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Exploring Admissions Criteria for a College Honors Program

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COLLEGE OF EDUCATION

This is to certify that the doctoral study by

Margaret Graham

has been found to be complete and satisfactory in all respects,
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Walden University
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MS, New Mexico Institute of Mining and Technology, 1995

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Doctoral Study Submitted in Partial Fulfillment

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Abstract

Honors programs (HP) play an important role in defining the organizational culture of colleges and universities. In the college selected for this study, 30% of its honors students attrite to nonhonors programs, usually due to subpar grade point averages (GPAs). Using Sternberg's augmented theory of successful intelligence, a mixed-methods approach was employed to better understand how selection metrics related to HP student success. The ex post facto design included a 5-year (2009–2014) census sample of 375 HP students. Correlation and regression analyses were used to examine the relationship between college GPA and HP admissions metrics such as standardized test scores and measures of high school quality, schedule strength, rank, and GPA. The quantitative results indicated that only ACT test scores and high school GPA were weakly predictive of college GPA. The qualitative component focused on Sternberg's creative and practical intelligences to guide an exploration of HP admissions criteria with 2 admissions officers and 5 HP faculty members who were chosen for participation because of their direct involvement with selecting and teaching HP students. The qualitative results indicated the participants were interested in adding 3 components to the HP admissions criteria: art and music grades from high school, advanced epistemological thinking, and the ability to connect to faculty and resources. A white paper is included at the end of this study to help guide the process of revisiting admissions criteria to improve HP student completion. Positive social change is achieved, and both students and colleges benefit, when colleges more accurately enroll students into the academic programs they are most likely to complete.

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Dedication

“This story is for all the slightly broken people out there.

I am one of you. You are not alone. You are all beautiful to me.”

— Patrick Rothfuss, *The Slow Regard of Silent Things*

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Section 1: The Problem

Introduction

At the college selected for this study, honors program (HP) students attrite from the HP at rates that are troubling to the institution. In this doctoral project study, I used a mixed-methods design to examine the relationships between analytical, creative, and practical intelligences, and success in the HP at a small college. Quantitatively, I analyzed independent variables commonly used in admissions decisions by selective colleges (namely standardized test scores, high school [HS] grades, HS rank, HS schedule strength, and HS quality) and college grade point average (GPA). I used a multiple regression to determine the predictive value of the admissions metrics for the GPA for honors students at the college. Through a qualitative analysis of interviews with admissions officers and HP faculty members, I focused on creative and practical predictors of success in the HP.

I further examined the quantitative and qualitative predictors to determine whether changes could be recommended for the HP to improve the completion rate of students who start in the HP at the target institution. In addition to improving the self-efficacy of students who might otherwise be dropped from the program, improving the graduation rate of HP students could lead to significant cost savings by investing in students who are more likely to succeed in the program and will later become donors to the college, rather than suffering an opportunity cost of investing in students who do not complete the HP (Goodstein & Szarek, 2013).

Definition of the Problem

The National Collegiate Honors Council (NCHC) defines a *college HP* as a set of cohesive activities that offer "opportunities for measurably broader, deeper, and more complex learning-centered and learner-directed experiences for its students than are available elsewhere in the institution" (NCHC, 2013, p. 1). In practice, HPs are used in marketing strategies by colleges and universities in the United States to attract top academic students (Owens & Travis, 2013). For these programs to serve as cost-effective recruiting techniques, institutions must conduct quantitative studies to demonstrate that their admissions metrics accurately serve the needs of the local institution (Herron, 2013).

In this study, I focused on a small, liberal arts college (SC, a pseudonym) that has maintained an HP since 1995. The admissions metrics for SC are not placing all incoming students accurately in the college's honors and nonhonors programs. Administrators at SC set a target completion rate of 90% in the HP; that is, 90% of the students who enter the HP will complete all the requirements and graduate as part of the HP. However, in the past 5 years, the completion rate for the program is only 60% to 70% (dean of studies, personal communication, May 11, 2015). Most of the students who leave the HP at SC do so because their GPAs have fallen below the HP minimum of 3.40 on a 4.00 scale. Furthermore, SC admits students who were not selected for the HP due to their subpar admissions metrics, yet those students achieve GPAs above 3.40 during their first year in college. Although these high-achieving, non-HP students do not take the two required honors courses in their first year, their high GPAs suggest that they would have successfully completed the HP in the first year. A goal of SC is to use its admissions

metrics to more precisely identify students who will succeed academically in the HP and to redirect to a nonhonors track those who would likely not complete the program (dean of studies, personal communication, May 11, 2015). One pathway to this goal includes understanding the relationships between the current admissions metrics and GPA, the criterion measure for HP success, so that better analytic metrics can be recommended to improve HP admission criteria. Understanding noncognitive factors valued by key HP faculty and admissions personnel, the qualitative focus for this study, may also inform HP selection to improve HP student success.

Rationale

Evidence of the Problem at the Local Level

A numeric rating influences admissions to the college and to the HP program. This rating is a linear combination of standardized test scores, HS GPA, HS ranking, HS schedule strength, and HS quality. Applicants whose admission ratings are above the minimum score for admission and below the minimum score set for the HP are admitted to the college as regular students. The applicants whose admission ratings are above the minimum score set for the HP program are told about the HP when they are accepted to the college. Subsequently, those students are enrolled automatically in the HP when they enter the college unless they opt out of the program. Although an essay was included in the application process in the early history of the program, it was dropped in 2008 because of concern that it could be an entry barrier to top students. Noncognitive factors such as creativity and practical intelligence are not considered in the HP admissions

process at SC. Thus, the admissions process for the HP is based primarily on analytical factors.

In the past 5 years, the completion rate for the HP at SC has been approximately 60% to 70%, but the desired rate is 90% (dean of studies, personal communication, May 11, 2015). In 2014 however, the minimum GPA for the program was raised from 3.20 to 3.40. Thus the current year's data suggest a completion rate of approximately 60% or less for the class that will graduate in 2018. Concurrently, approximately 25% of the first-year students who were not identified for the HP earned GPAs above 3.50, signifying they may have succeeded in the HP despite the fact that the current set of admissions metrics did not indicate them for the program. A more accurate process of identifying students for appropriate program tracks would positively affect HP completion rates.

Evidence of the Problem From the Professional Literature

Admissions criteria and completion rates in HPs vary widely (Long, 2013). Although the majority of programs consider standardized test scores and HS GPA in admissions, some also require applications with noncognitive factors such as essays, interviews, recommendations, and service hours. Smith and Vitus Zagurski (2013) claimed 97% completion at their college, whereas Goodstein and Szarek (2013) noted rates of less than 50% were the norm. Thus, little consensus exists in the literature about these issues. Long and others in the honors education field have called for research into the efficacy of admissions practices in HPs, and this doctoral study will contribute to that effort. Goodstein and Szarek suggested that one reason for suboptimal HP completion rates was "a program may . . . not select the students best-suited for its offerings" (p. 91).

The purpose of this doctoral project study was to identify the best admission metrics for accurately placing SC students in appropriate program tracks, specifically the HP program, within the college.

Definitions

In this section, I define terminology that is important for this study. Because some of the variables to be used in this study are defined internally by the institution and are not defined formally through institutional policy, personal communications are used to ground those definitions.

ACT: A widely used standardized test, formerly known as the American College Test (ACT, Inc., 2015).

Analytical intelligence: The ability to use information-processing elements of general intelligence such as inductive reasoning and working memory to analyze problems or evaluate solutions (Sternberg, 2010). As operationalized in this study, analytic intelligence is reflected primarily in the quantitative admissions criteria at SC.

Creative intelligence: The ability to be flexible, adaptable, and go beyond normal solutions to problems (Sternberg, 2010).

HS quality: The academic rigor of the student's HS (SC admissions data analyst, personal communication, June 17, 2015).

HS rank: A student's rank order by GPA in his or her HS class, as reported by the HS (SC admissions data analyst, personal communication, June 17, 2015).

HS schedule strength: The academic rigor of the student's HS courses (SC admissions data analyst, personal communication, June 17, 2015).

Practical intelligence: The ability to navigate everyday situations (Sternberg, 2010).

SAT: A widely used standardized test, formerly known as the Scholastic Aptitude Test (College Board, 2015a).

Significance

In this doctoral project study, I extend the understanding of the relationships between the admissions metrics and program completion as measured by GPA using statistical methods such as correlation and multiple regression analysis, as well as exploring the views of key stakeholders with regard to HP admissions criteria. Most previous research of this nature focused on large universities (Goodstein & Szarek, 2013; Nichols & Chang, 2013); little research has been published regarding HPs at small and selective colleges. Given the prevalence of HPs, the higher education community needs to develop a detailed and nuanced understanding of the issues that influence recruitment and program completion among top students at many types of institutions. Noncompletion of the HP can result in feelings of academic inadequacy (Campbell & Fuqua, 2008), which can cause a drop in academic performance (Di Giunta et al., 2013; Stupnisky, Perry, Renaud, & Hladkyj, 2013). Thus, studying this problem at the local level will lead to a detailed and nuanced understanding of college recruitment to improve HP completion at SC.

Research Questions

The academic community and SC in particular will benefit from better understanding the relationships and predictive values between the admissions metrics and

the college GPA. Cumulative GPA was the dependent variable in this study because the decisions to retain or attrite HP students hinge on the students' cumulative GPAs. The overarching question for this research was, "How can the admissions process at SC be better understood to improve HP student success?" The primary admissions criteria emphasize analytic intelligence measures and include standardized test scores, HS GPA, HS quality, HS rank, and HS schedule strength, which are reported to the SC admissions officers who then convert them to ordinal subscales. Admissions criteria that consider creative and practical intelligences are not emphasized. The following research questions, therefore, further guided this doctoral project study:

1. What is the relationship between the current admissions metrics and college GPA for HP students?
2. Do admissions metrics predict college GPA for HP students?
3. What creative factors, if any, would admissions officers and HP faculty recommend for inclusion in the admissions criteria for the HP?
4. What practical factors, if any, would admissions officers and HP faculty recommend for inclusion in the admissions criteria for the HP?
5. Beyond those already considered, are there any additional analytical factors that admissions officers and HP faculty recommend for inclusion in the admissions criteria for the HP?

Specifically, the following hypotheses were tested to answer the first two research questions:

$H_0$1: There is no relationship between standardized test scores and college GPA for HP students.

H_a1: There is a relationship between standardized test scores and college GPA for HP students.

$H_0$2: There is no relationship between HS GPA and college GPA for HP students.

H_a2: There is a relationship between HS GPA and college GPA for HP students.

$H_0$3: There is no relationship between HS ranking and college GPA for HP students.

H_a3: There is a relationship between HS ranking and college GPA for HP students.

$H_0$4: There is no relationship between HS quality and college GPA for HP students.

H_a4: There is a relationship between HS quality and college GPA for HP students.

$H_0$5: There is no relationship between HS schedule strength and college GPA for HP students.

H_a5: There is no relationship between HS schedule strength and college GPA for HP students.

$H_0$6: Admissions metrics do not predict college GPA for HP students.

H_a6: Admissions metrics predict college GPA for HP students.

I developed Research Questions 1 and 2 to guide the quantitative portion of the study. Similar hypotheses have been studied by various researchers and are presented in the literature review that follows. I included Research Questions 3 to 5 to explore

noncognitive HP success factors using qualitative research techniques. I also discuss noncognitive factors related to HP student success in the following section.

Review of the Literature

Theoretical Framework

Sternberg's (2010) triarchic theory of successful intelligence posited three components required to succeed in life: (a) creative, (b) practical, and (c) analytical intelligences. Creative intelligence focuses on the ability to find novel solutions. Practical intelligence, often called *street smarts*, is the ability to use one's own skills and the available resources to navigate daily life. Analytical intelligence is the ability to solve academic tasks. College admissions processes primarily focus on analytical intelligence rather than these other components. Sternberg noted that including creativity, practicality, and wisdom in admissions decisions would lead to greater success later on in life. Willis, Dumont, and Kaufman (2011) argued, "The time has come for developers of individual clinical tests to broaden their basis of test construction beyond the analytic dimension of Sternberg's triarchic theory and to begin to embrace the assessment of both practical intelligence and creativity" (p. 51). Sternberg subsequently theorized that these intelligences are amplified by an individual's wisdom; that is, the ability to ethically use these intelligences, as well as knowledge to improve situations for both the individual and broader society in the short and long terms. This theory, depicted in Figure 1, became known as Sternberg's augmented theory of successful intelligence.

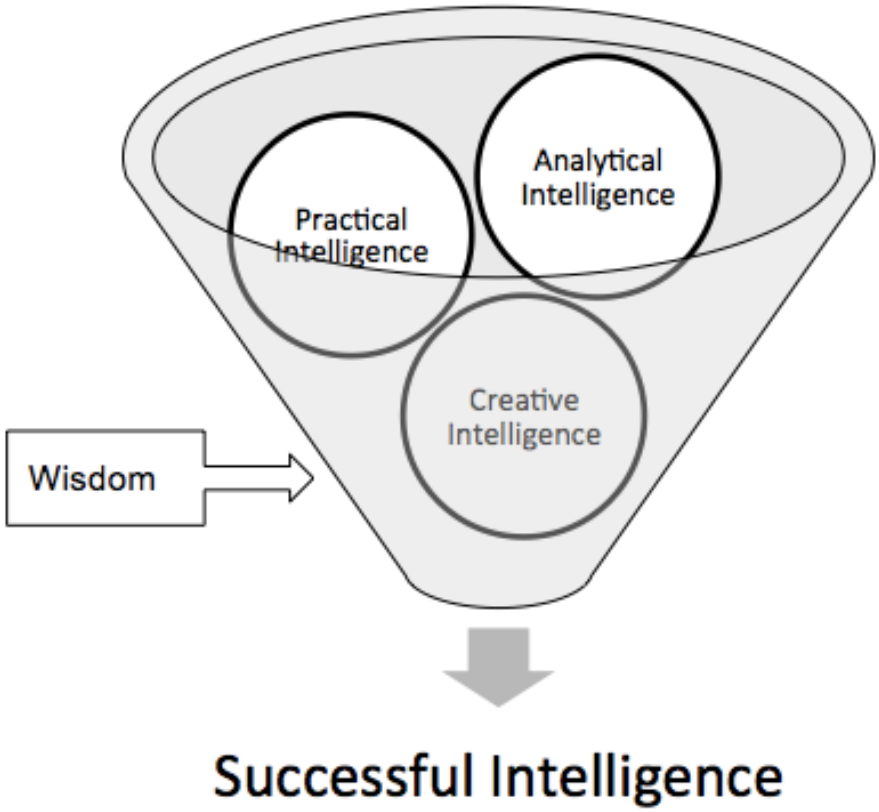

Figure 1. Sternberg's augmented theory of successful intelligence. Adapted from Sternberg (2010).

The first step in corroborating Sternberg's theory for a specific HP is to better understand the relationships between admissions metrics and success in college as measured by GPA, because GPA is the criterion measure for success in most HP programs. Sternberg (2010) noted that analytical intelligence alone is not sufficient to predict success. Sternberg's multiple regression analysis of GPAs across several colleges found that including measures of practical and creative intelligences doubled the predictive power of the SAT. Thus, to recommend or reject the inclusion of practical and creative tests in the admissions criteria of the HP at SC, I explored the relationship between existing analytical measures of intelligence and GPA. Furthermore, preliminary

review of SC's admissions variables revealed little evidence of creative and practical intelligence measures. Thus, in the qualitative portion of this study, I sought to elucidate the perspectives of the admissions officers and HP faculty as to which creative and practical intelligence measures they recommended as HP admissions criteria.

Two major areas of literature are relevant for this study: the relationships between admissions metrics and college success for all students, and influences on completion rates for students in HPs. Searched databases and search tools included Oxford Education Bibliographies, Education Research Complete, ERIC, and Google Scholar. Specific search terms included *academic achievement*, *admissions algorithms*, *college/university admissions*, *college/university entrance examinations*, *educational evaluation*, *grade point average*, *higher education*, *honors completion*, *honors program*, *honors students*, *performance*, *predictors of GPA*, *program effectiveness*, *SAT*, *standardized tests*, *student success*, and *talented students.*

Relationships Between Admissions Metrics and College Success

In the last 100 years, college admissions tests in the United States have become pervasive despite reservations about their validity in predicting GPA (Zwick, 2002). The average correlation coefficient between ACT or SAT score and the first-year college GPA is 0.4 and the coefficient for the combination of HS GPA, ACT, or SAT score, and the first-year college GPA is 0.5. Demographic factors including race/ethnicity, gender, and socioeconomic status often influence both HS GPA and standardized test scores (Soares, 2012; Wainer, 2011; Zwick, 2013). Recent research studies on other admissions metrics (such as advanced placement [AP] test scores and academic discipline) and

noncognitive attributes (such as determination and self-confidence) have not established strong correlations with college GPA either (Daniels, Gibson, Carmack, & Smith, 2013; Komarraju, Ramsey, & Rinella, 2013; Sparkman, Maulding, & Roberts, 2012).

Researchers affiliated with the standardized test manufacturers such as Zwick (2002, 2013) and Sawyer (2013) regularly tout the predictive value of the tests compared with other analytical factors such as HS GPA. But conflicts of interest make this type of researcher prone to bias (Creswell, 2012, p. 280). As a result, colleges and universities are conducting and sometimes publicly releasing research on their own experiences with the limited predictive value of standardized tests (Berger, 2012; Cornwell, Mustard, & Van Parys, 2012; Douglass, 2012; Rask & Tiefenthaler, 2012; Wonnell, Rothstein, & Latting, 2012).

Colleges frequently modify their own admissions criteria in search of formulas that reliably predict students' successes at their college, at the same time recognizing the lack of diversity that comes with strictly adhering to those predictors (Soares, 2012). By 2015, more than 850 colleges and universities in the United States stated that standardized tests such as the SAT and ACT were either optional or could be discounted in their admissions processes (National Center for Fair and Open Testing, 2015), and more than 90% of admissions officers in a national survey said that they welcomed the proposed changes to the SAT tests (Jaschik & Lederman, 2014). Thus, continued investigations into predictors of college GPA are necessary for both scholarly and pragmatic purposes (Belasco, Rosinger, & Hearn, 2015).

Several recent studies have targeted noncognitive predictors of student success. Sternberg, Bonney, Gabora, and Merrifield (2012) found that creative intelligence, practical intelligence, and wisdom augment analytical intelligence and that these noncognitive intelligences predict success measures including GPA. Krumrei-Mancuso, Newton, Kim, and Wilcox (2013) noted that academic self-efficacy and organization/attention to study were predictive of first semester GPA. Looking at factors involved in degree attainment, Keefer, Parker, and Wood (2012) found that students with lower interpersonal and stress management competencies were less likely to complete their degrees in 6 years. However, students with high interpersonal and stress management competencies were no more likely to complete than their peers with moderate scores in those areas. Conversely, Schauer, Osho, and Lanham (2011) found that Sedlacek's NonCognitive Questionnaire did not predict GPA at a historically Black university. So although some noncognitive predictors of students' success may exist, little consensus exists in the literature regarding their added value for admitting students, let alone HP students.

