AN EXAMINATION OF SELF-PERCEIVED TEMPERAMENT STYLES AND ITS RELATION TO THE RETENTION OF FIRST TIME, FULL-TIME FRESHMEN IN A COLLEGE OF AGRICULTURE

by

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TABLE OF CONTENTS

1. INTRODUCTION 1

Background and Setting 1
Statement of the Problem 9
Purpose and Objectives 9
Definition of the Terms 10
Limitations of the Study 11
Basic Assumptions of the Study 12

2. REVIEW OF THE LITERATURE 13

Introduction 13
Theoretical Framework 13
Retention 15
History and Main Theories 15
Pre-College Characteristics 19
Demographic Traits 19
College of Agriculture Demographics and Traits 20
Personality and Retention 21
Admissions Criteria 22
Goal Commitment 24
Institutional Integration: Social and Academic 24
First-year Students 26
Temperament 28
Ancient Beginnings 28
Modern History of Temperament 29
Keirsey Temperament Theory 31
Personality, Temperament, and Retention in Colleges of Agriculture 32
Real Colors 34
Background 34
The Four Colors 35
Blue 36
Gold 36
Green 36
Orange 36
Real Colors in the Industry 37
Real Colors and True Colors 38
Beginning College Survey of Student Survey 39
Summary 43

TABLE OF CONTENTS CONTINUED

3. METHODOLOGY 45

Instrumentation 45
Beginning College Survey of Student Engagement.....46
Validity 47
Real Colors.....48
Reliability & Validity 50
Population 51
Data Collection 53
Data Analysis 55
Summary 60

4. RESULTS 62

Introduction.....62
College of Agriculture Freshmen Profile.....62
Beginning College Survey of Student Engagement.....65
Pre-College and Retention 69
Temperament, Pre-College, BCSSE, and Retention Relationships.....71
Mann-Whitney *U* Results for Background Characteristics 72
Mann-Whitney *U* Results for BCSSE Questions 13 and 18.....73
Kruskal-Wallis Results 74
Chi-Square 78
Correlations.....79

5. CONCLUSIONS AND DISCUSSION 84

Outcomes 84
Objective One 85
Objective Two.....86
Objective Three.....89
Objective Four 89
Implications and Recommendations 92
Building Effective College of Agriculture Retention Programming 94
College of Agriculture Academic Advising 96
College of Agriculture Career Advising 97
Implications for Agriculture Education and Leadership Courses.....99
Recommendations for Future Research 101
Summary 102

REFERENCES CITED.....105

TABLE OF CONTENTS CONTINUED

APPENDICES 120

APPENDIX A: Beginning College Survey of Student Engagement 121
APPENDIX B: Example of COA Champ Change Retention Events 126
APPENDIX C: Types of Courses, Course characteristics, and Coursework that the Different Temperaments Excelled In 129
APPENDIX D: The Four Temperaments: Careers in Agriculture 139
APPENDIX E: IRB Approval Form 142

LIST OF TABLES

Table Page

1. The History of the Four Temperaments....32

2. The Compatible Temperament Types of Galen, Myers-Briggs, Keirsey, and Real Colors®....35

3. Data Codebook for Variables within the Study as Input in SPSS 20....56

4. Primary and Secondary Color Temperament Distribution by Gender....65

5. Frequencies (*n*) and Percentages (%) of the Purposive Sample's BCSSE Question 13: A-D Results....68

6. Means (*M*) and Standard Deviations (*SD*) of BCSSE Question 18....69

7. High School GPA Range Frequencies (n) and Percentages (%) for the Purposive Sample....70

8. Means (*M*) and Standard Deviations (*SD*) of SAT Verbal and Math and ACT Composite Scores....71

9. Mann-Whitney *U* n, Means Ranks, *U*, and *p* Values of Gender and High School GPA, SAT Verbal and Math, and ACT Composite Scores....73

10. Mann-Whitney *U* Test *n*, Mean Ranks, *U*, and *p* values from BCSSE Question 18 and Gender....74

11. Kruskal-Wallis Results of the Three Semester Groups for BCSSE Questions 13 and 18 Values n, Mean Ranks, degrees of freedom (*df)*, and *p*....75

LIST OF TABLES – CONTINUED

Table Page

12. Post-hoc Mann-Whitney *U* Test to Compare Temperament to BCSSE Question 18: E 77

13. Cross-Tabulation between the Primary and Secondary Temperaments in the Purposive Sample 78

14. Correlations between Primary and Secondary Temperament, Retention, High School GPA, ACT Composite, and SAT Verbal and Math Scores in the Purposive Sample 80

15. Correlations between Primary and Secondary Temperament, Retention, and BCSSE Questions 13: A-D and 18: A-F 82

16. Revised Temperament, Talent, and Tools in the Workforce 98

LIST OF FIGURES

Figure Page

1. The Freshmen Year Process and Four Retention Decisions (Veenstra, 2009) 27

2. Gender Distribution of the Purposive Sample....63

3. Primary Temperament Distribution for the Purposive Sample....64

4. Secondary Temperament Distribution for the Purposive Sample....64

5. Primary and Secondary Temperament Distribution 85

ABSTRACT

First-time full-time freshmen are faced with an enormous amount of new experiences in their first year in college. Student personality has been a well-established factor in retention studies. However, no studies had been conducted on what significant ways a student temperament could be used to positively impact the retention of first-time, full-time freshmen within the College of Agriculture (COA) at Montana State University (MSU). The purposive sample for this study included only students who met four criteria: (a) First-time, full-time freshmen enrolled in the AGED 140 course in the fall 2012, spring 2013, and fall 2013 semester with declared majors in the COA; (b) completed the Beginning College Survey of Student Engagement (BCSSE) during the summer 2012 orientation session; and (c) completed the Real Colors® temperament assessment during the AGED 140 course. Descriptive quantitative in design, inferential and descriptive nonparametric statistics were used to explore for relationships and statistical significance between pre-college scores and the two study instruments—the BCSSE and Real Colors®. Findings were based on the results from the two instruments and pre-college academic factors of high school GPA, SAT Verbal and Math scores, and ACT Composite scores. Results showed that the largest primary temperament was Orange, and the largest secondary temperament was equal between Gold and Blue. Gold and Green students were concerned about making friends. Students were also concerned with engaging with instructors and paying for college. Females were concerned with their time management skills. Students expected to spend 21-30 hours preparing for coursework each week. Temperament was not correlated with retention. Recommendations were that retention programs and course study groups focus on gathering students struggling in a course or multiple courses. Scholarship and other financial services that assist in paying for college should be well publicized to students. Instructors' office hours should be posted and referred to often. Instructors and advisors should be aware of the different ways in which students with different temperaments perceived their first year academic workload. Instructors should keep course assignments practical; relate course material to industry jobs; provide hands on activities; and encourage big picture thinking.

INTRODUCTION

Background and Setting

The educational institutions currently known as colleges came into existence in the 1600s. However, it has only been within the past 50 years that retention has become a focal point (Morrison & Silverman, 2012). An institution's "source of prestige" has been built on its ability to retain students (Berger, Ramirez, & Lyons, 2012, p. 10). Some higher education institutions include in their strategic plans priorities to raise retention rates; while others take less formal action approaches to retention. Universities that do take action care not only about their reputation, but about keeping students motivated to stay in college by providing a quality education and effective retention programming for all. Montana State University (MSU) was an example of one such institution that did not just talk about raising retention rates, but took strategic steps to do so.

With only 28% of Montanans 25 years of age or older having at least a baccalaureate degree, action needed to be taken to raise retention and graduation rates (Baum, Ma, & Payea, 2013, p. 44). MSU's 2012 Strategic Plan documented that equipping students with the knowledge and skills needed for being successful in their future careers and education was an institutional learning goal (Strategic Planning Committee, 2012). The Strategic Planning Committee believed "this goal pushes MSU to seek continuous improvement in student learning and to create innovative, compelling student learning opportunities that will increase retention and graduation rates" (Strategic Planning Committee, p. 3). To reach this goal, MSU sought to increase first-time, full-time freshmen retention rates from fall-to-fall semester from 74% to 82%. According to

the Strategic Planning Committee (2012), MSU fell below the average Western land-grant institutional retention rate of 77%. The challenge faced by MSU and other institutions nationwide was to identify why students were leaving, and then build and implement effective early intervention and support programs to draw those students.

In order to determine what makes students depart from college, examination must begin with their first year experiences. Many important experiences that shape a student's decision to stay or leave college happen within their first year (Tinto, 1993). MSU has developed a number of initiatives and institution-wide programs to address those issues. One example came from the 2013-2019 Academic Strategic Plan developed by the Dean's Council. Eight implementation recommendations were outlined regarding increased first-time, full-time freshmen retention rates. The recommendations were as follows (The Dean's Council, 2013):

- Analyze and implement recommendations from assessment of freshman seminars;
- Implement and assess freshmen experience classes, residential interest groups or freshman interest groups;
- Identifying funding for sophomore-level scholarships;
- Develop transitional advising for students changing majors that will allow on time graduation;
- Encourage "introduction to the major" seminars in all programs;
- Provide clear four-year degree plans;
- Survey why students leave and address results; and
- Reduce Drop/Fail/Withdraw (DFW) levels in freshmen-level classes.

Fox-Koon, Frick, and Igo (2009) noted that retention should be a university-wide effort, and that no single program or factor explained student retention. This conclusion was also reached by previous retention researchers such as Berger, Ramirez, & Lyons, (2012) and Tinto (1990, 1993, & 1997). As a result, institutions needed to implement multiple initiatives to increase student retention (Tinto, 1990). Paramount retention researchers, such as Tinto (1990, 1993, 1997, & 2002), Astin (1993) and others (Yorke & Longden, 2004; Kuh, 2001-2002) noted that universities needed to identify students who were at-risk of dropping out of college before they did so. Early student support could have meant the difference between retention or an early exit from higher education.

MSU, specifically, employed two early identification and support programs that adhered to researcher's institution-wide multiple initiative recommendation. The Beginning College Survey of Student Engagement (BCSSE) is a pre-college survey that MSU administered to incoming freshmen prior to the start of fall classes (Montana State University, 2012). The instrument gathered information on student's pre-college experiences, first-year expectations, and intention to graduate from the institution. The Office of Student Success at MSU utilized the data by contacting students about areas of concern, based on their survey responses, and initiated support in the areas the instrument identified as potential issues (Beck, 2011). The BCSSE data provided MSU and the College of Agriculture, specifically, with an in-depth understanding of the student's pre-college engagement and expectations of their first-year (Indiana University, 2013).

After the semester began, faculty and staff at MSU had at their disposal the Early Alert System (Montana State University, 2012). With Early Alert, faculty submitted the

names of students in their courses about whom they were concerned. Upon submission into the system, attempts were made to connect the student with an advisor at the Office of Student Success to create a plan of action that sought to improve the student's performance and success (Montana State University, 2012). Together the BCSSE and Early Alert system were two institution-wide attempts at early identification of students that possibly needed support in order to be successful and stay in college at MSU. These programs were prime examples of the types of procedures that researchers, such as Tinto (1975; 1993), recommended universities employ.

However, not only the higher education institutions were affected by the retention or dropping out of college students. Industries, and by extension, the U.S. economy were also impacted. Obtaining a higher education degree not only positioned the individual for higher financial earnings, but it was also linked to economic growth (Baum & Ma, 2007). The National Institute of Food and Agriculture (NIFA) (Goecker, Smith, Smith, & Goetz, 2010) forecasted a five percent increase in the need of college graduates that had expertise in food, agriculture, renewable energy, and the environment during the years of 2010-2015. This increased need for qualified graduates served to underscore the importance that colleges of agriculture retain students so employment vacancies can be filled. The numerical estimation of available jobs between 2010 and 2015 was "54,400 annual openings for individuals with a baccalaureate or higher degree in food, renewable energy, and environmental specialties" (Goecker, Smith, Smith, & Goetz, 2010, p. 1). Not surprisingly, employers in the industry preferred to hire specialized agriculture students over other graduates (Goecker, Smith, Smith, & Goetz, 2010).

The United States Department of Agriculture (USDA) reported that college of agriculture graduates in pursuit of employment in the agricultural education, communication, and governmental industries had approximately 6,200 (11%) annual job openings between 2010 and 2015 (2010). The retention of college of agriculture students was not only important to fill the job vacancies reported, but to continue to grow and sustain the industry for the future.

Simultaneous to the increased need for qualified graduates in the field of agriculture was the price of obtaining a higher education degree (Berger, Ramirez, & Lyons, 2012). Students must feel that their time spent and knowledge gained at higher education institutions was a sound investment in their future (Paulsen & St. John, 2002). The College Board reported in 2011, the median earnings of an individual with a bachelor's degree that worked full-time was $56,500 annually. That was $21,100 more than the median earnings of an individual who obtained a high school diploma alone (Baum, Ma, & Payea, 2013). The numbers provided evidence that individuals were positioned for higher earnings in the marketplace by receiving a higher education degree (Baum et al., 2013; DeBernard, Spielman, & Julka, 2004). Degree attainment not only had an impact on the standard of living of the individual or family unit, but also affected the communities and societies in which these degreed workers lived (Baum et al., 2013).

Federal, state, and local governments also benefited from a higher number of college graduates. At each level, an increase in tax revenue occurred because governments "spend less on income support programs" (Baum et al., 2013, p. 5). The Montana legislature understood this important outcome, and got involved in increasing

MSU's retention and graduation rates. The Bozeman Daily Chronicle reported, during the 2013 Montana legislative session, that the state Board of Regents voted unanimously to appropriate state dollars based on the campus' graduation rates, which was a result of successful student education and retention. The graduation rates of students was measured, by the state, as the number of first-time, full-time freshmen who graduated from a Montana University System institution within six years (Schontzler, 2013). There were sixteen colleges and universities in the Montana University System (Montana University System, 2011). Competition between institutions for state funds was yet another motivation for MSU to raise retention rates.

"Student retention has now become a big business" (Tinto, 2006-2007, p. 5). The Lumina Foundation, a private organization committed to increasing the number of college graduates in the U.S., focused solely on increasing the number of individuals with college degrees or certificates by 60% by the year 2025. In 2012 alone, the Lumina Foundation made 70 grants amounting to $30 million dollars for the implementation of their goal (Lumina Foundation, 2011). Such interest from various stakeholders in increasing the number of college graduates displayed how college student retention was not just a concern of higher education systems.

With the large list of stakeholders of student retention, Upcraft, Gardner, and Barefoot (2005) noted nearly 75% of colleges and universities were offering programs for first-year students. They further concluded that even with surveys, such as the BCSSE, university retention rates were still a concern. There was not one magical mixture of variables to assuredly predict first-time, full-time freshmen retention to the second fall

semester. Traditional admissions criteria alone could not predict academic performance and the retention of students (Garton, Dyer, & King, 2000). In fact, in their 2004 study, Lotkowski, Robbins, and Noeth concluded that eight of nine nonacademic factors, when combined with socioeconomic status, high school GPA, and ACT scores, could be used to effectively predict student retention. The predictive factors were found to be confidence, institutional commitment, social support, financial aid, academic goals, academic self-confidence, and social involvement. These factors explained 17% of the variance of student retention in the study (Lotkowski, Robbins, & Noeth, 2004). Multiple variables that could affect retention have been examined in past retention research. Different from previous research, this study explored self-perceived temperament style as a variable could impact a College of Agriculture student's retention.

Temperament and personality assessment instruments have a popular use in the private, nonprofit, and public sectors for helping groups understand one another to streamline work efforts and manage conflict. The Human Resources Department at MSU has used personality style differences to help explain why conflicts may occur (McCorkle, 2012). In academia, personality styles have been used in various disciplines from economics to parenting to medicine (Liang, 2010; McPhereson & Mensch, 2007; Nedrow, Istvan, Haas, Barrett, Salveson, Moore, Hammerschlag, Keenan, 2007; Parker, 1993; Ziegert, 2000).

Within agriculture research, personality styles and temperament have been used to assess students learning styles and academic achievements in relation to retention; agriculture education teachers and teaching styles; rural leaders; and Extension agents

(Barrett, 1985; Barrett, Sorenson, & Harding, 1985; Barrett, Sorenson, & Harding, 1987; Barrett & Horner, 1989; Garton, Ball, & Dyer, 2002; Raven, Cano, Garton, & Shelhamer, 1993; Sorensen, 1998; Watson & Rayner, 1920). Many articles have been published on the personality styles of teachers and students and how this knowledge can positively impact colleges of agriculture in the classroom and for retention purposes. Other variables, such as demographic and academic, have also been measured in conjunction with personality styles to form a predictive link to retention.

With the broad search for different factors that affect student retention, the question posed became why temperament, and more specifically Real Colors®, had not been utilized to explain the retention of students in a college of agriculture? Friedman and Mandel (2011) called for more research to be conducted on supplemental factors that go beyond high school GPA and SAT scores to help improve the prediction of retention in first-year students. For college of agriculture students specifically, Dyer and Breja (1999) found that traditional admissions criteria alone were not the best predictors of retention. Even with these recommendations for future research, no studies had been conducted that tested for a link between self-perceived temperaments of first-time, full-time freshman, measured against proven student demographic variables, and retention at Montana State University. This study was exploratory in nature and concentrated only on the retention of first-time, full-time freshmen in the College of Agriculture at Montana State University.

Statement of the Problem

In what significant ways can a student's self-perceived temperament style be used to positively impact the retention of first-time, full-time freshmen students within the College of Agriculture at Montana State University?

Purpose and Objectives

The purpose of this study was to investigate the potential for a significant explanatory relationship between self-perceived temperament style and retention to the second fall semester of college in first-time, full-time freshmen in the College of Agriculture at Montana State University. The specific objectives of the study were:

1. Compare the Real Colors® temperament assessment results to create individual lab and sample preliminary profiles of the primary and secondary self-perceived temperament styles in the full-time, first-time freshmen enrolled in the AGED 140 Leadership Development for Agribusiness and Industry Employees course in the fall semester of 2012, and spring and fall semester of 2013, at Montana State University.
2. Compile results of the first-time, full-time freshmen enrolled in the College of Agriculture BCSSE survey questions 13, 18, and 25 to uncover the sample's expectations.
3. Obtain, organize and analyze student pre-college academic information—SAT Verbal and Math, ACT Composite scores, and high school GPA— and enrollment

data from the 2012-2013 academic year to the 2013-2014 academic year to identify whether participants were retained to their second fall semester.

4. Determine if a relationship exists, and to what magnitude it may exist, between self-perceived temperament style and BCSSE data, pre-college academic information, and retention to the second fall semester at Montana State University.

Definition of the Terms

For the purpose of this study, specific terms were defined as follows:

At-risk: The degree to which a student is susceptible to dropping out of college within their first year at Montana State University (Fox, 2006).

Beginning College Survey of Student Engagement (BCSSE): The Beginning College Survey of Student Engagement is a survey administered to incoming freshmen students at Montana State University. The BCSSE gathers data on the high school academic and co-curricular experiences of students, their expectation about their first year in college, and additional information (Indiana University, 2013).

First-time, Full-time Freshman: "A traditional aged student enrolled in an equivalent credit load of 12 credits or higher and who has not previously attended an institution of higher education in the pursuit of a degree" (Chambers, 2009, p. vii).

Personality: Personality consists of a person's character and temperament. "Character is disposition, temperament is predisposition" (Keirsey, 1998, p. 20). Multiple

personality traits make up a personality type. “The types can be identified by their differences in traits, and they are described by their traits” (Lawrence, 2009, p. 17).

Real Colors®: A temperament assessment instrument developed by National Curriculum & Training Institute, Inc.(NCTI) that bridges Keirsey’s temperament theory (Keirsey & Bates, 1984) and real life application to help people understand one another. Real Colors identifies four temperaments — Blue, Gold, Orange, and Green (NCTI, 2005).

Retention: The enrollment status of a first-time, full-time freshmen who have been enrolled in the College of Agriculture from their first fall semester to their second fall semester at Montana State University.

Temperament: “Temperament is an inherent personal style, a predisposition that forms the basis of all of our natural inclinations: what we think and feel, what we want and need, what we say and do.” (Montgomery, 2002, p. 17-18).

Limitations of the Study

1. The purposive sample for this study included only student who met all the following criteria:
    a. First-time, full-time freshmen enrolled in the AGED 140 course in the fall 2012 and spring 2013 semester with declared majors in the College of Agriculture;
    b. Retained to the fall 2013 semester;

   c. Completed the BCSSE during the summer 2012 orientation administered by the Office of Student Success at Montana State University and also complete the Real Colors® temperament assessment during the AGED 140 course.

2. The determination and reliability of temperament style is not consistently exact when assessing young people, such as first-time, full-time freshmen (Lawrence, 2009).
3. This study did not record whether non-persisters at Montana State University transferred to another higher education institution or on academic suspension.
4. The study did not distinguish nor is concerned whether non-persisters withdrew voluntarily or involuntarily.

Basic Assumptions of the Study

The basic assumptions of this study were the following:

1. The facilitator of the Real Colors® temperament assessment was certified by NCTI.
2. The students that participated in the Real Colors® temperament assessment were of sound mind to answer the questions honestly and accurately.
3. The instruments used in this study were reliable in collecting the data needed to accurately investigate the research problem.
4. Data was provided by the Office of Student Success related to the BCSSE instrument for each student, as well as data from the Registrar's Office on student's enrollment status was accurate.

