.
2. I feel part of this college.
3. I know attending college is the best choice for me.
4. I have difficulties keeping up academically with my classmates.
5. I often feel out of control.
6. I don't know if I want to stay in college.
7. When confronted with a problem, I try to be flexible in my decision making.
8. My nervousness interferes with my performance on tests.
9. I turn in my assignments on time.
10. I avoid activities that require meeting new people.
11. I do my best to fulfill my commitments.
12. I'm not performing to the best of my academic abilities.
13. I am a capable person.
14. I have a sense of belonging when I am on campus.
15. At social gatherings, I mix well with people.
16. I'm a fast learner.
17. I have a sense of connection with others at school.
18. I achieve little for the amount of time I spend studying.
19. I'm confident I will succeed in school even if I need help.
20. When confronted with a problem, I weigh the pros and cons of various situations.
21. I organize my thoughts before I prepare an assignment.
22. I do my best in my classes.
23. I'm committed to finish college regardless of obstacles.

24. I get upset when criticized.
25. I lose control when things go wrong.
26. A college education will help me achieve my goals.
27. I'm motivated to get a college degree
28. It's very important for me to do well in school/college
29. I regularly do things with friends.
30. I give my undivided attention to something important
31. I enjoy spending time with others
32. I am a trustworthy person.
33. I rank in the top 20% on academic ability among students my age.
34. If I don't feel like going, I skip classes.
35. If a problem is very large, I divide it into small parts that I can handle.
36. I'm a disciplined student.
37. I stay calm in difficult situations.
38. I feel isolated.
39. I manage my frustration well.
40. Others consider me a hard-working student
41. I'm a patient person
42. I'm thoughtful in my career planning.
43. People count on me to get a job done.
44. I tend to keep to myself
45. I express anger toward people who upset me.
46. I miss deadlines.

47. I try to do my best at any task.
48. I cannot think clearly when I'm angry.
49. I tend to trust people.
50. I have developed close friendships wherever I go.
51. I keep my promises.
52. I get easily irritated.
53. I feel nervous when talking with others.
54. I am shy.
55. I consistently do my school work well.
56. Once I set a goal, I do my best to achieve it.
57. I'm satisfied with my academic performance.
58. I'm not smart enough to do well on assignments.
59. I like to help others.
60. I make friends easily.
61. I get along with most people.
62. I brainstorm possible solutions to solve problems.
63. I have a positive view of myself.
64. I try not to hurt other's feelings.
65. I have been involved in extra-curricular activities.
66. When confronted with a problem, I look for patterns that may help me understand it.
67. I am confident of my academic abilities.
68. I summarize important information in diagrams, tables, or lists.
69. It is important for me to finish what I start.

70. When confronted with a problem, I'm willing to do something rather than forget about it.
71. I sympathize when others have troubles.
72. I am serious about fulfilling my obligations.
73. I don't feel comfortable talking to strangers.
74. The social side of college life is a highlight for me.
75. When confronted with a problem, I consider a solution that will not cause problems for other people.
76. When a solution fails, I examine why it didn't work.
77. I bounce back after facing disappointment or failure.
78. After solving a problem, I think about what was right and what was wrong with my approach.
79. I would leave college if I found something more interesting.
80. I'm sensitive to others' feelings.
81. When confronted with a problem, I analyze the situation.
82. I share my emotions with others.
83. In reaching an agreement, I consider the needs of others as well as my own needs.
84. I wait until people speak to me before I talk with them.
85. People describe me as a hard worker.
86. I would rather be somewhere else than in college.
87. I'm not sure if my decision to go to college is right.
88. I make an outline before answering questions or writing papers.
89. I'm a confident person.
90. I highlight key points when I read assigned materials.

91. If I don’t understand class work, I talk to my instructor.
92. I’m easily annoyed.
93. I work hard to improve on my shortcomings.
94. I’m intelligent
95. When I make plans, I follow through on them.
96. I don’t feel comfortable working with others.
97. I am less talented than other students.
98. I need to work harder than others to get the grades they do.
99. I can follow discussion about abstract academic topics.
100. I have a bad temper.
101. I discuss pr4oblems at school with my friends.
102. I have confidence that I can achieve my academic goals.
103. I’m willing to compromise when resolving a conflict.
104. I take good notes in class.
105. I intend to participate in campus social events.
106. I find it hard to pick out main ideas in texts.
107. I strive to achieve the goals I set for myself.
108. I often get into arguments.

Appendix C: ACT Engage© Advisor Generated Report

ADVISOR REPORT

Sample Student

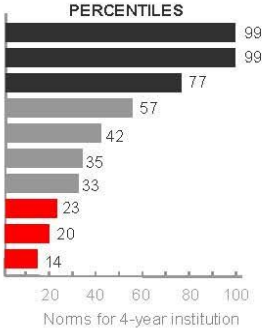
Tested on April 2, 2013
1st year of college · ID 926096433

ENGAGE™

SAMPLE COLLEGE Class/section: ENG 101

ENGAGE measures personal, behavioral and academic skills critical to college achievement. Low scores on ENGAGE represent areas that, when improved, may increase your GPA and make it easier to focus on completing college. This report is designed to help you identify your strengths and needs in order to ensure that you are successful in your college career.

SCALE	SCORE
Academic self-confidence	58
Commitment to college	56
Goal striving	49
Social activity	49
Steadiness	37
Social connection	27
Communication skills	21
Academic discipline	19
General determination	18
Study skills	12



ENGAGE INDICES
Probability estimates range from 0 to 1; indices do not appear on student reports.

.49 / 17%ile — **Academic Success Index**
probability of college GPA ≥ 2.0

.66 / 27%ile — **Retention Index**
probability of returning second year

STUDENT SELF REPORT
High school GPA: (C- to C) 1.5 - 1.9

Capitalize on your strengths

99 Academic self-confidence

The belief in one's ability to perform well in school — Your score on this scale suggests you feel highly confident in your ability to succeed academically. Confidence in your abilities is critical to your academic success.