Influences on Completion Rates for Students in HPs

Honors programs target one of the most sought-after groups in the admissions pool: the high-achieving students who are likely to be accepted at many colleges (Jaschik & Lederman, 2014). Standardized tests are not reliable indicators of suitability for honors, and the NCHC does not publish guidelines for admitting students to an HP (NCHC, 2015). Thus, HP admissions models vary widely and the literature contains endorsements and criticisms of various models. From the quantitative perspective, Herron

(2013) noted that multiplying the ACT score by the HS GPA provided a significant predictor of success in the HP at his institution; Roszkowski and Nigro (2015) similarly highlighted the value of SAT and HS GPA in the honors admissions process. Smith and Vitus Zagurski (2013) recommended reducing the weighting of the standardized tests in favor of the HS GPA to produce both better completion and a more diverse group of honors students. Other researchers rejected the purely quantitative approach to honors admissions and focused on qualitative elements that can inform the process. Weerheijm and Weerheijm (2012) promoted reviewing potential honors students for high levels of motivation and desirable personal characteristics. Guzy (2013) questioned the usefulness of Herron's formula given that students can take the ACT many times. Both Guzy and Portnoy (2013) implored HP administrators to include qualitative admissions measures such as interviews, writing samples, and recommendations. Given the lack of consensus in the research, HPs must develop admissions criteria that suit the needs and values of their home institution.

Beyond the admissions aspects, HPs benefit their institutions in other ways (Driscoll, 2011; Long, 2013; Owens & Travis, 2013). HPs often serve as laboratories where faculty and administrators can experiment with new learning activities and courses, incubators for faculty-student mentoring relationships, and nurturing environments for students who want to explore the classical idea of a liberal arts education (Badenhausen, 2012; NCHC, 2015). More dispassionately, Bell (2014) noted that although honors students generally cost the institution more than their nonhonors peers, the honors students pay back their institutions by augmenting the average

standardized test scores, promoting academic excellence, and enhancing the institution's reputation. Although Brimeyer, Schueths, and Smith (2014) confirmed the speculation that some HPs are less diverse than the general student population, they also supported the perception of honors students as academic role models. Consequently, institutions have a justifiable motive to find the most appropriate students for their HPs.

Individual pupils also benefit from participating in HPs. According to Nichols and Chang (2013), students enter HPs to be more competitive in postgraduate opportunities, to take advantage of smaller class sizes, and to connect with faculty. They receive enhanced educational opportunities and, in many cases, scholarships that reduce their debts after they receive their degree (Badenhausen, 2012; Bell, 2014). They have more of the characteristics needed to succeed in professional life, though some of these characteristics are selection criteria for the HP that are then further developed by the students' participation in the HP (Scager et al., 2012). Keller and Lacy (2013) noted that HP students are more likely to graduate from college than their nonhonors peers.

Students receive the maximum benefit from the HP if they complete it. Thus, the *completion rate* for an HP denotes the percentage of entering students who subsequently complete all of the HP requirements. Completion rates should not be confused with college retention rates; students who do not complete the HP may or may not be retained as students at the institution. Because the administrators at SC are concerned with the HP completion rate, I focused my literature review there.

Campbell and Fuqua (2008) wrote the seminal article on completion rates in HPs. The authors looked at the 5-year HP completion rates for 336 students at a large public

university, using Tinto's (1993) theory of student departure as a theoretical basis. Tinto posited seven influences on a student's decision to leave an institution: "adjustment, difficulty, incongruence, isolation, finances, learning, and external obligations" (p. 112). Tinto believed that students who were academically and socially well integrated would be less likely to leave their college, and advocated for the use of HPs to increase student retention (p. 175). Thus, Campbell and Fuqua sought to test the extension of this theory into HP completion. In the HP they studied, inclusion was primarily based on admissions criteria. Only 18.45% of the students in their study completed the HP. The authors examined 16 HP variables related to Tinto's model of student departure. They found that only five significantly predicted HP completion. The most important factor in completion was first-term college GPA. Secondary factors included HS GPA, HS ranking, first-year housing (students in honors residence halls were more likely to complete), and gender (females were more likely to complete). Standardized test scores were only weakly related to HP completion in their study. As a result of their study, Campbell and Fuqua believed that Tinto's theory of student departure was not fully applicable to HPs, as the majority of variables in their HP study did not predict HP completion. Notably, clear markers of student integration in the college and the HP (number of regular and honors courses taken the first term, initial enrollment choice, rank of enrollment choice, and HP facility usage) were not predictive of HP completion. Their findings echoed Brunsden, Davies, Shevlin, and Bracken's (2000) criticism of Tinto's theory, which also noted that as a whole, Tinto's model failed to predict completion. Brusden et al. believed this failure was related to the lack of student perspective in Tinto's model.

McKay (2009) replicated and confirmed Campbell and Fuqua's (2008) results on a larger scale (N = 1,017) at another large, public university with a large HP. The average HP completion rate was 36% at the target institution. McKay's findings were well aligned with Campbell and Fuqua: HS GPA was the strongest predictor of HP completion, followed by gender, and standardized test scores were not related to HP completion. McKay advocated removing standardized test scores from the HP admission criteria, and creating a "sophisticated evaluation" (p. 85) that went beyond the HS GPA of the individual students. Unfortunately, McKay's work did not include specific designs for that evaluation.

The previous research linking first-term college GPA as the most important factor in HP success lends credibility to the common use of college GPA as the criterion measure for retention in HP programs. Yet noncognitive factors that support and may predict completion cannot be excluded. Numerous other quantitative and a few qualitative studies have looked at additional elements that predict honors completion in various institutions. Goodstein and Szarek (2013) found that first-year honors housing, participation in honors communities, and standardized test scores were correlated with HP completion rates. Guzy (2014) noted that a first-year honors composition course was correlated with HP completion. Savage, Raehsler, and Fiedor (2014) found that HS GPA was a better predictor of HP completion than standardized test scores. Trucker (2014) conducted a mixed-methods study at a community college where students were selected for the HP after their first semester. Trucker found that HP completion and community college graduation rates depended on standardized test scores, academic confidence, and

financial backing. Finally, Truijen, ’t Mannetje, Banis, and Gellevij (2014) found that admissions metrics were only correlated with student satisfaction and not with higher levels of reflective learning. Overall, the research evidence regarding admissions criteria and college and HP success is inconsistent at best. Taken in total, the literature seems to suggest that individual colleges and universities benefit most when authentic local research is conducted and applied.

Implications

The product of this doctoral project is a report to SC, summarizing the project’s findings and making recommendations for the HP. Such a report is best framed as a research-derived policy recommendation or position paper on the alignment of admission metrics for improving HP completion based on GPA. For example, if five metrics are used in the admissions process, and for the honors students, four of those metrics predicted GPA but one did not, I made a research-derived recommendation to remove the confounding metric from the honors admissions process. The resulting project is informed and made more interesting by the inclusion of the qualitative findings of this study. The project is contained in Appendix A.

Summary

Honors programs are widely used recruiting tools at institutions in the United States (NCHC, 2015). However, completion rates vary widely across HPs, and researchers are still seeking to understand best practices that will allow admissions metrics to more accurately predict HPs completion. In this doctoral study, I used a mixed-

methods design to better understand the relationships between the admissions metrics and HP completion at the institution studied.

Section 2: The Methodology

Introduction

I used an explanatory sequential design to first explore the relationships between admissions metrics and college GPA, and then I used those analyses to inform the qualitative data collection and analysis. The guiding research questions for this study were as follows:

1. What is the relationship between the current admissions metrics and college GPA for HP students?
2. Do admissions metrics predict college GPA for HP students?
3. What creative factors, if any, would admissions officers and HP faculty recommend for inclusion in the admissions criteria for the HP?
4. What practical factors, if any, would admissions officers and HP faculty recommend for inclusion in the admissions criteria for the HP?
5. Beyond those already considered, are there any additional analytical factors that admissions officers and HP faculty recommend for inclusion in the admissions criteria for the HP?

In the following subsections, I describe the details of the design, the sample, and the ethical precautions, and practices necessary to support this study.

Research Design and Approach

The pragmatic paradigm focuses on the importance of the research question rather than the methods that must be used to uphold the paradigm (Creswell & Plano Clark, 2011). As a worldview, pragmatism respects both impartial knowledge and multiple

perspectives, and it concentrates on aligning the research methods with the nature of the research questions. Thus, mixed-methods designs can be used to test hypotheses as well as explore multiple perspectives when the research questions warrant this approach.

I used a nonexperimental, ex post facto design for the quantitative portion of this study. The design derived logically from the research problem because historical quantitative data are readily available for analyses to develop a better understanding of the relationship between HP admission metrics and success as measured by GPA. As the research questions ask about the relationships between and predictive values of the admissions metrics with respect to the college GPA, I selected correlational and multiple regression analyses as the basic measures of these statistical relationships (Urdan, 2010). I did not randomly assign participants. Instead, I used archival data to analyze the correlation between the admissions metrics (independent variables) and GPA (dependent variable) and to calculate a multiple regression analysis to ascertain whether the metrics predicted the college GPA for HP students. I selected college GPA as the dependent variable because it is the criterion measure for retention within the HP being studied. The conclusions of these analyses imply relationships between the dependent and independent variables (Lodico, Spaulding, & Voegtle, 2010), which were used to develop recommendations for new admissions criteria for the HP.

Variables that are related to one another display a linear correlation when changes in one variable of a data pair result in a corresponding change in the other variable of the data pair (Triola, 2012). Thus for two variables in a data pair represented by x and y, their relationship is represented by the formula $y = B_0 + \rho\, x$ where B_0 is a mathematical

constant and ρ is the linear correlation coefficient for the population. In this study, I examined the relationships between the individual admissions metrics and the college GPA for the students in the HP. The linear correlation analyses for the admissions metrics indicate if significant relationships exist, as the admissions officers at SC believe they do.

Multiple regression analysis uses multiple independent variables to predict values for a dependent variable (Triola, 2012). Given *k* independent variables of the form x_1, x_2, … x_k, the formula for the dependent variable prediction from a population is

$$y = B_0 + B_1x_1 + B_2x_2 + \ldots + B_kx_k \, .$$

Thus, the analysis yields a proportion B for each independent variable x that represents the independent variable's contribution to the prediction of the dependent variable y. Because the admissions staff at SC believed several admissions metrics predict college GPA for HP students, I selected a regression analysis to indicate which metrics are most predictive of HP student success.

After the quantitative analysis of Research Questions 1 and 2 were complete, I conducted an instrumental case study to explore Research Questions 3, 4, and 5. Instrumental case studies provide insights into perspectives related to central concerns (Merriam, 2009). In this explanatory sequential design, I shared the analysis from the quantitative study with important members of the HP process at the college, and I then asked them to share their perspectives. I discuss the qualitative interview plan in the Instrumentation and Materials section later. The interviews were audio recorded and transcribed by a professional and confidential transcriptionist. Once the transcription

process was complete, I used a constant comparative method to analyze the interview data to develop themes or categories of responses (Merriam, 2009). I asked the qualitative participants to meet with me for a second interview to conduct member checking.

In mixed-methods designs, Morse and Niehaus defined the *point of interface* as the "point within the process of research where the quantitative and qualitative strands are mixed" (as cited in Creswell & Plano Clark, 2011, p. 66). For this study, I connected the data during collection by using the results of the quantitative analysis to inform the qualitative data collection and analysis. I synthesized a final, inclusive interpretation from both the quantitative and qualitative results.

Setting and Sample

The target institution, SC, has a total enrollment of 2,200 undergraduate students, and it enrolls approximately 570 new, first-year students each autumn. The HP comprises approximately the top 10% of the new, first-year students, based on their admissions metrics. According to Lodico et al. (2010), census sampling, using the entire population of participants, is an accepted practice when the population is a manageable size. Because the population of HP students is relatively small, I used a census sample of the entire population. The timeframe for the study was the 5 academic years from 2009 to 2014. Given these boundaries, the entire quantitative data set contained data for 375 students in the HP.

Seven interviews were conducted for the qualitative portion of the study. To be eligible for an interview, the admissions officers must have been employed since the

beginning of the quantitative data set (i.e., 2009) and must have admitted students to the HP. The eligibility criteria for faculty members included the same employment criterion, plus they must have taught at least two HP courses and served on the faculty advisory committee for the HP. These criteria ensured that the admissions officers and faculty members interviewed for the study were highly cognizant of the goals of the HP.

Because I am already an employee of SC (though I do not supervise the faculty or admissions officers), I readily identified those who were eligible to participate. Four admissions officers and seven faculty members met the eligibility criteria. I invited them via email to participate in the study. Two admissions officers and five faculty members agreed to participate. Participants were informed of their rights to voluntarily participate, remove themselves from the study at any time, and review their interview transcripts. They were advised of the minimal risk of harm, and they were asked to sign informed consent documents before participating in interviews. During the qualitative data analysis, each participant was asked to attend a second interview where we checked the themes and categories that I developed during the qualitative analysis to ensure that those were in line with the participants' perspectives.

Instrumentation and Materials

At this stage in the study, it is important to establish comprehensive characterizations of the variables that were used. This is particularly true of the admissions metrics developed by SC, which are not as simple as one might first infer. Therefore, a brief review of quantitative and qualitative measurements is appropriate.

Quantitative

It is important to specify a measurement scale for a variable, as the measurement scale indicates the type of statistical treatments that are appropriate for a given variable. Social science researchers typically define four measurement scales in quantitative research: categorical, ordinal, interval, and ratio (Martin & Bridgmon, 2012). These four scales differ in both continuity and order.

Categorical or nominal variables are measured in distinct and discrete classifications (Martin & Bridgmon, 2012). They do not have an intrinsic system of organization: although some relationships between the classifications might exist, no one classification is automatically higher or lower than the others. In college admissions, race, ethnicity, and gender are all categorical variables. It is not meaningful to average categorical variables, so they are often represented in frequency tables.

Ordinal variables are also measured in distinct and discrete classifications, but have a ranked system of organization (Martin & Bridgmon, 2012). The ordering is indicative of the measured attribute, but still limits the statistical treatments that are applicable to the variable. Such treatments must be selected with caution to ensure they maintain their significance. For example, HS rank is an ordinal variable. It is not useful to compute the average rank in a single HS graduating class, but the median HS rank of incoming students at a college could be used as an indicator of selectivity.

Interval variables are measured on a continuous scale that does not have a genuine zero point (Martin & Bridgmon, 2012). So although differences between points on an interval scale are consistent, a measurement of zero does not have a meaningful

interpretation. In many colleges, a grade of F corresponds to the zero on the grade point scale, but does not necessarily mean that the student developed absolutely no understanding of the course material.

Finally, ratio variables are measured on a continuous scale that has a meaningful zero point (Martin & Bridgmon, 2012). Just as in interval measures, differences between points on an interval scale are consistent, but with ratio variables, a measurement of zero truly indicates that none of the variable was detected. For example, the length of time that a recommender has known a student would be a relevant ratio variable in the college admissions process.

Data types are required for understanding how to select appropriate statistics. As interval and ratio data are continuous rather than discrete, these types of data are more likely to demonstrate a normal distribution (Triola, 2012). Thus it is appropriate to use parametric statistics for interval and ratio data. Nonparametric statistics are more versatile because they do not rely on assumptions of a particular distribution. Nonparametric statistics, therefore, are used for categorical and ordinal data, which would not be expected to have normal distributions.

The quantitative variables of interest for this study are detailed in the paragraphs below. The instruments used to collect the data were in use prior to this study's design (ex post facto). In general, the staff of the SC admissions office receives data from the primary sources (the standardized testing companies, HS guidance counselor, or SC database) and converts them to ordinal subscales to create ordinal admissions ratings.

Because all of the independent variables (IVs) are ordinal, Spearman's ρ and multiple regression will be used to analyze the quantitative data.

The standardized tests used by the admissions office at SC include the SAT and ACT. The scale for the SAT from the College Board ranges from 200 to 800 in three areas: verbal, mathematics, and writing (College Board, 2015a). The admissions process at SC only uses the verbal and mathematics scores, which yields a minimum score of 400 and a maximum of 1600. The rating scale for the ACT from Educational Testing Services ranges from 1 to 36 in English, mathematics, reading, and science (ACT, Inc., 2015). These four areas are averaged to create a composite score that also ranges from 1 to 36.

SC uses HS transcripts provided by guidance counselors to calculate the HS GPA for each student (SC admissions data analyst, personal communication, June 17, 2015). The HS transcript reveals grades for the individual courses that each student has taken. Raw course grades range from 0 to 100% or 0 to 4.0. The SC admissions staff remove grades for courses such as physical education, business, health, driver's education, art, music, and computers unless those courses count for advanced placement credit. The grades for the remaining core courses are averaged to create a weighted HS GPA.

The student's HS counselor also reports HS rank (SC admissions data analyst, personal communication, June 17, 2015). The student's original, unweighted HS GPA is compared to others in the graduating class by the HS counselor, and based on this comparison, the student receives a ranking that indicates his or her place in the HS class.

HS quality is a measure of academic rigor at the student's HS that is assessed by the SC admissions staff (SC admissions data analyst, personal communication, June 17,

2015). For HSs that frequently send students to SC, the raw academic quality score is known and recorded in a database at SC. Otherwise, the admissions staff make inquiries about the HS and collaborate to come up with an appropriate quality score based on queries to the HS. The HS quality scores range from 1 for average and below average HSs to 5 for the most academically rigorous HSs.

The SC admissions staff determines HS schedule strength by reviewing the student's HS transcript (SC admissions data analyst, personal communication, June 17, 2015). Students who selected advanced courses such as advanced placement, honors, and college courses offered within the HS are rated higher than students who selected standard courses. The number of courses is also considered. The HS schedule strength subscale also ranges from 1 for students who only take a minimum number of standard courses to 11 for students who take the maximum possible difficult courses.

The admissions department uses these data to create an admissions rating for each student. The admissions rating has five component subscales: standardized tests, HS GPA, HS rank, HS quality, and HS schedule strength. The admissions officers take the HS quality and HS schedule strength directly from the calculation they made, but they scale the other three components. They convert the raw SAT or ACT scores to an ordinal subscale for standardized tests that ranges from 2 to 10. (So, for example, a student with a perfect SAT score would receive a 10 on SC's standardized test scale, whereas a student with an average or below average SAT score would receive a 2.) They convert the weighted HS GPA to SC's GPA subscale with a range from 2 to 10. (A student with a perfect GPA score would receive a 10 on SC's HS GPA scale, whereas a student with an

average or below average GPA would receive a 2.) Finally, they convert the raw HS ranking to SC's rank subscale with a range from 2 to 10. (Students who are first and second in their graduating class receive a 10 on SC's HS rank scale, whereas students with an average and below average ranking receive a 2.) Once these subscales are complete the admissions rating can be determined.

The admission rating is a summated rating that is calculated by averaging the subscales discussed above (standardized tests, HS GPA, HS rank, HS quality, and HS schedule strength) and multiplying by 10. If a subscale is missing (e.g. the student did not submit standardized test scores or a HS does not distribute information on rank), then the overall rating is determined based on an average of the other subscales. At the end of the admissions process, each student receives a number that indicates his/her admissions rating by SC, ranging from 16 to 95. Although this number appears at first glance to be interval, because the underlying subscales are all ordinal, it is actually ordinal as well. This ordinal data characteristic of the admissions rating scale has important implications for data analysis, which will be discussed later in the data analysis section.