REVIEW OF THE LITERATURE

Introduction

Within this chapter, the review of the literature covered the theoretical framework of the study, as well as the research areas of retention, temperament theory, the Real Colors® temperament assessment, and the Beginning College Survey of Student Engagement (BCSSE). The first half of the review was focused on the elements of retention and temperament. Examination of retention research occurred through the lens of the first-time, full-time freshmen in higher education. The second half of the review was comprised the instruments utilized in the study—Real Colors® temperament assessment and the BCSSE.

Theoretical Framework

The theoretical framework for this study was based on two of the most well-known and abundantly cited models of student retention (Tinto, 1975; 1993). Vincent Tinto's interactionalist theory and student departure model has served as the framework for countless retention studies throughout the years (1975; 1993). Internationalist theory (1993) informed the outline of the study trough the student academic and integration factors that dictated retention. Factors in the model included student and institutional factors and the relationships between them. The formal and informal interactions between faculty and students promoted academic and social integration into the college. These

interactions, in conjunction with commitment to academic goals, determined a student's degree of "belonging" in the institution (Tinto, 1993).

Tinto's student departure model (1975) was an expansion from Spady's (1970) sociological model of student departure. The model suggested that "a student's entry characteristics, coupled with his or her initial commitment to the institution and to graduation, influence student departure decisions" (Berger, Ramirez, & Lyons, 2005, p. 23). A student's pre-college characteristics had the power to influence their expectations of college and initial commitment level. Institutional commitment and commitment to graduation were confirmed factors that effected a student's academic and social integration. Both were also critical in the student's retention or dropout decision (Tinto, 1975, 1993).

In order to examine the retention of first-time, full-time freshmen to their second fall semester at Montana State University (MSU), the researcher incorporated factors that impacted retention set forth in both of Tinto's models (1975; 1993). The factors examined in the study and captured by the instruments were student characteristics such as gender, high school GPA, SAT/ACT scores, student's disposition (self-perceived temperament style), institutional commitment, and first-year expectations.

As discovered by Tinto (1975), student institutional interaction also predicted retention. However, because of the timeline, scope, and data collected from the instruments, students' degree of institutional interaction was not available. Thus, adaption of Tinto's model for the study was necessary. A student's interaction, both social and academic, with Montana State University was reported in the study as expected

interactional values captured by the BCSSE. An additional major component of Tinto's (1975) model was the institutional characteristics that either encouraged or constrained students in the development and integration into the system.

Retention

Main Theories

The topic of student retention in higher education institutions has been extensively researched for the past fifty years and was one of the most popular research topics in higher education (Berger & Lyons, 2005; Pascarella & Terenzini, 1991, 2005; Tinto, 2006-2007; Yorke & Longden, 2004). The extensive body of material available verified the issues' importance. Student retention was studied from many different perspectives, and numerous factors have emerged as identifiers affecting student retention. Retention research was largely focused on developing and testing theories that were concerned with why some students dropped out and why some reached degree attainment (Seidman, 2005).

The foundational and most popular theories of retention research related to this study came from the 1970s and 1980s by Spady (1970), Tinto (1975; 1987; 1993), Astin (1975; 1977; 1985), Hossler (1988), Pascarella and Terenzini (1980), Terenzini and Pascarella (1977), and Bean (1980, 1983). These researchers designed the framework and theories of which this study was based. It was through these foundational studies, that the concept of retention and understanding of factors affecting it were identified.

Alexander Astin, in 1975 and again in 1985, reported two main predictors of student retention— personal and environmental factors. Astin described personal factors as the student's academic and family background, study habits, academic goals, expectations, age, and marital status (1975). Environmental factors were defined as the student's place of residence, academic environment, employment, and college characteristics (1975). The personal factor that was the best predictor of a student's retention was past academic grades. These findings led Astin to develop the involvement theory (1985). The theory posits that the student who was more involved in college life, based upon supported experiential factors, was more likely to persist (Astin, 1985).

William Spady offered his own, single-institution focused, interdisciplinary model of student departure that was born from a sociological and longitudinal approach (1970). Spady's (1970) model delivered a more focused and defined lens of understanding of why student's dropped out. Based off of Durkheim's suicide theory, Spady believed that "the social conditions that give rise to dropping out are similar to those that result in suicide" (Morrison & Silverman, 2012, p. 69). A student brought with them to college their attitudes, skills, and values. These attributes either conflicted or complemented the college's values and goals (Spady, 1970). Thus, the attribute interaction with the college system, both academically and socially, explained a student's decision to drop out or stay (Berger et al., 2012; Morrison & Silverman, 2012).

Spady's (1970) model was a precursor of Vincent Tinto's model. Tinto's model focused on student social and academic integration as the most important factor attributed to retention. The model also acknowledged the importance of external factors that

affected a student's decision (1975). Born from anthropological and sociological theories, Tinto cultivated his model positing that the attributes a student brought with them to college, along with institutional and educational commitment level impacted whether a student stayed or left that institution (Morrison & Silverman, 2012; Tinto, 1987).

Tinto's theory (1975) was well established due to the work of subsequent researchers who validated and supported his theory. To operationalize Tinto's (1975) model, Terenzini and Pascarella (1977) examined the possibility of a functional relationship between social and academic integration and attrition. Results of the study proved Tinto's theory (1975; 1987) that social and academic integration were equally significant factors that affected student retention. Berger, Ramirez, and Lyons, explained the importance of Terezini's and Pascarella's (1977) work in that they "provided a foundation of research that led to an explosion of studies and more systematic understandings of the nature of retention (2012, p. 24). Instruments used in the study produced data that gave insight into the expected social and academic integration of research participants.

In the 1980s, retention research expanded and explored new factors. Building off previous studies that expanded Tinto's work (1975), Pascarella and Terenzini (1980) identified and tested five institutional integration variables (1) peer-group interactions, (2) interactions with faculty, (3) faculty concern for student development and teaching, (4) academic and intellectual development, and (5) institutional and goal commitment. Results of the study proved, once again, that Tinto's (1987) model was accurate at the

identification of freshmen who persisted and who voluntary dropped out of higher education (Pascarella & Terenzini, 1980).

Bean (1980) adapted Price and Mueller's (1981) model of nurse worker turnover that helped explain student departure. Bean's (1980) psychological model proposed that there were similarities in the reasons why nurses left their jobs and why students left college. From the literature of worker turnover, Bean (1980) formed four categories of environmental factors: (1) a student's decision to leave college must be realized as the dependent variable; (2) two intervening variables that affected a student's decision were their institutional commitment and satisfaction; (3) there were five student background variables that were reflective of pre-enrollment interactions with the institution; and (4) there were twenty-one factors that reflected organizational or institutional elements that influenced a student or worker's satisfaction (Berger & Lyons, 2012; Morrison & Silverman, 2012). Although the study provided retention researchers and institutions with an alternative way to view and frame retention, Bean's theory had a serious flaw—a failure to account for variance in men and women. Morrison and Silverman stated that "studies of student retention that utilize the conceptual framework proposed by Bean [were] limited" because he failed to account for gender differences (2012, p. 74).

By the end of the decade, quality framework models and theories of retention had been posed by researchers whose work was the very foundation of this study. Specifically, Tinto's (1987) model spurred retention research forward. Morrison and Silverman (2012) expressed the critical implications of Tinto's research to the field, "Regardless of the particular theory, model, or concept, it is Tinto's model of academic

and social integration that is generally the cornerstone of research…" (p. 77). This study, and many others, were indebted to the work of Vincent Tinto, and pressed forward in the search for the factors that predicted student retention.

Pre-College Characteristics

Over the years, research proved that a student's pre-college characteristics were important factors in degree attainment (Astin, 1991, 1993, 1997; Astin & Oseguera, 2005, 2012; Fox, 2006; Pascarella and Terenzini, 1991, 2005; Tinto, 1993). The background characteristics of students such as gender, ACT/SAT scores, and high school GPA were factors included in many retention studies (Astin, 1997; DuBrock, 1999; Fox, 2006; Nora, Barlow, & Crisp, 2005; Smith, 1995; Tinto, 1975). Tinto (1987; 1993) included the pre-college characteristics of student's disposition which study referred to disposition as temperament; high school educational experiences; commitment to the institution and graduation; and institutional academic and social integration. Unfortunately, the research on academic and nonacademic pre-college characteristics varied from study to study. To review the literature of these characteristics was necessary as a result of incongruences and established importance of inclusion of these factors.

Demographic Traits.

The basic goal of retention studies in higher education was to discover the differences between students who persisted in college and students who did not persist (Fox, 2006). Student demographic descriptors have been at the forefront or served as a factor associated with the majority of retention research in existence (Fox, 2006). There were four pre-college characteristics Astin (1997) identified that provided

evidence as sound predictors of retention. Two of the four demographic traits identified by Astin (1997) that were proven predictors of retention were gender and the student's personality.

In the past, researchers concluded various predictive strengths of gender as a factor of student retention. Attewell, Heil, & Reisel (2011) found that gender was a significant factor in the prediction of college graduation. The persistence of males and females in college, however, varied by study (DuBrock, 1999; Nora, et al., 2005). For example, Smith (1995) reported that females were more likely to persist in college than men were. Due to the unstable findings in the research, it was important to identify the background characteristics of participants in the study.

Astin and Oseguera found in their 2012 study that women were more likely to complete a bachelor's degree than men. Whether the women completed the degree in four or six years, they were still more likely to reach degree attainment. Findings were congruent with the works of Astin (1971, 1975, 1982, & 1993) and Astin, Tsui, and Avalos (1996). These studies reflected that gender and degree attainment was an important inclusion in this study since degree attainment was a result of student retention.

College of Agriculture Demographic and Traits. Additional demographic factors were specific to retention studies that involved college of agriculture students. The additional factors utilized included the following: 4-H or FFA involvement (Ball, Garton, & Dyer, 2001; Dyer, Breja, Wittler, 2000; Dyer, Lacey, & Osborne, 1996), experience with agriculture (Dyer, Breja, & Anderson, 1999; Dyer, Lacey, & Osborne, 1996; Wildman & Torres, 2001), high school participation with agricultural curriculum

(Abbasi, 1989; Dyer, Breja, & Anderson, 1999; Dyer, Breja, & Wittler, 2000; Dyer, Lacey, & Osborne, 1996), and having a farm or rural background (Dyer, Breja, & Andreason, 1999; Dyer, Breja, & Wittler, 2000). Garton, Dyer, and King (2000) investigated whether a student's learning style was a predictor of academic achievement and retention. They concluded that high school GPA and ACT score was the best predictor of academic performance, but learning style and ACT score was the most accurate predictor of retention.

Personality and Retention. Tinto (1975) called upon retention researchers to look past traditional academic factors, and begin to investigate nonacademic factors, such as student's disposition. In response to Tinto's recommendations, past researchers included individual characteristics such as personality and temperament in their retention studies (Schurr, Ruble, Palomba, Pickerill, & Palomba, 1997). Years later, Tross, Harper, Osher, and Kneidinger (2000) concluded that "personality variables are useful predictors of college performance and retention" (p. 323). Support for personality as an important factor in student retention has continued and supported by the sizable amount of literature reviewed on the topic (Welter, 2002).

In 2004, McKenzie, Gow, and Schweitzer found that students who were Introverted and had agreeable personalities were more likely to have higher grades than those who were Extroverted and antagonistic. Further findings in McKenzie and colleagues (2004) study showed that students who were categorized as Introverts were more focused on their goals, better organized, and were less likely to get distracted by social activities than were Extroverts.

Retention researchers and institutions have utilized the well-known personality instrument, the MBTI, to improve student learning, performance, and retention. In 2002, Kahn, Nauta, Gailbreath, Tipps, and Chartrand examined the capacity of the MBTI to predict student retention and academic performance. Their study included over 600 first-year students and discovered that students that were identified as Feeling increase academic performance when enrolled in classes that developed analytical thinking skills. While students identified as Intuitive increase academic performance when enrolled in a higher number of classes that allowed them to be detail-oriented and examine factual data (Kahn et al., 2002). Students that identified themselves as Sensing had a higher likelihood of being retained than Thinking students. This was conceivably due to the tolerance for tasks such as note taking and material memorization (Kahn et al., 2002).

Admissions Criteria. Every higher education institution had an established set of criterion that students must meet in order to be accepted into the institution. Criteria were set in place by the institution to admit only the students they believed were most likely to persist until graduation. The types of criterion vary from institution to institution. However, there was basic criterion in which virtually all higher education institutions require. Two basic criteria were ACT/SAT score and high school GPA. MSU was much like other four-year universities in that they required an institution-specific minimum ACT/SAT score, with the exception of some on academic probation, graduation from an accredited high school or a passing score on the General Education Development (GED) exam, minimum cumulative high school GPA of 2.5 or upper half of high school graduated class, and completion of state college preparatory curriculum of all incoming

first-time freshmen to be submitted. However, MSU also admitted students with low scores into the institution but were placed on academic probation (Montana State University, 2012).

Over the years, various predictors of student retention in admissions criteria have been identified and actively reported. Astin (1997) provided evidence that ACT/SAT scores and high school GPA were two admission criterion that were successful predictors. Perrine and Spain (2008) found in their study of first-year students that high school GPA and ACT scores were significant predictors of retention. Oseguera's study in 2006 found that standardized test scores were strong positive predictors of degree completion for White students, but not as strong for African-American students. Astin and Oseguera (2005) reviewed, summarized, and cited volumes of research that also supported admissions criteria, such as high school GPA as a successful predictor of student retention.

However, other researchers have found that through the lens of academic performance, high school GPA and SAT/ACT scores were not directly related to college persistence (Anastasi, 1988; Bean & Metzner, 1985; Kern, Fagley, & Miller, 1998; McGrath & Braunstein, 1997; Wolfe & Johnson, 1995). When combined, high school GPA and SAT/ACT scores were more significantly predictors of student's college academic performance (Anastasi, 1988; Astin, Korn, & Green, 1987). The research on whether high school GPA was a solid predictor of retention was debatable. Despite this fact, the inclusion of high school GPA in retention research was widely prevalent and included in this study.

Goal Commitment. Goal commitment in this study was defined as whether the student intended to graduate from Montana State University. This factor of goal commitment was a question that appeared on the 2012 BCSSE instrument. The data collected from the BCSSE was representative of the definition provided.

Tinto's interactionalist theory focused on the importance of a student's commitment to not only the institution, but also the commitment level to graduation as an important factor that effected whether a student stayed in college or not (1975). Simarly, Oseguera (2006) found that institutional commitment was a positive predictor of degree completion. For White students, institutional commitment was a stronger predictor than it was for African-American students, and social integration was a stronger predictor for African-American students of degree completion.

Institutional Integration: Social and Academic. As people age, they like to relive their "glory days". For some those days were spent in high school and for others it was college. Whether one graduated in two, four, six, or eight years, integration into the academic and social life of college had an impact on one's experience. In Tinto's (1975; 2006-2007) longitudinal model of student retention, he stressed the importance of the student's institutional integration into the social and academic life during the first year of college. "We learned that involvement matters and it matters most during the first critical year of college" (Tinto, 2006-2007, p. 3). The works of Kuh (1999; 2003), Astin (1985; 1993), and Pace (1980) made positive strides in the operationalization student integration.

The notion of having a college life dated back to the nineteenth century. It was just as important then as it was in the twenty-first century. Social integration was defined

by Oseguera as “measures such as peer relations, participation in student government, and satisfaction with social life” (2006, p. 16). In past single-institution research, social integration proved to be positively related to graduation (Allen & Nelson, 1989; Cabrera, Nora, & Castaneda, 1992).

Activities, such as volunteering, during high school had a positive effect on degree completion (Oseguera, 2006). In fact, it was viewed as a precursor to college social integration and engagement (Oseguera, 2006), which enhanced the probability the student was retained and graduated from college. In Braxton and Braxton, Sullivan, & Johnson’s (1997; 2000) studies measuring the internal consistency of Tinto’s model, results alluded to the notion that social integration was a key component in student departure and not academic integration.

Noel-Levitz supported and validated Tinto’s theory through their 2006 investigation. Results showed that students place a high premium on academic interactions, such as advising from faculty. The function of academic advising was to identify and guide students toward their academic and career goals. When done effectively, academic advising promoted student retention. In conjunction with academic advising was the critical factor of actual academic classroom instruction. The quality of instruction a student received in courses took priority over every other factor in college integration and satisfaction (Noel-Levitz, 2006).

The more students that were involved in the academic and social environments of college, the more likely they were to stay (Astin 1977; 1985). Due to the nature of the data gathered by the BCSSE instrument, the values of the data were *expected* levels of

social and academic institution integration. Information on expected levels of integration was just as crucial to the retention puzzle as actual student integration levels.

First-Year Students

Retention studies were normally conducted on first-year students due to them being most impressionable during this time of change and newness. The period of change and adjustment within the first year was when most students fell prey to voluntary or involuntary departure (Fox, 2006). Thomas Mortenson, in his chapter *Measurements of Persistence* (2012), noted that "Freshman-to-sophomore persistence measurement is important both because of student vulnerability at the beginning of college and because institutions can react quickly with interventions" (p. 40). The first year in college has a significant positive or negative effect on freshmen. There were many factors at play when studying first-time, full-time freshmen as a population.

Cindy Veenstra illustrated the processes a student went through in their first year of college. She discovered that there were four possible retention decisions freshmen had available to them (Veenstra, 2008). See Figure 1 for the display of the freshmen year process and the four retention decisions. Having met the admissions criterion, freshmen entered the institution. Students brought with them past experiences and assumptions that influenced their encounters at the institution. Then, it was the responsibility of the institution to provide the student with "the development of its educational processes and programs throughout the freshman year" (Veenstra, 2009, p. 19). At the end of the student's freshman year, a decision was made about their retention. The four choices were the following (Veenstra, 2009, p. 19): (1) Return to the same college; (2) Leave this

college and transfer to another college in the same university; (3) Leave this college and transfer to another university; or (4) Drop out of college.

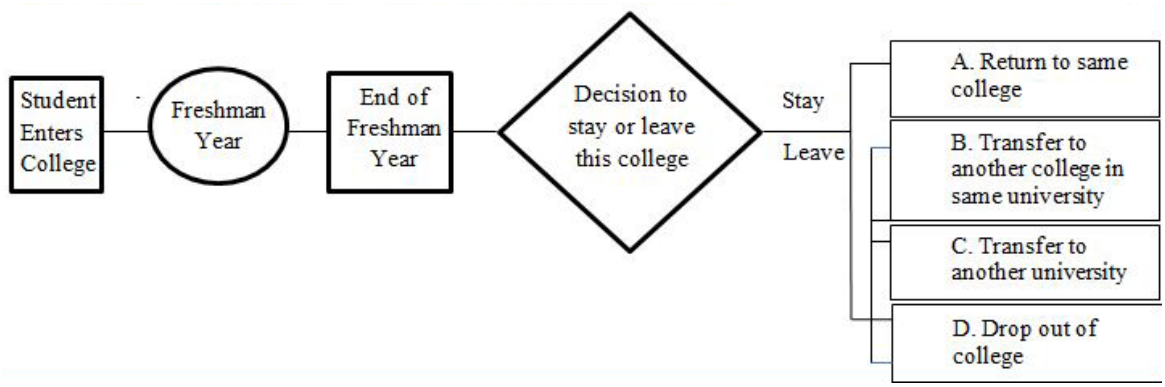


Figure 1. The freshmen year process and four retention decisions (Veenstra, 2009)

The knowledge of this process about the first year of college should empower institutions to provide quality experiences, as well as support programs to help influence the student to continue their education at the respective institution. Veenstra believed that it was the responsibility of the faculty who taught the freshman classes and the staff to help the students experience a successful first year in college (2009; Berger et al., 2012).

Tinto demanded that "What is needed and what is not yet available is a model of institutional action that provides guidelines for the development of effective policies and programs that institutions can reasonably employ to enhance the persistence of all of their students" (2006-2007, p. 6-7). When colleges and universities were able to retain their students, the positive impact was not just on the university, but also on the student's prospective industry and self.

The implementation of retention programs came at a high nominal cost for institutions. However, not implementing retention programs tailored to the students also

cost the institution their prestige ranking amongst other institutions (Crosling, Thomas, & Heagney, 2008). Veenstra believed that "As long as the budget for student services is less than the loss associated with students leaving the university, the monetary benefit to the University of supporting a major student support effort is positive." (2009, p. 20). Because of this study, the College of Agriculture and MSU had a pivotal piece of the retention puzzle that assisted leveling, increasing, or allocating funds to other initiatives due to the retention of students (Schuh & Gansemer-Topf, 2012).