99 Commitment to college

One's commitment to staying in college and getting a degree — Your response suggests that you feel confident in your reasons for continuing your education. You see yourself as determined to invest the necessary time and effort required to attain a high school diploma and college degree.

77 Goal striving

The strength of one's efforts to achieve objectives and end goals — Your response indicates that you see yourself as goal driven. You generally set appropriate goals and you feel confident in your ability to achieve these goals. Establishing and accomplishing goals is an important life skill that is essential for success in high school and beyond and will help you to maintain your motivation, energy, and focus.

Continue to develop your skills

57 Social activity

One's comfort in meeting and interacting with other people — Your response suggests you feel relatively comfortable interacting with people you do not know and making new friends. Your social skills may benefit you in courses that emphasize team projects and other collaborative assignments.

ACT®

42 Steadiness
One's responses to and management of strong feelings — Your response indicates that you see yourself as capable of effectively controlling your emotions. You feel as though you do not often lose your temper and you manage frustration well. You are fairly effective in keeping emotions from affecting your academic performance and other important activities in your life.

35 Social connection
One's feelings of connection and involvement with the college community — Your response suggests you see yourself as connected with your school and its student body. Your involvement in school activities will provide a valuable source of stress relief and social interaction that will serve to enhance feelings of connection.

33 Communication skills
Attentiveness to others' feelings and flexibility in resolving conflicts with others — Your score on this scale suggests that you tend to see yourself as fairly comfortable when communicating with others, handling interpersonal conflicts, and working collaboratively with others. These skills will help you in learning and work environments as you effectively exchange information, cooperate with others, and work as a team member.

Make plans for improvement

23 Academic discipline
The amount of effort a student puts into schoolwork and the degree to which a student is hardworking and conscientious — Your response suggests you frequently approach academic related tasks with less enthusiasm and effort than other students. You may frequently rush through your homework without giving much attention to detail, turn in poor or incomplete work, or give up on difficult tasks or problems.

20 General determination
The extent to which one strives to follow through on commitments and obligations — Your score on this scale suggests that you see yourself as someone who often has difficulty fulfilling your assigned responsibilities or duties. If something more interesting presents itself, you may pursue that interest rather than uphold your prior obligations and/or tend to your commitments. Other people may not be able to depend on you to fulfill your promises.

14 Study skills
The extent to which students believe they know how to assess an academic problem, organize a solution, and successfully complete academic assignments — Your response indicates that you feel you lack good study skills, problem-solving skills, and learning strategies. Like academic abilities, these skills are important in predicting your success in high school and beyond.

Recommended plan of action

Overall, your ENGAGE scores suggest that you are likely to benefit from campus resources for promoting academic success and attaining a college degree. Consult with a counselor or academic advisor who can assist you to develop a plan of action for improving your skills. Further, consult the student tool shop for helpful information and sample strategies.

There are services available at your institution that may be helpful to you:

- Develop strategies for improvement. Take advantage of campus resources recommended to you. By using campus resources, you can enrich your college experience and improve your chances for success. Your advisor can help you customize a plan of action.
- Capitalize on your strengths. Talk to your academic advisor about ways to take advantage of your strengths.
- Find out more about campus services and get a list of helpful workshops and events at your institution's website or advisory office.
- Visit the student tool shop for information and exercises to aid you in constructing your improvement plan.

Appendix D: ACT Engage© Student Generated Report

Sample Student

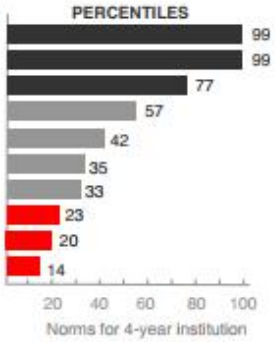
Tested on MM/DD/YY
1st year of college · ID 926096433

ACT Engage College

SAMPLE COLLEGE Class/section: ENG 101

ACT Engage measures personal, behavioral and academic skills critical to college achievement. Low scores on ACT Engage represent areas that, when improved, may increase your GPA and make it easier to focus on completing college. This report is designed to help you identify your strengths and needs in order to ensure that you are successful in your college career.

SCALE	SCORE
Academic self-confidence	58
Commitment to college	56
Goal striving	49
Social activity	49
Steadiness	37
Social connection	27
Communication skills	21
Academic discipline	19
General determination	18
Study skills	12



UNDERSTANDING YOUR SCORES
Your scores are reported in terms of percentiles. Your percentiles tell you the approximate percentages of students in schools like yours who took ACT Engage and scored at or below your score.

Scales highlighted in red are areas that you may want to focus on developing as you continue your education.

Capitalize on your strengths

99 Academic self-confidence

The belief in one's ability to perform well in school — Your score on this scale suggests you feel highly confident in your ability to succeed academically. Confidence in your abilities is critical to your academic success.

99 Commitment to college

One's commitment to staying in college and getting a degree — Your response suggests that you feel confident in your reasons for continuing your education. You see yourself as determined to invest the necessary time and effort required to attain a high school diploma and college degree.

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The strength of one's efforts to achieve objectives and end goals — Your response indicates that you see yourself as goal driven. You generally set appropriate goals and you feel confident in your ability to achieve these goals. Establishing and accomplishing goals is an important life skill that is essential for success in high school and beyond and will help you to maintain your motivation, energy, and focus.

Continue to develop your skills

57 Social activity

One's comfort in meeting and interacting with other people — Your response suggests you feel relatively comfortable interacting with people you do not know and making new friends. Your social skills may benefit you in courses that emphasize team projects and other collaborative assignments.

ACT

42 Steadiness

One's responses to and management of strong feelings — Your response indicates that you see yourself as capable of effectively controlling your emotions. You feel as though you do not often lose your temper and you manage frustration well. You are fairly effective in keeping emotions from affecting your academic performance and other important activities in your life.