Qualitative

One semistructured and one unstructured interview guided the qualitative portion of the study with two groups of key stakeholders familiar with the HP program, specifically admissions officers and HP faculty. The qualitative interview plan is attached in Appendix B, and was used to guide the interviews with each participant. During the first interview, the background for the study was explained and semistructured interview questions were asked for the purpose of unpacking analytic, creative, and practical

intelligences valued as important for HP student success by the stakeholders. In a second, less structured interview, I reviewed the participants' responses provided during the first interview and asked them to verify their transcripts. I conducted member checks to increase the reliability and validity of the qualitative analysis (Merriam, 2009). During the second interview, the participants were asked to consider their responses provided during the first interview and to provide any new or emerging thoughts related to values they hold important for HP student success. They were also asked to share their perspectives on the preliminary qualitative analysis. I used their perspectives to triangulate the qualitative data. The second interview concluded with the unstructured discussion of HP student success.

Data Collection and Analysis

Quantitative Data

The quantitative data used in this study consisted of admissions metrics that were compiled by the SC admissions office and the college GPAs compiled by the SC academic affairs division from the 2009 to 2014 academic years. I provided SC with a data use agreement (Appendix C), which an authorized representative signed. A data analyst from the admissions office aggregated the data, matched the admissions metrics to the GPA for each student, and then removed the student identification numbers from the data set. The data were formatted in an Excel spreadsheet and uploaded to a password protected, internally shared drive at SC for my use in the research. The data analyst provided a file containing all the data, which I loaded into Statistical Package for the Social Sciences (SPSS). To ensure accuracy, the data analyst and I reviewed the data file

to ensure that it was the actual data that had been used to admit students to the HP from 2009 to 2014.

A power analysis is used to determine if the sample size is large enough to infer meaningful results. With samples that are too small, Type II errors occur when a false null hypothesis is not rejected even though it is actually incorrect (Triola, 2012). These errors are also called false negatives and traditionally symbolized by β. Correspondingly, the power of a statistical test, calculated as $1 - \beta$, is defined as the probability that the false negative will be rejected. Although a firm requirement does not exist, values of power above 80% are typically considered sufficient in most research (McDonald, 2014).

Correlation coefficients of 0.20 to 0.34 indicate a slight relationship between variables (Lodico et al., 2010, p. 284). Correlation coefficients below this range indicate no relationship or a weak relationship, whereas correlations of 0.35 and higher indicate strong relationships. Because these IVs have a truncated range, the correlation coefficients will be smaller than if the analysis was performed using IVs with unrestricted ranges (Kirk, 2007, p. 141).

Using five admissions metrics, a sample size of HP students ($N = 375$) and an effect size of 0.25 with 95% confidence, the statistical package G*Power (Faul, Erdfelder, Buchner, & Lang, 2009) yielded a power analysis of $(1 - \beta) = 0.999$ for the multiple regression. This calculation can be interpreted as saying the statistical chances of making a Type II error are very small when looking at the HP population, and weak relationships calculated from the population of HP students are more prone to errors than

stronger relationships (Lodico et al., 2010). Thus the sample size is sufficient to accept or reject the null hypotheses in the quantitative portion of this study.

Because the quantitative data are ordinal, nonparametric tests are usually used in the analysis. Some authors argue that parametric tests yield very little difference from nonparametric tests even when the underlying assumptions of the statistics, like normal curves and interval data, are invalidated (Norman, 2010). However, nonparametric tests result in smaller errors, so I have chosen to use a nonparametric correlation coefficient for that reason.

I used the software system SPSS to calculate the quantitative data analysis for this study. For the admissions rating and each of the five subscales, I computed the correlation with the college GPA using Spearman's ρ. Then I conducted a multiple regression analysis with GPA as the dependent variable. For the purpose of this analysis, I treated the ordinal data as interval data. I tested that all the assumptions required for multiple regression were met. I conducted the regression analysis with all the IVs including only those students who had scores for both SAT and ACT ($N = 60$). I showed the preliminary results of the quantitative data analysis to the qualitative participants as part of their first interviews. I continued the quantitative analysis with subsets of the IVs to understand which IVs could predict college GPA. It was logical to run the regression analysis for subsets of the data because some HP students only take either the SAT or the ACT, but not both standardized tests.

Qualitative Data

The subsequent, qualitative portion of the study relied on interviews, as I was not able to discover any viable source of alternative qualitative data. Interviewees were selected based on their role at SC, their length of employment (at least since 2009 when the quantitative data began) and their connection to the HP. The interviews followed the protocol (Appendix B) I created, and lasted 20 to 40 minutes each. I recorded the interviews then a professional transcriptionist transcribed them for me. I analyzed these data using constant comparative methods. I first identified meaningful phrases and fragments of ideas in each interview and labeled them with provisional codes. Then I started comparing the interviews in groups (first all the faculty members' interviews, then both the admissions officers' interviews) to further develop axial codes. *Code saturation* occurs in qualitative data analysis when no new codes emerge from the repeated comparisons of participant data (Merriam, 2009). I continued the individual and group comparisons and coding until I reached code saturation.

Given the small number of interviews, I did not need qualitative research software to catalog and track coded data. In a subsequent one-hour interview, I used member checking to improve the preliminary qualitative analysis and further explore deviant or negative cases. I also triangulated the data by sharing preliminary results of the qualitative data analysis with the participants and asking for their response to the suggestions made by themselves and their fellow participants. Finally, I completed the qualitative analysis by looking for patterns and relationships between the codes.

During the qualitative research and analysis, I kept a research log to document my data and my understandings of patterns and relationships I was seeing. I included excerpts of my research log in Appendix D. The log was very helpful in the reflection process, and allowed me to articulate and keep track of my thoughts.

Mixed Methods Analysis

After completing both the quantitative and the qualitative analyses, I mixed the two forms of data. I then considered ways the qualitative results could explain the quantitative results. Finally, I sought inferences, i.e. interpretations drawn from analysis of both the quantitative and qualitative methods (Cresswell & Plano Clark, 2011), by interpreting the connected results.

Role of the Researcher

I have been employed at SC for 11 years and have been the director of the HP for the last 8 years. This study is not part of my normal duties at SC. Although I regularly interact with the admissions officers and faculty who were interviewed for this study, I do not supervise them in any way. Because I do not have any power or authority in my relationship with these colleagues, my role in the HP should not have biased their responses in the interviews. However, such biases were possible.

My own bias in this study stems from my role as director of the HP. I have worked with HP students who did not complete the program, and non-HP students who would have benefitted from and been able to complete the HP, but were not initially selected for it. I felt a better way to identify students for the HP existed. My feelings formed the motivation for this doctoral project study.

Assumptions, Limitations, Scope, and Delimitations

Assumptions

The primary assumption in this study is that college GPA is a legitimate measure of student success in the HP. Although the most prevalent reason for students leaving the HP at SC is insufficient GPA, other reasons such as lack of engagement, lack of direction, or lack of connection to the community may serve as confounding variables. It is important to note that college GPA is merely one element of student success, and the two concepts are not interchangeable.

Limitations

This study is limited by its ex post facto design. Lodico et al. (2010) noted that although this type of research is useful in examining the relationship between dependent and independent variables, the researcher's lack of control of the independent variable makes it more difficult to generalize the results. However, given that it would be both impractical and unethical to randomly assign students to the HP, the ex post facto design is a reasonable choice for this study.

The small number of participants in the qualitative interviews also limits this study. The criteria for the participants were chosen to ensure their familiarity with the HP. Because SC is a small college, participants may have been affected by my role with the HP, and only a few admissions officers and HP faculty met the selection criteria. However, those participants were able to share valuable perspectives on the qualitative research questions, so the limitation is reasonable under the circumstances of the study.

The dependent variables from this study are compiled and submitted before the student is admitted to SC. Accredited colleges nationally recognize the standardized test scores as an indicator of academic ability. The other admissions metrics (HS GPA, HS quality, HS rank, and HS schedule strength) are more subjective; the students' HSs set the parameters for calculating GPA and rank, yet the SC admissions office uses an internal rubric to calculate HS quality and schedule strength. Thus, some variation is expected in the admissions metrics related to the student's HS experience.

Finally, the data set imposed a limitation. Statisticians recognize that narrow data ranges cause smaller correlation coefficients (Jackson, 2015; Kirk, 2010). In this case, one could argue that it is unreasonable to expect statistically significant correlations and predictors given that all of the HP students are at the top of the admissions criteria ranges. However, HP admissions practices are based on those correlations and predictions, so it is reasonable to test those practices.

Scope of Study

The data set spans 5 academic years: 2009 to 2014. I selected this timeframe for two main reasons. First, SC changed its admissions processes in 2008. To remove this change as a confounding variable, I limited the data to those compiled after the changes were complete. Second, given that roughly 570 new, first-year students enroll at SC each year and I am using the entire population in the data set, I expected approximately 375 participants in the HP. Thus the data set is sufficiently large to calculate meaningful results.

Delimitations

I have made a number of choices that have delimited this doctoral study. For example, I selected the target institution and my research question because of my longstanding involvement with the program. The most controversial delimiter in this study may be the choice of theoretical framework. The little consistency that existed in the HP completion literature focused on Tinto's (1993) theory of student departure. However, given the lack of consistency as well as Campbell and Fuqua's (2008) position that Tinto's theory was not applicable to HP completion, I chose to use Sternberg's (2010) augmented theory of successful intelligence instead. Although these delimiters constrain the applicability of this study to other scenarios, they still permit a suitably academic research study.

Protection of Participants' Rights

Several steps were taken to protect participants' rights. First, I completed the National Institutes of Health's online training for the ethical treatment of human subjects in research. In addition, I was required to sign a data use agreement (Appendix C) and submit my research proposal to SC's institutional review board (IRB). The IRB at SC confirmed my compliance with ethical practices including sample selection, minimization of potential risks to participants, and the participants' informed consent. I have incorporated feedback from SC's IRB chair in this design. Finally, I also obtained separate IRB approval from my research institution (Walden University) prior to collecting any data (IRB Approval #01-05-16-0143270).

The data analyst from the SC admissions office anonymized the quantitative data used in this study. Individual students were not identifiable from the admission data sample or analysis. I safeguarded the data to protect it from anyone not affiliated with the research. The population of students at SC was not considered a sensitive group for the purposes of ethical research. Because the data were archival and de-identified, and the analysis is part of the normal educational practice at colleges and universities, further informed consent did not need to be gathered from the students.

I informed the faculty members and admissions officers involved in the qualitative portion about the purposes of this study. They did not receive any monetary or other incentive to participate. I also asked them to sign informed consent documents. I asked the transcriptionist to sign a nondisclosure agreement that prevented him from revealing any contents of the interviews. The raw data and the transcripts were password protected and anonymized before publication. Although every precaution was taken to ensure the data are kept securely, a minimal risk of the interviews becoming public still exists. However even if that happened, the nature of their comments is not sensitive in a way that could harm the participants.

Data Analysis Results

In this explanatory sequential approach, I gathered and analyzed the quantitative data first, and I used the qualitative data and analysis to expand on the quantitative findings (Creswell & Plano Clark, 2011). I used this standard of practice to structure collecting, investigating, and drawing conclusions from my data.

The quantitative data were archival records that were located in SC's databases. I was not given direct access to the databases. Instead, a data analyst at SC used queries to create an anonymized spreadsheet of variables for each student, and verified that the data set matched the admissions records that were used for these students. The data analyst transferred the password-protected file to me.

I loaded the quantitative data into SPSS for analysis. Consulting Triola (2012) for the basic statistical guidance, I followed the detailed protocols provided by Laerd Statistics (2015) to ensure my statistical methods were sound and current. I shared my results with my research chair to confirm my preliminary analysis before I started the qualitative portion of my data collection and analysis.

I gathered qualitative data from interviews with admissions officers and faculty members who met the eligibility criteria noted above. Four admissions officers and seven faculty members were eligible for the interviews. From this pool, two admissions officers and two faculty members declined the invitation to participate. I conducted interviews with two admissions officers and five faculty members who agreed to participate in this project.

Each interviewee signed an informed consent agreement before participating in the study. I reviewed the preliminary quantitative analysis with each participant and used the attached interview plan to discuss his or her insights and perspectives. I recorded the first interviews with each participant and had a professional transcriptionist convert the recordings to text files.

Once I had completed all the interviews, I coded the interviews and developed themes using constant comparative analysis procedures (Boeije, 2002). First I looked at each interview by itself, reading and rereading it to develop a thorough understanding of the participant's perspective. After this initial review, I selected quotes and comments from the interview and arranged them in a matrix that reflected my understanding of the categories (Appendix D, Excerpt 1). I created provisional codes that corresponded with the interpretations I developed. Next, I compared the faculty members' interviews to one another and created axial codes to classify new and existing themes. I repeated the process with the admissions officers' interviews before finally comparing all of the interviews. During this analysis, I kept a log of my thoughts about the codes and themes to assist me in interpreting the data (Appendix D, Excerpt 2).

I asked each of the interviewees to meet with me for a second interview to review his or her transcript and discuss the themes that had emerged from the interviews. These member checks and triangulation steps helped ensure the credibility of the qualitative data (Lodico et al., 2010).

In this explanatory sequential design, I used the quantitative data and analysis to identify significant results to discuss in the interviews (Cresswell & Plano Clark, 2011), and used the qualitative data and analysis to find new themes that should be considered in creating new HP admissions criteria. Once the initial qualitative findings were developed, I combined the quantitative and qualitative portions of the data analyses to complete the final analysis presented below.

Quantitative Analysis and Findings

The quantitative data set contained records for 375 HP students from the start of the 2009 academic year to the end of the 2014 academic year. During that period, 50 students were dismissed from the HP, 20 were still in the HP but likely to be dismissed due to low GPA, and 305 were in good standing with the HP and likely to successfully complete it. The descriptive statistics for the independent variables (IVs) are listed in Table 1.

Table 1

Descriptive Statistics for Converted Honors Program Admissions Metrics

Variable name	Valid *N*	Mean	*SD*	Min	Max
Admission rating	374	79.01	4.36	56	93
Subscale standardized test	296	8.79	1.33	4	10
Subscale HS GPA	362	8.83	1.36	4	10
Subscale HS rank	303	9.56	1.07	2	10
Subscale HS schedule strength	359	9.65	0.79	6	10
Subscale HS quality	359	2.78	1.34	1	5

Note. HS = high school; GPA = grade point average.

With respect to RQ1, not all of the IVs were significantly correlated with college GPA (see Table 2). Only the admission rating, standardized test score, and HS GPA, showed significant Spearman correlations. According to Urdan (2010), correlation coefficients with absolute values less than .2 are considered weak and those with absolute values in the .2 to .5 range are moderately correlated. Thus the only subscale with a

slightly moderate correlation with college GPA was HS GPA. The composite scale, admissions rating, also had a slightly moderate correlation with college GPA.

Table 2

Spearman Correlations Between College Grade Point Average and Admissions Subscales

		Admissions rating	Subscale standard-ized test	Subscale HS GPA	Subscale HS quality	Subscale HS rank	Subscale HS schedule strength
College GPA	Correlation coefficient	.204**	.182**	.209**	.016	.030	−.052
	Sig. (2-tailed)	.000	.002	.000	.762	.603	.325
	N	373	295	361	358	303	358

Note. HS = high school; GPA = grade point average.
**Correlation is significant at the .01 level (2-tailed).

Because the admissions subscales were determined by categorizing the raw scores into less precise values, it is possible that the conversion from the raw scores to the admissions subscales obscured the relationship between the college GPA and the IVs. Note that HS quality and HS schedule strength were not converted from raw scores to subscales and would be unaffected. To check if the other variables were affected, I conducted a second correlation test using the raw scores instead of the subscales for standardized tests, HS GPA, and HS rank. The descriptive statistics for these variables are shown in Table 3 and the results of the correlation are provided in Table 4. I found significant correlations between college GPA and ACT test scores, raw HS rank, and raw HS GPA, but no significant correlations between raw SAT scores and college GPA. As a

result, I decided to use raw scores where possible for the rest of my quantitative data analysis.

Table 3

Descriptive Statistics for Independent Variables Raw Data

Variable name	Valid *N*	Mean	*SD*	Min	Max
SAT: verbal	243	671.19	57.08	520	800
SAT: math	243	694.81	55.67	550	800
ACT	123	30.67	2.15	24	35
HS GPA	362	94.62	2.59	86.1	101.12
HS rank	303	6.99	6.53	0.18	55.11
College GPA	374	3.59	0.32	2.31	4.00

Note. HS = high school; GPA = grade point average.

Table 4

Spearman Correlations Between College Grade Point Average and Raw Scores

		SAT: verbal	SAT: math	ACT	HS Rank	HS GPA
College GPA	Correlation coefficient	.100	.081	.305**	−.174**	.205**
	Sig. (2-tailed)	.118	.209	.001	.002	.000
	N	243	243	122	303	363

Note. HS = high school; GPA = grade point average.

** Correlation is significant at the .01 level (2-tailed).

Truncated and restricted variable ranges are known to cause smaller correlation coefficients (Jackson, 2015; Kirk, 2010). However, this mathematical rationalization for

the magnitude of the correlation coefficients in this study does not invalidate the interpretation of the statistics. Indeed, the problem of reduced correlation between admissions criteria and college GPA due to the truncated ranges of admissions criteria is so widely known that Jackson (2015) used it as an example in a research methods textbook:

> For example, colleges that are very selective, such as Ivy League schools, would have a restrictive range of SAT scores—they only accept students with very high SAT scores. Thus, in these situations, SAT scores are not a good predictor of college GPAs because of the restrictive range on the SAT variable. (p. 157).

Because SC is a selective college and the HP admission process further selects students from a limited range of admissions criteria, it is reasonable that the IVs are not well correlated with college GPA.

The next stage in the quantitative analysis was a multiple linear regression to address the second RQ, "Do admissions metrics predict college GPA for HP students?" I decided to run two separate analyses for ACT and SAT because some students did not take both tests. For the first analysis, I looked at ACT.

Only $N = 99$ students had all data for the following independent variables: ACT score, HS GPA, HS quality, HS rank, and HS schedule strength. Before starting the regression, I first checked that the assumptions about the data set were valid. A Durbin-Watson statistic of 1.199 indicated the independence of residuals (Table 5). Visual inspection revealed that the independent variables were linearly related to the dependent variable. The residuals were evenly spread for all values of the predicted dependent

variable. None of the independent variables had correlation coefficients greater than 0.7 when compared with college GPA and all the tolerance values were greater than 0.1. The single outlier was a real data point and not an error. That outlier did not exert undue leverage and its Cook's distance was less than 1. The residuals were approximately normally distributed.

Table 5

Multiple Linear Regression: Model Summary

Model	R	R^2	Adjusted R^2	Standard Error of the Estimate	Durbin-Watson
1	.457	.209	.167	.272	1.199

Note. HS = high school; GPA = grade point average. Predictors: ACT, HS GPA, HS rank, HS quality, HS schedule strength. Dependent Variable: college GPA.