Temperament

Ancient Beginnings

The concept of temperament was not new by any means. In fact, a Greek physician, Hippocrates, in the fifth century B.C.E., believed that the only way for a person to be healthy was if they had a balance of four "humors". Galen, a second century Roman physician, agreed and postulated that each of the four humors were actually bodily fluids that blended together in a different pattern. These patterns could be viewed as a temperament or emotional style (Clark & Watson, 1999). When one of the fluids was more present within the body than the others, it created an imbalance within the person. This imbalance of the bodily fluids was where the Galen's four humors originated. He identified the four humors as the Sanguine, if blood was dominant; Melancholic if black bile was dominant; Choleric if yellow bile was dominant; and Phlegmatic if phlegm was dominant (Kagan, 1994: Keirsey, 1998).

In 1884, Sir Francis Galt first mentioned the importance of measurement stating, "the character which shapes our conduct is a definite and durable 'something', and therefore… it is reasonable to attempt to measure it" (p. 179). Temperament research would not have the merit it does today if early scientists and statisticians had not placed a high regard and established need for the practice. The focus on measurement paved the way for researchers to identify and quantify human behavior into traits and temperaments.

Aspects of these ancient views of temperament were evident in modern popular temperament theories. Allport (1937) provided an all-inclusive definition of temperament that has served past, present, future temperament research.

> Temperament refers to the characteristic phenomena of an individual's emotional nature, including his susceptibility to emotional stimulation, his customary strength and speed of response, the quality of his prevailing mood, and all the peculiarities of fluctuation and intensity of mood; these phenomena being regarded as dependent on constitutional makeup and there largely hereditary in origin. (p. 54)

Modern History of Temperament

The personality trait was a concept that identified patterns of human behavior. For years, psychologists have identified certain personality types, or bundles of characteristics, that defined an explicit pattern in behavior (Winter, John, Stewart, Klohnen, & Duncan, 1998). Personality researchers approached the identification of trait patterns through three popular strategies: (1) a factor analysis, (2) rational theorizing of typologies, and (3) biological "basic" traits (Winter & Barenbaum, 1999). These three

strategies comprised the history of how traits were studied. However, it was through the typology approach that gave rise to modern temperament theories.

The modern history of temperament began in child psychological research. Childhood temperament studies have been dominated by dimensional structures proposed by Thomas, Chess, and Birch (1968; Thomas & Chess, 1977) in the late 1960s, and by Jerome Kagan (1994). Kagan's two infant temperaments were derived from two of the four humors Galen identified. The two temperaments were identified in infants as young as four months old. Kagan saw the sanguine temperament as positive and outgoing, which mirrored his uninhibited temperament. Whereas, when the child was identified as negative and moody, the melancholic temperament provided the basis for the inhibited temperament (Kagan, 1994).

Typologies were a way of behavioral pattern identification through the combination of characteristics that created a distinct configuration. The most popular of these was the Myers-Briggs Type Indicator (Myers & Briggs, 1962), developed from Jung's typology (1923/1971). The traits combined were Extraversion-Introversion and other functions such as Feeling, Body, Intellect, and Intuition (Jung, 1923/1971). People identified as Extroverts were more outgoing and excited to be around people. Introverts were the complete opposite. Introverts preferred to focus internally on thoughts and ideas. No one person was ever 100% Introverted or 100% Extroverted. People had a natural preference or tendency for one over the other (Lawrence, 2009, Liang, 2010).

Keirsey Temperament Theory

The Keirsey temperament theory has been the cornerstone of which most modern theories were found (Keirsey.com, 2008). Keirsey believed that each one of the temperaments had its own distinctive path, “its own unique qualities and shortcomings, strengths and challenges” (Keirsey.com, 2008, p.1; Miao, 2009). The theory was “based on the belief that such differences are not acquired from environmental influence” and was a “sort of a psychological DNA” (Bassey, Logeswaran, & Michel, 2013, p. 78). The four temperament types identified were the Artisan, the Rational, the Idealist, and the Guardian (Keirsey, 1998).

Keirsey believed a person’s personality was inborn wholly and completely as one; a person’s personality was not compartmentalized and taken apart. Based upon this belief, Keirsey developed his temperament sorter that identified four temperaments and corresponding learning styles. The Keirsey Temperament Sorter was used by teachers and students alike to help make the classroom a more successful learning environment for all. The sorter also helped students identify careers that matched their temperament type and preferences (Keirsey.com, 2008).

The research regarding temperament has been challenged, changed, and controversial over the development of the discipline. Until all of the broad traits and outlines of a unified model have been agreed upon, researchers have continued in pursuit of all avenues of temperament models, systems, and assessments.

In this section, a brief history of temperament was examined in personality psychology. A full review of the history was too large for the scope of this study. Table 1 displayed the history and evolution of temperament theories covered in this review.

Table 1. The history of the four temperaments

Hippocrates BCE 370	Cheerful	Somber	Enthusiastic	Calm
Galen c190	Sanguine	Melancholic	Choleric	Phlegmatic
Myers 1958	Perceiving	Judging	Feeling	Thinking
Keirsey 1978	Dionysian (artful)	Epimethean (dutiful)	Apollonian (soulful)	Promethean (technological)
Keirsey 1998	Artisan (SP)	Guardian (SJ)	Idealist (NF)	Rational (NT)

Personality, Temperament and Retention in Colleges of Agriculture

Personality has appeared in many studies as possible predictors of retention, dropout, persistence, and degree attainment. Identifying the personality factors of retained students and non-retained students was important. An even more crucial component was the environment in which specific personality or temperament types arose. Just as there were certain pre-college characteristics linked to retention prediction in college of agriculture students, specific temperament and personality traits were also present in college of agriculture students.

Students with different temperaments often had different collegiate experiences and viewed their education in different lights (Sorensen, 1998). The majority of the personality studies conducted on college of agriculture students and retention came out of the 1980s by Leverne Barrett at University of Nebraska-Lincoln. Before Barrett's studies on college of agriculture students, Roberts and Lee (1977) reported personality

differences of the teachers and students within a college of agriculture. This spurred Barrett's (1985, 1985, 1987) cornerstone works on personality in agriculture.

In 1985, Barrett studied the effect of student and teacher personality differences on student grades, providing critical information about college of agriculture students through the use of the MBTI. Most of the students in her 413 student sample were typed as Sensing (S), and specifically Sensing-Perceiving (SP), meaning they needed and wanted real-life, experiential learning opportunities, and felt they do not perform well in structured classrooms. "Many sensing students say that they chose to major in agriculture because it was the most practical of the majors" (Barrett, 1984 as cited in Barrett, 1985, p. 55).

Barrett also found that personality type was related to GPA. The students who typed themselves as Judging (J) tended to have higher averages than the Perceiving (P) students. According to Barrett, judging (J) students liked deadlines and preferred to plan their work to be accomplished by a date set. GPA was also found to be higher for Introvert (I) students than for Extrovert (E) students. A study by McKenzie, Gow, and Schweitzer (2004) reinforced Barrett's (1985) reasoning for this occurrence. Both supported the idea that Introverts had an easier time staying focused on one thing.

Utilizing the Myers-Briggs and Keirsey's temperament groups, Barrett, Sorensen, and Hartung (1985) found similar results. Students typed as Judging (J) and Introverted (I) had higher GPAs. The majority of the students in the University Nebraska's College of Agriculture were 54% Introverted (I), 84% Sensing (S), 69% Thinking (T), and 57%

Judging (J) (Barrett, Sorensen, & Hartung, 1985). The results for the Keirsey (1984) temperament assessment showed that 51% of the students were Sensing-Judging (SJ).

Williams (2007) compared agriculture students with non-agriculture students. His study also revealed personality type differences in college of agriculture students that Barrett (1985) outlined. Williams found 76% of the freshmen at Texas Tech were typed as Extroverts (E), an increase from Barrett's 54% in 1985 at the University of Nebraska. While scores were mostly even between Thinking (T) and Feeling (F), students in agriculture were higher in Sensing (S) than were non-agriculture students. Conflicting results between Barrett and Williams also occurred in the number of students typed as Perceiving (P) over Judging (J). The culture of the college seemed to attract more students who were E, N, and P, Williams (2007) noted.

Real Colors®

Background

The ancient view of Hippocrates that all humans were divided into four behavioral types has transcended throughout the years. Combining the temperament theories of Jung (1923/1971), Myers-Briggs (1962), and Keirsey (1984), The National Curriculum Center & Training Institute, Inc. (NCTI), fashioned the Real Colors® assessment instrument in 1981 (NCTI, 2007). Over the years, NCTI has been a leader in development trainings used by multiple businesses, non-profit agencies, governments, criminal justice agencies, and educational institutions (NCTI, 2007).

The Real Colors® and Keirsey (1984) model of temperament prescribed that people were a blend, or on a continuum, of the four temperament types. It was the specific arrangement of the types that placed a person into temperament groups. “Keirsey recognizes that the theory may not be logical. But it is behaviorally sound, and his long-time assessment of temperament validates the theory” (NCTI, 2007, p. 30). Table 2 identified the relationship of Real Colors to previous temperament types discussed in the chapter.

Table 2. The compatible temperament types of Galen, Myers-Briggs, Keirsey, and Real Colors®.

Galen 4 humors	Myers-Briggs 16 Types	Myers-Briggs 4 temperaments	Keirsey	Real Colors®
Sanguine	ESTP;ESDP;ISTP;ISFP	Perceiving: SP (Sensing-Perceiving)	Artisans	Orange
Melancholic	ESTJ; ESFJ; ISTJ; ISFJ	Judging: SJ (Sensing-Judging)	Guardians	Gold
Choleric	ENFJ;ENFJ;INFJ;INTJ	Feeling: NF (Intuitive-Feeling)	Idealists	Blue
Phlegmatic	ENTJ; ENFJ; INTJ;INFJ	Thinking: NT (Intuitive-Thinking)	Rationals	Green

The Four Colors

The temperament colors identified by Real Colors® were blue, gold, green, and orange (NCTI, 2005).

As you learn more about the Colors, you’ll instinctively recognize characteristics of people you know, and their Color. This knowledge gives you valuable insight into what is most important to them, why they may react to situations differently

than others, how you can best communicate with them and much more (NCTI, 2005).

Blue. Words that describe blues were: peaceful, sincere, spiritual, subjective, sympathetic, insightful, caring, compassionate, personal, empathetic, etc. (NCTI, 2005). Blues were the feelers of the temperaments. Blues placed others ahead of themselves. They were the mediators and peacemakers of the world. Blues liked to work in related industries where they assisted and helped others.

Gold. Words that described a gold were: sensible, practical, organized, provider, parental, stable, thorough, punctual, etc. (NCTI, 2005). Gold's were the bosses and operations managers in organizations. They relied on facts, and made decisions based upon them. A person who was a gold tended to be very organized, valued rationality and security- both financial and relational. A gold liked to be at the top of their field or class. A gold typically did not consider emotions in the decision making process.

Green. Words that described a green were: complex, curious, abstract, exacting, independent, ingenious, intellectual, research-oriented, etc. (NCTI, 2005). People who were green were the researchers at universities. They enjoyed analyzing. The results for a green did not matter as much as making sure all avenues of a situation, challenge, or experience have been identified and weighed equally.

Orange. Words that described an orange were: immediate, generous, witty, competitor, performer, trouble-shooter, optimistic, eager, charming, courageous, etc.

(NCTI, 2005). A person typed as an orange was considered the life of the party. They were always looking for something fun to do. An orange was also very creative and excelled at the arts. Oranges tended to be the big picture, visionaries of organizations. Implementation of the creative strategies, events, or projects they came up with was not a strong suit.

Real Colors® in the Industry

Since 1981, Real Colors® has been available to and utilized by multiple organizations and businesses to help employees and constituents better understand one another (NCTI, 2005). Higher education institutions, not- and for-profit organizations, and public and private business have utilized Real Colors® to help maximize understanding of individuals and how to successfully recognize, accept, and value the work of others with different color temperament distributions. The knowledge of self and others, empowered individuals to create, grow, and foster positive work or home environment due to their awareness of personal values and the values others who surround them in the workplace or home (University of Wisconsin Cooperative Extension, 2010).

Cooperative Extension has a rich history of utilizing Real Colors® for training purposes. Real Colors® has been utilized in many different formats and for many different audiences ranging from career professionals to volunteers to community members. Real Colors® has been an integral tool in increasing the approachability and service driven environment of Cooperative Extension.

University of Wisconsin-Extension created the “Get REAL with Money” program (2013). The program participants completed the Real Colors® instrument and applied temperament findings to their individual financial situation. The goal was to increase positive financial practices. Other state Extension programs that utilized Real Colors® included Michigan State University Extension, Montana State University Extension, University of Nebraska Extension, and University of Illinois Extension. Real Colors® was more than just a temperament assessment instrument. Real Colors® impacted practical aspects and happenings in the lives of individuals who completed the instrument.

Businesses, organizations, and educational institutions have all used Real Colors® temperament assessment. Businesses and organizations such as Ashley Furniture Industries, Inc., GEICO, General Electric, Bank of America, Tempe Leadership, Arizona Builders Alliance, and Gilbert Leadership have engaged in and complete the Real Colors® instrument. Educational institutions such as Vanderbilt University, Purdue University, University of Illinois, Hawkeye Community College and others have facilitated Real Colors workshops in classrooms and trained faculty and staff on campuses to lead the workshops (NCTI, 2005)

Real Colors® and True Colors™

A related temperament instrument, called True Colors™, also was based in Jung, Myers-Briggs, and Keirsey temperament theories. True Colors™ also utilized the blue, green, gold, and orange colors with near identical definitions of temperaments as Real Colors®. The founder and creator of True Colors™, Don Lowry, was a student of David

Keirsey and worked closely with him on developing personality concepts. In 1978, Lowry coined the coloring methodology of temperaments (True Colors International, 2013).

Similar to Real Colors®, True Colors™ was a personality instrument that was meant to be used to help "people find personal success and dramatically improve their interpersonal relationships" (True Colors International, 2013). The reputation and applicability of the instrument parallels that of Real Colors®. For both programs, facilitator certification was necessary to administer the instrument and take participants through the exercises.

Beginning College Survey of Student Engagement (BCSSE)

For freshman, the first year of college, in particular, commences a new and possible stressful transition for students (Lu, 1994). The Beginning College Survey of Student Engagement (BCSSE), first launched in 2007, provided insight for institutions on what the high school experiences and first-year of college expectations were of their incoming freshman class. James Cole, project manager, and Elijah Howe, project associate, state the BCSSE's purpose was "…to measure entering first-year students' pre-college academic and co-curricular experiences, as well as their expectations and attitudes for participating in educationally purposeful activities during the first college year" (2013, p. 3).

The BCSSE was created in response to interest generated by institutional leaders in having a pre-emptive instrument to provide perceptional and characteristic data about

entering students. Prior to development of the BCSSE, colleges and universities only had access to National Survey of Student Engagement (NSSE) which was administered at the end of the student's first-year of college and asked students about their actual first-year experiences. The BCSSE was a created to be a companion survey to NSSE, that when administered together, provided longitudinal data about the student's complete first-year in college. BCSSE was not created to identify students that needed remedial classes or academic intervention (Cole & Howe, 2013).

The first BCSSE was piloted in 2004, and first administered in 2007 with multiple institutions (Cole & Howe, 2013). Oregon State University (OSU) was one of the institutions that participated in the BCSSE pilot study. OSU communicated the importance of the survey in their 2012 BCSSE Results report, "The ability to compare student responses at the beginning of their collegiate experience with those obtained near the end of their first year can provide valuable information to inform programs and services for students' first year experience" (Sanderson, 2012, p.1).

The BCSSE included three sections. The first section of the BCSSE asked students about their high school experiences. Questions ranged from the type of classes students took (core or advanced), extracurricular activities, and academic behaviors (study habits) (Cole & Howe, 2013).

The second section asked fundamentally the same questions as the first, but was tailored toward the student's first-year expectations of college. The questions asked involved the student's expectations, attitudes, and beliefs about their first year in college. Questions ranged from expected hours of study and study habits; co-curricular activities;

expected types of academic assignments; potential hindrances; financial situation; and institutional and academic goals (Cole & Howe, 2013).

The final section of the survey gathered background characteristics of the student. Characteristics of the student collected were major, gender, full-time or part-time status, ethnicity, parental education level, and more (Cole & Howe, 2013). The information collected in this portion assisted researchers in organizing student data by background characteristics, and provided added insight through statistical procedures of how these factors might affect a student's responses in the previous two sections.

Indiana University Center for Post-Secondary Research provided four administration options to institutions for the BCSSE: paper administration at an event like Welcome Week or New Student Orientation; web group administration, such as in a computer lab; through an e-mail link; or a mixture of methods (Cole & Howe, 2013).

After the survey was administered, two reports were generated: the BCSSE report and the BCSSE Advising. The BCSSE Report and raw data files of the means and frequencies of the responses was generated and e-mailed to institution during either the late summer or early fall months. There was no physical report sent to institutions. Institutions had the autonomy to create their own meaningful report to identify students or questions they wanted to focus on or were concerned with through the raw data files (Cole & Howe, 2013).

The second report was the BCSSE Advising report sent in an Excel spreadsheet that was capable of being merged to Microsoft Word. The information from this report created a one page student summary for advisors or faculty that worked one-on-one with

students. The summary identified factors that a student might have issues with, such as study habits, motivation or low engagement, to better equip the advisor or faculty member with information about how best to support the student (Cole & Howe, 2013).

Retention, recruitment, academic advising, curriculum reform, and first-year program evaluation were just a few of the ways in which the BCSSE results were used. First-year programs, specifically, were proven to related increased retention and have a positive correlation with student involvement, student satisfaction, graduation rates, faculty attitudes, and more (Barefoot, Warnock, Dickenson, Richardson, & Roberts, 1998; Tobolowsky, Cox, & Wagner, 2005; Upcraft, Gardner, & Barefoot, 2005).

Barton and Donahue (2009) reported findings from the University of Maine at Farmington comparing a first-year seminar course, first-year transition course and a one week Summer Experience orientation. The BCSSE and NSSE were utilized to compare the engagement, preparedness, and expectations of the students in the first-year seminar and Summer Experience. Results showed that "retention was a little higher for first semester and Summer Experience immediately after the semester but was reversed for spring to fall, and retention was highest after the first semester for students taking both Summer Experience and first-year seminar" (Barton & Donahue, 2009, p. 267). Student academic performance (first-year GPA) was significantly higher for students who participated in the first-year seminar course. Interestingly, only five out of the fourteen corresponding expectations and engagement questions from the BCSSE and NSSE resulted in statistically significant associations to whether the student participated or did not participate in a first-year seminar (Barton & Donahue, 2009).

Students who participated in a first-year seminar had higher outcomes on time spent on academic work, higher expectations about receiving academic assistance, discussed grades and assignments with professors more, high expectations and outcomes with attending campus events and activities, and lastly entered college with higher expectations for vising creative art venues or events. From these findings, Barton and Donahue concluded that first-year seminar courses attracted the academically prepared students that continued on successfully in college (2009).

The data returned to institutions from the BCSSE had multiple uses and painted a portrait of expected levels of college engagement, both academic and social. It was up to the institution to decide on how the results of the survey were to form retention efforts, course planning, academic advising, and other aspects at their institution. The BCSSE survey administration procedures, instrument components, institutional reports, and institution impacts were discussed in this section of the chapter. The validity and reliability of the BCSSE relationship to the NSSE was reported in the following Methodology chapter.

Summary

Retention, personality, and temperament were highly researched areas in academia. A review of the literature on the three areas, though not exhaustive, supported the importance of each of the topics. Previous studies of how personality impacted student retention have been performed (Liang, 2010). Each instrument and research area

discussed employed facets of Tinto's student engagement and internationalist theories (1975; 1993).

METHODOLOGY

The purpose of this study was to investigate the potential for a significant explanatory relationship between self-perceived temperament styles and retention to the second year of college in first-time, full-time freshmen enrolled in the College of Agriculture at Montana State University (MSU). Approval from the Internal Revenue Board (IRB) at MSU was obtained by the researcher to conduct the study.

This chapter described the instrumentation used and population of the study. The research design, methods of data collection, and data analysis were also described. This study did not record whether non-persisters at Montana State University transferred to another higher education institution. Also, this study did not distinguish nor was concerned whether non-persisters withdrew forcibly or voluntarily.

Instrumentation

The two instruments used in this study have been widely established and employed before this study was conducted. Instruments used were the Beginning College Survey of Student Engagement (BCSSE) and the Real Colors® temperament assessment. Both were chosen for the study due to the unique descriptive portrayals of the purposive sample. The Real Colors® assessment was a diagnostic tool that shed light on the participant's behavioral preferences. While the BCSSE provided data on the samples' expectations of their first year of college. Together, the instruments produced a snapshot of the purposive sample's temperament types, and how their college expectations may have, ultimately, affected their retention to the second fall semester of college. The

instruments fulfilled the roles that Dr. Paul Gore laid out for assessments (2014). They were the following: “to supplement data already available to institutions in the admissions record; to more accurately predict student strengths and weaknesses; and to use that knowledge to leverage resources and services in a more efficient and effective manner.” (Gore, 2014, p.7)

Beginning College Survey of Student Engagement

The first-year engagement factors that the Beginning College Survey of Student Engagement (BCSSE) identified aligned with the variables outlined by Tinto (1987) in his model of student retention. Tinto’s variables (1987) were the following: (1) peer-group interactions, (2) interactions with faculty, (3) faculty concern for student development and teaching, (4) academic and intellectual development, and (5) institutional and goal commitment. It was important to choose an instrument that captured each of these factors to bridge the connection between Tinto’s (1987) model and this study.