35 Social connection

One's feelings of connection and involvement with the college community — Your response suggests you see yourself as connected with your school and its student body. Your involvement in school activities will provide a valuable source of stress relief and social interaction that will serve to enhance feelings of connection.

33 Communication skills

Attentiveness to others' feelings and flexibility in resolving conflicts with others — Your score on this scale suggests that you tend to see yourself as fairly comfortable when communicating with others, handling interpersonal conflicts, and working collaboratively with others. These skills will help you in learning and work environments as you effectively exchange information, cooperate with others, and work as a team member.

Make plans for improvement

23 Academic discipline

The amount of effort a student puts into schoolwork and the degree to which a student is hardworking and conscientious — Your response suggests you frequently approach academic related tasks with less enthusiasm and effort than other students. You may frequently rush through your homework without giving much attention to detail, turn in poor or incomplete work, or give up on difficult tasks or problems.

20 General determination

The extent to which one strives to follow through on commitments and obligations — Your score on this scale suggests that you see yourself as someone who often has difficulty fulfilling your assigned responsibilities or duties. If something more interesting presents itself, you may pursue that interest rather than uphold your prior obligations and/or tend to your commitments. Other people may not be able to depend on you to fulfill your promises.

14 Study skills

The extent to which students believe they know how to assess an academic problem, organize a solution, and successfully complete academic assignments — Your response indicates that you feel you lack good study skills, problem-solving skills, and learning strategies. Like academic abilities, these skills are important in predicting your success in high school and beyond.

Recommended plan of action

Overall, your ACT Engage scores suggest that you are likely to benefit from campus resources for promoting academic success and attaining a college degree. Consult with a counselor or academic advisor who can assist you to develop a plan of action for improving your skills. Further, consult the student tool shop for helpful information and sample strategies.

There are services available at your institution that may be helpful to you:

- Develop strategies for improvement. Take advantage of campus resources recommended to you. By using campus resources, you can enrich your college experience and improve your chances for success. Your advisor can help you customize a plan of action.
- Capitalize on your strengths. Talk to your academic advisor about ways to take advantage of your strengths.
- Find out more about campus services and get a list of helpful workshops and events at your institution's website or advisory office.
- Visit the student tool shop for information and exercises to aid you in constructing your improvement plan.

ACT

Appendix E: ACT Engage© Institutional Aggregate Generated Report

Sample

Sample College

Aggregate Report: September 5, 2010

ENGAGE College

This report provides a summary of your institution's ENGAGE results — your students' psychosocial strengths and needs — and is designed to help you understand trends and identify potential problems early. Research suggests that one of the most effective ways to prevent poor academic performance and student dropout is to identify at-risk students early in their first semester of college and assist them in their educational development.

ENGAGE College

ENGAGE College is a low-stakes, self-report inventory made up of ten scales. (See sidebar and Table A1 in the Appendix.) It captures students' perceptions of their motivation, commitment to education, social connection, and other key predictors of academic success and persistence. It helps educators to:

- Evaluate students' psychosocial attributes
- Determine students' levels of academic and retention risk
- Identify interventions to help students persist in postsecondary education

ENGAGE Scales

- Academic Discipline
- Academic Self-Confidence
- Commitment to College
- Communication Skills
- General Determination
- Goal Striving
- Social Activity
- Social Connection
- Steadiness
- Study Skills

There are multiple ways to use results from ENGAGE.

- Both the **Academic Success Index** and the **Retention Index** are predictive scores that can be used to help identify students who may be at risk of postsecondary academic difficulties and/or dropout.
- A student's entire profile of scale scores (shown in individual Student and Advisor Reports) can be used to identify relative strengths and needs.
- Aggregate Reports for the institution (this report) can be used to identify institution-level needs based on the ten ENGAGE scales and the two success indices.

For more details concerning ENGAGE scales, the Academic Success and Retention Indices, and information about the development, interpretation, and use of ENGAGE, please refer to the *ENGAGE College User's Guide*.

ACT

Contents of the Aggregate Report

This report includes the results from all ENGAGE assessments administered by your institution as of September 5, 2010. It shows how your students scored, on average, on each of the ten ENGAGE scales, as well as the Academic Success and Retention Indices.

Average ENGAGE scores for all participating students at comparable institutions who have taken ENGAGE in the last 12 months are included for comparison. This information can be used to help understand how your students compare to other students and identify areas where institution-wide resources or interventions may be needed. If you administer ENGAGE on an ongoing basis, your students' average scores will change as student records continue to accumulate. It is recommended to run this report again at the end of your administration to get a more accurate picture of how your students compare to their peers.

This report provides a summary of some key demographic characteristics for the students. In addition, ENGAGE scale scores, including the Academic Success and Retention Indices, are summarized by broad percentile range (Low, Medium, High). For intervention purposes, your institution may want to concentrate on low-scoring students (e.g., those in the Low range), as these students are most at-risk for academic performance and persistence difficulties.

Summary of Your Institution's Results

As of September 5, 2010, we received a total of 240 ENGAGE assessments from your institution.

Table 1 provides a summary of the demographic characteristics of these students. You may want to use this information to assess whether this group of students seems representative of a typical cohort of students at your institution.