Tables 5 and 6 exhibit the model summary and ANOVA for the multiple regression analysis. The coefficient of determination, R^2, characterizes the magnitude of the variability that can be determined from predictors (Triola, 2012). In this analysis, only 21% of the variability in the college GPA was explained by the IVs. The effect size, denoted by the adjusted R^2, was .167, which is considered a small effect (Urdan, 2010). The ANOVA test revealed that the model was a good fit for the data, and with $p < .001$, the finding was statistically significant.

Table 6

ANOVA

Model		Sum of squares	*df*	Mean square	*F*	Sig.
1	Regression	1.821	5	.364	4.919	.000
	Residual	6.887	93	.074		
	Total	8.708	98			

Note. $N = 99$. HS = high school; GPA = grade point average. Predictors: ACT, HS GPA, HS rank, HS quality, HS schedule strength. Dependent Variable: college GPA.

Finally, I examined the coefficients of the model in Table 7. The only significant coefficients were ACT test and HS GPA, which were significant at the $p < .05$ level. The standardized coefficients for ACT test score and HS GPA were nearly identical, indicating they have similar weights in the prediction model. None of the other IVs were statistically significant in the multiple regression model.

Table 7

Multiple Regression Coefficients

Model	Independent variable	Unstandardized coefficients		Standardized coefficients	*t*	Sig.
		B	Std. error	β		
1	(Constant)	.368	1.361		.271	.787
	ACT	.034	.012	.260	2.771	.007*
	HS GPA	.028	.013	.222	2.119	.037*
	HS quality	.051	.031	.191	1.658	.101
	HS rank	−.009	.005	−.211	−1.778	.079
	HS schedule strength	−.055	.037	−.137	−1.477	.143

Note. $N = 99$. HS = high school; GPA = grade point average. Dependent Variable: college GPA.
* Significant at the $p < .05$ level

Next, I analyzed the subset of data that included SAT test scores ($N = 177$). I repeated the multiple linear regression with the following independent variables: SAT verbal score, SAT math score, HS GPA, HS quality, HS rank, and HS schedule strength. Before starting the regression, I confirmed that the assumptions about the data set were valid. However, the calculation did not yield a significant result as $p = .076$ for the ANOVA. Therefore, a good fit model could not be created from this combination of variables.

A binomial logistic regression was conducted to see if any of the IVs could predict the student standing in the HP. I created a dichotomous dependent variable called standing, and set it to 1 if the HP student was in good standing and 0 if the HP student was not in good standing (i.e. dismissed or on track to be dismissed). I found data for $N = 101$ students. All the assumptions for the binomial logistic regression were met: the standing was categorical, the IVs were continuous, the observations were independent, the categories for the dependent variable were mutually exclusive and exhaustive, and a linear relationship existed between the IVs and the logit transformation of the dependent variable. However, none of the IVs showed significant coefficients in the model (Table 8).

Table 8

Binomial Logistic Regression: Omnibus Tests of Model Coefficients

		Chi-square	*df*	Sig.
Step 1	Step	6.583	7	0.474
	Block	6.583	7	0.474
	Model	6.583	7	0.474

Note. $N = 101$

During the quantitative data analysis, I noted that gender seemed disproportionally distributed in terms of HP standing. To verify this observation, I conducted a chi-square test. Looking at all HP students ($N = 375$), 212 females (56.5% of HP students) and 163 males (43.5% of HP students) participated. If all conditions were equal, the same percentages of males and females would be in both categories of HP standing. But as Tables 9 and 10 reveal, that is not the case in this HP. A higher than expected number of females were observed in the good standing category and a higher than expected number of males were in the warning or dismissed category. Table 9 shows the observed number of males in the warning or dismissed group was 44 rather than the expected 30.5. This means that 12.3% of females who started the HP ended up dismissed or on track to be dismissed, and 27.0% of males who started the HP were dismissed or on track to be dismissed. Therefore, males were more than twice as likely as females to end up on warning or dismissed from the HP. The chi-square test results in Table 10 demonstrate that gender was significantly related to warning or dismissed status in the HP.

Table 9

Gender Versus Honors Program Standing

HP standing		Observed *N*	Expected *N*	Residual
Warning or dismissed	Female	26	39.6	−13.6
	Male	44	30.5	13.6
	Total	70		
Good	Female	186	172.3	13.7
	Male	119	132.7	−13.7
	Total	305		

Note. HP = honors program. In total sample *N* = 375, 212 females (56.5%) and 163 males (43.5%) participated in the HP. Using those percentages, I calculated expected numbers of females and males in each standing category. The residual is the difference between the observed and expected counts in each category.

Table 10

Chi-Square Test Statistics for Gender Versus Honors Program Standing

	Value	*df*	Asymp. sig. (2-sided)	Exact sig. (2-sided)	Exact sig. (1-sided)
Pearson chi-square	13.169[a]	1	.000		
Continuity correction[b]	12.216	1	.000		
Likelihood ratio	13.099	1	.000		
Fisher's exact test				.000	.000
Linear-by-linear association	13.134	1	.000		
N of valid cases	375				

Note. *N* = 375.

[a]0 cells have expected count less than 5. The minimum expected count is 30.43.

[b]Computed only for a 2x2 table.

Summary of Quantitative Findings

The first research question in this study was "What is the relationship between the current admissions metrics and college GPA for HP students?" The answer from the quantitative analysis is that ACT test scores, HS GPA, and the SC admissions rating were significantly but weakly correlated with the college GPA for the HP students. I rejected the null hypotheses for ACT test scores, HS GPA, and the SC admissions rating. The remaining admissions metrics were not significantly correlated with the college GPA for the HP students. Therefore, I failed to reject the null hypotheses for HS rank, HS schedule strength, HS quality, and SAT math and verbal test scores. Thus the results for the first research question are mixed.

The second research question in this study was "Do admissions metrics predict college GPA for HP students?" A multiple linear regression (Cronk, 2012) was calculated to predict college GPA based on ACT test score, HS GPA, HS rank, HS schedule strength, and HS quality. A significant regression equation was found college GPA $F(5,93) = 4.919$, $p < .001$, with an adjusted R^2 of .167. Only ACT test score and HS GPA were significant predictors. So an HP student's predicted college GPA is equal to .368 + .034 (ACT test score) + .028 (HS GPA) because the other coefficients are not statistically different from zero. From the raw data on the HP students, the mean ACT test score was 30.67 and the mean HS GPA 94.62. Using these values in the regression formula, the average HP student has a predicted college GPA of 4.06. In other words, if the formula predicted the college GPA in a useful way, all the HP students with average or higher ACT test scores and HS GPAs would have perfect 4.0 college GPAs. As a

result, I rejected the null hypothesis for the second research question with the qualification that the small R^2 means that the model only explains a small part of the variance in the college GPA.

Two additional, relevant, quantitative tests were carried out. I used a binary logistic regression analysis to test whether any IVs significantly predicted completion of the HP when completion was coded as a dichotomous variable, but none did. Finally, I conducted chi-square tests on race, ethnicity, gender, and financial aid rating to determine if any of these demographic factors showed a significant association with HP completion. The chi-square test revealed that only gender showed such an association, with females significantly more likely to complete the HP compared to males.

Qualitative Analysis and Findings

For the qualitative portion of the study, I interviewed faculty members and administrators with strong ties to the HP in order to gather their perspectives on the current HP admissions process. To be eligible for this study, personnel at SC must have been employed there since the beginning of the quantitative data set, i.e. 2009. Additionally, admissions officers must have admitted students to the HP, and faculty members must have taught at least two HP courses and served on the advisory committee for the HP. These criteria ensured that the admissions officers and faculty members interviewed for the study were highly cognizant of the goals of the HP. Seven eligible faculty members and four eligible admissions officers existed at SC. I emailed all eligible personnel with a request for their participation. Two faculty members and two admissions

officers declined to be interviewed for the study, and five faculty members and two admissions officers agreed to participate.

Individual interviews were conducted with each participant. The interview protocol is described in Appendix B. After obtaining informed consent, I briefly described Sternberg's (2010) augmented theory of successful intelligence and the preliminary quantitative results. I then asked the participant to reflect on characteristics they felt were important to HP success and recommend elements of analytical, creative, and practical intelligence that would serve as good admissions criteria for the HP from their perspective.

The preliminary quantitative results shared with the participants were the same as the final results presented above, with one notable exception: the multiple regression model. At that time, I had included both the SAT and ACT test scores in the regression analysis, along with HS GPA, HS rank, HS schedule strength, and HS quality. Students' data were only included in the analysis if scores were available for each of these variables, resulting in a relatively small subset of the available sample ($N = 60$). This produced the regression model shown in Table 11. A significant regression equation was found ($F(7, 52) = 2.341$, $p = .037$), with an R^2 of .24. Only ACT test score and HS rank were significant predictors in the preliminary quantitative analysis. For this analysis, an HP student's predicted college GPA would be equal to .966 + .043 (ACT) − .017 (HS rank) where ACT is the ACT test score and HS rank is the student's percent rank in the high school graduating class. For example, a student with a perfect ACT test score of 36 and a HS rank of 1 out of 100 students has a predicted college GPA of .966 + .043 (36) −

.017 (1) = 2.497. This preliminary model was statistically significant, but led to a lower than expected prediction for college GPA. Due to the sequential design of this study, the participants were not exposed to the final quantitative results that were based on a larger subset of the available sample ($N = 99$) and predicted a much higher college GPA.

Table 11

Preliminary Quantitative Results: Multiple Regression Coefficients

Model	IV	Unstandardized coefficients		Standardized coefficients	*t*	Sig.
		B	Std. error	β		
1	(Constant)	0.966	2.194		0.440	0.662
	SAT: verbal	0.000	0.001	0.006	0.043	0.966
	SAT: math	−0.001	0.001	−0.209	−1.489	0.143
	ACT*	0.043	0.019	0.327	2.280	0.027*
	HS GPA	0.025	0.021	0.154	1.186	0.241
	HS rank*	−0.017	0.008	−0.326	−2.200	0.032*
	HS schedule strength	−0.031	0.056	−0.068	−0.546	0.587
	HS quality	0.079	0.044	0.256	1.792	0.079

Note. HS = high school; GPA = grade point average. $N = 60$. Dependent Variable: college GPA.
* Significant at the $p < .05$ level

I analyzed the interviews by using axial coding techniques (Corbin & Strauss, 2007, as cited in Merriam, 2009, p. 180) to code the related interpretations into categories, because axial coding helps the researcher improve her conceptualization of the subject (Boeije, 2002). After the interviews were transcribed, I added margin notes to the transcripts that included my comments and thoughts on the data. I then reviewed all the transcripts and my notes iteratively to create themes or categories. Finally, I analyzed the preliminary categories to find further patterns and interrelated structures. The second

interviews were unstructured, individual meetings to review the transcripts and categories developed during the preliminary qualitative analysis. I made detailed notes during the second interviews but did not record them. The second interviews served as member checks and allowed the participants to verify the transcripts of their first interviews and elaborate on their recommendations for the HP. Most of the time spent in the second interviews was spent in confirmatory dialogue. Although new data came from the second interviews, it was clear that I had reached saturation (Merriam, 2009) with these interviewees. The final qualitative findings include categories that more than one participant supported.

Merriam (2009) noted that reports of qualitative work must carefully balance detailed evidence that supports the research findings with general descriptions that move the narrative forward. Thus, the first two subsections below describe interviews with the admissions officers and HP faculty, and the last subsections relate the qualitative themes to Sternberg's augmented theory of successful intelligence. Where appropriate, I have included some vignettes or mini-cases to allow the reader to more easily understand the participant's perspective.

Admissions officer interviews. The two admissions officers who participated in this project were responsible for admitting the entire range of students to SC, including those who are admitted to the HP. They both served in college admissions roles for at least 20 years, and were able to speak to both the strengths and the weaknesses of the HP admissions process. Their primary interactions with students take place when the students are in HS and applying to colleges. The admissions officers have little contact with most

SC students after that time. Although a few students work or volunteer in the admissions department, it is not usually clear to the admissions staff which students are members of the HP. Thus our interview discussions focused on the current admissions processes for SC in general and the HP in particular, rather than experiences with individual HP students.

Both admissions officers stressed that the admissions process is very labor intensive. For example, each applicant's transcript must be coded and the raw HS GPA converted to SC's weighted HS GPA before the admissions rating for the applicant can be calculated. Students with extremely high or extremely low admissions ratings are automatically assigned an admissions outcome at that point, but the majority of SC applicants are further reviewed to take into account 10−12 additional factors such as letters of recommendation, activities, financial need, and background. Most HP students have extremely high admissions ratings and therefore do not undergo further review. Several of the recommendations from faculty regarding HP admissions criteria (e.g. review letters of recommendation for specific characteristics, review AP scores, etc.) are already in place for students with average admissions ratings, but it would be time-consuming for the admissions office to conduct those same reviews for students with extremely high admissions ratings.

Both admissions officers also stressed that they believed "making connections" was an important criterion for student success at SC. Although they do not usually review materials other than the admissions rating for HP students, they both noted that when they did, they looked for evidence that the applicant could apply concepts from an

academic discipline to situations and discussions in other disciplines or even outside of academia. This evidence of the ability to make connections was typically found in a student's application essays and in letters of recommendation. One admissions officer stated:

> We should look at students who aren't just focused on a single subject matter, students that can bridge the gap between the humanities, the social sciences, the sciences, [technology, engineering, and mathematics] fields. We've started to look at how students are able to make those connections. We don't want just students that are so focused on, for engineering for example, that they can't do anything outside of that. Even if a student is interested in engineering, what else have they done? What else can they contribute outside of that engineering focus?

The admissions officers noted that this ability to make connections is not given a numeric rating, and they believed it would be a good admissions practice for all admissions officers to have some way to flag applicants who might be successful in the HP but did not meet the numeric cutoff for the admissions rating.

Faculty member interviews. Although SC admissions officers rarely have sustained interactions with the HP students, the faculty who were eligible to participate in this project had long and complex relationships with many HP students. During interviews, the faculty members often referenced HP students who excelled and embodied the ideals of the HP, and others that fell short of the faculty member's expectations. These cases provided valuable insights to the faculty members' perspectives on success in the HP.

One faculty member (hereby given the pseudonym FM2) gave an example of a current HP student who had been working on FM2's research since entering college one and a half years ago as a first-year student. During our interview, FM2 noted that the student had two abilities that were lacking in other students: "One is the ability to try things that have never been done before, and the other is to come up with a new way to do something when something is not working." FM2 called the combination of these two traits "creative problem solving." FM2 did not believe that these traits could be taught, but rather that they were inherently present or absent in students. FM2 believed that creative problem solving was a necessary component to success, though a specific definition of success was not offered.

Another faculty member, FM3, discussed an outstanding student from the department as well. This student took advantage of numerous HP options to create a uniquely broad education as well as depth in the academic field. FM3 felt that this student served as a role model for other students in the HP by letting them understand the HP's potential. But FM3 also noted that this student was a year older than peers who had entered the HP at the same time. FM3 thought that it would be good for the HP to admit a balanced mix of students who had some independence as well as traditional students who were coming straight from HS.

FM3 also had experience with some of the negative aspects of high achieving students, relating an experience of a student who may have been in the HP and certainly was academically capable, but could not successfully manage time. The student used an extremely detailed schedule but could not grasp that between classes, time should be used

to study, do work, socialize, and pursue other activities. FM3 thought that this over-reliance on a practical tool was a marker that a student should be excluded from the HP, and warned me that new HP admissions metrics must be carefully crafted to ensure that practical criteria were balanced in a way that would help students be successful in the HP.

Another faculty member, FM4, echoed the same caution, also being concerned that some HP students were, as FM4 called them, "box checkers", i.e., students who focused on completing required tasks to the detriment of their own development. FM4 felt that the HP currently admitted a number of these students, and this type of utilitarian thinking limited those students' growth. FM4 contrasted that with creative students who make their own choices and learn to balance their time across several interests. FM4 felt that the creative students' perspective was "who am I and how do I relate with the world?" as opposed to the box checkers who "simply react against the world."

Just as FM3, FM4 was reluctant to call this trait maturity. FM4 felt it was more aligned with Sternberg's concept of wisdom, paraphrased as "the melding and the integration" of maturity, personal identity, and truth with "knowing what the results of one's choices are about." FM4 believed that the percentage of students with the combination of wisdom and breadth of experience had increased since SC went to test-optional admissions. FM4 proposed that students from underrepresented backgrounds had more experience with negotiating situations and solving problems than some of their majority peers, and that all students benefited from a breadth of experiences that included stepping out of one's comfort zone and experiencing failure. This was a crucial articulation in this study: FM4 believed a diversity of experiences and overcoming

challenges sets students up for HP success and completion. FM4 unknowingly echoed the comments of an admissions officer by pointing out that the admissions processes and practices reflect the values of the college: by removing the art and music course grades and then calling the students with the highest revised, weighted GPA "the best," SC automatically discounts and disadvantages students with strong humanities experiences.

The faculty participants in these interviews had sustained, professional relationships with the HP and the HP students for many years. They taught HP courses, advised HP students, oversaw HP student research projects, and served on the HP oversight committee. Their experiences with a wide variety of HP students allowed them to offer specific examples of outstanding, average, and subpar HP students. They also commented on the current HP admissions criteria and changes to those criteria that they believed will benefit the HP.

Analytical factors. As noted above, the current HP admissions rating formula is comprised of purely analytical factors: SAT/ACT scores, HS GPA, HS quality, HS rank, and HS schedule strength. However, it is important to note that the HS GPA that is used is not the raw score that is given by the HS. The SC admissions department removes grades for courses such as physical education, driver's education, health, art, music, and business unless the student has taken an AP course. So for example, AP Art History would be factored into the HS GPA, but a standard 11th grade art class would not. Although both of the admissions officers were fully cognizant of this practice and noted that it had been standard practice at SC for their entire employment with the institution, none of the faculty knew that art and music courses were removed from the GPA. Thus

all of the faculty members strongly recommended that art and music classes be added into the HS GPA for HP admissions.

Many factors are reviewed for general admissions to SC, but not further reviewed for HP admissions. Four of the five faculty members and both of the admissions officers believe that these metrics should be available for use in the HP admissions process. These include individual components of the admissions rating scale, AP scores, HS transcripts, writing samples, creative portfolio ratings, and letters of recommendation from teachers or counselors. Also, subject specific GPA (i.e. math and science grades for students applying as science majors, humanities grades for those applying as humanities majors, etc.) could be calculated from the available admissions data, but are not available for review in the current application process.

One faculty member rejected all further analytical factors. Although listing several possible additions to analytical considerations during the first interview, when reviewing the preliminary qualitative results during the second interview, this faculty member strongly felt that the analytical factors would not lead to success in the HP. The faculty member's position was that the HP admissions process should identify students who are "smart and curious," and those two factors were sufficient for HP admission and participation. This was the only case of such strong reversal of opinion between the two interviews.

Another faculty member believed that standardized tests should be required for HP admission because they were indicators of reading comprehension and response formulation. Because SC is a test-optional institution, not all HP students have submitted

standardized test scores. This faculty member's rationale for including the standardized test scores was "we've done a disservice because we are expecting our students to have these skills but we're not selecting based on that." The faculty member did not think that students should be excluded from the HP merely because their standardized test scores were low but that it should be one factor that was considered for HP admissions.