During the 2012 summer freshman orientation session, the MSU Office of Student Success required that “every entering freshman” take the BCSSE (Montana State University, 2012, p.1). The BCSSE was physically administered and completed on paper by the students. Results of the survey were reported back to MSU later in the fall semester. Means and frequencies reports, along with raw data files, were housed in the Office of Student Success for institutional leaders, staff, and faculty to view (Montana State University, 2012). The fall 2012 BCSSE data set was accessed by the Director of

the Office of Student Success and disseminated to the researcher in an Excel pre-coded spreadsheet during the spring 2014 semester.

Validity. Quality research not only employs sound methodology and an established framework, but also utilizes valid and reliable instruments to gather data. The Indiana University Center for Postsecondary Research has routinely produced validity and reliability reports for the National Survey of Student Engagement (NSSE). In 2012, Indiana University reviewed the relationship between the BCSSE and the NSSEE. The review provided evidence of validity for both instruments. The BCSSE data used in the validity study was from the 2008 administration and the NSSE data was from the 2009 administration. The sample included 13,000 first-year students enrolled in one of the 91 participating institutions that completed both the BCSSE in the summer of 2008 and the NSSE in the spring 2009 (NSSE, 2013).

Variables used the 2012 study included five BCSSE scales that were representative of high school academic engagement, college expectations, and attitude toward academic work. The scales "range from 0 (low) to 10 (high) and include High School Academic Engagement (alpha =.76), Expected First-Year Academic Engagement (alpha =.72), Academic Perseverance (alpha = .80), and Expected Academic Difficulty (alpha = .62)" (Indiana University, 2012, p. 1). The NSSE Benchmarks served as the dependent variable and were organized into three scales that portrayed student engagement. The three scales were Level of Academic Challenge (LAC), Active & Collaborative Learning (ACL), and Student Faculty Interaction (SFI). Internal

consistency for the three benchmarks were previously established and were reported as .714, .644, and .719 respectively.

The researchers used hierarchical linear modeling due to the nature of the BCSSE data. Validity was established through the effect size of .31 of high school academic engagement at step two in the study. “Academic engagement was significantly related to level of academic challenge even after controlling for various student and institutional characteristics.” (Indiana University, 2012, p. 2). The NSSE psychometric portfolio also established concurrent validity on BCSSE scales which were proven to be “highly related to NSSE benchmarks” (Gonyea & Miller, 2010, p. 18).

Real Colors®

The Real Colors® temperament assessment instrument was given to the participants in the early weeks of the fall 2012, and the spring and fall 2013 semesters. For the purpose of this study, the researcher exchanged Tinto’s “disposition” (1993, p. 37) for temperament. The assessment identified participants as a combination or distribution of four temperament colors: Blue, Gold, Green, and Orange. Real Colors® provided the researcher with an additional tool for understanding the behaviors of the purposive sample (NCTI, 2005).

The administration of the Real Colors® diagnostic assessment met the conditions outlined by Gore for why assessments should be used (2014). The conditions were the following: (1) the assessment administration was intentional by the Real Colors® certified facilitator. (2) The researcher and facilitator had a clear goal that focused on the promotion of understanding temperament differences, and to how best work

collaboratively with them, in mind during the session. (3) The assessment was based on temperament research and implemented because of the evidence proposed by Tinto (1987; 1993). (4) The administration of the assessment led to action through the conduction of this study, and application of implications and recommendations

Each research participant completed three different temperament identification exercises in the Real Colors® Adult Version workbook. The first exercise instructed participants to circle up to eight images, found on each of the four temperament color cards, that "look[ed] most like" them (NCTI, 2005, p.6). Once completed, participants ranked the color cards from 4 (*most like them*) to 1 (*least like them*) with number of pictures they circled on the individual color cards under the corresponding temperament color column on the scoring page.

The second exercise was on the reverse side of the color cards. Participants were instructed to circle as many words and sentences that "sound[ed] most like" (NCTI, 2005, p.7) them. Participants were directed by the facilitator not to circle the words and sentences that described what they supposed people thought about them or what they wished they were like, but to circle the words that truly described themselves. Participants then ranked the color cards with the card that had the highest number of words circled ranked as 4 and the card with the lowest number of words and sentences circled ranked as 1.

The third exercise was a multiple choice sentence completion exercise. Participants were asked to complete a sentence with four possible phrase endings labeled as a, b, c, or d. Each of the four phrases corresponded with a specific color temperament.

Participants gave 4 points to the phrase that “is most like you”, 3 points to the phrase that “is next most like you”, 2 points to the next, and 1 point to the phrase that “is least like you” (NCTI, 2005, p.4). After participants completed the exercise, they transferred the number of a’s, b’s, c’s, and d’s to the scoring grid at the bottom of the page.

The scores from each of the three exercises were totaled vertically in each of the four color columns. The color column with the highest numeric value revealed the primary temperament color of the participant. The column with the second highest numeric value was the participant’s secondary temperament color. The same process was repeated twice more which revealed the third and fourth temperament color (NCTI, 2005). The purpose of ranking temperament colors was to identify participant’s inherent (primary) temperament style and subsequent styles they were capable of transitioning to when primary temperament style was not applicable within a given situation or scenario.

Reliability & Validity. In spite the popularity of the Real Colors® temperament assessment, no validity or reliability studies have been conducted. However, True Colors™, a near identical temperament assessment, has undergone validity and reliability tests (Whichard, 2006; Cooper, 2009). An evaluation study of the True Colors™ instrument cited the reliability and validity of the instrument.

In 2006, Dr. Judith Whichard conducted a reliability and validity study which generated empirical data that solidified the instrument and supported the theories on which it was based. The study included 416 participants over a four year period. Participants were involved, at the time of the study, in a Level 1 Certification Training or

True Colors Awareness Workshop, or enrolled in a 100 level collegiate psychology course (Whichard, 2006).

The Word Cluster assessment exercise in True Colors™ was determined "relatively free from measurement error" at a 0.94 reliability coefficient (Whichard, 2006, p. 4). Content validity was measured against two highly popular personality assessments, the MBTI and the DISC. All dimensions, except for the DISC Dominance and True Colors™ Orange type, displayed significant content validity at the 0.05 confidence level. Construct validity was solidified by the underlying connections to key temperament theories and was judged as highly accurate by the participants in assessing characteristics and behavioral preferences (Whichard, 2006).

Population

Purposive sampling techniques were used for this study. The purposive sampling technique was defined by Leedy & Ormrod as "people or other units [that were] chosen, as the name implies, for a particular purpose" (2013, p.215). Thus, in purposive sampling, participants were selected by the researcher for a specific reason (Singh, 2007). For this study, the population was chosen by the researcher for four purposeful reasons: (1) their enrollment in the College of Agriculture, (2) enrollment in the freshmen seminar course AGED 140: Leadership Development for Agribusiness and Industry Employees, (3) academic standing as a first-time, full-time freshmen, and lastly (4) they took the BCSSE in the 2012 summer new student orientation session.

The population frame for this study was first-time, full-time, degree-seeking freshmen that entered the College of Agriculture at Montana State University in the 2012 fall semester. First-time, full-time freshmen included in the study were defined as those enrolled in a minimum of twelve credit hours, were of traditional age, and began their college education at Montana State University. The sample was limited to participants who were present on the day the survey was administered in the AGED 140 course during a regular lab session in the fall 2012, spring 2013, or fall 2013 semesters. The cohort was further limited to students who completed the BCSSE in the summer of 2012 new student orientation session prior to the start of the fall 2012 semester.

A total of 102 participants comprised the population for the study. Three separate groups of students, defined by their semester of enrollment in the AGED 140 course, were included in the study. The first group, from the fall 2012 semester, consisted of 31 participants. The second group, from the spring 2013 semester, included 34 participants. The last group, from the fall 2013 semester, included 37. Of the total, 49 participants were classified as first-time, full-time freshmen and met the four criteria for the purposive sample. Thus, only 49 participants were included in the data analysis for the study. The purposive sample was comprised of 21 participants from the fall 2012 group, 23 from the spring 2013 group, and 5 from the fall 2013 group. Of those, 20 (40.8%) were male and 29 (59.2%) were female. The number of participants that were retained to their second fall semester in college was 38 (77.6%). While only 11 (22.4%) were not retained to the second fall semester.

Data Collection

The data collected for the study was classified as insubstantial measurements, due to the absence of the physical qualities of the Real Colors®, BCSSE, and retention data (Leedy & Ormrod, 2013) utilized in the study. To ensure the quality of data collected from the temperament assessment, observation of the three groups of participants engaging in the assessment was carried out by the researcher. To verify the accuracy of the assessment and information collected, the facilitator allowed participants to move between temperament colors if they felt they had typed themselves incorrectly.

Confidentiality maintenance of the temperament assessment results was the responsibility of the facilitator until the proprietary information had been released to the researcher by the students. Results from the Real Colors® temperament assessment was student owned data and released to the researcher through an informed consent form signed before the assessment began. Students in the AGED 140 course owned the data for the reason that the cost of the Real Colors® book was funded through their fees for the course. Once the facilitator released the temperament assessment results to the researcher, the information was stored in a locked, secured, and confidential space.

For the purposive sample, high school GPA and SAT/ACT scores were obtained from the Office of Registrar at Montana State University in the fall of 2013. High school GPA was calculated based on courses required by Montana State University for admission. The enrollment status of participants was obtained from the Dean's Office in the College of Agriculture. The retention of study participants was determined based upon their enrollment status in the College of Agriculture at the beginning of the fall

2013 semester. The individual participant BCSSE data was obtained from the Director of the Office of Student Success in the spring semester of 2014.

A unique identification number and an alias were assigned to each participant in the selected sample to track them throughout the course of the study. This technique aided the researcher in matching the BCSSE measures, Real Colors® assessment results, high school GPA, SAT/ACT scores, and enrollment data with each specific study participant.

Of the data collected on the purposive sample, missing values existed within the data set. The high school GPA data had two missing values. Within the ACT Composite data, 13 values were missing. The SAT Verbal and SAT Math scores both had 28 missing values. The reasons for the missing values were attributed to four explanations: (1) some participants took the ACT or SAT, (2) some took both the ACT and SAT, (3) scores were not available due to citizenship or disability, or (4) students were in the top 10% of their class and did not need to take the entrance test to be accepted into Montana State University. Participants with missing data were included in the purposeful sample and not deleted because deleted data would result in the loss of other necessary data that was paramount to answering the research question. To avoid loss of necessary data to answer the research question, the missing values were deemed not crucial to the validity and reliability of the study.

Data Analysis

A descriptive quantitative research design was chosen for this study. “Descriptive research, as the name suggests, enumerates descriptive data about the population being studied and does not try to establish a causal relationship between events” (Singh, 2007, p. 64). Descriptive design was required due to the data classified as insubstantial measurements. The researcher examined the retention and temperament situation of the participants as it was in real-life. The variables within the study were not manipulated or maneuvered by the researcher during the data collection process. The independent variables within the study were the Real Colors® temperament assessment results, high school GPA, SAT/ACT scores, and the BCSSE data. The dependent variable within the study was the enrollment data gathered depicting whether participants were retained to the second fall semester in college.

In order to answer the research question, the following statistical procedures were used to analyze the Real Colors®, BCSSE, high school GPA, SAT/ACT scores, and enrollment data. Data was initially complied into a Microsoft Excel spreadsheet for sorting and coding. Expert guidance in SPSS 20 for Windows was secured from a Statistics professor at Montana State University. Confirmation bias was described by Leedy and Ormrod as: “The researcher might bias the procedure by looking only for those data that would appear to support the hypothesis” (2013, p. 39). By utilizing external expert guidance, the researcher reduced confirmation bias in the analysis process.

Numeric data were desirable when the SPSS 20 program was used to conduct tests. To ensure all data collected were entered numerically into SPSS, dummy coding was used by the researcher (Morgan, Leech, Gloeckner, & Barrett, 2013). A number was assigned to each category in the data set and were "mutually exclusive" (Singh, 2007, p. 82). The coding for the variables were outlined in table 3.

Table 3. Data codebook for variables within the study as input in SPSS 20

Variable	Code number	Label in output
Primary Color	1.00	Orange
	2.00	Gold
	3.00	Green
	4.00	Blue
Secondary Color	5.00	Orange
	6.00	Gold
	7.00	Green
	8.00	Blue
Gender	1.00	Male
	2.00	Female
Retained	1.00	Yes
	2.00	No
Semester	1.00	Fall 2012
	2.00	Spring 2013
	3.00	Fall 2013
Intend to Graduate from	1.00	Yes
This College	2.00	No
	9.00	Uncertain
HS GPA Missing Values	90.00	HS GPA
ACT Missing Values	91.00	ACT Composite Score
SAT Missing Values	92.00	SAT Math & Verbal Scores
Intend to Graduate Missing Values	93.00	BCSSE #25
Difficulty in the Following Missing Values	94.00	BCSSE #18
How many hours do you think you will spend doing the following? Missing Values	95.00	BCSSE #13

For the BCSSE, the data provided was both nominal and scale data. The BCSSE data was coded identically to the values and labels produced by Indiana University (2012). The three questions chosen from the 2012 BCSSE that complimented the behavioral results of the Real Colors® assessment were the following:

"Question 13: During the coming school year, about how many hours do you expect to spend in a typical 7 day week doing each of the following?

a) Preparing for class (studying, reading, writing, doing homework or lab work, analyzing data, rehearsing, and other academic activities)
b) Working for pay on- or off- campus
c) Participating in co-curricular activities (organizations, campus publications, student government, fraternity or sorority, intercollegiate or intramural sports, etc.)
d) Relaxing and socializing (time with friends, video games, TV or videos, keeping up with friends online, etc.)

Question 18: During the coming school year, how difficult do you expect the following to be?

a) Learning course material
b) Managing your time
c) Paying college expenses
d) Getting help with school
e) Making new friends
f) Interacting with faculty

Question 25: Do you expect to graduate from this college?

- Yes
- No
- Uncertain" (Indiana University, 2012)

A 0.05 alpha level was selected as the criterion for statistical significance in the study. Both inferential and descriptive nonparametric statistical procedures were used to analyze the data. Inferential statistics, as stated by Leedy and Ormrod, "help the researcher make decisions about the data" (2013, p. 10). This particular type of statistical measure assisted the researcher in estimating whether temperament was associated with the BCSSE data and retention for the purposive sample. As discussed in the literature review, temperament was a predetermined and constant way of behaving or viewing the world. Temperament served as the population parameter because it was a characteristic of the population that was held constant.

Descriptive and frequency tables were utilized to characterize, summarize, organize, and simplify the data within the study. Measures of central tendency and frequencies were displayed to show how many individuals (or scores) fit in each temperament, gender, retention, and lab semester groups. Frequency distributions were important given that Morgan, Leech, Gloecker, and Barrett believed they "are critical to understanding our use of measurement terms" (2013, p. 37).

The frequency table results for the nominal data of primary and secondary temperament, gender, retention, lab semester groups, and expectation to graduate were reported in valid percentages. While BCSSE questions 13: A-D and 18: A-F scale data

were reported in cumulative percentages. The frequency distribution charts provided the researcher visual confirmation of the distribution, either normal or skewed, of each variable.

Mann-Whitney *U* tests were used as a result of the non-normally distributed dependent variable of retention. Retention was a two-level dependent variable that was tested against the independent, grouping variable of gender. Outcomes from the Mann-Whitney *U* test would reveal whether the gender group with the higher mean rank was most likely retained to the second fall semester in college. Four independent Mann-Whitney *U* tests were conducted on BCSSE questions 13 and 18. Two additional Mann-Whitney *U* tests were conducted to compare the two-level variable of gender against the participant's results from BCSSE questions 13 and 18. Lastly, two tests were conducted to compare the dependent variable of retention to the results of BCSSE questions 13 and 18.

Kruskal-Wallis tests were performed due to the assumption of equality of group variances was violated (Morgan, Leech, Gloeckner, & Barrett, 2013). The test was used to (1) compare the mean ranks of the three semester groups with the Real Colors® results and BCSSE questions 13, 18, and 25; (2) to compare if there was any statistically significant difference between the four primary and secondary color temperaments and participant's retention to the second fall semester; (3) compare the four primary color temperaments of Real Colors® and the BCSSE questions; and (4) comparing primary and secondary temperament colors with high school GPA, ACT Composite score, SAT Verbal, and SAT Math scores for statistical differences. The SPSS outputs showed

whether an overall difference occurred between the different levels and independent variables of the study.

In order to explore whether a statistically significant relationship existed between the primary and secondary temperaments, a Chi-square test was ran despite the small sample size. As Morgan, Leech, Gloeckner, and Barrett (2013) recommended for data that has more than two levels, the Cramer's *V* was reported instead of the phi. A Chi-Square test was performed to identify whether males and females differed in their retention to the second fall semester of college. A second Fisher's Exact test was performed on the three-level BCSSE question 25 "Do you expect to graduate from this institution" and the two-level dependent variable of retention. The multiple combinations of the BCSSE questions, temperament, pre-college characteristics, and retention were utilized in the computation of other Chi-Square tests to explore the possibility of relationships between the data.

Spearman rho correlational tests were run due to some of the BCSSE results yielding ordinal data. The Pearson parametric assumptions were also violated. A total of four correlations were run to search for associations between the variables within the data.

Summary

In conclusion, the study utilized 49 participants from the purposive sample of first-time, full-time freshmen. The purpose of this study was to explore the possibility of a significant explanatory relationship between self-perceived temperament styles and

retention to the second fall semester in college of participants enrolled in the College of Agriculture and the AGED 140 course at Montana State University in the fall of 2012 and 2013, as well as the spring of 2013 semesters. IRB approval was received by the researcher to conduct the study on October 24, 2013. Participants signed informed consent forms that gave access to their temperament styles, BCSSE, and pre-college data to the researcher. The chapter described the instrumentation utilized in the study, the population, data collection procedures, and the data analysis process employed by the researcher. Findings of the data analysis process were reported in Chapter 4.

RESULTS

Introduction

This study was designed to explore the possibility of a significant explanatory relationship between the self-perceived temperament styles, Beginning College Survey of Student Engagement (BCSSE) data, and pre-college data to the retention of first-time, full-time freshmen in the College of Agriculture at Montana State University. This chapter detailed the results of the study, while incorporating the essence of the study's theoretical framework (Tinto 1975; 1993). To satisfy the objectives of the study, the results were divided into the following sections: College of Agriculture Freshmen Profile; Beginning College Survey of Student Engagement (BCSSE); Pre-College and Retention; and Temperament, Pre-College, BCSSE, and Retention Relationships.

College of Agriculture Freshmen Profile

The first objective of the study was to compare the Real Colors® temperament assessment results with gender that created a separate lab and sample profile of the freshmen enrolled in the AGED 140 Leadership Development for Agribusiness and Industry Employees course in the fall 2012 semester, spring 2013 and fall 2013 semesters at Montana State University (MSU). The specific variables utilized in the profiles were gender and primary and secondary temperament. First, the sample was separated into lab groups by semesters, then by gender, and lastly by primary and secondary temperament.

Frequencies were reported on the nominal data variables of primary and secondary temperament, gender, and lab group.

The frequency distributions for the three separate lab groups were identified by the corresponding semester the participants were enrolled in AGED 140. The fall 2012 group accounted for 42.9%; the spring 2013 group accounted for 46.9%, and the fall 2013 group accounted for 10.2% of the purposive sample. The fall 2013 group was considerably smaller due to a bulk of the population in that semester group not meeting the criterion to be a part of the purposive sample. There were no missing values within the data set for lab groups.

Figure 2 displayed the gender distribution of the first-time, full-time freshmen who met the criteria to be included in the purposive sample. The fall 2012 and spring 2013 group included nine males each; the spring 2013 group included two males. The largest frequency of females (14) occurred in the spring 2013 group, the fall 2012 group followed with 12, and the lowest frequency representation of females was the spring 2013 group with three.

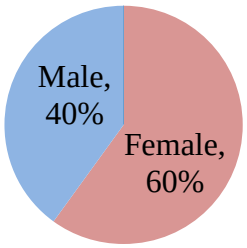


Figure 2. Gender distribution of the purposive sample

Based on the Real Colors® temperament assessment, the largest percentage of students in the purposive sample self-identified their primary temperament as Orange (40.8%). Gold was second (24.5 %); Blue third (18.4%); and 16.3% of students self-identified as Green (Figure 3). The secondary color distribution for the purposive sample was as follows (Figure 4): Gold and Blue temperaments each accounted for 36.7%, Orange accounted for 16.3%, and Green accounted for 10.2%.