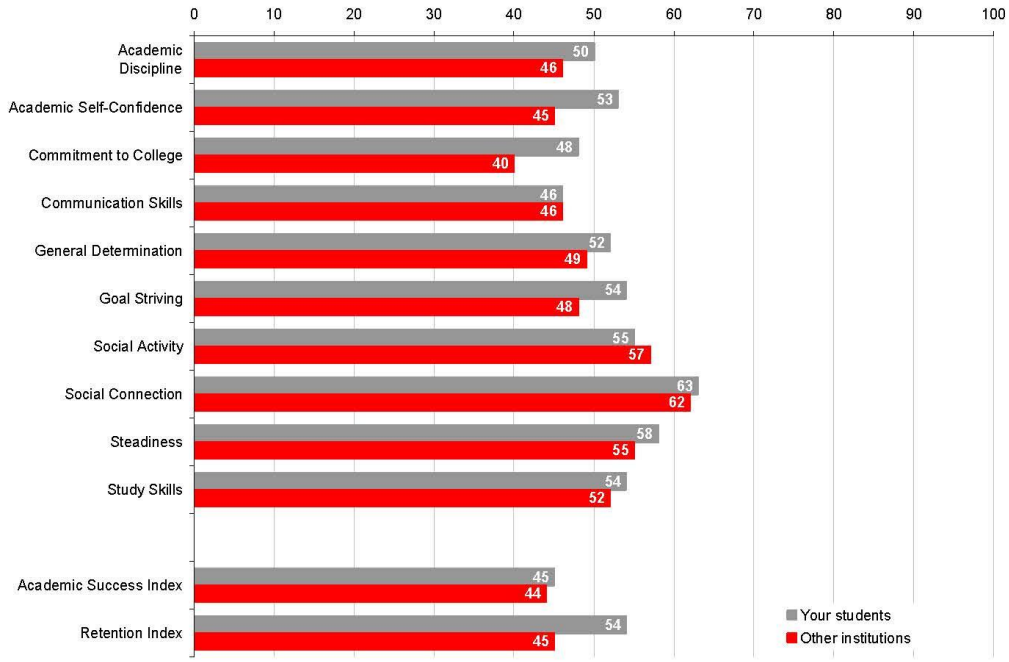
Table 1. Your Students' Demographic Characteristics

Characteristic	Percentage (%)
Gender	
Female	50
Male	50
Missing	0
Race/Ethnicity	
American Indian, Alaskan Native	1
Asian	0
Black/African American	13
Native Hawaiian/Pacific Island	0
White	2
Two or more races	1
Prefer not to respond	3
Hispanic/Latino	77
Missing	4
Language Known Best	
English	78
A language other than English	5
English and another language about the same	17
Missing	0

Note. $N = 240$. Percentages may not add up to 100% due to rounding.

Figure 1 shows average percentile scores on the ten ENGAGE scales and the Academic Success and Retention Indices for your institution's students who completed ENGAGE. For comparison purposes, this figure also shows average scores for the national sample of students who completed ENGAGE. (Note: Refer to Tables A2 and A3 in the Appendix for more detailed descriptive statistics and comparisons.)

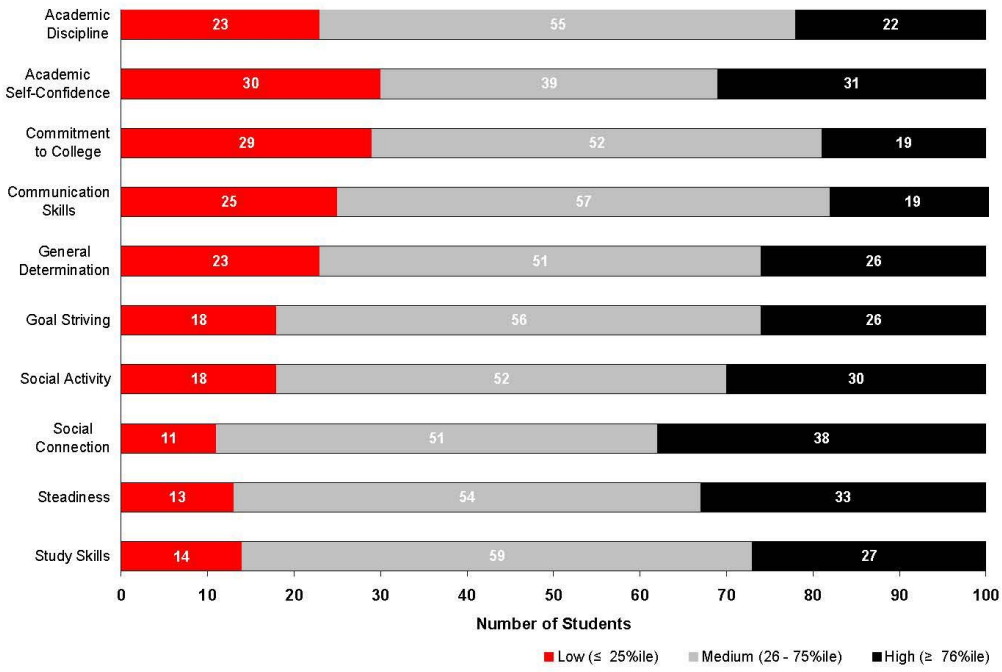
Figure 1. Average ENGAGE Percentile Scores for Your Institution and the National Sample



Note. ENGAGE percentile scores range from 1 to 99. Results compared to other 4-year institutions.

Figure 2 provides a graphical representation of your students' scores on each scale broken down by the broad percentile range in which the students scored. These ranges are Low (≤ 25th percentile), Medium (26th to 75th percentile), and High (≥ 76th percentile). For intervention purposes, your institution may want to focus on low-scoring students, as these students are most at-risk for academic difficulties.

Figure 2. Percentage of Students with ENGAGE Percentile Scores in each Broad Range