Creative factors. Sternberg (2010) defined creative intelligence as novel problem solving, and all of the participants agreed that was one valid perspective. However, they also wished to broaden and nuance the understanding of creative factors that could promote success in the HP. They discussed a number of factors that inextricably underpinned and intermingled with creativity in a variety of ways.

The most common explicit recommendation was curiosity. The interviewees asserted that creativity depends on curiosity as an underlying stance towards learning. They noted that students who were curious showed initiative in problem solving and came up with their own ways to experiment. Risk-taking was another common recommendation related to creativity. The interviewees believed that students who were risk-averse were less likely to try novel approaches and this impacted the learning that a student could accomplish.

One faculty member noted that some high-achieving students were more concerned with completing requirements than curiously exploring opportunities to enrich their understanding of a topic. The faculty member labeled them "box-checkers" and expressed disappointment that a number of the current HP students seemed to fall into this category. In contrast, other HP students owned their choices, decisions, and work.

The faculty member often met these students in dance productions and noted that some of them were particularly adept at balancing time in training with time needed for academics and social life. The faculty member was reluctant to label this factor as maturity and preferred to call it the ability to "own" and "live their truth."

Other faculty either explicitly or implicitly noted maturity related to creativity. When assessing students, they noted that top students showed "maturity in the discipline" and "thought behind the performance, more than just the assignment." They felt these students dealt with ambiguity and cognitive dissonance better than their peers. They clarified that maturity should not be confused with age, though they noted that some students who were a year or two older than their peers did show more maturity, and other students had experiences in their lives that made them more mature than their peers.

Similarly, several interviewees talked about independence as a factor related to creativity and success in the HP. One faculty member stated, "students who can problem solve, students who can be creative, are going to have a distinct advantage because they're not relying on somebody to tell them the answer."

A few participants used the term *multiple intelligences* during our conversations about creativity, and one specifically mentioned Howard Gardner. According to Gardner (2011), "[a]n intelligence is the ability to solve problems, or to create products, that are valued within one or more cultural settings" (p. xxviii) and intelligence is a synthetic construct rather than a biological fact. Gardner's list of intelligences included linguistic, musical, logical-mathematical, spatial, body-kinesthetic, interpersonal, and intrapersonal. The interviewees who referred to multiple intelligences were concerned that the current

analytical factors used in HP admissions aligned with linguistic and logical-mathematical intelligence yet left out other types of intelligence that were more aligned with creative intelligence.

Several suggestions, especially those from faculty related to creative intelligence, pointed toward the value participants placed on advanced epistemological thinking. The individual HP students cited as models and the general conversations about factors critical to success both highlighted students who were able to go beyond the so-called *right* answer to complex questions. Rather, these students' ways of developing knowledge included seeking a diversity of thought and making sound judgments about the value of new concepts relative to the context. These behaviors are aligned with what Perry (1970) called contextual relativism and Baxter Magolda (1992) called contextual knowing. Moore (2001) explained the transition to Perry's contextual relativism required "the self-consciousness of being an active maker of meaning" (p. 21) and noted that "the most powerful learning, the learning most faculty really want to see students achieve as a result of their experiences with classes/curricula, involves significant qualitative changes in the way learners approach their learning and their subject matter" (p. 19). Although the interview participants often struggled to pinpoint a name for these behaviors, they consistently pointed to these behaviors as vital to HP student success.

Practical factors. Sternberg's (2010) definition of practical intelligence centers on so-called *street smarts*. The participants in this study understood that perspective but did not embrace it, as they felt the phrase had many connotations. They recommended several elements of practical intelligence for HP admission including time management,

tenacity, communication skills, internal motivation, and leadership. They again recommended balance and independence, which they considered as prerequisites to creativity. The participants noted that experience with adversity was a critical practical factor: in their experience, students who had failed at an endeavor or experienced a tragedy and learned from reflecting on that experience were more likely to succeed in the HP. Finally, they felt that the best HP students were outward-looking, i.e., those students sought mentors and opportunities, got involved in the campus, went beyond the requirements, and developed a passion.

In general, the interview participants were more hesitant to include practical intelligence factors in the HP admissions process than creative and analytical intelligence factors. One faculty member argued that colleges are designed such that students do "not need practical knowledge for 4 years". Most interviewees recommended that students who do not show practical intelligence factors should not be excluded from the HP. Similarly, although they welcomed students with high practical intelligence, faculty did not think that practical intelligence was sufficient to succeed in the HP. The interview participants recommended considering practical intelligence in HP admissions when students showed promise in the analytical and creative intelligences. When discussing the evaluations that are conducted during the admissions process, one admissions officer noted:

> I don't know if I would make [practical intelligence] an integral part of that evaluation process, but I would like to look at it maybe a little more. Maybe that can be another way for us to kind of see who is going to be more successful, who

is going to need a little more time, who is going to need a little more support, maybe based on these practical experiences that they have or have not had.

In the end, none of the interview participants were comfortable recommending a process by which to include practical intelligence in admissions.

Summary of Qualitative Findings

Five faculty members and two admissions officers, all with long associations with the HP at SC, took part in this study. Precautions were taken to ensure all of the participants gave informed consent before participating in this study. Two interviews were conducted with each participant. Axial coding of interview transcripts was used to develop themes and categories that aligned with Sternberg's augmented theory of successful intelligence.

As noted in Table 12, in each of Sternberg's three intelligence classifications, one suggestion was supported by almost all of the participants. With regard to analytical intelligence, all but one of the participants believed that SC admissions staff should make art and music course grades available to the HP selection process, either as part of the overall HS GPA or as a separate number. The lone participant who did not support this suggestion in the second interview had supported it in the first interview. For creative intelligence, a consensus of support existed for advanced epistemological thinking as a key indicator of success in the HP. Finally, for practical intelligence, all the participants agreed that successful HP students were outward-looking, i.e. they looked beyond themselves and their immediate resources to make connections with their learning

environment. Lesser degrees of consensus existed on other suggestions made by the participants, and less understanding of or support for Sternberg's concept of wisdom.

Table 12

Frequencies of Suggestions

Type of Intelligence	Suggestion for desirable HP admissions criteria	Frequency of Support
Analytical	HS art and music grades in HS GPA	4 faculty, 2 admissions officers
	Other admissions factors (interview ratings, reviews of extracurricular activities, etc.), which are included in general admission but not HP admission at this time.	4 faculty
Creative	Ability to make connections	2 faculty, 2 admissions officers
	Independence	4 faculty
	Advanced epistemological thinking	All 7 participants
	Risk taking	3 faculty, 2 admissions officers
	Curiosity	3 faculty, 1 admissions officer
	Multiple intelligences	2 faculty, 2 admissions officers
Practical	Outward looking	All 7 participants
	Resolve	3 faculty, 2 admissions officers
	Balance/time management	2 faculty, 1 admissions officer
	Communication skills	4 faculty, 1 admissions officer
	Leadership	2 faculty, 1 admissions officer
	Growth experiences	2 faculty, 2 admissions officers

Note. HP = honors program; HS = high school; GPA = grade point average. Participant pool consisted of 5 faculty and 2 admissions officers.

Combined Quantitative and Qualitative Analysis

In the combined analysis, I looked at ways that the qualitative results explained the quantitative results. The quantitative analysis pointed to a clear gap between the current HP admissions criteria and success in the HP. The admissions officers were aware of some aspects of the gap but commented on it less frequently and less intensely. The faculty members reported that they had noticed the gap anecdotally and commented on the gap extensively during their interviews. The faculty members were more persuaded by the quantitative data than the admissions officers. However, it is important to note that they reviewed the preliminary quantitative analysis that resulted in a lower predicted GPA than the final quantitative analysis. Three faculty members explicitly stated that the current HP admissions process missed high achieving students who would likely succeed and benefit from it, but endorsed some students who went on to academically or culturally struggle to meet the expectations set by the HP. All the participants felt that the SC administrators in charge of the current HP admissions process should be informed of the gap and that analytical, creative, and possibly practical intelligences should be considered in a new HP admission process.

The inference from this study is that the HP admissions criteria do not currently align with the values of the liberal arts: by removing the art and music grades from the weighted HS GPA, and including only analytical metrics in the HP admissions criteria, SC is promoting analytical learning ahead of humanities. This discrepancy is particularly notable as the HP students are supposed to be academic role models for other students at SC, a liberal arts institution. The participants welcomed the proposed addition of

analytical, creative, and practical HP admissions criteria not only because it addresses the insufficiency of the current HP admissions criteria, but also because it resolves the cognitive dissonance that they presently experience when they look at the HP admissions criteria.

Conclusion

The data collection and analysis for this doctoral project were carried out using widely accepted academic standards for research. The mixed methods design used an explanatory sequential approach to understanding quantitative and qualitative perspectives on success in the HP. All of the research questions were addressed in the course of the project. The final analysis combined the quantitative and qualitative analyses to form recommendations for the project portion of the doctoral study.

Section 3: The Project

Introduction

In this section, I describe the project that I completed through this study. I discuss the project, its relation to the current literature and research, and its implementation at SC. This section also includes metrics for the project evaluation as well as small- and large-scale implications.

Description and Goals

The project for this study was a white paper entitled "Success in Honors: Accomplishments and Improvements," found in Appendix A. In the white paper, I described the research that I performed, and I recommended improvements based on the current literature and this research. The goals of the white paper were to highlight the successes of SC's HP and to recommend target areas for investigation during an HP admissions redesign process.

Rationale

The research in this study must be presented to the decision makers at SC for changes to occur in the HP admissions process. A detailed policy recommendation in the form of a white paper allows those decision-makers to see the scope of the research within the current literature and understand areas of concern for the HP. Thus, the white paper will serve as a means of educating the decision makers (Stelzner, 2007) and form the basis for discussion about future changes to the HP admissions process.

Review of the Literature

Two major areas of literature are relevant to this project: literature related to white papers and literature on implementing research. The Walden University Library provided peer-reviewed academic journals and books for this review. Searched databases and search tools included Education Research Complete, ERIC, and Google Scholar. Specific search terms included *white papers*, *business writing*, *marketing*, *education research implementation*, *project management*, and *implementing changes in education.* Saturation was reached when no new search results added to the interpretation of the topics.

Literature on White Papers

White papers are persuasive essays written by experts to sway an audience to action (Newton, 2013; Stelzner, 2007; Van Laan, 2012). They resemble several other types of communication but are uniquely suited to presenting a specific problem to the target audience (Elicksen, 2014). White papers are usually technical and written for a well-educated audience (Graham, 2013; Lewis, 2014), but they are less focused on the minutiae of the data analysis than academic papers, and they are more focused on presenting a problem and offering a solution than is a popular article (Jefferson & Tanton, 2013; St. Maur, 2012).

A white paper must be compelling to effect change (Leboff, 2014; Van Laan, 2012). Many guides to writing white papers note that although the style has changed with technology, the crucial appeal to the needs of the audience has helped the white paper remain an important document (Elicksen, 2014; Graham, 2013; Kantor, 2010; Powell,

2012; St. Maur, 2012). This unwavering focus on the needs of the audience requires the writer to screen out distracting elements (Janzer, 2016) and to include only the most persuasive evidence from the research (Jefferson & Tanton, 2013).

Literature on Research Implementation

Research on educational policies is a critical component in evidence-based practice (Lingard, 2013), yet implementing such research can be difficult. Researchers and policy makers disagree on evidence and how to use research results (Lassnigg, 2012). Young and Rorrer (2012) went so far as to say that it was unreasonable for most readers to understand the implications of research for the readers' work without further direction from an outside source. Recommendations from research must be selected carefully both as to not overwhelm the practitioners (Goren, 2012) and as those that are implemented will be difficult to repeal in the future (Colyvas, 2012). Educational research in particular does not occur in a vacuum or laboratory setting: the administrators, staff, students, and instructors all have their own perspectives and impacts on research implementation (Honig & Venkateswaran, 2012). Thus, the white paper bridges original research with its well-considered implementation in a specific educational setting (Spillane, 2012).

Implementing educational research requires changes to policies and practices. Research implementation fails when stakeholders are not brought at the initial stage of the change process and do not agree on definitions of *success* (Heagney, 2012; Kerzner, 2013; Teirlinck, Delanghe, Padilla, & Verbeek, 2013). According to Tagg (2012), educational researchers often fail to convince the faculty, key stakeholders in higher education, that change will empower them in meaningful ways. Successful

implementation requires involving local stakeholders early and consensus on the purpose for change and means for measuring outcomes (Bourke & McGee, 2012). The white paper will increase the chances of successful implementation by using local evidence as confirmation of the problem and bridge the gap between outside research and local issues (Finelli, Daly, & Richardson, 2014).

The logic model contained in the white paper further bolsters the chances of effective implementation. Carefully managed planning is crucial to successful project implementation (Javed, Mahmood, & Sulaiman, 2012). Logic models are a visual representation of the path from the research findings to the desired outcomes (Lawton, Brandon, Cicchinelli, & Kekahio, 2014). In education, these models are used to evaluate projects while tracking the consequences of realization (Frye & Hemmer, 2012). Thus both the white paper in general and its specific contents are supported as judicious selections for this doctoral project.

Support for Findings of the Doctoral Study

The problems that SC faces with its HP are far from unique. Admissions criteria and practices at colleges and universities are widely studied and show evidence of several problems. Duckworth, Quinn, and Tsukayama (2012) found that standardized achievement tests are more indicative of IQ, and self-control determined GPA for pre-college students. This result is problematic because most college admissions practices do not distinguish between these indicators. Yet Koljatic, Silva, and Cofré (2013) cautioned that achievement tests are more dependent on the quality of the HS and therefore more likely to correlate with socioeconomic status than aptitude tests. Steenman, Bakker, and

van Tartwijk (2014) noted that a complex relationship exists between the HS and college GPAs, but HS grades were based on lower order thinking skills and college grades were often based on higher order thinking skills. Thus, many college admissions practices do not accurately identify the skills students need to be successful.

Some admission practices are misaligned with the key values of most institutions of higher education. Most colleges in the United States, even selective colleges like SC, value diversity (Wechsler, 2014). Although a few scholars dispute the reasons for underrepresentation of racial and ethnic groups in academic achievement programs (Erwin & Worrell, 2012; Zwick 2002), most researchers agree that standardized tests are unfavorably biased for students from low socio-economic status backgrounds (Hearn & Rosinger, 2014) and those who face stereotype threats (Logel, Walton, Spencer, Peach, & Mark, 2012). Indeed, many colleges have decided to make standardized tests optional because of these concerns (Douglass, 2012).

Similarly, many co-educational institutions are concerned about the completion gaps seen between men and women in higher education (Ewert, 2012). Men are more likely than women to stop attending college, attend college part time, and receive lower grades, all of which contribute to an overall gender gap in degree attainment. Voyer and Voyer (2014) found that this gap appears early in the schooling process and has long-term, cumulative effects on male achievement. Certain academic fields like science, technology, engineering, and mathematics however still present obstacles for women, particularly those lacking strong social networks for support during college (Kerr et al.,

2012). Thus colleges, including HPs, must find ways to address these widespread problems in many areas.

College presidents noted many benefits to having an HP at a college including the durable academic benefits to the individual HP student (Johnsen, 2015), the cultivation of an ethos of intellectual risk-taking (Ferguson, 2015), the development of whole-person education (Wilson, 2015), and intangibles such as personal direction, increased self-worth, and preparation for academic awards (Johnson, 2015). Oftentimes, the skills that are taught in the HP benefit the students, faculty, and staff for many years and in many venues (Herbert, 2015). Thus it is valuable to maintain and improve HPs to secure the maximum benefits for the participants and the college.

Sternberg's (2010) theory of augmented successful intelligence served as the basis for this study and the recommendations in the white paper. As discussed in Section 2, the only analytical intelligence markers that were significant predictors of college GPA were ACT test score and HS GPA, and the admissions officers and HP faculty believed additional analytical, creative, and practical intelligence markers were worth considering as HP admissions criteria. The white paper used Sternberg's theory as a scaffold for the quantitative, qualitative, and combined findings.

The literature points to several measures of creativity that could be used in the HP admissions process. Pretz and Kaufman (2015) noted that traditional college admissions criteria were ineffectual indicators of creativity, and more specifically Kaufman (2015) stated that IQ tests such as the SAT were poor measures of creativity. Kaufman, Plucker, and Russell (2012) agreed with Sternberg that creativity is a valuable component of

successful intelligence. Blake, McCarthy, and Krause (2014) argued that college and university admissions continue to ignore measures of creative thinking despite the need for innovators in our society. Dollinger and Skaggs (2012) found that a combination of ACT test score and openness to experiences predicted the score on the Personality Imagination Exercise and noted the value of the ACT in that context. Thus the recommendation that was developed for the white paper involved combining analytical and creative intelligence factors to create a new HP admissions process.

Practical intelligence has been researched in admissions criteria as well. Two recent studies (Heller & Cassady, 2015; Wibrowski, Matthews, & Kitsantas, 2016) found that motivation and learning strategies significantly predicted college GPAs. Mandelman, Barbot, and Grigorenko (2015) examined the efficacy of the Aurora Battery, a test based on Sternberg's theory of successful intelligence, and found that the practical measures were the most predictive of college GPA. Sparkman et al. (2012) compared emotional intelligence to college completion and determined that students who graduated from college had higher empathy, higher social responsibility, lower flexibility, and higher impulse control than peers who started at the same time but were still enrolled or had dropped out of college without completing a degree. Thus, practical intelligence can be a meaningful factor in academic success.

Specific recommendations related to the HP admissions were also found in the literature. Mohler (2013) found that including an essay in the HP admissions criteria increased diversity. Hoxby and Avery (2013) suggested that HPs limited geographic searches missed academically capable students from atypical HSs. Similarly, Moon

(2012) stated HPs have "an imperative to do more to identify students who may lack traditional forms of social capital and provide them with additional support and instruction during the college transition" (p. 134). Moon also noted that it is critical for HPs to clearly articulate admissions criteria, HP benefits, and goals rather than assuming that potential HP students would intuitively understand them. Although not conducted in HPs, two studies (DeAngelo, 2014; Gershenfeld, Hood, & Zhan, 2016) noted that first-year college GPAs were better predictors of subsequent college GPAs, and these results could be interpreted as a recommendation for selecting HP students after their first year. The HP admissions recommendations from the literature support and extend the findings and recommendations from the research done for this study.

Project Description

After completing my degree, I will submit the white paper to the vice president (VP) of academic affairs and the VP of admissions at SC. These two individuals hold decision-making power for the HP. I will need their support for any recommendations before moving forward. If they give their permission, I will bring the white paper to the HP faculty advisory board (FAB) and ask them to draft a new HP admissions process for review by the VPs.

The logic model for the implementation is shown in Figure 2. A logic model is a useful tool for delineating program planning (Innovation Network, Inc., 2010). It demonstrates the flow of dependent stages in program management. The model starts on the left with resources, which are the core inputs to the program, i.e., the white paper and the human resources of the stakeholders. These resources support the activities of the

program, such as the white paper review. The activities create immediate program outputs, which generate short-term consequences called outcomes and long-term consequences called impact. In this case, the new charge to the FAB will create new HP admissions practices designed to increase the HP completion rate.