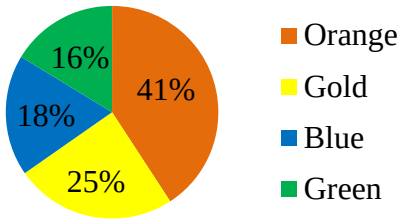


Figure 3. Primary temperament distribution for the purposive sample

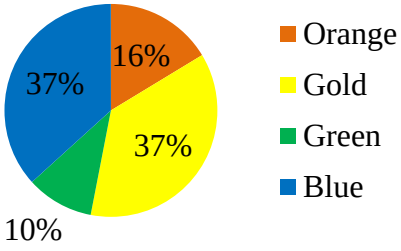


Figure 4. Secondary temperament distribution for the purposive sample

The primary and secondary temperaments were also categorized by gender. More females self-identified as primary Gold, Green or Blue temperaments, while more males reported an Orange primary temperament. With secondary temperaments, females

matched males on Gold, and had higher self-identification with Orange and Blue than males. More males, however, had a secondary Green temperament than females (Table 4).

Table 4.Primary and secondary color temperament distribution by gender

	Primary Temperament				Secondary Temperament			
Gender	Orange	Gold	Green	Blue	Orange	Gold	Green	Blue
Males	13	3	2	2	2	9	4	5
Females	7	9	6	7	6	9	1	13

Beginning College Survey of Student Engagement

The purpose of the second objective was to compile the results of the BCSSE to the purposive sample's profile, described in the first objective, to determine college expectations. The three BCSSE survey questions relevant to this study were about the respondents' college expectations and complimented the temperament behaviors identified by Real Colors®. See Appendix A for a copy of the complete 2012 BCSSE instrument. The questions used were the following:

"13: During the coming school year, about how many hours do you expect to spend in a typical 7 day week doing each of the following?

a) Preparing for class (studying, reading, writing, doing homework or lab work, analyzing data, rehearsing, and other academic activities)
b) Working for pay on- or off-campus
c) Participating in co-curricular activities (organizations, campus publications, student government, fraternity or sorority, intercollegiate or intramural sports, etc.)

d) Relaxing and socializing (time with friends, video games, TV or videos, keeping up with friends online, etc.)

16: During the coming school year, how difficult do you expect the following to be?

a) Learning course material

b) Managing your time

c) Paying college expenses

d) Getting help with school

e) Making new friends

f) Interacting with faculty

22: Do you expect to graduate from this college?

- Yes
- No
- Uncertain" (Indiana, University, 2012)

BCSSE questions 13 and 18 produced scale-level data that required frequency distribution, means, and standard deviation reports to describe the sample's expectations. For both questions, a total of 10 missing values were present within the data set. Only 39 values were included in the reports.

The purposive sample, for question 13, chose how many hours they expected to spend per week on the following activities: preparing for class; working for pay on- or off-campus; participating in co-curricular activities, and relaxing and socializing. The seven expected hours per week categories were arranged on a Likert scale of the following: 0 hours per week, 1-5 hours per week, 6-10 hours per week, 11-15 hours per

week, 16-20 hours per week, 21-25 hours per week, 26-30 hours per week, or more than 30 hours per week. Table 5 displayed the frequencies and percentage results from question 13: A-D. Analysis revealed a combined 25.6% expected to spend either between 21-25 hours or 26-30 hours per week preparing for class. No respondents chose the expected 0 hours per week category or the 1-5 hours per week preparing for class. The largest percentage of expected hours per week spent working for pay on- or off-campus was 25.6% of respondents selected the 6-10 hours category. In the co-curricular activities category, 41% expected to spend between 6-10 hours per week. The highest reported percentage (41%) from respondents for the relaxing and socializing category was between 6-10 hours per week.

Question 18 from the BCSSE asked the sample participants how difficult they expected the following to be during the coming school year: learning course material; managing your time; paying college expenses; getting help with school; making new friends; and interacting with faculty. Responses were recorded on a Likert-type scale from 1 (*not difficult at all*) to 6 (*very difficult*). The highest mean reported from the sample on question 18 was $M = 4.41$, $SD = 1.19$ for expected difficulty of managing your time.

Table 5. Frequencies (*n*) and percentages (%) of the purposive sample's BCSSE Question 13: A-D results

During the coming school year, about how many hours do you expect to spend in a typical 7-day week doing each of the following?

A: Preparing for class		
Expected hours spent	*n*	%
0	0	0
1-5	0	0
6-10	1	2.6
11-15	5	12.8
16-20	7	17.9
21-25	10	25.6
26-30	10	25.6
30+	6	15.4
B: Working for pay on- or –off campus		
0	6	15.4
1-5	4	10.3
6-10	10	25.6
11-15	8	20.5
16-20	6	15.4
21-25	4	10.3
26-30	1	2.6
30+	0	0
C: Participating in co-curricular activities		
0	2	5.0
1-5	5	12.8
6-10	16	41.1
11-15	7	17.9
16-20	7	17.9
21-25	1	2.6
26-30	0	0
30+	1	2.6
D: Relaxing and socializing		
0	0	0
1-5	9	21.3
6-10	16	41.0
11-15	9	23.1
16-20	2	5.1
21-25	2	5.1
26-30	0	0
30+	1	2.6

The lowest mean reported was $M = 2.46$, $SD = 1.09$ for expected difficulty of making new friends. The complete table of all means and standard deviations from the six variables were listed in Table 6.

Table 6. Means (*M*) and Standard Deviations (*SD*) of BCSSE Question 18

	Variable of Expected Difficulty	*M*	*SD*
During the coming school year, how difficult do you expect the following to be?	Learning Course Material	3.79	1.15
	Managing your time	4.41	1.19
	Paying college expenses	3.95	1.56
	Getting help with school	2.90	1.37
	Making new friends	2.46	1.09
	Interacting with faculty	2.67	1.16

BCSSE Question 25 recorded the participant's intention to graduate from this institution (Montana State University) using nominal data. Participants had the option to select one of three options— a box answering "yes", "no" or "uncertain". There were 11 missing values in the data set. Of the useable 38, 89.5% of sample participants expected to graduate from Montana State University. Results from gender distribution revealed that more females ($n = 22$) than males ($n = 12$) expected to graduate. None of the males reported that they did not expect to graduate from this institution, leaving one female reported "no". Three respondents, all female, reported that they were uncertain as to whether they expected to graduate from Montana State University.

Pre-College and Retention

The purpose of the third objective was to analyze the pre-college data—SAT Verbal and Math scores, ACT Composite score, and high school GPA—against enrollment data from the 2012-2013 and 2013-2014 academic years to identify whether

sample participants were retained to the second fall semester in college. It was useful to define the pre-college characteristics to provide an accurate academic background of the purposive sample. The means and standard deviations of the SAT Verbal and Math, ACT Composite, and high school GPA data were reported for the sample. The retention data for the sample and gender groups were reported in valid percentages as advised by Morgan, Leech, Gloeckner, and Barrett (2013).

The mean high school GPA for the purposive sample was 3.48 (*SD* = .41). None of the participants had a high school GPA below a 2.0. There were two missing high school GPA variables within the data set resulting in only 47 scores accounted for in the frequency distribution. Table 7 displayed the purposive sample's high school GPA distributed over five ranges.

Table 7**.** High School GPA range frequencies (*n*) and percentages (%) for the purposive sample

Ranges	*n*	%
<2.0	0	0
2.0-2.49	1	2.1
2.5-2.99	5	10.6
3.0-3.49	15	32
3.5-3.99	23	48.9
4.00	3	6.4
Total	47	100

The pre-college characteristics of the purposive sample provided insight as to where the study participants at MSU ranked nationally. The mean ACT composite score was *M* = 23.80 for the purposive sample. According to the national ranks of reported high school graduates that took the ACT in 2012, 68% of high school graduates also attained a score of 23 or lower (ACT, 2014). As reported by the National Center for Education

Statistics in 2012, the average SAT Math score in Montana in 2011-2012 was *M* = 536. Participants in the purposive sample scored above the average with a mean score of *M* = 555.24 on the SAT Math test. The SAT Verbal score was *M* = 542.38, which was above the state average of 536 in 2010-2012 (National Center for Education Statistics, 2012). Table 8 illustrated the mean and standard deviations for the samples' scores.

Table 8. Means (*M*) and Standard Deviations (*SD*) of SAT Verbal and Math and ACT Composite scores

Test	*M*	*SD*
SAT Verbal	542.38	99.34
SAT Math	555.24	70.75
ACT Composite	24	3.39

The retention data gathered from the Office of the Registrar comprised all 49 participants' enrollment data for the 2013-2014 academic year. Of the sample, 77.6% (*n* = 38) were retained to their second fall semester at Montana State University; 22.4% (*n* = 11) not retained. Of the 38 participants retained, 16 (42%) were males and 22 (58%) were females. Of the 11 not retained to the second fall semester, four (36.4%) were males and seven (63.6%) were females.

Temperament, Pre-College, BCSSE, and Retention Relationships

The purpose of objective four was to determine if a significant relationship existed, and if so, to what magnitude, between temperament, the BCSSE, pre-college, and retention data in the purposive sample. Mann-Whitney *U*, Kruskal-Wallis, Fisher's exact and Chi square, and correlational tests were utilized to determine relationships and strength between variables in the study.

Mann-Whitney *U* Results
for Background Characteristics

Because the data sets did not fit within parametric normality assumptions, non-parametric Mann-Whitney *U* tests were performed to compare gender with retention to the second fall college semester. The 29 female students had slightly higher retention mean ranks (25.41) than the 20 male students, $U = 278$, $p = 0.736$, $r = -0.05$, which did not meet the apriori critical value of 0.05. Males were no more likely than females to be retained to the second fall semester in college.

Gender was next tested against the independent variables of high school GPA, SAT Verbal and Math, and ACT Composite scores. Table 9 displayed the Mann-Whitney *U n*, means ranks, *U*, and *p* values of gender and high school GPA, SAT Verbal and Math, and ACT Composite. The 23 female students had a higher mean rank (21.63) than the 13 males (12.96) on the ACT Composite scores, $U = 77.50$, $p = 0.017$, $r = 0.40$, which was a statistically significant difference and considered a medium effect size. Females came close to having a statistically significant higher mean rank (12.86) than males (7.43) on their SAT Math scores, $U = 23$, $p = 0.056$, $r = 0.42$. However, the gender variable did not reveal statistically significant differences when compared to high school GPA or SAT Verbal scores. The mean score for high school GPA for males was 22.53 and for females was 25, $U = 238$, $p = .544$, $r = -.09$. The mean SAT Verbal scores for males was 7.43 and 12.79 for females, $U = 24$, $p = .061$, $r = -.41$.

Table 9. Mann-Whitney *U n*, means ranks, *U*, and *p* values of gender and high school GPA, SAT Verbal and Math, and ACT Composite Scores

Pre-College Variables		Gender	*n*	Mean Rank	*U*	*p*
	High School	Male	19	22.53	238	0.544

	GPA	Female	28	25.00		
		Totals	47			
	ACT Composite Score	Male	13	12.96	77.50	0.017
		Female	23	21.63		
		Totals	36			
	SAT Verbal	Male	7	7.43	24	0.067
		Females	14	21.63		
		Total	21			
	SAT Math	Male	7	7.29	23	0.056
		Female	14	12.86		
		Total	21			

Mann-Whitney *U* Results
For BCSSE Question 13 and 18

Questions 13 and 18 on the BCSSE were tested against gender through two Mann-Whitney *U* tests. Neither males nor females returned statistical significance on any of the four variables of question 13 on the BCSSE. However, on BCSSE question 18: B, the 26 female participants had higher mean ranks (22.48) than the 13 males (15.04) on how difficult they expected managing their time to be in college, $U = 104.50$, $p = 0.044$, $r = -0.32$, a medium effect size. Males and females did not differ significantly on any of the other variables in question 18. Table 10 displayed the *n*, mean ranks, *U*, and *p* values from BCSSE question 18: A-F and gender.

Two Mann-Whitney *U* tests were performed to test against retention and BCSSE questions 13 and 18. Results of the test showed that there was no statistical significance between the participants that were and were not retained to the second fall semester in college and their BCSSE results on question 13 and 18.

Table 10 Mann-Whitney *U* Test *n*, Mean Ranks, *U*, and *p* values from BCSSE question 18 and gender

	Variable	Gender	*n*	Mean Ranks	*U*	*p*
During the coming school year, how difficult do you expect the following to be:	A: Learning course material	Male	13	17.92	142	0.401
		Female	26	21.04		
		Total	39			
	B: Managing your time	Male	13	15.04	104.5	0.044
		Female	26	22.48		
		Total	39			
	C: Paying college expenses	Male	13	18.19	145.5	0.475
		Female	26	20.90		
		Total	39			
	D: Getting help with school	Male	13	21.23	153	0.622
		Female	26	19.38		
		Total	39			
	E: Making new friends	Male	13	16.04	117.5	0.111
		Female	29	21.98		
		Total	39			
	F: Interacting with faculty	Male	13	20.96	156.5	0.701
		Female	29	19.52		
		Total	39			

Kruskal-Wallis Results

The Kruskal-Wallis test allowed analysis of statistically significant differences between two nonparametric independent grouping variables (Table 11). For this research, Kruskal-Wallis was used to determine whether a statistically significant difference existed between the three semester groups, their Real Colors® primary temperaments and BCSSE questions 13: A-D, 16: A-F, and 25 through four separate tests. A total of 39 data points were a part of the analysis.

The first test indicated that the three respondent groups differed significantly only on BCSSE 13-D: “During the coming school year, about how many hours do you expect to spend in a typical 7-day week doing each of the following:

Table 11. Kruskal-Wallis results of the three semester groups for BCSSE Questions 13 and 18 values *n*, mean ranks, degrees of freedom (*df*), and *p*

	Variable	Lab Group	*n*	Mean Ranks	*df*	*p*
Q 13: During the coming school year, how many hours do you expect to spend in a typical 7-day week doing each of the following:	A: Preparing for class	Fall 2012	21	18.21	2	0.309
		Spring 2013	14	23.61		
		Fall 2013	4	16.75		
	B: Working for pay on- or off-campus	Fall 2012	21	19.98	2	0.369
		Spring 2013	14	18.04		
		Fall 2013	4	27		
	C: Participating in co-curricular activities	Fall 2012	21	20	2	0.615
		Spring 2013	14	18.64		
		Fall 2013	4	24.75		
	D: Relaxing and socializing with friends	Fall 2012	21	19.71	2	0.050
		Spring 2013	14	17		
		Fall 2013	4	32		
Question 18: During the coming school year, how difficult do you expect the following to be?	A: Learning course material	Fall 2012	21	19.21	2	0.835
		Spring 2013	14	20.43		
		Fall 2013	4	22.63		
	B: Managing your time	Fall 2012	21	19.81	2	0.706
		Spring 2013	14	21.36		
		Fall 2013	4	16.25		
	C: Paying college expenses	Fall 2012	21	20.64	2	0.898
		Spring 2013	14	18.89		
		Fall 2013	4	20.50		
	D: Getting help with school	Fall 2012	21	22.40	2	0.340
		Spring 2013	14	17.18		
		Fall 2013	4	17.25		
	E: Making new friends	Fall 2012	21	22.43	2	0.040
		Spring 2013	14	20		
		Fall 2013	4	7.25		
	F: Interacting with faculty	Fall 2012	21	19.14	2	0.775
		Spring 2013	14	21.68		
		Fall 2013	4	18.63		

Relaxing and socializing (time with friends, video games, TV or video, keeping up with friends online, etc.)", χ^2 (2, n = 39) = 5.97, p = 0.05, and BCSSE 18-E: "During the coming school year, how difficult do you expect the following to be? Making new friends", χ^2 (2, n = 39) = 6.419, p = .040. The lab groups did not differ significantly on

any other variables in questions 13 and 18. The three groups also did not differ significantly on BCSSE question 25.

Post hoc Mann-Whitney *U* test compared the three semester lab groups on BCSSE 18-E using a Bonferonni corrected *p* value of 0.017 to indicate statistical significance. Three individual Mann-Whitney *U* tests were performed comparing the fall 2012 group to the spring 2013 group; the fall 2012 group to the fall 2013 group; and the spring 2013 group to the fall 2013 group. No statistically significant differences were returned between the fall 2012 and spring 2013 comparisons or between the fall 2012 and fall of 2013 comparisons. However, the spring 2013 and the fall 2013 comparisons returned a significance level just outside the corrected *p* criterion (11.00, $n = 25$), $z = -2.372$, $p = 0.019$.

Post hoc Mann-Whitney *U* tests were also performed to compare the three semester groups on BCSSSE 13-D. Three individual Mann-Whitney *U* tests were performed that compared the fall 2012 group to the spring 2013 group; the fall 2012 group to the fall 2013 group; and the spring 2013 group to the fall 2013 group. No statistically significant differences were revealed using the Bonferonni corrected *p*.

A second Kruskal-Wallis test was performed on the four primary and four secondary temperaments against retention to the second fall semester. Results from the showed that there were no statistically significant differences between the primary temperament groups and retention to the second fall semester, χ^2 (3, n = 49) = 3.27, $p = 0.352$. There was also no statistically significant difference between the secondary temperaments and retention, χ^2 (3, $n = 49$) = 5.49, $p = 0.139$.

The third Kruskal-Wallis test was performed on the four primary temperaments and the BCSSE questions 13: A-D, 18: A-F, and 25. The test indicated the four primary temperament color groups differed significantly on BCSSE 18-E: "During the coming school year, how difficult do you expect the following to be? Making new friends", χ^2 (3, N = 39) = 13.43, p = .004 (Table 12). Four individual Mann-Whitney U tests were performed to compare each primary color temperament group and BCSSE 18-E using a Bonferonni corrected p value of .017 to indicate statistical significance.

Table 12. Post-hoc Mann-Whitney *U* test to compare temperament to BCSSE question 18: E

	Temperament	*n*	Mean Ranks	*U*	*p*
During the coming school year, how difficult do you expect the following to be: Making new friends	Orange	15	10.33	35	0.010
	Gold	11	15.04		
	Orange	15	8.37	5.50	0.004
	Green	5	16.90		
	Orange	15	11.97	59.50	0.972
	Blue	8	12.06		
	Gold	11	7.45	16	0.171
	Green	5	10.80		
	Gold	11	12.09	21	.048
	Blue	8	7.13		
	Green	5	10.10	4.50	0.19
	Blue	8	5.06		

Results uncovered a statistically significant difference between the primary temperament colors of Orange and Gold, (35.00, n = 26), z = -2.59, p = 0.010, and between Orange and Green, (5.500, n = 20), z = -2.900, p = 0.002, on BCSSE 18:E. No statistically significant differences emerged between the other temperament color groups and BCSSE 16-E.

The final Kruskal-Wallis compared temperament to high school GPA, ACT Composite, SAT Verbal, and SAT Math scores. No statistically significant differences

emerged in the test of primary temperament. Also, there was no statistically significant difference between the secondary temperament groups and the pre-college enrollment data.

Chi-square

A Chi-square test was ran to compare the two primary and secondary temperament groups. Because there were more than two levels of the independent temperament variables, the Chi-square was performed over the Fisher's exact test, despite the small sample size. Cramer's *V* was reported instead of phi due to the presence of different levels within the variables. The test resulted in a statistically significant difference between the primary and secondary temperament groups, ($\chi^2 = 20.87$, $df = 9$, $N = 49$, $p = 0.013$. Table 13 displayed the cross-tabulation between the primary and secondary temperaments.

Table 13. Cross-tabulation between the primary and secondary temperaments in the purposive sample

			Secondary Temperament					
		n	Orange	Gold	Green	Blue	χ^2	*p*
Primary Temperament	Orange	20	0	8	3	9	20.87	0.013
	Gold	12	5	0	1	6		
	Green	8	1	4	0	3		
	Blue	9	2	6	1	0		
Totals		49	8	18	5	18		

Correlations

Because the assumptions of the Pearson product moment correlation were violated, the Spearman rho was used to compute correlation between the variables in the data set. The first correlation computation was exploring the possibility of an association

between primary and secondary temperament in the purposive sample. Results showed that there was a statically significant negative association between the primary and secondary temperaments in the purposive sample, r (49) = -0.342, p = 0.016. When the association between primary temperament and retention was explored, results revealed that there was no statistically significant association between the two, r (49) = -0.216, p = 0.136. There was also no statistical significant association found between secondary temperament and retention to the second fall semester in college, r (49) = 0.192, p = 0.187.

A correlation matrix was computed to discover whether associations existed between multiple non-normally distributed variables within the data set. A total of three correlation matrices were computed. The first correlation matrix explored the possibility for an association among the four variables of primary and secondary temperaments, retention to the second fall semester in college, and lab semester groups. No statistically significant correlations were found among the four variables—besides between primary and secondary temperaments previously reported—in the purposive sample.

The second correlation matrix computed was among primary and secondary temperaments, retention, and the pre-college data of high school GPA, SAT Verbal and Math, and ACT Composite scores. A statistically significant association among the purposive sample's ACT composite scores and SAT Verbal and Math scores were reported and displayed in Table 14. The strongest positive correlation was between ACT Composite scores and SAT Math scores, r (10) = 0.86, p = 0.001. This meant that students who had relatively high ACT Composite scores were also very likely to have

high SAT Math scores. The ACT Composite scores also displayed a positive statistically significant correlation to SAT Verbal scores, r (10) = 0.76, p = 0.011.