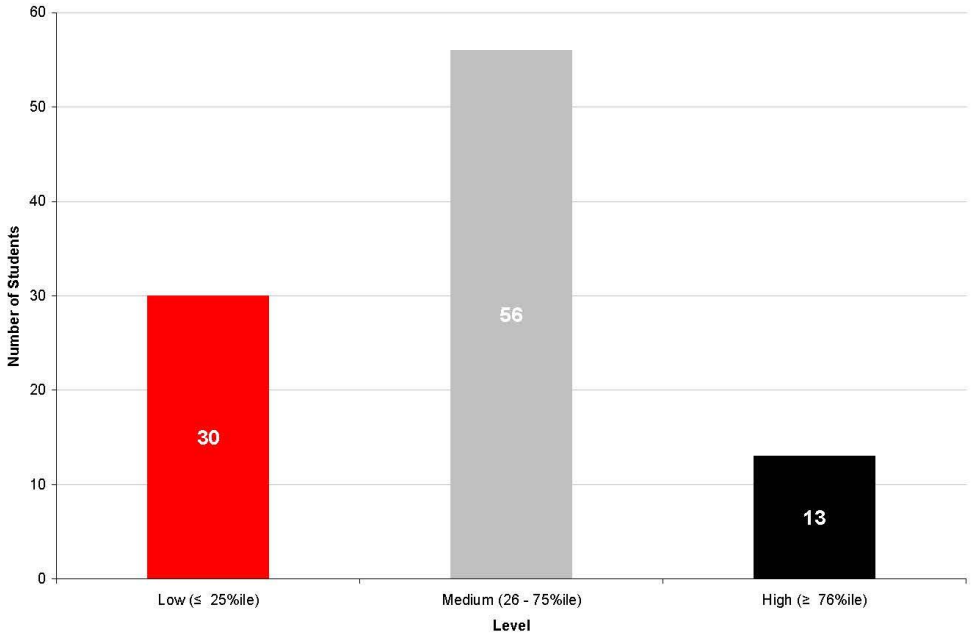


Note. $N = 240$. Percentages may not add up to 100% due to rounding.

Figures 3 and 4 feature information about the Academic Success and Retention Indices included in advisor and roster reports. These indices are on a scale from 1 to 99, with larger values representing less risk of poor academic performance (i.e., GPA < 2.0) or of dropping out, respectively. Since baseline academic performance and retention rates vary across institutions, these indices should not be interpreted as explicit predicted probabilities of retention or academic performance; rather, these indices are approximate measures of how each student's psychosocial factors lend themselves to academic performance and persistence after the first year of college (for more information on how to interpret ENGAGE success indices, consult the ENGAGE College User Guide). For ease of interpretation, we have transformed both the Academic Success and Retention Indices into percentile rank scores (by comparing your students to our national norms). For illustration purposes, the percentile ranges were broken down into "low" (1st to 25th percentile), "medium" (26th to 75th percentile), and "high" (76th to 99th percentile).

Figure 3 features students' Academic Success Index as percentile rank scores, in which students with low, medium, and high indices are plotted separately.

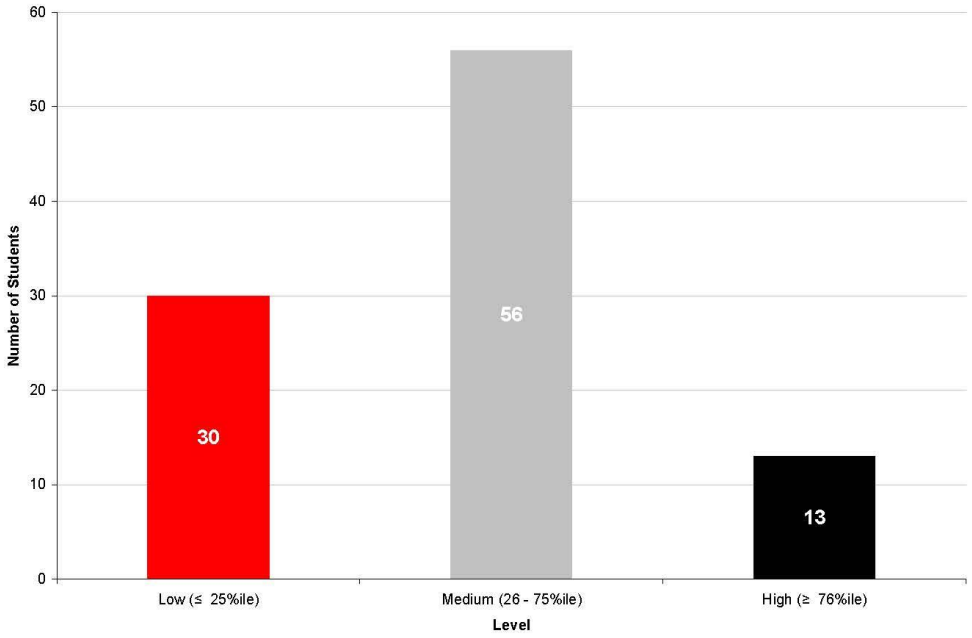
Figure 3. Percentage of Students with Academic Success Index Scores in Each Broad Range



Note. $N = 240$. Numbers may not add up to 100% due to rounding.

Similarly, Figure 4 features students' Retention Index as percentile rank scores, in which students with low, medium, and high retention indices are plotted separately.

Figure 4. Percentage of Students with Retention Index Scores in Each Broad Range



Chapters 4 through 6 of the *ENGAGE College User's Guide* describe how to interpret scores from ENGAGE scales and the success indices, and provide additional information about how to use ENGAGE results.

Appendix

This appendix provides a list of ENGAGE College scales and definitions, as well as a summary of key academic and behavioral information provided by your students at the time they completed ENGAGE. This information is also contained in the Roster Report.

Table A1. ENGAGE Scales and Definitions

Domain	ENGAGE Scales	Definition
Motivation & Skills Personal characteristics that help students to succeed academically by focusing and maintaining energies on goal-directed activities.	Academic Discipline	The amount of effort a student puts into schoolwork and the degree to which a student sees him/herself as hardworking and conscientious.
	Commitment to College	Commitment to staying in college and getting a degree.
	Communication Skills	Attentiveness to others' feelings and flexibility in resolving conflicts with others.
	General Determination	The extent to which one strives to follow through on commitments and obligation.
	Goal Striving	The strength of one's efforts to achieve objectives and end goals.
	Study Skills	The extent to which students believe they know how to assess an academic problem, organize a solution, and successfully complete academic assignments.
Social Engagement Interpersonal factors that influence students' successful integration or adaptation into their environment.	Social Activity	One's comfort in meeting and interacting with other people.
	Social Connection	One's feelings of connection and involvement with the college community.
Self-Regulation Cognitive and affective processes used to monitor, regulate, and control behavior related to learning.	Academic Self-Confidence	The belief in one's ability to perform well in college.
	Steadiness	One's responses to and management of strong feelings.
Behavioral Indicators	Absenteeism	Number of absences, days tardy, and skipped classes reported by the student over the past month.
	Homework Time	Time spent on homework on a typical school evening.

