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THE PREDICTIVE VALUE OF ADMISSIONS STANDARDS FOR STUDENT SUCCESS AT AN INDEPENDENT COLLEGE OF ART AND DESIGN

by

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CHAPTER 1 INTRODUCTION

Background of the Study

Admissions standards have become a significant part of the ongoing debate about quality and achievement in higher education. Enrollment managers are tasked by their institutions to enroll a group of students each year that matches their institution's mission, while identifying those students that are most likely to succeed and contribute to the campus community. The challenge for the enrollment manager is to identify the information that is most likely to enable their admissions team to accomplish this goal. A great deal of research has been conducted on admissions standards and the predictive value of those standards in higher education (for example: Geiser, S., and Santelices, M., 2007; Munday, 1967; Myers, R. and Pyles, M., 1992; Noble, J. and Sawyer, R., 2002; Patterson, B., Mattern, K., and Swerdzewski, P., 2012; Perfetto, G., 2002; Sawyer, R., 2010; Sawyer, R. 2013; Zwick, R., 2007).

The body of research into the predictive value of admissions standards has produced a great deal of insight into the likelihood of student success in the first year, overall academic success, graduation rates, and educational satisfaction. Admissions officers at institutions all over the world have established standards that are believed to encourage students that will succeed to enroll at their campus. Admissions teams are also hoping to build an incoming class that supports the institution's mission, is diverse, will add new value to the campus community, and be academically successful. It is also true that there are a limited number of available spots in an incoming class of students and the admissions standards must enable the admissions team to select the students it feels will best meet the above objectives.

As Zwick (2007) points out in her study of admissions criteria, "the hard truth is that granting one candidate a seat at these institutions means keeping another one out, and some mechanism is needed for selecting among the candidates". Admissions standards are set to encourage students that are both prepared to embark on the educational goals at a given institution but are also students that will be challenged to grow and develop at the institution where they enroll. Admissions standards are also being utilized to determine which students deserve merit based scholarships, have passion and drive, and provide diversity to the incoming class. (Allen, J. & Sconing, 2005; Geiser, 2009; Munday, 1967, Bontekoe, 1992; Community College Research Center, 2012; Sawyer, 2013; Admissions to Higher Education Review; National Association of College Admission Counseling, 2013). As funding sources continue to dwindle from both the state and federal levels, institutions of higher education are facing greater pressure from both internal and external stakeholders to invest in students that will be successful. The challenge of the admissions and enrollment management teams is to identify those students.

Identifying the right students starts with the institution's admission criteria. Each institution must establish criteria for admissions that support their mission and their educational philosophy. An open enrollment institution with a mission of serving under represented populations will have to have a set of standards vastly different than an elite research based institution focused on graduate education. Within the commonly used admissions standards industry wide, each of those institutions must determine which criteria are useful in identifying the right students for their institution and the acceptable criteria range. Zwick (2007) found that there was an overall success rate of 85 percent in

students whose high school grade point average was 3.5 or better, while also finding a wide spectrum of success prediction in that same group of students based on their SAT scores. Institutions must know what admissions criteria mean both on a national level and at their institution to be able to make the best admissions decisions. Understanding what admissions standards mean to the composition of the incoming class at their institution is vital to every admissions officer and enrollment manager.

Common standards for higher education admission include high school grade point average, transfer college grade point average, and standardized test scores (ACT or SAT). As early as 1917, Harvard University began using high school grades to predict class standing in their admissions process (Lincoln, E.A., 1917). Many colleges also include essays, formal writing samples, in person interviews, extracurricular involvement, class rank, demonstrated interest, and many other unique measures that relate to an institution's mission and enrollment plan. Enrollment management teams utilize these standards to select an incoming student body but also to establish merit based financial aid strategies, educational support mechanisms, collegiate testing policies, class placements, retention plans, and many additional administrative decisions.

The way in which these admission criteria are used is the first place that a distinct difference is seen between traditional universities and art and design colleges. For the purpose of this study, an art and design college is defined as a member institution to the Association of Independent Colleges of Art and Design (AICAD). To qualify as a member institution to AICAD, an institution must be a private, not for profit, accredited institution of higher education issuing only degrees in fields of art or design. These institutions cannot be connected with any broader institution or other agency. There are 42 member

institutions in AICAD, all of which have similar criteria for admissions in addition to similarities in educational philosophy (www.aicad.org, 2015).