Table 14. Correlations between primary and secondary temperament, retention, high school GPA, ACT Composite, and SAT Verbal and Math scores in the purposive sample

Variable	1	2	3	4	5	6	7
1. Primary Temperament	--	0.183	0.147	0.572	1.00	0.794	0.931
2. Secondary Temperament	--	--	0.427	0.162	0.841	0.876	0.654
3. Retention	--	--	--	1.00	0.203	0.459	0.119
4. High school GPA	--	--	--	--	0.562	0.859	0.375
5. ACT Composite	--	--	--	--	--	0.011*	0.001**
6. SAT Verbal	--	--	--	--	--	--	0.211
7. SAT Math	--	--	--	--	--	--	--
* p <0.05	** p <0.01						

A third correlation matrix was computed among primary and secondary temperament, retention, and BCSSE questions 13, 18, and 25 (Table 15). Multiple positive and negative statistically significant associations were found between the variables in the data set. The association between primary and secondary temperaments strengthened when the BCSSE questions were added to the matrix, r (38) = -0.413, p = 0.010. Secondary temperament and BCSSE 18: A “During the coming school year, how difficult do you expect the following to be: Learning course material” was just outside of statistical significance, r (38) = -0.319, p = 0.051. A negative statistically significant association between secondary temperament, and BCSSE 18: C “During the coming school year, how difficult do you expect the following to be: Paying college expenses”, r

(38) = -0.339, p = 0.037. No statistically significant association was uncovered between retention and any of the variables in this correlation matrix.

The BCSSE questions 13: A-D, 16: A-F, and 25 showed statistically significant correlations between each other. BCSSE 13: A "During the coming school year, about how many hours do you expect to spend in a typical 7-day week doing the following: Preparing for class" was found to have a positive statistically significant association with BCSSE 18: B "Managing your time", r (38) = 0.365, p = 0.024. Question 13: B "Working for pay on- or off-campus" also had a positive statistically significant correlation to BCSSE question 25 "Do you expect to graduate from this institution", r (38) = .331, p = 0.043. BCSSE 13: C "Participating in co-curricular activities" was found to have a strong, positive association with 13:D , r (38) = .458, p = 0.004. While, BCSSE 13: D "Relaxing and socializing" also had a strong, negative association with BCSSE 18: E "Making new friends", r (38) = -0.436, p = 0.006. Question 18: A "Learning course material" reported to have a strong, positive association with 18: B "Managing your time", r (38) = .421, p = 0.009.

Table 15. Correlations between primary and secondary temperament, retention, and BCSSE questions 13: A-D and 18: A-F

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1.Primary	--	.010**	.058	.892	.466	.495	.998	.575	.137	.139	.820	.295	.975	.135
2.Secondary	--	--	.064	.962	.218	.323	.795	.051	.340	.037*	.921	.761	.589	.083
3. Retention	--	--	--	.167	.451	.487	.987	.321	1.00	.542	.342	.841	.526	.288
4.13: A	--	--	--	--	.409	.204	.456	.267	.024*	.479	.673	.708	.443	.135
5.13: B	--	--	--	--	--	.873	.464	.377	.325	.165	.583	.204	.105	.043*
6.13: C	--	--	--	--	--	--	.004**	.293	.347	.722	.636	.076	.129	.164
7.13: D	--	--	--	--	--	--	--	.079	.813	.513	.280	.006**	.161	.269
8.18: A	--	--	--	--	--	--	--	--	.009**	.171	.108	.622	.747	.377
9.18: B	--	--	--	--	--	--	--	--	--	.020*	.250	.210	.461	.541
10.18: C	--	--	--	--	--	--	--	--	--	--	.103	.407	.007**	.098
11.18: D	--	--	--	--	--	--	--	--	--	--	--	.008**	.071	.920
12.18: E	--	--	--	--	--	--	--	--	--	--	--	--	.003**	.762
13:18: F	--	--	--	--	--	--	--	--	--	--	--	--	--	.906
14. 25	--	--	--	--	--	--	--	--	--	--	--	--	--	--

* p <0.05
** p <0.01

18: B also had a positive association with 18: C “Paying college expenses”, r (38) = .377, p = 0.020. Following suit, 18: C had a positive strong association with 18: F “Interacting with faculty”, r (38) = .428, p = 0.007. 18: D “Getting help with school” and 18: E “Making new friends” reported a strong positive association, r (38) = .422, p = 0.008. Lastly, 18: E and 18: F “Interacting with faculty” was reported to have a strong positive association between each other, r (38) = .475, p = 0.003.

CONLUSION AND DISCUSSION

Descriptive and quantitative in design, this study investigated the potential for a significant explanatory relationship between self-perceived temperament style and retention to the second fall semester in first-time, full-time freshmen in the College of Agriculture at Montana State University. The research findings were based on the results from the Real Colors® diagnostic assessment, the Beginning College Survey of Student Engagement (BCSSE), and pre-college academic factors.

Within the chapter, the outcomes from the objectives were outlined. Implications were made in relation to college of agriculture retention programming, academic and career advising, and agriculture education and leadership courses. The chapter concluded with a discussion on recommendations for future research.

Outcomes

The completion of objectives in chapter four was accomplished through multiple descriptive and inferential nonparametric statistical procedures. To ultimately answer the research question and satisfy the purpose, correlational tests were run between the Real Colors® results and retention data. Objectives one through three were crucial in order to adequately describe the population and compare with past research on the personality types of college of agriculture students. Objective four combined data from the other three objectives, leading to recommendations and implications.

Objective One

The purpose of objective one was to create a temperament profile of each semester group and a sample profile including all groups. In both fall 2012 and spring 2013 semester groups, the largest primary temperament group was identified as Orange. The Gold temperament was identified as the largest secondary temperament group. Gold primary and Blue secondary were the second largest groups. The fall 2013 temperament groups were incongruent with the previous two due to the small number of participants that met the criterion of the purposive sample. Figure 5 displayed the sample's temperament distribution.

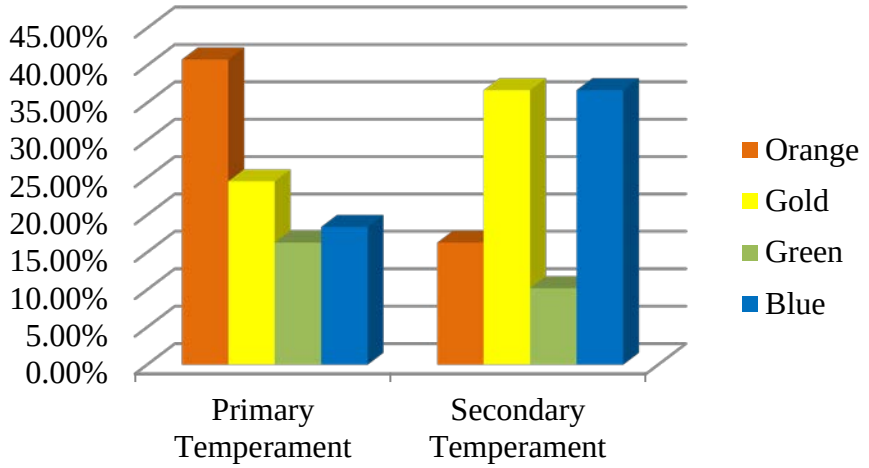


Figure 5. Primary and secondary temperament distribution

The purposive sample in this study was compared with the descriptions of college of agriculture students reported by Barrett in her 1985 study. Barrett's (1985) profile of college of agriculture students was chosen as the comparison due to her population being most-like the population in this research. The Myers-Briggs Type Indicator (MBTI) and Keirsey and Bates (1978) four temperament types were reported in Barrett's (1985)

study. The Real Colors® temperament types were linked to the four temperament types reported in Barrett's study. See Table 4 for the comparison of Real Colors® to the Keirsey and Bates temperament types.

This study's findings of the largest primary temperament group was congruent was Barrett's (1985) findings of Sensing-Perceiving's/Orange temperament as the largest group. Also congruent with Barrett's study was the Sensing-Judging/Gold temperament group being the second largest group. Incongruent, however, with Barrett's findings was this study's third and fourth largest temperament groups. Barrett reported Intuitive-Thinking/Green, being the third largest, and Intuitive-Feeling/Blue, was the smallest of the student temperament groups. As Barrett noted, "these findings may have major implications on the approaches used to improve teaching and learning for agricultural college students" (1985, p. 53).

Educators have been aware that students learn differently. The representation of Orange may suggest that first-time, full-time freshmen in the College of Agriculture preferred to learn hands on and enjoyed the practical applicability of agricultural topics. The Gold and Blue temperament groups may have been drawn to the College of Agriculture because of their dedication to family traditions or way of life. Each of these suppositions were congruent with Keirsey (1998) and the Real Colors® (NCTI, 2005) view of the primary temperament groups.

Objective Two

The purpose of objective two was to compile the results from the BCSSE survey questions 13, 18, and 25 to uncover the sample's first-year of college expectations. A

little over a quarter of the purposive sample expected to work between 6-10 hours per week during their first year in college. While only a small margin of the sample, 2.6%, expected to work between 26-30 hours per week.

Tinto noted (1993) that students who felt integrated into the institutional and social communities of an institution were more likely to be retained. 41% of the purposive sample expected to spend between 6-10 hours per week engaged in co-curricular activities. This suggested that students in the sample entered college with the expectation of joining a student organization or intramural sport team. Entering college with the expectation of becoming involved in campus life (social and institutional) could positively increase retention to the second fall semester in college through the encouragement of academic advisors.

Interestingly, 41% of the purposive sample also reported to expect to spend between 6-10 hours per week relaxing and socializing (time with friends, video games, TV or videos, keeping up with friends online, etc.). The occurrence of the same percentage of students expecting to become involved in co-curricular activities and spend the same amount of time relaxing gave rise to the perception that students expected to spend less time socializing during their first year in college and more time on coursework and studying.

The BCSSE results from question 13 and 18 and primary temperaments of Orange, Gold, and Blue bolstered the conclusion that the first-time, full-time freshmen in the College of Agriculture answered BCSSE questions according to their primary temperament. When it came to education, Orange's and Gold's expected to succeed in college, but for two completely different reasons. Oranges expected to spend a lot of time

studying so that they can get the passing grade and graduate, or may have become competitive with classmates and friends to see who received the higher grade. As Dr. Stephen Montgomery described this temperament type, “Their actions are aimed at getting them where they want to go… do whatever it takes to accomplish their goals” (2002, p. 21).

Gold’s expected to study long hours because they, too, liked to receive high grades and notoriety. This also could have been due to their desire to plan and prepare carefully and thoroughly (Keirsey, 1998; Montgomery, 2002; NCTI, 2005). Blues, meanwhile, operated and had expectations to succeed in college that came from a different end of the behavioral continuum. Blues may have expected to spend long hours studying and a good amount of time per week engaging in co-curricular activities and socializing due to their desire to be included, involved, and foster personal growth in themselves and others (Keirsey, 1998; Montgomery, 2002; NCTI, 2005). They may have joined organizations, worked a small part-time job, or studied in peer groups to “inspire others to develop as individuals and to fulfill themselves” (Montgomery, 2002, p. 31). Knowing the level of expected difficulties and hours spent engaged in certain aspects of campus or community life of first-time full-time freshmen should empower institution and college of agriculture faculty and staff to form programs and plan coursework accordingly.

Nearly 90% of first-time, full-time freshmen reported that they expected to graduate from Montana State University. The number of females was almost double the number of males for this finding, which further confirmed Tinto’s (1975; 1993) findings

that institutional commitment and commitment to graduate were critical factors to a student's retention decision.

Objective Three

The purpose of objective three was to analyze and compile the pre-college data—SAT Verbal and Math scores, ACT Composite scores, and high school GPA— and enrollment data from the 2012-2013 academic year to the 2013-2014 academic year to identify what percentage of the purposive sample was retained to the second fall semester of college. Both the mean SAT Verbal and Math scores of the purposive sample were above the state average of graduating seniors (National Center for Education Statistics, 2012).

Resembling the high pre-college scores, a high percentage of participants, almost 80%, was retained to the second fall semester of college, just 10% lower than the expectation to graduate. More females than males were retained. The 22% of students who were not retained included more females than males. The high scores reported from the admission requirements mimicked the high number of students retained. However, the retention of the sample was higher than the overall institutional retention rate.

Objective Four

The purpose of objective four was to determine whether a relationship existed, and to what magnitude, between self-perceived temperament style, and BCSSE responses, pre-college data, and retention to the second fall semester.

Results from the nonparametric test showed that males were no more likely to be retained than females to the second fall semester in college. Females did, however, have

higher ACT Composite scores than males. Males and females differed significantly on their expected difficulty of managing their time during their first year of college. Females were more concerned with managing their time during their first year of college than males. This expected concern with time management was no surprise due to it being primarily a Gold temperament trait, of which females were the largest primary temperament group within the sample.

No statistically significance between the BCSSE questions13: A-D and 18: A-F and retention was discovered. This could have been due to the small sample size. The three lab semester groups differed significantly on how difficult they expected making friends and how many hours they expected to spend socializing and relaxing. Specifically, the comparison between the spring 2013 and fall 2013 group fell just outside statistical significance on expected difficulty of making new friends during their first year in college.

The Orange and Green, as well as the Gold and Green temperaments differed significantly on their expected difficulty of making friends during the first year in college. Students who expected a great deal of difficulty making new friends also expected a great degree of difficulty getting help with school work also. The anticipated long hours spent studying, perhaps in solitary because of the perceived difficulty with finding help on assignments, could have detracted from the student's time spent meeting new people on- and off-campus.

The primary and secondary temperaments of the purposive sample did not have an effect on whether they were retained or not to the second fall semester of college at Montana State University. This could have been due to small sample size, which was also

the possible case in Liang's research on temperament and retention (2010).There was also no correlation found between temperament, semester group, and retention. However, student's secondary temperament could have potentially influenced their financial stress level of paying for college.

Students who were concerned about managing their time also expected to spend a large number of hours per week preparing for classes. The two largest primary temperaments represented in the sample, Orange and Gold, could have attributed to this outcome. It was the temperament's distinctly different views of college that call attention to their expectations. The expectation of spending less hours working on- or off-campus during their first year also meant a higher expectation of graduating from Montana State University. Conversely, students who expected to spend a great deal of time working had a lower expectation of graduating from Montana State University. In light of the temperament groups, Orange students could have expected to graduate when working less because they had more free time to have fun and study. Gold students could have expected to graduate when working less due to the time available to them to study, seek help, create study groups, and join organizations.

Students who expected to spend a high amount of time participating in co-curricular activities also expected to spend a large amount of their time relaxing and socializing with friends. Students may have anticipated that spending time on co-curricular activities was the same as spending time with friends. The more students spent time with those they served with in organizations and played with on intramural teams, the more likely they could have been to become friends. These students who expected to spend more time relaxing and socializing with friends also expected less difficulty in

making friends. The expectation of spending a lot of time with a social group could have translated to the students' openness to meeting and forming friendships with others.

The students who were highly concerned with learning course material were also concerned as to how they were going to manage their time during their first year in college. These same students whom were concerned with managing their time during their first year in college were also concerned with paying for the college education.

The expectation of having a hard time paying for college was coupled with the expectation of having a difficult time interacting with faculty The vice versa was also true. This disconnect could have been due to limited number of hours spent on campus due to work schedules of first-time, full-time freshmen.

Implications and Recommendations

Based on the findings and conclusions of this research, the following recommendations were presented:

1. Retention programs or course study groups focused on gathering together students outside normal school hours who are struggling in a course or multiple courses so an opportunity to create new social communities and develop time and course management skills.
2. Institutional leaders and advisors should offer, publicize, and educate students on the scholarship and other financial services that assist in paying for college.
3. Instructors should intentionally mention their office hours or hours of availability to students for assistance. Instructor and advisor awareness should increase of students whom were experiencing difficulty paying for college.

4. Faculty and staff needed to be sensitive to the different ways in which students with different temperaments perceived the workload of their first year in college, and possibly even first few months in college courses.
5. Instructors should keep course assignments practical; relate course material to the types of jobs; provide hands on activities; and encourage big picture thinking.

Personality was a well-established factor in retention studies. The inclusion helped to paint a picture of the students who were enrolled in the College of Agriculture (COA) at Montana State University (MSU). David Keirsey reminded us that we should not view people with different temperaments than ourselves as bad or strange (1998). Retention researchers should not view students with specific temperaments or traits as unsuccessful due to a statistical indication that their primary temperament predicts dropout. Instead, programs need to be constructed that engage and build up the less prominent temperaments present in students—to balance the humors as Galen would have recommended. Institutions cannot be "sculpting others into our own likeness" to increase retention rates (Keirsey, 1998, p. 2).

First-time full-time freshmen encountered various and large amounts of new experiences in their first year of college. Researchers and educators should display student's talents and difficulties strengthened through retention programs and classroom learning. Implications and recommendations of this study provided an opportunity for student development and on college campuses. Implications of the findings were applied to retention programming, academic and career advising in the College of Agriculture, and for the planning of Agriculture Education and Leadership courses. Recommendations for future research were also explored.

Building Effective College of Agriculture Retention Programming

Upcraft, Gardner, and Barefoot (2005) noted the preponderance of research supporting the importance of freshmen's first-year experience in college. However, this study was the second to be conducted at Montana State University on retention and COA students. As a result of this study, the faculty and staff of the Agricultural Education Division and the College of Agriculture were provided a profile of the students to consult when planning programs that engaged the four temperament groups. The more knowledge of student behavior available, the more successful we can be at helping students reach their academic and personal goals (Seidman, 2012).

For students identified as Gold, the concern about making friends could have been due to their belief that they must work hard to be successful, which minimized time spent with friends. To a Gold college is a time to build the skills and make the network successfully to obtain a good job after graduation. A Gold's need and desire for planned events inhibits attendance of impromptu or poorly marketed social or institutional activities. Also, dedication to their family and home communities could contributed to the expected difficulty that would have resulted in a less active campus life (Keirsey, 1998; Montgomery, 2002; NCTI, 2005).

For the students who identified themselves as Green, their expectation of having difficulty making friends was not surprising. Students with the Green temperament preferred to spend more time thinking, staying in their head, rather than in the world. Greens were pragmatic, skeptical, individualistic and private in their thinking, certainly in their actions, and definitely in relationships with others. Greens could spend their time

evaluating the best event or program to meet like-minded people that they may never attend. (Keirsey, 1998; Montgomery, 2002; NCTI, 2005). The combination of these characteristics could easily lead a Green to become concerned about making friends in college.

An example of a retention program would be an off-campus and after-work retention programs should be created to reach those students who work part- or full-time. The Agriculture Education Division specifically could implement a program occurring on a weekend or evening that allowed first-time, full-time freshmen, as well as other upper classmen to interact faculty and graduates from Agriculture Education to serve as a report from the field to assess and resolve needs, trends, and issues . This type of program would encourage institutional and social integration, along with supporting graduation commitment, which Tinto noted as critical factors for retention (1975/1993).

The College of Agriculture could implement an open study or questions forum that occurred one or two evenings a semester for first-time, full-time freshmen to engage with upperclassmen and faculty to focus on skills that would help develop critical thinking and time management that will help them be successful in their student role and in their prospective careers. Prizes could be raffled off at the event, such as concert tickets or gift cards. Further examples of retention programs, events, and activities the Agriculture Education Division and COA could sponsor, publicize, or implement were found in Appendix B.

College of Agriculture Academic Advising

It was well known that students learn in different ways and in different environments. The same was true for the four temperament groups. Lawrence (2009) and Montgomery (2002) outlined the multiple academic environmental needs of the four temperaments. Their contributions coupled with researcher recommendations based on the findings from this study provided practical applicability for academic advisors of the knowledge gained about the temperament and expectations of first-time, full-time freshmen found in Appendix C.

First-time, full-time freshmen could take the Real Colors® assessment at the beginning of the semester in their seminar one credit courses. To disseminate temperament distribution and BCSSE results institution-wide, the information could have been housed in DegreeWorks and made available to all faculty and staff on the MSU campus. By reporting the temperament information, faculty and could recommend courses that appealed to student's temperament types.

Academic advisors could recommend students take courses that appealed to their particular temperament distribution. A good course temperament distribution would be: 40% of course load each semester engage at the least primary temperament, 30% of course load engage the secondary temperament, and 30% engage supplementary temperaments. Appendix C provides an overview of the type of College of Agriculture courses at Montana State University that each temperament has a natural talent or competency. However, it is important to keep in mind that each temperament is certainly able to perform well in other classes that do not engage their natural competencies and primary temperament. For this reason, it is important to know the distributions—their

competencies and limitations — to provide a well-rounded academic plan to encourage success for all temperaments in any College of Agriculture major.

Utilizing the knowledge that most first-time, full-time freshmen in the COA at Montana State University expected to spend a lot of hours studying and less hours socializing, academic advisors would validated the student's academic expectations, and disclose the opportunities for social and academic groups. If the student was working, advisors could ensure that the course schedule did not overwhelm students and create distance between the student and faculty member if help with courses was needed.

College of Agriculture Career Advising

To advise students successfully, faculty members and staff needed to take into consideration the student's personal academic and career goals, as well as their natural talents and areas for development. Lawrence (2009) outlined three questions that advisors needed to answer in the quest for student career skills development. The three questions were modified by the researcher to fit the College of Agriculture advisors and were the following (Lawrence, 2009):

1. What was the primary and secondary temperament of the student?
2. How do you spot them in the student?
3. How do you work with students to achieve their desired career aspirations?