Table A2 includes your students' mean ENGAGE percentile scores, which are norm-referenced, compared to students from similar institutions.

Table A2. Your Students' Mean ENGAGE Percentile Scores Compared to Other 4-Year Institutions

	Your Students [a]		Students at Other 4-Year Institutions [b]	
ENGAGE Scales	***M***	***SD***	***M***	***SD***
Academic Discipline	50	28	46	28
Academic Self-Confidence	53	35	45	36
Commitment to College	48	30	40	32
Communication Skills	46	26	46	26
General Determination	52	29	49	27
Goal Striving	54	27	48	28
Social Activity	55	29	57	30
Social Connection	63	26	62	26
Steadiness	58	25	55	28
Study Skills	54	27	52	25
Academic Success Index	45	26	44	26
Retention Index	54	25	45	27

Note. [a] *N* for Institution 1 = 240. [b] *N* for 4-year institutions = 46,524.
M = Mean; *SD* = Standard Deviation. * Lower scores reflect more risk.

Table A3 includes your students' mean ENGAGE scale scores compared to students from other 4-year institutions. Those scale scores with statistically significant differences between your students and those from other 4-year institutions are marked on the last column to the right.

Table A3. Institution and National Sample Mean ENGAGE Scale Scores

	Your Students [a]		Students at Other 4-Year Institutions [b]		
ENGAGE Scales	***M***	***SD***	***M***	***SD***	*
Academic Discipline	47	9	45	9	*
Academic Self-Confidence	55	7	53	8	*
Commitment to College	56	6	52	7	*
Communication Skills	44	9	44	9	
General Determination	38	11	37	11	
Goal Striving	43	8	47	8	*
Social Activity	43	14	44	14	
Social Connection	41	9	41	9	
Steadiness	40	9	38	10	
Study Skills	40	8	40	8	
Academic Success Index	66	19	65	20	
Retention Index	65	22	67	23	

Note. [a] *N* for Institution 1 = 240. [b] *N* for other 4-year institutions= 46,524.
M = Mean; *SD* = Standard Deviation. * Designates a mean scale or index score that is significantly different from that of the national sample ($p \leq .05$). Lower scores reflect more risk.

Table A4 includes your students' high school GPA as self-reported on ENGAGE, represented by percentages of students selecting each response choice.

Table A4. Student Self-Reported High School GPA

Self-reported high school GPA	Percentage
(A- to A) 3.5 and above	14
(B to B+) 3.0 – 3.4	37
(B- to B) 2.5 – 2.9	38
(C to B-) 2.0 – 2.4	4
(C- to C) 1.5 – 1.9	1
(D to C-) 1.0 – 1.4	7
(D- to D) 0.9 or lower	1

Note. *N* = 240. Percentages may not add up to 100% due to rounding.

Table A5 includes the number of days students reported being absent per month in high school, represented by percentages of students selecting each response choice. Research shows that those students who report less than 80% attendance (i.e., miss more than 5 to 6 days in one month) are more likely to experience a range of academic difficulties.

Table A5. Student Reported Average Number of Days Absent from School per Month in High School

Response	Percentage
None	47
1 – 2 Days	33
3 – 4 Days	12
5 – 6 Days	3
7 – 8 Days	2
9 – 10 Days	0
11 or More Days	1
Missing	1

Note. *N* = 240. Percentages may not add up to 100% due to rounding.

Table A6 includes the frequency with which students reported going to class without having their homework done in high school, as represented by percentages of students selecting each response choice. Research shows that those students who do not complete their homework on a regular basis experience a higher rate of academic difficulties.

Table A6. Percentage of Students Who Reported Going to Class without Homework Done During High School

Response	Percentage
Never	15
Rarely	41
Sometimes	34
Frequently	5
Daily	3
Missing	1

Note. *N* = 240. Percentages may not add up to 100% due to rounding.

Appendix F: IRB Application

BAKER UNIVERSITY

IRB Request

Date 11-10-2018

IRB Protocol Number _____ (IRB use only)

I. Research Investigator(s) (students must list faculty sponsor)

Department(s) School of Education Graduate Department

	Name	Signature	
1.	Randy Flowers	Randy Flowers — Digitally signed by Randy Flowers Date: 2018.11.10 13:40:01 -06'00'	Principal Investigator
2.	Kathy Ermler	Kathy Ermler — Digitally signed by Kathy Ermler Date: 2019.02.03 14:55:33 -06'00'	☑ Check if faculty sponsor
3.	Li Chen-Bouck	Li C-B — Li Chen-Bouck 2019.02.25 19:40:43 -06'00'	☐ Check if faculty sponsor
4.	Cassy Bailey	Cassy Bailey — Digitally signed by Cassy Bailey Date: 2019.02.04 08:00:37 -06'00'	☐ Check if faculty sponsor

Principal investigator contact information

Phone 620-474-0746

Email rflowers@bakeru.edu

Address 2717 Ousdahl Road

Lawerence KS 66046

Note: When submitting your finalized, signed form to the IRB, please ensure that you cc all investigators and faculty sponsors using their official Baker University (or respective organization's) email addresses.

Faculty sponsor contact information

Phone 620-481-3816

Email KathyErmler@fac.bakeru.edu

Expected Category of Review: ☑ Exempt ☐ Expedited ☐ Full ☐ Renewal

II. Protocol Title

The Difference between ACT © Engage Survey Scores and First-Time, Full-Time Undergraduate Student Retention when considering Gender, Race, and Socioeconomic Status at a private Midwestern University.

III. Summary:

The following questions must be answered. Be specific about exactly what participants will experience and about the protections that have been included to safeguard participants from harm.