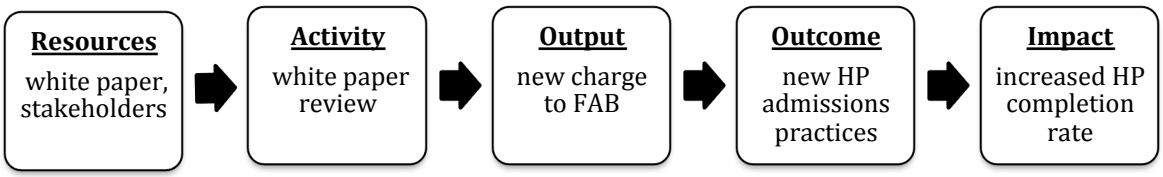

Figure 2. Logic model for implementation. The program to increase HP completion is depicted in a logic model (Innovation Network, Inc., 2010). In this model, the program inputs are *resources*; the *activity* transforms the resources into direct products, called the *output*. The initial result of the output is the *outcome* and the eventual result is the *impact*. Adapted from Innovation Network, Inc. (2010).

Potential Resources and Existing Supports

The FAB consists of four faculty members and an academic dean along with me as the HP director. This committee designs and maintains the academic program for the HP, and plans strategic directions for program development. The FAB members have been very supportive of this study and are eager to receive the recommendations. They expect to spend a significant portion of their committee time in the next year developing a new HP admissions process.

Potential Barriers

As noted in Section 2, the admissions officers are concerned about any new HP admissions process because they have limited time to spend on evaluating applicants and they do not want any process to negatively impact the number of students who enroll at SC. The main benefits of the current HP admissions process are that it is quick and easy for admissions officers, and incoming students find out that they are in the HP at the same time they are admitted to SC. For the recommendations from the white paper to be implemented, a new HP admissions process cannot require the admissions office to evaluate potential HP students, and the evaluation must not interfere with admitted students' acceptances. If the FAB can develop a new HP admissions process that meets the needs of the admissions office, therefore, the new process will likely win the support of the VPs.

Proposal for Implementation and Timetable

At the beginning of the fall 2016 semester, I will forward the white paper to the VPs of academic affairs and admissions, and ask that we meet to discuss the white paper. At that meeting, I will review the recommendations with them, answer any questions they have, and attempt to secure their permission to bring the white paper to the FAB for consideration. I will also ask the VP of admissions if a member of the admissions staff could join the FAB as they design the new HP admissions process, so that the new process is more likely to meet the needs of the admissions office.

As soon as the VPs have given their consent, I will take the white paper to the FAB, and if the VP of admissions has nominated an admissions officer to the FAB, I will

introduce that person to the committee. The FAB will take several months to draft a new HP admissions process. The goal will be to present a draft of the new HP admissions process to the VPs in the spring semester of 2017 so that it can be implemented in the 2017–2018 academic year.

Roles and Responsibilities of Student and Others

As the director, my job is to lead the tactical and strategic planning of the HP. Therefore, I will shepherd the white paper, recommendations, and HP admissions process designs between the VPs and the FAB, and also identify and involve other stakeholders when their perspective is needed. It is likely to take several iterations of design, critique, and feedback before all the stakeholders are satisfied with the new HP admissions process.

The VPs of academic affairs and admissions are the highest-ranking administrators participating in this project. They have joint oversight of the HP on a strategic level and an HP with a high completion rate would reflect well on them and their departments. They will be responsible for receiving the white paper and reviewing its recommendations. Following the review, they will determine an appropriate response. One possible response will be to charge the FAB with developing new admissions practices.

If the FAB is asked to draft a design for a new HP admissions process, they will begin by reviewing the white paper. They will also consider SC's strategic plan and the HP's goals within the context of admissions and academic affairs. Once drafted, the proposed process will be sent to the VPs for review. The FAB and VPs will work

together to revise the proposed process. Finally, the VPs will be responsible to send the proposed process to SC's faculty senate.

Project Evaluation Plan

The project will undergo a summative evaluation in the 2017–2018 academic year. Summative evaluations are conducted at the end of a project to measure the extent to which goals have been met (Lodico et al., 2010). For this project, the primary goals are to raise awareness of the shortcomings of the current HP admissions process and to make recommendations for improving the HP admissions process.

Looking at the logic model in Figure 2, two types of summative evaluation can occur: implementation evaluation, encompassing the activity and the output, and outcome evaluation (Innovation Network, Inc., 2005). Table 13 shows the indicators, target goals, and data sources for each type. The program will be evaluated on factors that are under the control of the HP. The implementation of the program will be successful with 100% participation of VPs and FAB members, and if the new HP admissions practices are data driven. Evidence of these indicators will be found in the correspondence and contributions of the VPs and FAB members. The outcome of the program will be successful if the new HP admissions practices sent to the VPs for review include additional analytical, creative, and practical intelligence measures.

Table 13

Evaluation Plan for Project

Type of summative evaluation	Indicators	Targets	Data sources
Implementation	Participation of VPs and FAB	100% participation	Meeting minutes, emails, contributions to shared drafts
Implementation	Data driven design of new HP admissions practices	100% data driven design	Meeting minutes, emails, contributions to shared drafts
Outcome	New HP admissions practices	Additional analytical, practical or creative intelligence measures in HP admissions criteria	New practices sent to VPs for approval

Note. VPs = vice presidents; FAB = faculty advisory board; HP = honors program.

Implications Including Social Change

Local Community

This project has the potential to significantly change the experience of the HP students, as well as the faculty and staff involved in the HP. If the recommendations are accepted and a new HP admissions process is developed by the FAB that more accurately identifies the students most likely to succeed in the HP, then the HP students will be more likely to complete the HP, the faculty will be less likely to find HP students who are underprepared for HP work, and the administrators will be able to meet their target of 90% HP completion. Although I cannot control the success of the recommendations and new HP admissions process design as the HP director, this project will be positive even if

it only succeeds in expanding the dialogue and thinking about the recommendations to improve HP admissions.

Far-Reaching

Honors programs are prevalent in the United States and becoming more prevalent in Europe as well (Wolfensberger, 2015). This research will inform the higher education community about HP practices and the perspectives of HP stakeholders at a small institution. Although the mixed methods design of this study contradicts its generalizability (Lodico et al., 2010), my hope is for continued dialogue and research that will make the ideas, concepts, and recommendations more transferable to other, similar situations.

Conclusion

The project for this study is the white paper found in Appendix A. The recommendations found in the white paper were the products of this research and extensive literature reviews. The white paper will be given to the stakeholders and decision-makers at SC in the hopes that they will consider these recommendations as they move forward with the strategic plans for the HP. The summative evaluation of the project will be based on the implementation and outcomes of the program initiated by the white paper. This study has the potential to benefit HP students at SC and other HPs at similar institutions, and has been of great benefit to me as a learner.

Section 4: Reflections and Conclusions

Introduction

In this final section, I discuss the strengths of the project and ways to mitigate its limitations in future studies. I also consider the ways that I have grown as a scholar, practitioner, and project developer. Finally, I look at possible future directions for this research.

Project Strengths and Limitations

The strengths of the project lay in the design and in the clarity of the results. Through the explanatory sequential design, I use the qualitative results to expand on the initial quantitative results (Creswell & Plano Clark, 2011). The combined analysis provides insights into the data that would not have been available using quantitative or qualitative methods alone. The data and analysis provided the evidence base for research-derived recommendations (Lodico et al., 2010).

The theoretical basis for this project was appropriately selected. Although many researchers have used Tinto's (1993) theory of student departure to predict attrition from college programs, Campbell and Fuqua (2008) demonstrated that Tinto's model was not applicable to HP completion. I selected Sternberg's (2010) augmented theory of successful intelligence because it focuses on preadmissions criteria that have been shown to predict success in multiple academic situations.

In Section 3, I discussed research-derived recommendations to the stakeholders at SC, and I present these recommendations in detail in the white paper project provided in Appendix A. The white paper, or policy brief, was an appropriate deliverable in this case.

These types of documents allow the researcher to clearly and efficiently convey the results and recommendations to the policy makers (Stage & Manning, 2015). Because the decision-makers' time is usually limited, they are given a shorter document such as a white paper and also referred to the longer paper for details of the research. This technique allows both the researcher and the policy makers to access each other's ideas and expertise in an effective manner.

The project was limited by its lack of generalizability (Lodico et al., 2010). For the study to be generalizable, the sampling methods would need to be changed. Ideally, even in an ex post facto study, the quantitative data would need to be a random sample from the population, with HP students matched to non-HP students with similar characteristics (Creswell & Plano Clark, 2011; Lodico et al., 2010). This experimental sampling method would better control for extraneous variables that may be obscuring the results.

The project was also limited by an error in the preliminary quantitative analysis. Although the regression model produced in the preliminary quantitative analysis was statistically significant, it was based on the extreme case where the HP students took both the ACT and the SAT. This led to a regression model where only ACT test scores and HS rank were significant and which predicted a lower than expected college GPA. This analysis was shown to the qualitative participants as part of their first interviews, and may have influenced their responses. The final quantitative analysis used the more likely scenario of HP students who took at least one standardized test, but not necessarily both.

If this study were repeated, the modeling error would need to be removed before the results were shared with the participants.

I gathered the qualitative data for this study from interviews with seven individuals at the college. Although data saturation was achieved, the identification and analysis of additional qualitative sources would provide data for triangulation and higher resolution results. This could increase the validity of the study and also help other institutions determine transferability based on their own unique circumstances (Lodico et al., 2010).

A white paper has limited ability to bring about change (Stage & Manning, 2015). In this situation, it was the appropriate choice of genre because, as HP director, I manage the daily operations but I do not control the HP's admissions process. Once the administrators at SC review the white paper, they will need to create a strategic plan to manage and bring about the changes they desire (Kotter, 1996). As an advocate for the HP as well as its manager, I will see that the white paper is distributed widely and that the SC administrators understand how Sternberg's (2010) augmented theory of successful intelligence can be used in SC's strategic planning process.

Recommendations for Alternative Approaches

One method to address the problem is to change the HP admissions criteria. By selecting criteria that more accurately reflect the values of the institution and the profiles of successful HP students, it is likely that the HP completion rate will increase at SC. I have used Sternberg's (2010) theory of augmented successful intelligence as the theoretical basis for my study, but NCHC notes that HPs are not required to use

standardized HP admissions practices or those supported by a specific theory. A survey of NCHC member institutions could be conducted to identify other HP admissions criteria and practices that are fruitful. I did not pursue this option as a project genre because I wanted the project to derive directly from the research findings so that the recommendations would be more representative of SC's HP program and college culture.

Alternatively, other definitions of the problem could be used at SC. The simplest modification would be to revise the acceptable HP completion rate. The current rate is approximately 70% of the students who start in the HP complete it, and the desired rate is 90%. If the SC administration decided 70% was an acceptable completion rate, as it is at some other institutions, then the problem would cease to exist and the HP admissions criteria would not need to be changed. However, given that SC values the reputation of its HP so highly, it is unlikely to take this approach.

Scholarship, Project Development, Leadership and Change

In the course of developing this study, I learned that scholarship is more than knowledge. Although knowledge, including facts, ideas, and theories, is a part of scholarship, it is not the whole. In order to be effective professionals, our definition of scholarship involves the commitment to the ideals of the evidence-supported argument as well (Lodico et al., 2010). Thus scholarship is an interrelated web of knowledge supported by evidence and expanded through high quality research. In the end, scholarship in even a single topic is too vast for any one individual to fully know. By conducting authentic research, I add incrementally to the construction of knowledge and I develop myself as a scholar.

Authentic research that advances scholarship takes significant time to develop (Creswell & Plano Clark, 2011; Lodico et al., 2010). Although introductory materials often simplify the research process by representing it in a linear model, emergent designs are required in mixed methods research. Thus creating scholarship is a cyclical process of asking questions, searching for answers, and refining the questions again. By taking the time to ask focused research questions and explore unbiased, valid, and reliable answers, I ensured that my research was authentic and adds to the body of knowledge on higher education leadership.

The definition of the problem is the foundation that the entire project is built upon (Lodico et al., 2010). The research questions are drawn from a need to understand the problem and refined as the problem reveals itself more fully. The research questions determine the choice of research methods that provide the eventual results. The evaluation of the final project closes the circle by going back to the definition of the problem to look for evidence that the problem has been addressed.

The researcher learns more about the problem in the course of the research, and may even need to refine the definition of the problem as time goes on. This includes adding perspectives of those impacted by the issue as well as gaps in the literature or in practice (Creswell & Plano Clark, 2011). The researcher's understanding of the problem becomes deeper and the definition of the problem becomes narrower through this process of project development.

Kotter (1996) noted that one of the largest barriers to change is complacency. Even organizational leaders are unlikely to change unless they see an urgent need to do

so. Change is disruptive to the organization and in the short-term causes declines in productivity and satisfaction. Being a leader means recognizing when change is necessary and appropriate because long-term benefits will outweigh the costs. Once that recognition occurs in the leadership team, the organization can proceed to developing a change management strategy.

One effective means of leading change is to establish a group that is charged with guiding the change through the organization (Kotter, 1996). This group must have the authority and responsibility to bring about change, but it also must have credible expertise to convince other members of the organization to support the change. Members of the organization build internal and external credibility and expertise by carrying out authentic research leading to scholarship. Thus research allows organizations to expand the number of individuals capable of leading change.

Many of my personal insights developed because of my background and experience. My bachelor's and master's degrees, and my initial foray into a doctoral study were in astrophysics rather than social sciences such as education. Although little overlap existed in the research content, learning astrophysics taught me how to use deductive approaches to large problems, remain calm under research pressures, and find the right tools to solve problems. These lessons proved invaluable as I developed into an education scholar.

I started this study with a working understanding of quantitative methods, but I needed to resurrect my quiescent mathematics and statistics skills. I spent many hours reading textbooks and other resources. I also enlisted the help of my chair, Walden's

Academic Skills Center, and several colleagues at my home institution. I was fortunate to find a colleague with SPSS expertise who was willing to tutor me. By the time I was done with the preliminary quantitative data analysis, I was confident in my abilities in that area of research.

I knew the qualitative portion of this study would be far more challenging to me. I was initially resistant to using a mixed methods design, as I was not certain that I could successfully and efficiently complete a doctoral study under those constraints. But the more I discussed the research questions with my chair, the more clearly I saw that the best approach to answering them was to use mixed methods. So I agreed to face the challenges of learning qualitative and mixed research methods, albeit somewhat reluctantly.

An explanatory sequential approach made sense for the research question and my abilities as a researcher. Vygotsky (1978) theorized that at any given time for a given learner, a zone of proximal development exists between the learner's independent abilities and the abilities the learner is unprepared to achieve even with support. For me, this study and the project fell squarely in my zone of proximal development: I could build on my quantitative foundation and use support from my chair and other researchers to scaffold my learning and develop the white paper.

This project demanded a higher level of quantitative proficiency, an embrace of qualitative research, and the ability to synthesize these data into viable mixed methods results. I made a good many missteps and mistakes during this project, but I eventually managed to look upon them as learning opportunities rather than failures. As a scholar, I

am more secure in understanding and producing a broader variety of research now than I was when I started this project.

Until I began my doctoral studies at Walden, I was a self-taught practitioner of educational administration. My original degrees were in the physical sciences. As a young adult, I worked as a data analyst and a software engineer before moving into higher education administration. During my years in academia, I have constantly constructed and executed my own professional development agenda. But Sefton-Green (2012) noted that informal education is often discussed in the language of deficits, and my experience bore that out: my self-taught status was a detriment in the eyes of some academic leaders. This perception of my professional skills compelled me to find gaps in my learning and address them in my doctoral program.

Research for this study allowed me to increase my quantitative skills and build nascent qualitative skills as well. The qualitative work demanded that I not only learn to collect data by interviewing participants but also deal with the ambiguity inherent in qualitative data analysis. I found that intuition is a double-edged sword; it can point to potential themes but it can also be a source of researcher bias. Thus, I found research data triangulation and validation processes, such as member checking, were crucial for the accuracy of the qualitative data collected for this study.

I am putting these new skills into practice in my job as an educational administrator on a daily basis. I ask for more evidence to make data-driven decisions than I did previously, and I scrutinize the source of the data much more closely. I now automatically relate reports of my work to the college's strategic plan. I also encourage

my co-workers and challenge my students to assume the perspective of scholar-practitioners to improve their own work as well. Thus my doctoral studies have increased my capabilities as a practitioner and a leader.

Research methods texts such as Lodico et al. (2010) were crucial to developing this project. These texts present project development as smooth and linear. But they also warn that in practice, project development can be chaotic and iterative or cyclical. Although I was intellectually prepared for these challenges before starting this project, I developed a higher tolerance for ambiguity and revision by completing the project.

For me, one of the more difficult aspects of developing the project was my lack of control of the eventual outcomes and impact. Although I manage day-to-day operations of the HP, the deans lead it. So I can only make recommendations regarding the HP admissions process rather than dictate a new procedure. In the process of creating the white paper, it was important to remember this distinction and find ways to frame the project and its recommendations that would encourage the decision-makers to consider new options rather than defend the status quo.

Yet the lack of control does not give a manager permission to simply recommend changes and leave it in the hands of the decision-makers. If a project is going to live up to its potential, Kotter (1996) noted that a guiding coalition must shepherd the project all the way to the end. Thus it is important for me to not only take these recommendations to the decision-makers but also continue to advocate for them in the long-term.

Reflection on Importance of the Work

Due to the clear results in this study, I recommend the addition of creative and practical intelligences to the HP admissions process at SC. This addition could potentially expand the definition of HP students at SC as well as increasing the HP completion rate. Savvy college applicants understand that admissions criteria represent institutional values (Umhofer, 2015). So by expanding the criteria for HP admissions to include additional analytical, creative, and practical measures as defined by Sternberg (2010), SC will be signaling that it values more than just the narrow analytical measures it now relies upon for HP admissions.

Beyond a single institution, this work points to the need to more broadly define intelligence in programs for high-achieving post-secondary students. Many colleges outside SC use narrow analytical measures as a basis for program admissions. By using Sternberg's (2010) augmented theory of successful intelligence as the basis for admissions, decisions will likely lead to gains for all of higher education, including increased diversity, program completion, and graduation rates.

Implications, Applications, and Directions for Future Research

This study adds to the body of literature on the insufficiency of narrow, analytical measures as predictors of success in HPs. As alluded to by one of the admissions officers in this study, colleges rely on such measures because they are widely available, easy to manipulate, and less time consuming to evaluate than the alternatives. Consequently, HP admissions criteria can be based on narrow analytical measures as a means of managing

expenses (Wolfensberger, 2015). If additional criteria are to be adopted, administrators at SC will need to find new measures that are cost effective as well as valid predictors.