The value of the knowledge gained through this study was useful in providing a new viewpoint of which to advise students in how to reach their professional goals. Advisors could utilize the Real Colors® diagnostic assessment to discover the student's existing talents and skills, while defining development needs to succeed within a specific

career in the agriculture industry. Montgomery (2002) outlined the four talents and tools that the four temperaments work best with. Table 16 displayed the list of talents and tools revised with the Real Colors® temperaments by the researcher.

Table 16. Revised Temperament, Talent, and Tools in the Workforce

Temperament	Talents	Works best with
Orange	Tactics	Tools and equipment
Gold	Logistics	Supplies and schedules
Blue	Diplomacy	People and Communication
Green	Strategy	Plans and technology

Building off of the questions that Lawrence (2009) outlined and taken into consideration the tools and talents of Montgomery (2009), there were a few simple tasks that career advisors could perform to ensure a student was a good fit for a specific field of agriculture. The first step was to identify the key qualities that inhabited a model employee in a particular agricultural occupation. Secondly, compare the daily activities, skills, and development opportunities of the job with the student's temperament, talents, and skills. Thirdly, the career advisor would meet with the student to discuss, using buzzwords that would motivate, encourage, or discourage a specific temperament to seek employment in a particular occupation. Buzzwords of the occupation should resonate either positively or negatively with the student. Both advisor and student would create a plan of action that would allow the student to develop the skills of their less significant temperaments, while furthering their primary temperament in order to develop the skills necessary to become a successful in a particular occupation. Lastly, advisors would present career prep opportunities that engaged all four of the temperaments to ensure the student was developing the skill of performing well in the workplace in supplementary as

well as their primary temperaments. Appendix D provided example of the types of careers within agriculture the different temperaments would be drawn to.

Implications for Agriculture

Education and Leadership Courses

Agriculture, as an industry, has been changing and, thus, the curriculum and agriculture students at the university level have been changing as well. In response, research has begun to emerge on how to better educate, retain, and graduate students within colleges of agriculture. This study joined previous research in the attempt to positively impact college of agriculture student retention.

In knowing the temperament distributions of the first-time, full-time freshmen in the College of Agriculture at Montana State University, faculty and staff were presented with the challenge to engage in the classroom and through retention programs the Orange, Gold, and Blue temperaments that aimed at increase learning and positively affect college of agriculture student retention.

Lawrence (2009) noted the importance of temperament knowledge for education and planning, “The outcomes of formal education depend so much on understanding student differences in motivation, interest, learning styles and attitudes” (p. 31-32). Formal education benefits some temperaments and hinders others. Since the purposive sample was derived from an introductory leadership Agriculture Education course, implications for the use of the results were applied to agriculture education and leadership education course in colleges of agriculture.

Instructors were recommended to provide students with the opportunity to begin the development process during the first year of college through the creation of well-

rounded coursework that assisted in the development the four temperaments. By supporting the four temperaments through purposeful coursework, students will have a built-in opportunity to impact positive leadership skill development.

Due to the large number of students with Orange primary temperaments, instructors should be aware that these students and others, Twenge noted (2006), wanted experiences that provided personal attention, and practical and interactive classes. To meet these student desires and acquire the skills necessary to be effective in the workforce after college, students need to have experience in "communicating effectively, working in teams, and develop[ing] creative solutions to complex problems" (Doerfert, 2011, p. 21) in the classroom. Each temperament responds and behaves differently initially to each of these abilities, and should be provided a safe classroom environment to develop these skills that may or may not come naturally.

One of the skills Doerfert (2011) noted that students needed to be able to do effectively in the workforce was work as a team. In an Agriculture Education or Agriculture Leadership course, for example, that required a debate-style group project or a service leadership project has the opportunity to give students a positive or negative group-work experience. The type of experience students have depends upon the types represented in each group. Structuring the assignment so that a task was performed that a specific temperament typically enjoyed would be a way to engage each temperament. Appendix C contained an example of course assignments that each temperament enjoyed or had a hesitation toward based on the temperament knowledge gained from this study to promote success in Agriculture Education and Agriculture Leadership courses.

Recommendations for Future Research

Based on the findings of this study, recommendations for future research on the topic of student temperament and retention were as follows.

This study should be replicated with a larger sample size to uncover whether results of the study were attributed to small sample size or were representative of all college of agriculture first-time, full-time freshmen. By doing so, a more in-depth picture of college of agriculture students at four-year universities would be painted and beneficial for institution faculty and staff.

Replication at multiple institutions would provide a snapshot of the first year expectations and temperaments of first-time, full-time students in colleges of agriculture across the country. This would aid college of agriculture leaders and faulty to develop curriculum and effective retention programming standards that would be used across the country. Other colleges at MSU were also encouraged to participate in a replication of the study to discover whether the findings were representative of all first-time, full-time freshmen at the institution.

For the Agriculture Education Division specifically, a longitudinal study to determine whether the primary and secondary temperament distribution changes throughout a student's college career should be explored. A temperament distribution profile of students within each of the majors and the population as a whole in Colleges of Agriculture, which would aid faculty and staff in course planning and development.

Institutions should conduct research utilizing Real Colors® to construct a reputation as an easy to use and accurate diagnostic assessment in the self-reporting of

student temperament distributions. Through the more frequent utilization of temperament assessments in colleges of agriculture to promote retention, success in the classroom, and social and institutional integration, research should be conducted on whether temperament positively affected the actual first-year engagement (NSSE) of freshmen in the college of agriculture.

Results from the BCSSE and NSSE should be compared to student temperament for the identification of a possible link between college expectations, actual engagement, and temperament. Recommendations for future research needed be focused on the development of student's supplementary temperaments to positively affect retention, engagement, and success in the classroom within colleges of agriculture.

Summary

Through a descriptive, quantitative research design, this study provided evidence that student temperament may be used to positively impact the retention of first-time, full-time freshmen in the College of Agriculture at MSU through the implementation of temperament and BCSSE findings. The retention of college students was a topic that was deemed important to multiple stakeholders. Finding ways in and outside the classroom that supported and encouraged student retention to the second fall semester in college was information desirable for the faculty and staff in the College of Agriculture. It was important to remember that retention decision stems from various college experiences, and each of the four temperaments perceive them differently.

The recommendations were based on this study's results. Retention program planners and course instructors needed to encourage provide opportunities to for students

to form study and social groups that would assist with the student's expected difficulty of learning course material and making new friends in their first year. Instructors should post office hours and encourage communication in and outside the classroom. Faculty and staff should be sensitive to how the different temperaments perceived their course load in their first year. Course assignments should be practical; related to potential careers; interactive; and encourage big-picture thinking.

Implications extended to MSU College of Agriculture faculty and staff. Retention programmers should offer multiple types of programs to engage each of the four temperaments. Academic and career advisors within the College of Agriculture should be mindful of the talents and job preferences of each temperament. Instructors in the Agriculture Education and Agriculture Leadership departments should take into account the different types of assignments that the four temperaments enjoy or do not feel comfortable performing when planning instruction.

The study should be replicated with a larger sample to determine if findings were representative of all College of Agriculture students at Montana State University. Additionally, other colleges at MSU were encouraged to collaborate to discover the largest primary and temperament groups and first year expectations of all first-time, full-time freshmen at Montana State University. Future research should be conducted to uncover whether well-rounded coursework assisted in the development supporting temperaments and positively affected retention and course satisfaction. Other institutions were recommended to conduct research utilizing Real Colors® to construct a reputation as an easy to use and accurate diagnostic assessment in the self-reporting of student temperament distributions.

While every freshman may have a different college experience, it should be the goal of the faculty and institutional leaders to make all of their experiences as personal and positive as possible. To impact students, we must be willing to do the work to get to know them, calm their fears, and discuss expectations so that the first year is not only a challenging one, but a successful one that leads to degree attainment.

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APPENDICES

APPENDIX A

2012 BEGINNING COLLEGE SURVEY

OF STUDENT ENGAGEMENT SURVEY

Beginning College Survey of Student Engagement

We are interested in your high school experiences and how often you expect to participate in certain activities during your first year of college. The information that you provide will help your institution improve teaching, learning and the quality of the student experience. Thanks for your help. Write or mark your answers in the boxes. Examples: ☒ or ■

Please print your student ID number in the box below. Do not print your Social Security number.

Please write in the 5-digit ZIP code of your home during your last year of high school.

(U.S. residents only.)

When are you completing this survey? (Select only one.)

- ☐ Prior to the start of fall term classes
- ☐ During the first week of fall term classes
- ☐ After the first week of fall term classes

HIGH SCHOOL EXPERIENCES

1 Please write in the year you graduated from high school (for example, 2013):

2 From which type of high school did you graduate? (Select only one.)

- ☐ Public
- ☐ Private, religiously-affiliated
- ☐ Private, not religiously-affiliated
- ☐ Home school
- ☐ Other (e.g., G.E.D.)

3 What were most of your high school grades? (Select only one.)

- ☐ A
- ☐ A-
- ☐ B+
- ☐ B
- ☐ B-
- ☐ C+
- ☐ C
- ☐ C- or lower
- ☐ Grades not used

4 To date, in which of the following math classes have you earned a grade of "C" or better? (Select all that apply.)

- ☐ Algebra II
- ☐ Pre-Calculus/Trigonometry
- ☐ Calculus
- ☐ Probability or Statistics

5 Did you take the SAT and/or ACT?

☐ Yes ☐ No

If yes, please write your scores below (as best you remember):

SAT (possible range=200-800)		ACT (possible range=1-36)	
Critical Reading		Composite	
Mathematical Reasoning			
Writing			

6 During high school, how many of the following types of classes did you complete?

Classes:	0	1-2	3-4	5-6	7-8	9-10	11 or more
a. Advanced Placement (AP) classes	☐	☐	☐	☐	☐	☐	☐
b. College or university courses for credit	☐	☐	☐	☐	☐	☐	☐

7 During your *last year* of high school, about how many papers, reports, or other writing tasks of the following length did you complete?

	None	1-2	3-5	6-10	11-15	16-20	More than 20 papers, etc.
a. Up to 5 pages	☐	☐	☐	☐	☐	☐	☐
b. Between 6 and 10 pages	☐	☐	☐	☐	☐	☐	☐
c. 11 pages or more	☐	☐	☐	☐	☐	☐	☐

8 During your *last year* of high school, about how many hours did you spend in a typical 7-day week doing each of the following?

	0	1-5	6-10	11-15	16-20	21-25	26-30	More than 30
a. Preparing for class (studying, reading, doing homework, etc.)	☐	☐	☐	☐	☐	☐	☐	☐
b. Working for pay	☐	☐	☐	☐	☐	☐	☐	☐
c. Participating in co-curricular activities (organizations, school publications, student government, sports, etc.)	☐	☐	☐	☐	☐	☐	☐	☐
d. Relaxing and socializing (time with friends, video games, TV or videos, keeping up with friends online, etc.)	☐	☐	☐	☐	☐	☐	☐	☐

Hours per week

9 During your *last year* of high school, of the time you spent preparing for class in a typical 7-day week, about how many hours were on assigned reading?

0	1-5	6-10	11-15	16-20	21-25	26-30	More than 30
☐	☐	☐	☐	☐	☐	☐	☐

Hours per week

SAMPLE

10 **During your *last year* of high school, about how often did you do the following?**

	Very often	Often	Some-times	Never
a. Came to class without completing readings or assignments	☐	☐	☐	☐
b. Prepared two or more drafts of a paper or assignment before turning it in	☐	☐	☐	☐
c. Reached conclusions based on your own analysis of numerical information (numbers, graphs, statistics, etc.)	☐	☐	☐	☐
d. Used numerical information to examine a real-world problem or issue (unemployment, climate change, public health, etc.)	☐	☐	☐	☐
e. Evaluated what others have concluded from numerical information	☐	☐	☐	☐
f. Identified key information from reading assignments	☐	☐	☐	☐
g. Reviewed your notes after class	☐	☐	☐	☐
h. Summarized what you learned in class or from course materials	☐	☐	☐	☐
i. Included diverse perspectives (political, religious, racial/ethnic, gender, etc.) in course discussions or assignments	☐	☐	☐	☐
j. Examined the strengths and weaknesses of your own views on a topic or issue	☐	☐	☐	☐
k. Tried to better understand someone else's views by imagining how an issue looks from his or her perspective	☐	☐	☐	☐

11 **During your high school years, how involved were you in the following activities at your school or elsewhere?**

	Very much	Quite a bit	Some	Very little	Not at all
a. Performing or visual arts programs (band, chorus, theater, art, etc.)	☐	☐	☐	☐	☐
b. Athletic teams (varsity, JV, club sport, etc.)	☐	☐	☐	☐	☐
c. Student government	☐	☐	☐	☐	☐
d. Publications (student newspaper, yearbook, etc.)	☐	☐	☐	☐	☐
e. Academic clubs or honor societies	☐	☐	☐	☐	☐
f. Vocational clubs (business, health, technology, etc.)	☐	☐	☐	☐	☐
g. Religious youth groups	☐	☐	☐	☐	☐
h. Community service or volunteer work	☐	☐	☐	☐	☐

12 **During your *last year* of high school, to what extent did your courses challenge you to do your best work?**

Not at all ☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7 Very much

EXPECTED FIRST YEAR EXPERIENCES

13 **During the coming school year, about how many hours do you expect to spend in a typical 7-day week doing each of the following?**

a. Preparing for class (studying, reading, writing, doing homework or lab work, analyzing data, rehearsing, and other academic activities)

☐ 0 ☐ 1-5 ☐ 6-10 ☐ 11-15 ☐ 16-20 ☐ 21-25 ☐ 26-30 ☐ More than 30

Hours per week

b. Working for pay on- or off-campus

☐ 0 ☐ 1-5 ☐ 6-10 ☐ 11-15 ☐ 16-20 ☐ 21-25 ☐ 26-30 ☐ More than 30

Hours per week

c. Participating in co-curricular activities (organizations, campus publications, student government, fraternity or sorority, intercollegiate or intramural sports, etc.)

☐ 0 ☐ 1-5 ☐ 6-10 ☐ 11-15 ☐ 16-20 ☐ 21-25 ☐ 26-30 ☐ More than 30

Hours per week

d. Relaxing and socializing (time with friends, video games, TV or videos, keeping up with friends online, etc.)

☐ 0 ☐ 1-5 ☐ 6-10 ☐ 11-15 ☐ 16-20 ☐ 21-25 ☐ 26-30 ☐ More than 30

Hours per week

14 **During the coming school year, of the time you expect to spend preparing for class in a typical 7-day week, about how many hours will be on assigned reading?**

☐ 0 ☐ 1-5 ☐ 6-10 ☐ 11-15 ☐ 16-20 ☐ 21-25 ☐ 26-30 ☐ More than 30

Hours per week

15 **During the coming school year, about how often do you expect to do each of the following?**

	Very often	Often	Some-times	Never
a. Ask another student to help you understand course material	☐	☐	☐	☐
b. Explain course material to one or more students	☐	☐	☐	☐
c. Prepare for exams by discussing or working through course material with other students	☐	☐	☐	☐
d. Work with other students on course projects or assignments	☐	☐	☐	☐
e. Talk about career plans with a faculty member	☐	☐	☐	☐
f. Work with a faculty member on activities other than coursework (committees, student groups, etc.)	☐	☐	☐	☐

15 **During the coming school year, about how often do you expect to do each of the following?** (Continued)

	Very often	Often	Some-times	Never
g. Discuss your academic performance with a faculty member	☐	☐	☐	☐
h. Discuss course topics, ideas, or concepts with a faculty member outside of class	☐	☐	☐	☐
i. Prepare two or more drafts of a paper or assignment before turning it in	☐	☐	☐	☐
j. Come to class without completing readings or assignments	☐	☐	☐	☐

16 **During the coming school year, about how often do you expect to have discussions with people from the following groups?**

	Very often	Often	Some-times	Never
a. People of a race or ethnicity other than your own	☐	☐	☐	☐
b. People from an economic background other than your own	☐	☐	☐	☐
c. People with religious beliefs other than your own	☐	☐	☐	☐
d. People with political views other than your own	☐	☐	☐	☐

17 **During the coming school year, how certain are you that you will do the following?**

	Not at all certain 1	2	3	4	5	Very certain 6
a. Study when there are other interesting things to do	☐	☐	☐	☐	☐	☐
b. Find additional information for course assignments when you don't understand the material	☐	☐	☐	☐	☐	☐
c. Participate regularly in course discussions, even when you don't feel like it	☐	☐	☐	☐	☐	☐
d. Ask instructors for help when you struggle with course assignments	☐	☐	☐	☐	☐	☐
e. Finish something you have started when you encounter challenges	☐	☐	☐	☐	☐	☐
f. Stay positive, even when you do poorly on a test or assignment	☐	☐	☐	☐	☐	☐

18 **During the coming school year, how difficult do you expect the following to be?**

	Not at all difficult 1	2	3	4	5	Very difficult 6
a. Learning course material	☐	☐	☐	☐	☐	☐
b. Managing your time	☐	☐	☐	☐	☐	☐

18 **During the coming school year, how difficult do you expect the following to be?** (Continued)

	Not at all difficult 1	2	3	4	5	Very difficult 6
c. Paying college expenses	☐	☐	☐	☐	☐	☐
d. Getting help with school work	☐	☐	☐	☐	☐	☐
e. Making new friends	☐	☐	☐	☐	☐	☐
f. Interacting with faculty	☐	☐	☐	☐	☐	☐

19 **During the coming school year, about how many papers, reports, or other writing tasks of the following length do you expect to complete?**

	None	1-2	3-5	6-10	11-15	16-20	More than 20 papers, etc.
a. Up to 5 pages	☐	☐	☐	☐	☐	☐	☐
b. Between 6 and 10 pages	☐	☐	☐	☐	☐	☐	☐
c. 11 pages or more	☐	☐	☐	☐	☐	☐	☐

20 **How prepared are you to do the following in your academic work at this institution?**

	Not at all prepared 1	2	3	4	5	Very prepared 6
a. Write clearly and effectively	☐	☐	☐	☐	☐	☐
b. Speak clearly and effectively	☐	☐	☐	☐	☐	☐
c. Think critically and analytically	☐	☐	☐	☐	☐	☐
d. Analyze numerical and statistical information	☐	☐	☐	☐	☐	☐
e. Work effectively with others	☐	☐	☐	☐	☐	☐
f. Use computing and information technology	☐	☐	☐	☐	☐	☐
g. Learn effectively on your own	☐	☐	☐	☐	☐	☐

21 **How many courses are you taking for credit this fall term?**

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 or more ☐ Uncertain

Of these courses, how many are entirely online?

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 or more ☐ Uncertain

DRAFT

22 How important is it to you that your institution provide each of the following?

	Not important 1	2	3	4	5	Very important 6
a. A challenging academic experience	☐	☐	☐	☐	☐	☐
b. Support to help students succeed academically	☐	☐	☐	☐	☐	☐
c. Opportunities to interact with students from different backgrounds (social, racial/ethnic, religious, etc.)	☐	☐	☐	☐	☐	☐
d. Help managing your non-academic responsibilities (work, family, etc.)	☐	☐	☐	☐	☐	☐
e. Opportunities to be involved socially	☐	☐	☐	☐	☐	☐
f. Opportunities to attend campus activities and events	☐	☐	☐	☐	☐	☐
g. Learning support services (tutoring services, writing center, etc.)	☐	☐	☐	☐	☐	☐

23 Which of the following sources are you using to pay your education expenses (tuition, fees, books, room & board, etc.)?

	Using	Not using	Not sure
a. Support from parents or relatives	☐	☐	☐
b. Loans	☐	☐	☐
c. Grants or scholarships	☐	☐	☐
d. Job or personal savings	☐	☐	☐
e. Other	☐	☐	☐

24 What do you expect most of your grades will be during the coming year? (Select only one.)

☐ A ☐ B ☐ C
☐ A- ☐ B- ☐ C- or lower
☐ B+ ☐ C+ ☐ Grades not used

25 Do you expect to graduate from this institution?

☐ Yes ☐ No ☐ Uncertain

26 Do you know what your major will be?

☐ No
☐ Yes, specify: _____

27 Are you (or will you be) a full-time student this fall term?

☐ Yes ☐ No

28 How many of your close friends will attend this institution during the coming year?

☐ None ☐ 1 ☐ 2 ☐ 3 ☐ 4 or more

29 This institution was your:

☐ First choice ☐ Second choice ☐ Third choice
☐ Fourth choice ☐ Fifth choice or lower

30 What is your gender?

☐ Female ☐ Male

31 Are you an international student or foreign national?

☐ Yes ☐ No

32 What is your racial or ethnic identification? (Select all that apply.)

☐ American Indian or Alaska Native
☐ Asian
☐ Black or African American
☐ Hispanic or Latino
☐ Native Hawaiian or Other Pacific Islander
☐ White
☐ Other
☐ I prefer not to respond

33 What is the highest level of education completed by either of your parents (or those who raised you)?

☐ Did not finish high school
☐ High school diploma or G.E.D.
☐ Attended college but did not complete degree
☐ Associate's degree (A.A., A.S., etc.)
☐ Bachelor's degree (B.A., B.S., etc.)
☐ Master's degree (M.A., M.S., etc.)
☐ Doctoral or professional degree (Ph.D., J.D., M.D., etc.)