A. In a sentence or two, please describe the background and purpose of the research.

The purpose of this study was twofold: (1) to explore the difference of ACT Engage© Retention Index scores between retained and not retained first-time, full-time undergraduate students when considering gender, race, and SES level; and (2) to explore the difference between the ACT Engage© domain scores between retained and not retained of first-time, full-time undergraduate students when considering gender, race, and SES level.

B. Briefly describe each condition, manipulation, or archival data set to be included within the study.

The study will use archival data from the Engage Survey for fall freshman cohorts from 2012-2017 at Baker University – College of Arts and Sciences and Undergraduate School of Education in Baldwin City, Kansas. No condition or manipulation will be included within the study.

IV. Protocol Details

A. What measures or observations will be taken in the study? If any questionnaire or other instruments are used, provide a brief description and attach a copy.

The study will use archival data from 2012-2017 cohorts. Permission to use archival data was granted from the Director of Institutional Research.

In terms of reliability and validity of the Engage Survey, ACT (2016) reported that reliability estimates for the Engage© survey were calculated using the total sample of participating students (n=144,770). ACT Engage© scores demonstrate moderate to high internal consistency reliability by Cronbach's

B. Will the subjects encounter the risk of psychological, social, physical, or legal risk? If so, please describe the nature of the risk and any measures designed to mitigate that risk.

Subjects will not encounter any risk. Only archival data will be used in this study.

C. Will any stress to subjects be involved? If so, please describe.

There will be no stress to any subjects since only archival data will be used in this study.

D. Will the subjects be deceived or misled in any way? If so, include an outline or script of the debriefing.

Subjects will not be deceived or misled in any way. Only archival data will be used in this study.

E. Will there be a request for information which subjects might consider to be personal or sensitive? If so, please include a description.

The only personal or sensitive information that would be gathered is their race, gender, and socioeconomic level (Pell Grants eligible, Stafford Loan recipients, not Pell Grants or Stafford Loans eligible). This data is made available through the Institutional Research Office and is archival data.

F. Will the subjects be presented with materials which might be considered to be offensive, threatening, or degrading? If so, please describe.

The subjects will not be presented with any materials considered to be offensive, threatenting or degrading. Only archival data will be used in this study.

G. Approximately how much time will be demanded of each subject?

No time will be required of any subject. Only archival data will be used in this study.

H. Who will be the subjects in this study? How will they be solicited or contacted? Provide an outline or script of the information which will be provided to subjects prior to their volunteering to participate. Include a copy of any written solicitation as well as an outline of any oral solicitation.

No subjects will be solicited for this study. Only archival data will be used in this study.

I. What steps will be taken to insure that each subject's participation is voluntary? What if any inducements will be offered to the subjects for their participation?

Only archival data will be used in this study.

J. How will you insure that the subjects give their consent prior to participating? Will a written consent form be used? If so, include the form. If not, explain why not.

Since this survey used archival data with no identifying information, no consent form was needed. Permission to access the archival data will need to be given by Baker University for use in this study.

K. Will any aspect of the data be made a part of any permanent record that can be identified with the subject? If so, please explain the necessity.

No aspect of the data will be made a part of any permanent record that can be identified with the subject. Only archival data will be used in this study.

L. Will the fact that a subject did or did not participate in a specific experiment or study be made part of any permanent record available to a supervisor, teacher, or employer? If so, explain.

Participation or non participation in this study will not be made part of any subject's permanent file. Only archival data will be used in this study.

M. What steps will be taken to insure the confidentiality of the data? Where will it be stored? How long will it be stored? What will be done with the data after the study is completed?

Data will be provided by the Baker University Office of Institutional Research department in a manner that is free of any identifier that could be used to identify any specific student. Data will only be kept on Baker University owned technology if that be my computer in my office, or my data analysis when running SPSS software. Data will be stored on the device until the conclusion of writing dissertation and defense. Upon successfully defending dissertation, data will be removed from office device within 30 days and be stored on a secure flash drive for 5 years.

N. If there are any risks involved in the study, are there any offsetting benefits that might accrue to either the subjects or society?

There are no risks to students in this study. Only archival data will be used in this study.

O. Will any data from files or archival data be used? If so, please describe.

Archival data from Baker University covering Baldwin City campus Fall Cohort first year, first time students from 2012-2017 will be used. The data used will include Engage Survey component scores, ethnicity, retention from first to second year, SES level as determined by Financial Aid eligibility, and gender.

Appendix G: IRB Request Letter

RE: Randall Flowers IRB Submission

IRBProposals
Randy Flowers; Kathy Ermler
Friday, March 1, 2019 at 1:40 PM
Show Details

IRB Letter of Approv...
254.1 KB

Download All Preview All

You forwarded this message on 3/2/19, 11:37 AM. Show Forward

Randy-

Just e-mail Eric and have him approve via e-mail, then forward that to me here at the IRB e-mail address.

Pending that, your proposal is approved. See attached.

-Nate

-----Original Message-----
From: Randy Flowers
Sent: Friday, March 01, 2019 1:21 PM
To: IRBProposals
Subject: RE: Randall Flowers IRB Submission

Nate,
Correct, the information would be destroyed after five years. My original plan was to destroy data after dissertation defense, but Dr. Li shared that I must keep it for five years. Due to potentially changing jobs or who knows over five years, we decided a flash drive was best.

As for approval from IRO, do I send that to Eric Hays directly? He verbally told me this is no issue at all, but I'll get the written confirmation too. Let me know what account to email.

Thanks,

Randy Flowers
Assistant Dean of Students
& Director of Student Life
Baker University
(785)594-8304
Personal Pronouns: He/Him/His
Achiever | Maximizer | Analytical | WOO | Arranger

Follow us on Twitter

Appendix H: IRB Approval Letter

BAKER UNIVERSITY
Own Confidence

Baker University Institutional Review Board

March 1st, 2019

Dear Randy Fl Font and Kathy Ermler,

The Baker University IRB has reviewed your project application and approved this project under Exempt Status Review. As described, the project complies with all the requirements and policies established by the University for protection of human subjects in research. Unless renewed, approval lapses one year after approval date.