The faculty and admissions officers interviewed for this study supported the use of a more holistic approach to HP admissions, rather than the analytical approach that is currently used. They agreed that Sternberg's (2010) augmented theory of successful intelligence has merit in this context and could be used to refine HP admissions criteria in a way that would increase HP completion. Specifically, they believed that vital analytical, creative, and practical measures are currently missing from the HP admissions criteria, especially HS art and music grades, advanced epistemological thinking, and a focus on external connections and relationships. The combined analysis of the quantitative and qualitative portions of this study led me to recommend a review of the HP criteria to SC administrators, in the hope of spurring changes in the HP admissions process.

The honors students are some of the most highly sought students in not only college admissions, but also undergraduate opportunities such as research, internships, external scholarships, and international fellowships, as well as postgraduate opportunities with highly selective employers, graduate, and professional schools. These stakeholders and the HP students are best served when the HP admissions criteria match the values and skills required to successfully complete the HP. The application of this study to the HP at SC necessitates changes in the HP admissions criteria and admissions processes. Although this redesign will require scarce resources such as admissions officers', faculty members', and administrators' time, the integrity of the HP demands we do all in our power to create an HP that is going to provide the maximum benefit to its participants.

The SAT test recently underwent significant changes (College Board, 2015b). The changes are supposed to make the SAT more of an achievement test like the ACT, and less of an aptitude test like the prior versions. Thus, future research will include comparisons of the new SAT test scores to college GPA, as the new SAT may be more or less predictive than the version used in this study. In particular, if SC adopts new HP admissions standards based on the recommendations from this study, it will be possible to extend this research by conducting a quantitative evaluation at SC to determine the relationships between the new SAT test scores, new HP admissions criteria, and the college GPA for students in the HP.

The potential addition of noncognitive intelligence measures to HP admissions criteria generates several possibilities for future work. The Aurora Battery, a new intelligence test based on Sternberg's augmented theory of successful intelligence (Sternberg et al., 2012), has been shown to be effective in predicting GPA as well as expanding diversity in college admissions. Once new HP admissions criteria at SC are agreed upon, a new study at SC comparing HP completion rates under the new HP admissions criteria in comparison the current HP admissions criteria will be required.

Conclusion

This project was based on Sternberg's (2010) augmented theory of successful intelligence. It used a mixed method design that led to clear recommendations for a process to improve the admissions criteria for HP students. Different sampling techniques would allow the study to be more transferable to other settings. This research facilitated my growth as a scholar, practitioner, and project designer, and also has the potential to

impact positive social change at the local level and beyond. Future research will include both testing new HP admissions criteria at SC and broader explorations of intelligence measures as predictors of success.

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Appendix A: Project

Success in Honors: Accomplishments and Improvements

Introduction

The goals of our honors program (HP) are to recruit the best students to SC and give them an opportunity to pursue a more challenging curriculum. Students must be retained in the HP to benefit from it. Program administrators would like to see 90% of the students who enter the HP graduate as members. However, in the past few years, the completion rate has been significantly lower, typically around 70%. This paper presents recent research related to the HP program and explores the current admissions practices and their relation to HP completion based on that research. It concludes with research-derived recommendations regarding improvements to the HP selection process that could improve the completion rate and make the HP more likely to reach its goals.

Background

A former vice president of academic affairs established the HP at SC in 1995 as a means of recruiting top students to the institution. Informal conversations with this former administrator revealed that little thought was given to the academic parameters of the HP at the time, as it was seen primarily as a means to entice students to enroll, and that the high achieving students would make the most of the available opportunities once they were at SC. The core honors courses were established, and the program was run by a series of faculty directors until 2008, when an administrator was appointed as the director.

The HP application process changed during the last two decades. Prior to 2008, an application essay was required of all students who wished to be admitted to the program. The director, and in some years a panel of faculty members, reviewed the admissions applications including the HP admissions essay, and then admitted students to the HP. In 2008, when the current HP director was appointed, the vice president for admissions asked that the application essay for HP admissions be dropped. He reasoned that the top students had many choices of colleges to attend and that they were more likely to come to SC if they had been automatically admitted to the HP. Thus the current admissions process for the HP is only based on the admissions rating.

All applicants to SC are given an admissions rating. The rating consists of five factors: high school (HS) grade point average, HS quality, HS rank in class, HS schedule strength, and standardized test scores. According to the SC admissions office, these factors are defined as follows:

HS grade point average: A weighted average of only the HS core courses, calculated by the admissions staff based on information from the student's HS transcript. It includes grades for courses such as English, mathematics, languages, history, science, and advanced placement (AP) courses. It excludes physical education, driver's education, health, art, music, and similar courses unless they have been taken as an AP course.

HS quality: The academic rigor of the student's HS, as assigned by the admissions staff based on information from the student's HS transcript.

HS rank: A student's rank order by GPA in his or her HS class, as reported by the HS.

HS schedule strength: The academic rigor of the student's HS courses as assigned by the admissions staff based on information from the student's HS transcript. For example, students with many AP courses are given a high rating whereas students who only took standard courses are given a low rating on this subscale.

Standardized test scores: Scores from the SAT or ACT tests, as reported by the relevant testing entities.

If any of these factors are missing, the rating is calculated based on the remaining factors. At the conclusion of the rating process, each applicant has a numeric admissions rating which is then used to determine admission to SC and admission to the HP.

The Problem

Although SC has been using admissions ratings as the primary criteria for HP admissions for the past 8 years, this is the first research study that has been undertaken to explore the efficacy of the admissions criteria. Anecdotally, the faculty and HP director noted that nonhonors students were often capable of honors-quality work and some HP students did not complete the HP despite having high admissions ratings. Thus, this study was undertaken to better understand the relationships between the HP admissions process and eventual success in the HP.

The overarching research question for this study focused on the relationship between HP selection criteria and HP success. First, I looked at the quantitative relationships between the components of the admissions rating and the HP students' college GPAs to see if they were correlated or if the components could be used to predict the college GPA. Then I interviewed faculty and admissions officers who were involved

in the HP to get their perspectives on the current HP admissions process and recommendations for possible improvements.

The fundamental theories behind this study are Robert Sternberg's (2010) theories of successful intelligence. Sternberg's (2010) triarchic theory of successful intelligence posited three components required to succeed in life: (a) creative, (b) practical, and (c) analytical intelligences. Creative intelligence focuses on the ability to find novel solutions. Practical intelligence, often called *street smarts*, is the ability to use one's own skills and the available resources to navigate daily life. Analytical intelligence is the ability to solve academic tasks. Sternberg (2010) subsequently theorized that these intelligences are amplified by an individual's wisdom; that is the ability to ethically use these intelligences, as well as knowledge, to improve situations for both the individual and broader society in the short and long term. This theory, depicted in Figure 1, became known as Sternberg's augmented theory of successful intelligence.

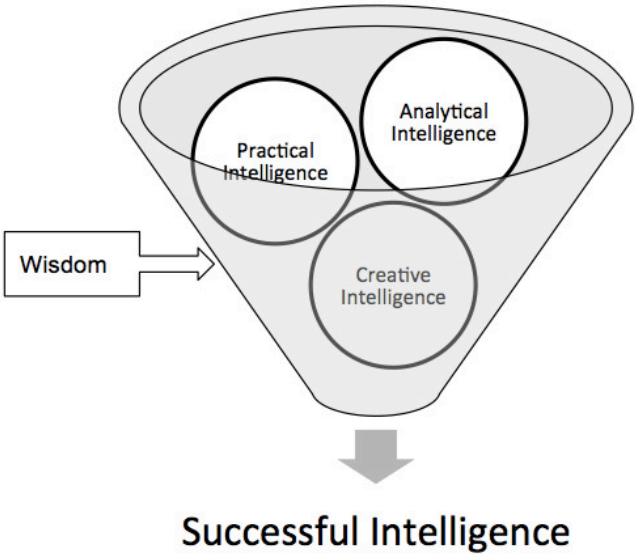

Figure 1. Sternberg's (2010) augmented theory of successful intelligence. Most college admissions processes primarily focus on analytical intelligence rather than the other components. Sternberg believed that including creativity, practicality, and wisdom in admissions decisions would lead to greater success later on in life. Adapted from Sternberg (2010).

Admissions criteria and completion rates in HPs vary widely (Long, 2013). Although the majority of programs consider standardized test scores and HS GPA in admissions, some also require applications with noncognitive factors such as essays, interviews, recommendations, and service hours. Little consensus exists in the literature about standard or optimal completion rates: Goodstein and Szarek's (2013) review of the literature on HP completion found that rates of less than 50% were the norm. But reports of HP completion rates from individual studies range from 18% completion reported by Campbell and Fuqua (2008) to 97% completion reported by Smith and Vitus Zagurski (2013). Goodstein and Szarek suggested one reason for suboptimal HP completion rates

was “a program may … not select the students best-suited for its offerings” (p. 91). Thus SC is not the only institution struggling to understand the relationship between its HP admissions practices and the eventual HP completion rates.

Quantitative Research and Findings

The SC admissions data analyst provided admissions data records for HP students from 2009 through 2015. The records included the five factors used to calculate the admissions rating (weighted HS grade point average, HS quality, HS rank in class, HS schedule strength, and standardized test scores). The SC admissions data analyst was also able to include the students’ college GPAs in the records. He then removed the students’ names and college identification numbers so the data set was fully anonymized. The data set was password-protected, and I loaded the data set into SPSS for statistical analysis. Table 1 shows the variability of the measures for each admission variable.

Table A1

Descriptive Statistics for the Quantitative Variables

Variable Name	Valid *N*	Mean	*SD*	Min	Max
Admission rating	374	79.01	4.36	56	93
Subscale standardized test	296	8.79	1.33	4	10
Subscale HS GPA	362	8.83	1.36	4	10
Subscale HS rank	303	9.56	1.07	2	10
HS schedule strength[a]	359	9.65	0.79	6	10
HS quality[a]	359	2.78	1.34	1	5
SAT-verbal[b]	243	671.19	57.08	520	800
SAT-math[b]	243	694.81	55.67	550	800
ACT[b]	123	30.67	2.15	24	35
HS GPA[b]	362	94.62	2.59	86.1	101.12
HS rank[b]	303	6.99	6.53	0.18	55.11
College GPA	374	3.59	0.32	2.31	4.00

Note. HS = high school; GPA = grade point average.
[a]The subscales for these variables are the same as the raw scores. [b]The raw scores for these variables are used to calculate the relevant subscale.

The data set consisted of records for 375 HP students, of which 305 (81%) were in good standing in the HP and 70 (19%) were already on warning or dismissed from the HP. Because these students have not yet completed their SC degrees, 19% is the lower limit of program attrition, and it will rise as the students approach graduation. In other words, it is likely that more students will attrite from the HP, whether they stay at SC, transfer to another institution, or leave higher education entirely. Thus, the anecdotally observed attrition rate was upheld by this data and analysis.

Spearman correlation coefficients indicate the strength of the relationship between two ordinal variables, and range from −1 for perfect negative correlation, to 0 for no

correlation, to +1 for perfect positive correlation. According to widely held statistical standards, correlation coefficients with absolute values less than .2 are considered weakly correlated, whereas correlation coefficients with absolute values in the .3 to .5 range are considered moderately correlated (Urdan, 2010). The Spearman correlations between the college GPA and SC's admission criteria are shown in Table 2. By the standard statistical guidelines, the only SC admissions criterion that has a moderate correlation to the college GPA is the ACT test score.

Table A2

Spearman Correlations Between College Grade Point Average and Admissions Criteria

		Admission rating	SAT - verbal	SAT - math	ACT	HS GPA	HS rank	HS schedule strength	HS quality
College GPA	Correlation coefficient	.204**	0.1	0.081	.305**	.205**	−174**	−0.052	0.016
	Sig. (2-tailed)	0	0.118	0.209	0.001	0	0.002	0.325	0.762
	N	373	243	243	122	363	303	358	358

Note. HS = high school; GPA = grade point average, *N* = 374.
** Correlation significant at the 0.01 level (2-tailed)

Truncated and restricted variable ranges are known to cause smaller correlation coefficients (Jackson, 2015; Kirk, 2010). However, this mathematical rationalization for the magnitude of the correlation coefficients in this study does not invalidate the interpretation of the statistics. Indeed, the problem of reduced correlation between admissions criteria and college GPA due to the truncated ranges of admissions criteria is so widely known that Jackson (2015) used it as an example in her research methods textbook:

> For example, colleges that are very selective, such as Ivy League schools, would have a restrictive range of SAT scores—they only accept students with very high

> SAT scores. Thus, in these situations, SAT scores are not a good predictor of college GPAs because of the restrictive range on the SAT variable. (p. 157).

Because SC is a selective college and the HP admission process further selects students from a limited range of admission criteria, it is reasonable that the current HP admission variables are not well correlated with college GPA.

The next step in the statistical analysis was the regression calculation. Regression analysis looks at whether a variable or group of variables can be used to predict an outcome or dependent variable. In this case, I used the five variables that were part of the admissions rating calculation to see if they could predict the college GPA. Multiple linear regression analysis resulted in the model summary in Table 3. The coefficient of determination, R^2, is the amount of the variability that can be determined from the input variables as a whole (Laerd Statistics, 2013). In this analysis, only 21% of the variability in the college GPA was explained by the components of the admissions rating. The effect size, denoted by the adjusted R^2, was .167, which is considered to be a small effect (Urdan, 2010).

Table A3

Multiple Linear Regression: Model Summary

Model	*R*	R^2	Adjusted R^2	Standard Error of the Estimate	Durbin-Watson
1	.457	.209	.167	.272	1.199

Note. HS = high school; GPA = grade point average. Predictors: ACT, HS GPA, HS rank, HS quality, HS schedule strength. Dependent Variable: college GPA.

Table 4 summarizes the multiple regression coefficients for each of the admissions rating factors. The only significant coefficients were ACT test and HS GPA,

which were significant at the $p < .05$ level. The standardized coefficients for ACT test score and HS GPA were nearly identical, indicating they have similar weights in the prediction model. None of the other admissions ratings factors were statistically significant in the multiple regression model.

Table A4

Multiple Regression Coefficients

Model 1	IV	Unstandardized coefficients		Standardized coefficients	*t*	Sig.
		B	Std. error	β		
	(Constant)	.368	1.361		.271	.787
	ACT	.034	.012	.260	2.771	.007*
	HS GPA	.028	.013	.222	2.119	.037*
	HS quality	.051	.031	.191	1.658	.101
	HS rank	−.009	.005	−.211	−1.778	.079
	HS schedule strength	−.055	.037	−.137	−1.477	.143

Note. $N = 99$. HS = high school; GPA = grade point average. Dependent Variable: college GPA.

* Significant at the $p < .05$ level

In the course of the quantitative analysis, it became clear to me that although more female students started in the HP, more male students left the HP. A chi-square test confirmed that females were overrepresented when looking at the *good standing* category of HP status. According to the data displayed in Table 5, in the academic years from 2009 to 2014, only 12.3% of females who started the HP ended up dismissed or on track to be dismissed, but 27.0% of males who started the HP were dismissed or on track to be dismissed. For reasons that are unclear, males were more than twice as likely as females to end up on warning or dismissed from the HP during this period.

Table A5

Gender Versus Honors Program Standing

HP standing		Observed *N*	Expected *N*	Residual
Warning or dismissed	Female	26	39.6	−13.6
	Male	44	30.5	13.6
	Total	70		
Good	Female	186	172.3	13.7
	Male	119	132.7	−13.7
	Total	305		

Note. HP = honors program. In total sample $N = 375$, 212 females (56.5%) and 163 males (43.5%) participated in the HP. Using those percentages, I calculated expected numbers of females and males in each standing category. The residual is the difference between the observed and expected counts in each category.

The five components of the admissions rating are not strongly correlated with and do not accurately predict the college GPA of the HP students at SC. The only component that was moderately correlated with college GPA was the ACT test score. The combination of ACT test score and HS rank weakly predicted 21% of the variance in the college GPA. Males were twice as likely to leave the program as females, but it is unclear why gender is related to HP completion.

Qualitative Data and Findings

After the initial quantitative data analysis, I conducted a series of interviews with a few HP stakeholders to explore their perspectives on the HP admissions criteria. Two admissions officers and five faculty members agreed to take part in interviews for this study. All the participants had been employed at SC since the beginning of the quantitative data set, i.e., 2009. The admissions officers had placed students in the HP and the faculty members had taught HP courses and served on the HP's faculty advisory

committee. Participants took part in a recorded, semi-structured, primary interview to discuss their individual perspectives on analytical, creative, and practical intelligence and how these intelligences related to success in the HP. A second interview with each participant was unrecorded and unstructured. It served as a member check: participants were asked to review their own transcript and talk about the themes that had emerged from the initial qualitative data analysis. The final qualitative analysis, as shown in Table 6, was conducted after all the second interviews were complete.

Interviews with two of the SC admissions officers revealed that many of the procedures used to screen general admissions candidates are not used in HP admissions. This is generally due to the high admissions ratings that are required for the HP students. So although data such as letters of recommendation, interview ratings, extra-curricular activities, and similar factors are used in general admissions at SC, they are not used for HP admissions. The SC admissions officers believed that some of this data could potentially be useful to the HP in the admissions process, but were concerned that it would be highly labor-intensive to gather and calculate the data for the HP students because they were already admitted to SC at that point.

Table A6

Frequencies of Suggestions

Type of Intelligence	Suggestion for desirable HP admissions criteria	Frequency of Support
Analytical	HS art and music grades in HS GPA	4 faculty, 2 admissions officers
	Other admissions factors (interview ratings, reviews of extracurricular activities, etc.), which are included in general admission but not HP admission at this time.	4 faculty
Creative	Ability to make connections	2 faculty, 2 admissions officers
	Independence	4 faculty
	Advanced epistemological thinking	All 7 participants
	Risk taking	3 faculty, 2 admissions officers
	Curiosity	3 faculty, 1 admissions officer
	Multiple intelligences	2 faculty, 2 admissions officers
Practical	Outward looking	All 7 participants
	Resolve	3 faculty, 2 admissions officers
	Balance/time management	2 faculty, 1 admissions officer
	Communication skills	4 faculty, 1 admissions officer
	Leadership	2 faculty, 1 admissions officer
	Growth experiences	2 faculty, 2 admissions officers

Note. HP = honors program; HS = high school; GPA = grade point average. Participant pool consisted of 5 faculty and 2 admissions officers.

The five faculty members who participated in this study represented the full spectrum of academic disciplines at SC. Four were tenured professors and one was a senior, nontenured instructor. All the faculty participants were familiar with the HP admissions process. Only one of the faculty members had belonged to the HP faculty advisory committee during the time when the HP admissions process included an essay.

All of the faculty members were unaware that the HS GPA used to calculate the admissions rating was a weighted GPA that excluded art and music courses. Faculty members agreed that driver's education class should be excluded from the GPA, but the faculty members' opinions varied as to whether physical education, health, and other noncore courses should be included. Some faculty felt these course grades should be available for students considering particular majors: physical education might be relevant to dance majors, but not mathematics majors, for example. The faculty members did not have consensus on how the data from art, music, and similar courses should be included in the admissions process. Four of the five faculty members interviewed expressed a desire to have access to applicant data beyond the numeric admissions rating so elements such as letters of recommendation, portfolios, extracurricular activities, and other applicant experiences could be considered in the HP admissions process.