34 In driving time, about how far is this institution from the home where you lived during your last year of high school?

☐ Less than 1 hour ☐ At least 4, less than 6 hours
☐ At least 1, less than 2 hours ☐ At least 6, less than 8 hours
☐ At least 2, less than 4 hours ☐ 8 hours or more

35 Which of the following best describes where you will be (or are) living during the coming school year?

☐ Dormitory or other campus housing
☐ Residence (house, apartment, etc.) within walking distance to campus
☐ Residence (house, apartment, etc.) farther than walking distance to campus
☐ None of the above

36 Enter your first two initials and last name:

F. I. _____ M. I. _____ Last Name _____

THANKS FOR SHARING YOUR RESPONSES!

SERIAL #

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APPENDIX B

EXAMPLE OF COA CHAMP CHANGE RETENTION EVENTS

Event	Description and Temperament
New Student Orientation	Introduce and give Champ Change points (Orange) to students that attended the event. Administer the BCSSE.
Student Organization Expo	Give points (Orange) to each student who officially joins (Blue) at least 1 during the organization at the expo.
Student Organizations	Students would be given extra points (Orange) for holding an office (Gold) within an organization.
Champ Change Tracker	Create a mobile app for students (Orange and Gold) to track and input involvement. Also, it could connect students with similar service interests
Writing and Math Help Center	On top of giving points (Orange) for visiting these locations, students could be awarded in courses with an extra bonus point on assignments or projects if they sought out help (Blue) or started a study group (Blue) for the course.
Chili Cook-Off	This type of event would engage all of the temperaments quite well. Oranges would enjoy the competition and have a drive to win a trophy. Gold's would enjoy putting together the team, scheduling team meetings, and delegating jobs. Green's would be useful in selecting a chili recipe or researching how to modify an existing recipe. Blues would enjoy the comrade that comes with working on a team and be useful in visually setting up, decorating the tent, and developing a team name or theme that satisfied all team members.
(Thanksgiving) Create A Service Event	Students could be given points (Orange) and notoriety (Gold) for the creation and development of service events (Blue), such as food drives, 5k's, donations to local nonprofits. Students would be recognized at a college social event or game, like a football game.
Internship Opportunities	Students would be given points (Orange) for seeking out career and internship opportunities (Gold) through the Career Services office at MSU that would help them reach their personal professional goals
(Christmas) Adopt a Family, 4-H chapter, Farm or Ranch	Students would receive points (Orange) for compiling a group of COA students that wanted to sponsor a family farm or 4-H/FFA chapter locally or statewide (Blue) to raise money for to provide Christmas presents (MSU COA apparel or necessities), provide scholarships (Gold), or buy feed/supplies for other families and youth who had animals that were less fortunate (Blue).
ALTERNATIVE (Christmas)	Student organizations could create gift ideas (home decorations, clothing, Christmas crafts, etc) from Pinterest

	that could be given to local farming and ranching families or sold at a silent auction where the money could be donated to help a family in need to buy Christmas presents.

APPENDIX C

TYPES OF COURSES, COURSE CHARACTERISTICS, AND COURSEWORK THAT THE DIFFERENT TEMPERAMENTS EXCELL IN.

The four temperaments and the types of courses preferred (Montgomery, 2002)

Temperament	Course type	Course characteristics
Orange	Lab, technical, or applied	Works with tools; group work; little management or oversight; abstract or creative properties to content
Gold	Lecture or applied	Practical applicability of content; structured and sequential course structure; thorough teaching of content; individual projects
Blue	All (lab, applied, lecture, etc.)	Cooperative environment between instructor and students; group work; abstract or creative properties to content; no wrong answer environment
Green	Applied, lecture	Present content with complex systems; little management or oversight; no time limit; experimentations and manipulations of content; no right or wrong answers;

The Four Temperaments Natural College of Agriculture Course Competencies

Temperament	Courses
Orange	Money and banking; Public Communication; Introduction to Plant Biology; Farm and Ranch Management; Natural Resource Conservation; Montana Range Plants Lab; Animal Nutrition Soils; Rural Electrification; Economics of Ag Business; Livestock in Sustainable Systems; Western Equitation; Starting Colts; Crop Breeding
Gold	Environmental policy and natural resource economics; Leadership Development for Agribusiness and Employees; Agricultural Law Animal Nutrition; Ag Ed in Pub Schools Soils; Non Form Tchng Mthd Ag; Phil & Prog in Extension; Economics of Ag Business; Equine Form to Function; Introduction to Entomology; Plant Disease Control
Green	Economic development; Statistics and econometrics; Intro Animal; Rural Electrification Science; Introduction to Plant Biology; Natural Animal Nutrition; Communicating Ag; Economics of Ag Business; Resource Conservation; Livestock in Sustainable Systems; Horse Science and Mgmt Lab; Concepts of Plant Path; Crop Breeding
Blue	Intro Animal Science; Leadership Development for Agribusiness and Employees; Natural Resource Conservation; Montana Range Plants Lab Animal Nutrition; Ag Ed in Pub Schools; Non Form Tchng Mthd Ag; Phil & Prog in Extension; Livestock in Sustainable Systems; Equine Lameness; Weed Ecology & Mgmt; Vegetable Production

Type of Assignment or Project	Temperament	Roles
Group Project	Enjoy: Orange and Blue Hesitation: Gold & Green**	Orange = enjoy being in groups and can be the "big picture" person providing an overall design for the project. Create the visual effects for the project. Blue = enjoy being in groups. Will make sure everyone's opinion and ideas are heard. Will try to incorporate everyone's ideas and talents into the process to feel included and as a valued member of the group. Gold = Like group projects only if they can be in charge. Otherwise would rather do it themselves. Provide structure and order to the project. Assigns everyone a job. Green = Need time to think and evaluate about how to best do the project. Logical sequences in project methodology and analyzing results
Report/Essay Assignments	Enjoy: Blue, Gold, & Green Hesitation: Orange	Blue = Through essays, they can describe how they feel and what they think about a topic. Gold = Will enjoy creating a structured and ordered argument for the topic. The logic behind the argument will be based on facts. Green = May have a hard time meeting the deadline of the assignment due to multiple possible outcomes, solutions, or viewpoints. Will provide a thorough and logical analysis. Orange = Will procrastinate and turn in the assignment exactly on time or late. May not have a logical order of points, if order at all. May feel passionately about viewpoint but not a lot of facts. Mainly personal accounts and implications
Agricultural Topical Debates & Speeches	Enjoy: Gold, Orange, Green Hesitation: Blue **	Gold = Provide structure and logical order to the arguments. Demand that facts be reported on the topic. Would be confident in their presentation as long as the work had been done to their standards. Orange = Enjoy entertaining the audience with their speech/debate. Incorporate real-life examples to sell

		points instead of facts and figures. Use artistic eye for developing visual aids. Green = Would provide facts for their argument. May not decide on a specific viewpoint but provide the audience with researched and concrete facts so that they could decide for themselves. Blue = May would feel uncomfortable taking a specific stance on a subject as not to negate any one's belief's about the topic. Unless the reasons for or against would cause harm, discomfort, or sadness to people or animals impacted. Would feel awkward debating a topic that did not add value or help a person or animal's situation.
Course Reading Assignments	Enjoy: Gold, Green, & Blue Hesitation: Orange	Gold = Divide up reading assignment over a couple days to allow for proper time management and mental processing of the topic. Green = May read all in one day or over the course of a few days. Emphasis would be placed on the time spent thinking and analyzing the topic's implications and meanings. Blue = Would want to be prepared for class, as to not let the instructor down. Would complete the reading in a timely manner. Would think about the implications of the reading for the self and others. Orange = Read either the night before or not read at all. Create ideas about the reading topic off the top of their heads- not much prior analysis of the topic.
Teaching on an Agricultural Topic in the Secondary Classroom	Enjoy: Gold, Blue, Green, and Orange Hesitation: Blue** & Orange**	Gold = Would be comfortable when following the logical sequence of a detailed lesson plan. Formally teach from a PowerPoint or textbook at the front of the classroom. Blue = Would walk around the room, engaging students about their experiences, knowledge, and desire to apply agricultural topics. Create meaningful assignments. Green = Would follow a logical and detailed lesson plan focusing on the facts of the topic and brainstorming implications. Formally teach from the front of the room.

		Would only recommend a certain method if all of the facts pointed to one definitive answer. Otherwise, would allow for assignments to be tests to see what topic engaged more students or provided the most logical and valid results. Orange = Would create a loose lesson plan and may not even follow it. Would teach by walking around the classroom. Provide students with plenty of visual aids and scenarios. Projects would be hands-on and active. There would be minimal written assessments of students. Most would be active assessments

** indicates caveats for the temperament. They may enjoy the assignment if tailored specifically to their in-born desires, topics of enjoyment, or was a perceived as a positive experience.

Agriculture Leadership Coursework and General Temperament Roles

Type of Assignment or Project	Temperament	Roles
Written Reflections	Enjoy: Gold, Blue, & Green Hesitation: Orange	Gold = Arrange the paper in a logical order. Enjoy writing down their actions and thoughts about a certain topic. Would be thought of as a very purposeful assignment of how to re-create a positive experience or thought or how not to repeat. Would write in a very concrete way about their reflections. Blue = Paper would be organized around the feelings and emotions they or others experiences. Would write in abstract thought/non-tangibles. Very introspective and honest about how the experience made them feel and respond. Evaluate the experience as either uncomfortable or comfortable/helpful. Green = Paper would be organized in the way that the event or experience occurred. Multiple accounts, reasons, or perspectives of the reflection may be posed. A definitive answer may be lacking unless there is one underlying theme. Orange = Write about the experience and whether it was fun or not. Reflect on what happened instead of maybe the behavioral or mental reactions about the experience.
Service Learning Projects	Enjoy: Gold, Orange, & Blue Hesitation: Green**	Gold = Appreciate the opportunity to use existing and develop new skills. May see value in the experience as a networking opportunity. A preparation reflection paper allows Gold's to see what obstacles may be ahead to better know how to deal with them or resolve them before they become an obstacle. A project presentation allows Gold's to highlight what they did and how they grew or "succeeded" to the class. A portfolio will allow the Gold to take their project to a professional level. They will be able to bring it to job interviews and display to family and friends their accomplishments. Orange = Enjoy serving with an program, activity, or performing labor. May see the opportunity as an opportunity to hang out and have fun with other people while doing some good along the way. A preparation

		reflection paper will allow Oranges to be aware of the obstacles they must crush to be successful or perform the best. The presentation will allow an Orange to be creative and artistic in how they decide to display to the class their growth or activities engaged in. May include a lot pictures, videos, and personal accounts/stories. A portfolio will allow an Orange to creatively arrange and display their project in way that evokes emotion from the reader. They may not keep it or give it to a proud parent. It was not about the grade or the "growth"; it was about the fun had and people met. Blue = Will serve an organization that helps people or animals. Will see value in the work they do in so much that they can see they are making a positive difference. A preparation reflection paper will allow Blue's to know what obstacles may lie ahead and how to make sure that they do not become an obstacle. Blues are not good with confrontation or encounters that make themselves or others feel like they are not doing a good job. A presentation will allow Blues to show pictures, videos, and tell stories about how they have helped and how it made them feel. A portfolio will be like a diary to a Blue. They will be able to look back and remember all the good done, people/animals helped, and the people they got to meet and work with along the way. Green = A green will serve most likely individually in a capacity that uses problem-solving and analyzing abilities. They will see value in the project in so much as quality data or future uses can be derived from it. A preparation portfolio will allow a Green to explore possible obstacles and solutions prior to experiencing them. Whether a decision gets made prior to experiencing the obstacles is uncertain, but at least they will have a few solutions to choose from in the moment. A project presentation will allow a Green to visually process and analyze an outcome from the experience. They will present and evaluate data based on their experiences. A portfolio will serve as a document outlining experiences and outcomes that could be useful in future encounters or work environments.
Mission Statements	Enjoy: Gold, Blue, &	Gold = Will enjoy thinking about all of the impacts they will make in their future. Serve as a roadmap to their

	Orange Hesitant: Green	personal definition of success. Highlight their traditions, values, responsibilities, and goal to be the best in their field. Blue = Will enjoy thinking about all of the good they are going to do in the world. Will feature their dedication to a large network of friends, family, and others. May not be concrete as to specifically what, but they will know that they want to help make the world a better place. Orange = Will mention their dedication to family and tradition while making a lasting impact through hard work. May mention a desire to best the best in their field. Focus on one main theme or job. Green = There will be so many extraneous variables and unforeseen events that creating a concise personal mission statement would be a daunting task. Will need to write in generalities with their values and desires that have been constant throughout their life up to that point.
Role-Play	Enjoy: Orange, Green, & Gold Hesitant: Blue**	Orange = Adapt easily to change and different scenarios. See role-playing as a fun and "acting" like they are in a movie to find a better angle or approach. Enjoy communicating, and fixing or winning. Focused on finding a solution quickly if a problem is present so they can be done with the exercise. Green = Direct in the methods of communication or resolution. Will restate the goal before mentally thinking about how to approach the scenario even while playing it out in front of the class. Focused on finding the best solution not the fastest solution. Gold = Also will be direct in communication or resolution. May restate their position and the goal before engaging in the scenario with other people. Want to find a solution through efficiency and facts available at the time. Do not waste time to get to an answer with the facts presently available. Wants to win or come out looking the best for negotiating properly and efficiently with other people. Blue = May have a longer role-play scenario than the

		others. Will want to make sure themselves and the other people are fully heard—their position and their feelings. Will seek to find a solution that validates all parties involved. Maintaining harmony and decency while problem-solving is key.
Assessments	Enjoy: Gold, Green, & Blue Hesitant: Orange**	Gold = Enjoy seeing what they excel at and what they need to work on to be the best. Exemplify what they do well, and try to do that most often. Worry about developing weaknesses when it is pertinent. Green = Analyze in what scenarios or situations they embody specific strengths and weaknesses. May theorize over how they develop some skills over others. Will think about how to develop weaknesses while maintaining strengths constant. Evaluate personally whether the assessment was correct and then decide to accept or reject. Blue = Will feel validated and talented by becoming aware of their strengths. Will see their weaknesses and maybe avoid developing them because it may involve an uncomfortable encounter. To keep harmony and peace, will do downplay or play-up whatever skills/qualities are necessary. Orange = Will see the assessment as a chance to brag about all the things they do well. Will downplay their weaknesses or rationalize that they are not as important as their strengths. Or may decide that despite their weaknesses, their strengths make them a good/fun person anyways.

** indicates caveats for the temperament. They may enjoy the assignment if tailored specifically to their in-born desires, topics of enjoyment, or was a perceived as a positive experience.

APPENDIX D

THE FOUR TEMPERAMENTS: CAREERS IN AGRICULTURE

The Four Temperaments: Potential Careers in Agriculture

Temperament	Potential Careers in Agriculture
Orange	• Advertising for major farm equipment company • Sales for pesticides, farm & ranch supplies, and equipment • Equipment technician • Farm/ranch laborer • Starting own farm or ranch • Extension Agent • CEO (visioning) • Crop duster • Truck driver • Auctioneer • Corporate spokesperson
Gold	• Professor • Program/event planner • Extension Agent • Farm/ranch manager • Supervisor/manager • Office manager • Politician • Accountant • Insurance agent • Lab technician • Fish & game warden
Green	• College Rodeo Coach/Director • CEO • College Dean • Farm/ranch management consultant • Extension Agent • Forecasting • College curriculum designer • Researcher • Manufacturing technologist • Economist • Systems analyst
Blue	• Extension Agent • Training facilitator • Director of Dean of College of Agriculture • Writer/Editor

	• Professor • Secondary Agriculture Education teacher • Career counselor in secondary or higher education • Nutritionist • Journalist • Recruiter • Community relations

APPENDIX E

IRB APPROVAL FORM

SUBJECT CONSENT FORM
FOR
PARTICIPATION IN HUMAN RESEARCH AT
MONTANA STATE UNIVERSITY

Project Title: **Student Temperament and Retention**

You are being asked to participate in a research study of the significant ways student temperament can be used to positively impact retention on first-time, full-time freshmen students in a College of Agriculture.

Purpose:

The reason for this research is that past researchers have identified characteristics that may affect retention of full-time, first time freshman. However, none so far have examined retention through temperament assessment. The potential significance of the expected results can help College of Agriculture advisors and institution leaders develop a plan for retaining freshman students from their first fall semester to the next fall.

Subjects:

Subjects were identified by their enrollment in the Leadership Development for Agribusiness and Industry Employees course in the fall 2012, spring of 2013, and fall of 2013 semesters.

Procedures:

Participation is voluntary. If you agree to participate you will be granting permission to use your Real Colors assessment outcomes. Students can choose not to grant access to their assessment outcomes. Students can choose to withdrawal from the study at any time. Participation or non-participation will not affect the student's grade or class standing.

The subjects have previously taken the Real Colors temperament assessment instrument and will be tracked from fall 2012 to fall 2013 with no other testing needed for the duration of the study.

The Real Colors temperament assessment instrument will be used to identify student's self-perceived temperaments. The College Student Inventory, granting access from the Dean of Students, will be used to identify academic motivators in the participants.

Risks:

There are no foreseen risks.

Benefits:

The study is of no benefit to you.

Alternatives Available:

APPROVED
MSU IRB
10-24-2013
Date approved

If the subject declines to participate in the study, their Real Colors and College Student Inventory responses will not be presented in the study. The subject will not experience any adverse actions.

Source of Funding:

NA

Cost to Subject:

None

Questions:

Participants are encouraged to ask questions about the study to truthfully decide whether they want to be involved.

Confidentiality of Records:

The records identifying the subjects will be seen by the researchers only. Confidentiality will be maintained by storing the records in a undisclosed locked room where only the researchers can gain access.

Should the participant have questions about the research, they can contact Ashley Powell at Ashley.Powell4@msu.montana.edu or at (406) 994-7463. If they have additional questions about the rights of human subjects they can contact the Chair of the Institutional Review Board, Mark Quinn, (406) 994-4707 [mquinn@montana.edu].

AUTHORIZATION: I have read the above and understand the discomforts, inconvenience and risk of this study. I, _____ (*name of subject*), agree to participate in this research. I understand that I may later refuse to participate, and that I may withdraw from the study at any time. I have received a copy of this consent form for my own records.

Signed: _____

Investigator: _____

Primary Color: _____

Secondary Color: _____

Date: _____ .

APPROVED
MSU IRB
10-24-2013
Date approved

MONTANA STATE UNIVERSITY

INSTITUTIONAL REVIEW BOARD
For the Protection of Human Subjects
FWA 00000165

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MEMORANDUM

TO: Ashley Powell and Carl Igo

FROM: Mark Quinn, Chair Mark Quinn CHI

DATE: October 24, 2013

RE: "*Retention of First Time, Full-Time Freshmen in a College of Agriculture in Relation to Self-Perceived Temperament Styles*" [AP102413-EX]

The above research, described in your submission of October 22, 2013, is exempt from the requirement of review by the Institutional Review Board in accordance with the Code of Federal regulations, Part 46, section 101. The specific paragraph which applies to your research is:

X (b) (1) Research conducted in established or commonly accepted educational settings, involving normal educational practices such as (i) research on regular and special education instructional strategies, or (ii) research on the effectiveness of or the comparison among instructional techniques, curricula, or classroom management methods.

X (b) (2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless: (i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability, or be damaging to the subjects' financial standing, employability, or reputation.

___ (b) (3) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior that is not exempt under paragraph (b)(2) of this section, if: (i) the human subjects are elected or appointed public officials or candidates for public office; or (ii) federal statute(s) without exception that the confidentiality of the personally identifiable information will be maintained throughout the research and thereafter.

___ (b) (4) Research involving the collection or study of existing data, documents, records, pathological specimens, or diagnostic specimens, if these sources are publicly available, or if the information is recorded by the investigator in such a manner that the subjects cannot be identified, directly or through identifiers linked to the subjects.

___ (b) (5) Research and demonstration projects, which are conducted by or subject to the approval of department or agency heads, and which are designed to study, evaluate, or otherwise examine: (i) public benefit or service programs; (ii) procedures for obtaining benefits or services under those programs; (iii) possible changes in or alternatives to those programs or procedures; or (iv) possible changes in methods or levels of payment for benefits or services under those programs.

___ (b) (6) Taste and food quality evaluation and consumer acceptance studies, (i) if wholesome foods without additives are consumed, or (ii) if a food is consumed that contains a food ingredient at or below the level and for a use found to be safe, or agricultural chemical or environmental contaminant at or below the level found to be safe, by the FDA, or approved by the EPA, or the Food Safety and Inspection Service of the USDA.

Although review by the Institutional Review Board is not required for the above research, the Committee will be glad to review it. If you wish a review and committee approval, please submit 3 copies of the usual application form and it will be processed by expedited review.