Please be aware of the following:

1. Any significant change in the research protocol as described should be reviewed by this Committee prior to altering the project.
2. Notify the IRB about any new investigators not named in original application.
3. When signed consent documents are required, the primary investigator must retain the signed consent documents of the research activity.
4. If this is a funded project, keep a copy of this approval letter with your proposal/grant file.
5. If the results of the research are used to prepare papers for publication or oral presentation at professional conferences, manuscripts or abstracts are requested for IRB as part of the project record.

Please inform this Committee or myself when this project is terminated or completed. As noted above, you must also provide IRB with an annual status report and receive approval for maintaining your status. If you have any questions, please contact me at npoell@bakeru.edu or 785.594.4582.

Sincerely,

Nathan D. Poell

Nathan Poell, MA
Chair, Baker University IRB

Baker University IRB Committee
Scott Crenshaw
Erin Morris, PhD
Jamin Perry, PhD
Susan Rogers, PhD

Appendix I: Data requested from Institutional Research

RE: IRB Approval

EH

Eric Hays
Randy Flowers
Monday, March 4, 2019 at 8:37 AM
Show Details

You replied to this message on 3/4/19, 8:38 AM. Show Reply
You forwarded this message on 3/4/19, 8:38 AM. Show Forward

That's no problem. What do I need to do?

Eric

From: Randy Flowers
Sent: Saturday, March 02, 2019 11:34 AM
To: Eric Hays
Subject: IRB Approval

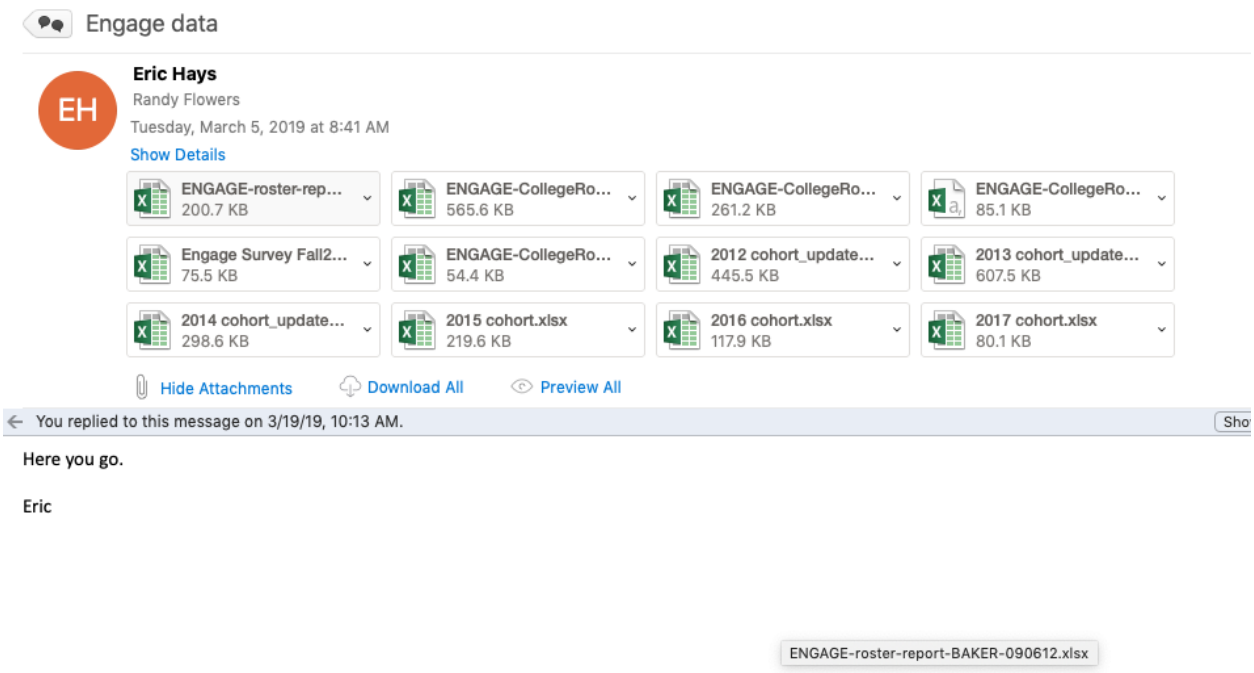
Eric,
The IRB committee needs approval from you that I can have access to 2012-2017 ACT Engage Scores, along with those students' respective race (white or minority), gender (male or female), and SES status (pell grant, Stafford loan, neither). I do not need names for any of the students unless I need that as an identifier for merging data collections. If this information is already merged somehow, that's even better!

Once, I have your approval, my IRB is officially approved. I will then look forward to connecting with you on receiving the data.

Thanks,

Randy Flowers
Assistant Dean of Students & Director of Student Life
Baker University
(785)594-8304

Appendix J: Data granted by Institutional Research


Engage data
EH
Eric Hays
Randy Flowers
Tuesday, March 5, 2019 at 8:41 AM
Show Details
ENGAGE-roster-rep... 200.7 KB
ENGAGE-CollegeRo... 565.6 KB
ENGAGE-CollegeRo... 261.2 KB
ENGAGE-CollegeRo... 85.1 KB
Engage Survey Fall2... 75.5 KB
ENGAGE-CollegeRo... 54.4 KB
2012 cohort_update... 445.5 KB
2013 cohort_update... 607.5 KB
2014 cohort_update... 298.6 KB
2015 cohort.xlsx 219.6 KB
2016 cohort.xlsx 117.9 KB
2017 cohort.xlsx 80.1 KB
Hide Attachments
Download All
Preview All
You replied to this message on 3/19/19, 10:13 AM.
Here you go.
Eric
ENGAGE-roster-report-BAKER-090612.xlsx