Interview participants also supported the inclusion of creative intelligence in the HP admissions process. All of the participants felt that advanced epistemological thinking was a hallmark of success for students in the HP. Students with underdeveloped epistemological thinking, i.e. those who relied on external authorities to serve as experts who delineated right and wrong, were unlikely to excel in the HP. In contrast, students

who were skilled at finding and weighing a variety of arguments, and then using appropriate evidence to inform their own solution to a problem were very likely to succeed in the HP.

Beyond epistemological thinking, several other aspects of creative intelligence were suggested and supported by the participants. These included curiosity, independence, the ability to make connections between disparate concepts, and the ability to take risks. Two faculty and two admissions officers supported the concept of multiple intelligences, i.e. aptitudes or abilities beyond general intelligence (Gardner, 2011). These participants noted that some student excelled in areas not measured by analytical, mathematic or linguistic intelligences, such as musical, spatial, body-kinesthetic, interpersonal, and intrapersonal intelligences. They believed that the HP admissions process should consider the possibility of these alternative intelligences.

Practical intelligence was not as highly sought in HP students by the interview participants. They believed that it was an important aspect of an individual, but they did not believe it was as critical to success as analytical and creative intelligences. Two faculty members stated that the practical intelligence should not be as highly weighted as the analytical and creative intelligence. Another faculty member remarked that colleges were designed such that students were not required to exhibit practical intelligence in order to succeed.

One practical skill that all the interview participants agreed was a major contributor to an HP student's success was the ability to look outside oneself. Successful students often made connections to people, places, objects, or ideas that were not required

by everyday activities at the college. This ability, and in some cases affinity, for looking outward tended to help the student create interesting or unique pathways to success during their undergraduate years.

Four faculty members and one admissions officer also noted the importance of communication skills. Although reading and writing are generally known to be essential to college success, these participants also included aspects of communication such as approaching a faculty member and promoting one's own perspective as critical to success in the HP.

Several other practical traits were suggested by the interview participants as valuable to a student's success in the HP. These included time management, leadership, motivation/resolve, and experiences with challenge or adversity that generated significant growth. Not all the interview participants agreed that all of these practical traits were beneficial, but these traits had prominent support among them.

The five faculty members and two admissions officers interviewed for this study agreed on several suggestions for the HP admissions criteria. Chiefly, HS art and music grades should be made available in the HP application process, and the level of a student's epistemological thinking should be evaluated and considered. They also noted that outward-looking students tended to be more successful in the HP though the interviewees did not wish to add this as an admission criterion.

Combined Quantitative and Qualitative Analysis

The HP admissions process as it stands did not meet the expectations of the administrators, faculty members, and admissions officers who were involved in the HP.

The admissions rating does not predict the eventual successful completion of the HP, and critical analytical and creative criteria are missing from the HP admissions criteria. Although it was not clear that any currently available analytical metrics would predict success in the HP, the participants believed that a combination of analytical, creative, and practical intelligences hold promise in improving the HP completion rate.

Recommendations

The HP admissions process could be improved in many ways, some of which are clear from current research and this study, and some of which will require further research.

Evidence of the Solutions in Current Literature

Sternberg's theory of successful intelligence has been validated by numerous research studies and been applied effectively at the secondary, postsecondary, and postgraduate levels (Mandelman, Barbot, & Grigorenko, 2015). A plethora of HP admissions models exist (National Collegiate Honors Council, 2013; Roszkowski & Nigro, 2015) but the weighting of analytical elements varies. Reliance on analytical factors also tends to decrease diversity in the HP (Carnicom, 2013). The inclusion of creative and practical criteria in HP admissions has been shown to increase HP completion, diversity, and student satisfaction (Nichols & Chang, 2013; Truijen et al., 2014; Weerheijm & Weerheijm, 2012), which could address strategic goals of both the HP and SC as a whole.

Recommendations From This Research

The primary recommendation from this study is that the HP admission process for SC should be reviewed. The current process that solely relies on the analytical admissions rating is not a sufficient indicator of success, and this conclusion is based on both quantitative and qualitative research findings. In order to meet the administration's goal of 90% HP completion, the HP admissions criteria will need to be revised. An HP review committee consisting of vested participants at SC should carry out that work. Figure 2 shows a logic model where the recommendations can lead to increased HP completion.

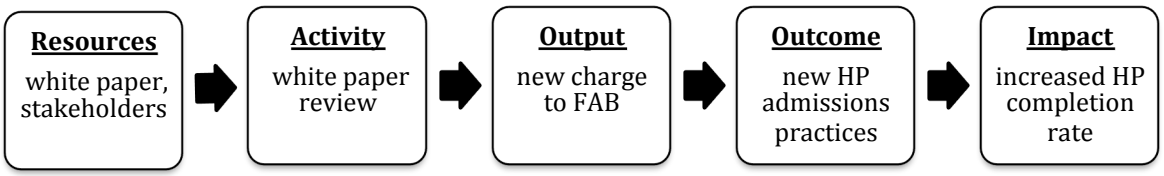

Figure 2. Logic model for implementation. The program to increase HP completion is depicted in a logic model (Innovation Network, Inc., 2010). In this model, the program inputs are *resources*; the *activity* transforms the resources into direct products, called the *output*. The initial result of the output is the *outcome* and the eventual result is the *impact*. Adapted from Innovation Network, Inc. (2010).

Three suggestions received near-unanimous consensus in this study, and are recommended to the review committee. From an analytical approach, faculty members were unaware that art and music grades were not included in the HS GPA. The committee will need to consider methods of including these data either in the HS GPA for HP students or as a separate metric. In the creative intelligence category, advance epistemological thinking should be considered as a possible HP admissions criterion.

Finally, in the practical intelligence category, although participants felt that this was less crucial than analytical or creative intelligence, an outward-looking standpoint was noted to be common among successful HP students. If current admissions data are insufficient, new data may be needed to measure these criteria before they can be included in the HP admissions process.

In addition, it is critical to not lose sight of the admissions officers' concerns that they do not have time to conduct extensive reviews for HP criteria and any new HP admissions criteria must not diminish the yield of high achieving students in the admissions process. This may mean that other staff members will need to be involved in the new HP admissions process or SC admission application questions could be focused on success factors for the HP. The new HP admissions criteria will need to be applied after the students have submitted their enrollment deposit in order to avoid disrupting the yield.

Recommendations for Future Research

Future research will take several directions. First, the SC admissions department will want to replicate this study and test the admissions rating to college GPA for non-HP students to see if the admissions rating is predictive for those students. Second, and more specific to the HP, SC will want to compare its HP completion rate to the rates at similar colleges. If new admissions criteria are created, SC will want to compare the new and old completion rates. Finally, several measures of analytical, creative, and practical intelligences are not being considered by SC in either its HP or its general admissions

practices. Using these measures, an experiment could be designed to search for good predictors of HP completion.

Conclusion

Many universities and colleges, including SC, see lower than desirable HP completion rates. For a variety of theoretical and practical reasons, the quantitative admissions ratings are not sufficient to predict the college GPA and eventual completion of HP students. Professionals at SC with a deep understanding of its HP recommended additional analytical, creative, and practical intelligence measures be considered as part of a new HP admissions process.

The HP has long been a source of pride at SC. In order to continue that tradition, the HP admissions process must be revised in ways that reflect SC's values and goals. The recommendations in this white paper point toward concepts that must be further explored, researched, and implemented before they will benefit the HP at SC.

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Appendix B: Interview Plan

Project Title: An Explanatory Sequential Approach to Success in a Small College Honors Program
Date, Time, and Location: _____

Interviewee Name and Title: _____

First Interview (semistructured)

1. Thank the interviewee for participating in the study.

2. Review the following topics with the interviewee:
    a. concept and purpose of study
    b. interview purpose, topics, recording, and duration
    c. protection of interviewee's identity, including pseudonym
    d. member checking during qualitative analysis
    e. lack of payment/compensation for interview
    f. informed consent document and have interviewee sign it

3. Background for study:
    a. Discuss Sternberg's theory of successful intelligences
    b. Share results of quantitative analysis representing first factor of Sternberg's triarchic theory of intelligence, analytic intelligence.

4. Question 1: Let's begin our discussion by focusing on Sternberg's second factor of success intelligence, creative intelligence. Sternberg defined creative intelligence as the ability to be flexible, and adaptable; to go beyond normal solutions to problems. How would you define creative intelligence? Alternatively, what if anything would you add to Sternberg's definition?

5. Question 2: Based on these definitions and understandings of creative intelligence, please identify and share any creative intelligence domains, factors, or examples that could be identified in the admissions process and you think would help HP students be more successful in the HP program.

6. Question 3: Of the domains, factors, and examples of creative intelligence discussed, which would you value most in students at SC and why?

7. Question 4 (contingent on the number of domains/factors/examples shared): Would you please rank the top two or three domains/factors/examples of creative intelligence in terms of their importance for HP student success?

8. Question 5: Let's shift our focus now to Sternberg's third kind of success intelligence, practical intelligence. Sternberg defined practical intelligence as the ability to navigate everyday situations. How would you define practical intelligence? Alternatively, what if anything would you add to Sternberg's definition?

9. Question 6: Based on these definitions and understandings of practical intelligence, please identify and share any practical intelligence domains, factors or examples that could be identified in the admissions process and you think would help HP students be more successful in the HP program.

10. Question 7: Of the domains, factors, or examples of practical intelligence discussed, which would you value most in students at SC and why?

11. Question 8 (contingent on the number of domains/factors/examples shared): Would you please rank the top two or three domains/factors/examples of practical intelligence in terms of their importance for HP student success?

12. Question 9: When we began this interview, I reviewed the variables the college currently includes for HP admissions, variables that represent Sternberg's analytical intelligence. To review, Sternberg's definition of analytic intelligence is the ability to use information-processing elements of general intelligence such as inductive reasoning and working memory to analyze problems or evaluate solutions. Beyond those already discussed, are there any additional analytical factors that you would value and recommend for inclusion in the admissions criteria for the HP?

13. Question 10 (contingent on the number of additional domains/factors/examples shared): Would you please rank the top two or three additional domains/factors/examples of analytical intelligence in terms of their importance for HP student success?

Second Interview (unstructured).

1. The purpose of this second and last interview is twofold. First, I want to verify your responses that I recorded during the first interview to make sure I have recorded them accurately. Second, new ideas can emerge after having had the chance to think about something for a while. Therefore, I would like to close the interview by giving you a chance to discuss anything new that you would like to add.

2. One-by-one, go through the questions and recorded responses from the first interview. Be sure to clarify any new comments to accurately reflect the intended responses.

3. Close with the following question: Please add anything new that might help the college improve the HP selection process. Let the participant's response guide the remainder of the second interview.

Appendix C: Data Use Agreement

With the permission of Walden University's IRB, I used a data use agreement in lieu of a letter of cooperation. Due to confidentiality concerns, I redacted all identifying information from the following copy of the data use agreement.

DATA USE AGREEMENT

This Data Use Agreement ("Agreement"), effective as of October 5, 2015 ("Effective Date"), is entered into by and between Margaret Tongue ("Data Recipient") and [redacted] ("Data Provider"). The purpose of this Agreement is to provide Data Recipient with access to a Limited Data Set ("LDS") for use in research **in accord with laws and regulations of the governing bodies associated with the Data Provider, Data Recipient, and Data Recipient's educational program.** In the case of a discrepancy among laws, the agreement shall follow whichever law is more strict.

1. Definitions. Due to the study's affiliation with Laureate, a USA-based company, unless otherwise specified in this Agreement, all capitalized terms used in this Agreement not otherwise defined have the meaning established for purposes of the USA "HIPAA Regulations" and/or "FERPA Regulations" codified in the United States Code of Federal Regulations, as amended from time to time.

2. Preparation of the LDS. Data Provider shall prepare and furnish to Data Recipient a LDS in accord with any applicable laws and regulations of the governing bodies associated with the Data Provider, Data Recipient, and Data Recipient's educational program.

   Data Fields in the LDS. **No direct identifiers such as names may be included in the Limited Data Set (LDS).** In preparing the LDS, Data Provider shall include the **data fields specified as follows,** which are the minimum necessary to accomplish the research:

Data for all enrolled students, academic years 2009-2010 to 2014-2015:

- Interview score
- Creative works score
- Red sheet status
- Legacy status
- Development rating
- Contact history (on + off campus)
- Financial aid application (Y/N/E)
- Financial need
- TOEFL
- ACT
- SAT
- Applicant Rating
- High school rating
- HS GPA
- HS Schedule strength
- HS ranking

- HS Type
- Citizenship
- Ethnicity
- Gender
- HS Name + Ceeb
- Honors Program status
- Home state/country
- College GPA

3. Responsibilities of Data Recipient. Data Recipient agrees to:

    a. Use or disclose the LDS only as permitted by this Agreement or as required by law;

    b. Use appropriate safeguards to prevent use or disclosure of the LDS other than as permitted by this Agreement or required by law;

    c. Report to Data Provider any use or disclosure of the LDS of which it becomes aware that is not permitted by this Agreement or required by law;

    d. Require any of its subcontractors or agents that receive or have access to the LDS to agree to the same restrictions and conditions on the use and/or disclosure of the LDS that apply to Data Recipient under this Agreement; and

    e. Not use the information in the LDS to identify or contact the individuals who are data subjects.

4. Permitted Uses and Disclosures of the LDS. Data Recipient may use and/or disclose the LDS **for its Research activities only.**

5. Term and Termination.

    a. Term. The term of this Agreement shall commence as of the Effective Date and shall continue for so long as Data Recipient retains the LDS, unless sooner terminated as set forth in this Agreement.

    b. Termination by Data Recipient. Data Recipient may terminate this agreement at any time by notifying the Data Provider and returning or destroying the LDS.

    c. Termination by Data Provider. Data Provider may terminate this agreement at any time by providing thirty (30) days prior written notice to Data Recipient.

    d. For Breach. Data Provider shall provide written notice to Data Recipient within ten (10) days of any determination that Data Recipient has

breached a material term of this Agreement. Data Provider shall afford Data Recipient an opportunity to cure said alleged material breach upon mutually agreeable terms. Failure to agree on mutually agreeable terms for cure within thirty (30) days shall be grounds for the immediate termination of this Agreement by Data Provider.

e. Effect of Termination. Sections 1, 4, 5, 6(e) and 7 of this Agreement shall survive any termination of this Agreement under subsections c or d.

6. Miscellaneous.

a. Change in Law. The parties agree to negotiate in good faith to amend this Agreement to comport with changes in federal law that materially alter either or both parties' obligations under this Agreement. Provided however, that if the parties are unable to agree to mutually acceptable amendment(s) by the compliance date of the change in applicable law or regulations, either Party may terminate this Agreement as provided in section 6.

b. Construction of Terms. The terms of this Agreement shall be construed to give effect to applicable federal interpretative guidance regarding the HIPAA Regulations.

c. No Third Party Beneficiaries. Nothing in this Agreement shall confer upon any person other than the parties and their respective successors or assigns, any rights, remedies, obligations, or liabilities whatsoever.

d. Counterparts. This Agreement may be executed in one or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.

e. Headings. The headings and other captions in this Agreement are for convenience and reference only and shall not be used in interpreting, construing or enforcing any of the provisions of this Agreement.

IN WITNESS WHEREOF, each of the undersigned has caused this Agreement to be duly executed in its name and on its behalf.

DATA PROVIDER	**DATA RECIPIENT**
Signed: [redacted]	Signed: Margaret Tongue
Print Name: [redacted]	Print Name: Margaret Tongue
Print Title: [redacted]	Print Title: Student, Walden University

Appendix D: Excerpts From Qualitative Analysis Log

Excerpt 1

Interviews with participants were transcribed, and then I entered responses to specific interview questions in the table below. This served as a first step in determining themes within and among the responses.

ID#	Response to Analytical Question	Response to Creative Question	Response to Practical Question	Other Responses
1a	• Just 5 factors	• supplemental pieces • art pieces • projects outside of the classroom • highlight a specific interest or passion • building • essay (is secondary) • students who aren't just focused on a single subject matter. • Students that can bridge the gap, make connections • what else have they done? • outside their focus?	• street smart • independent • common sense • drive • determination • perseverance • do the work • difference maker	• high powered schools (vs. 1s and 2s.) might be weighted too much
2f	• SAT & ACT • reading comprehension • ability to read, interpret and respond • read a text and draw conclusions • high school	• problem solve • they're not relying on somebody to tell them the answer. • question to ask on their own. • In Science, creativity is a big	• administrative hurdles • more boxes to check, • make a schedule • figure out that when their classes are • times available	• Test optional has decreased analytical skills • easier to work with. The ones who don't

	rankings • AP scores • Placement test scores for SC.	deal. • see around the curve. See what the next, see where I'm going • they can put the pieces together, they can synthesize. • to try things that have never been done before, • come up with a new way to do something when something is not working. • inherent willingness to look at a problem a different way and come up with a different way to solve a problem • trying to come up with a solution, • reasoning by analogy, and coming up with some other way of doing it. • "okay this isn't working let me see if I can find a way to rig something up that will do the job for me".	for HP project • right time to take 4 classes • registering for classes, picking courses, petitioning • personal life skills. • Ability to hold a conversation. • interpersonal skills • reading comprehension • be independent	need their hands held • if you have to come to me to ask whether you're breathing in first or breathing out first I'm kind of done. • students who went to bad high schools who really excelled and I understand that it's almost like they should get like that difficulty rating like wow you're that good and you came from a bad high school.

Excerpt 2

As the themes and categories developed, I also kept track of my thoughts and concerns regarding the participant responses:

Thoughts on analytical, beyond 5 factors:

- None of the faculty were aware that the HS GPA was weighted at all, let alone excluding art and music grades outside AP. Some want to know if this is common practice at other colleges?? One admissions rep mentioned that they consider including unweighted GPA when admissions has its yearly discussion about changes to the admissions process, but it never makes the final cut.
- Creative Works grades. Interviewees seem to be asking: Is it fair/right/reasonable to include a student in the HP if they have a high CW score (e.g. incredible painter) but not high on the other 5 factors? Are we setting that student up to fail in the HP?? Unclear.
- How do analytical factors speak to our values as a college?

Thoughts on creativity, beyond novel problem solving.

- Connections: explicitly "make connections" or implicitly "see around the curve", "synthesize".
- Independence: explicitly "being independent". implicitly "come up with a new way", "make their own way", make it MINE
- Maturity: maturity in the discipline, thought behind performance (more than just the assignment.), OWN their work, live their truth, deal with ambiguity, weighing short term & long term goals.
- Risk taking: "try something new" "rig up something", "not box checkers", "novel experiences", breadth and depth of a resume.
- Curiosity: stance towards learning. Ways to experiment, initiative.
- Multiple intelligences.

Thoughts on practical, beyond street smarts:

- Outward looking: seek mentors & opportunities, get involved, beyond the boxes, passion. NEED A BETTER NAME FOR THIS.
- Tenacity: determination, perseverance, Willingness to work hard, difference maker, get it off the ground.
- Balance/time management
- Communication skills
- Leadership
- Independent
- Experiences that shape you: Experience of failure and reflection on failure. Learning from it.
- Motivated
- These are all overlapping and mutually influential. Enmeshed and interdependent. Comingled. Compounded. Leveraged.