Art college admissions processes set out to identify students that have merit but also demonstrate talent, drive, and passion for the fields of art or design. In an examination of admissions practices at art and design colleges by Burke and McManus (2011), a list of 39 attributes (appendix A) were compiled representing the breadth of what admissions counselors were looking for in applications. Those items ranged from "wide knowledge of contemporary art", "use of colour", "good at self-promotion", to "wit", and "ability to meet deadlines". The admissions process at art and design colleges is driven by the goal of learning this type of information about potential students. The industry standard for determining if a student has these characteristics is through the use of a portfolio.

The entrance portfolio has long set the standard as the tool utilized by art and design institutions to evaluate applicants in a hope to identify those students that best meet the long list of desired attributes that admissions representatives are looking for. Standards for the portfolio are set by individual institutions based on programmatic needs and emphasis areas. These standards can vary within an institution based on the prospective student's chosen major or focus area. These standards are to determine if a student is ready to engage in the development of their chosen field of art or design. This process is often arduous for both the admissions team and for students seeking admission.

Events like National Portfolio Day have been established to help prepare students for the admissions process at AICAD institutions and for admissions processes that are

similar at traditional universities that utilize a portfolio for admission to their art and design programs. National Portfolio Day sees thousands of would be art and design students descend on tables of admissions advisors from institutions all over the country for feedback on their portfolios. During these days in the fall and early winter every year, no admissions decisions are made. The purpose for prospective students is to gather feedback from institutions that they are potentially interested in attending. Some of the participating institutions will chose to formally approve portfolios during the event, but only as a component in the admissions process, not as a completed admissions process. Would be students leave with advice on how to improve their portfolio, which in turn improves their chance of admissions to their chosen institution but also for improving their chances for a better scholarship (www.portfolioday.net, 2015). These days represent not only an opportunity for prospective students to gather feedback on their portfolio but are also an opportunity for the admissions team from the institutions to present themselves as the best option for prospective students. The events are held throughout the fall and early winter to align with institutional admission's timelines for acceptance decisions.

AICAD institutions and art programs at traditional comprehensive universities have utilized the art school portfolio for a variety of different purposes. The portfolio is often used to gauge past artistic training, raw talent, insight into art or design trends, and interest areas of prospective students. This information is then used to make admissions decisions, career recommendations, financial aid decisions, and other similar administrative decisions. The portfolio is potentially a problem for the art and design admissions officer though. The merits and validity of the portfolio can be debated though. Is the portfolio an antiquated pseudo measure of preparedness that has little to do with

the way the professional art and design world functions or a highly sophisticated tool to gain insight into a young artist's ability and drive?

Burke and McManus (2011) contend that what admissions counselors are evaluating through the portfolio are criteria that are "steeped in value judgments that are arguably connected to historically privileged ways of being". Donal O'Donoghue (2011) has written the portfolio "serves to exclude those who do not possess sufficient economic, social, or cultural capital". He also points out that little research has been done on the entrance portfolio to quantify its predictive value, validity, merit, or reliability. His research has shown that the portfolio may have little predictive value in the context to current art and design education as influenced by the art and design community.

O'Donoghue (2009) completed one of the few studies examining incoming student variables including entrance portfolio scores and the predictive value on first year academic marks. His research shows weak correlations between entrance portfolio scores, previous educational marks, and standardized test marks with future academic success indicators. His research was done in the UK college system, so there are differences that are worth examining and the choice to follow students through only their first year of study also leaves room for further examination. Among other goals, the researcher aims to use the information that O'Donoghue has started with and expand the measures of academic success beyond the first year and to apply his principles to a US population.

Similarly to the entrance portfolio, little research has been done on the predictive value of high school grade point average and standardized test scores at AICAD institutions. Enrollment teams at AICAD institutions often rely on extrapolated data from

success prediction studies at traditional universities, narrow target population studies, and short term internal data points to establish admissions standards and financial aid packages.

Another challenge that the enrollment team faces is that a student's grade point average, test score, and portfolio score do not exist in the absence of other influencing variables. The world around a prospective student has been shown to have a significant amount of impact on their chances of success and persistence to graduation. Demographic variables like socioeconomic status, race, gender, and age have all been shown to have an impact on academic success and persistence to graduation (Kurlaender and Larsen, 2013; Office of Planning and Analysis, 2010; Waugh, Micceri, and Takalkar, 1994; Educational Testing Service, 2013; Fleming, 2002; Hoffman and Lowitzki, 2005). Although demographic variation is beyond the scope of this study, next steps in research into the prediction of success through admissions criteria will have to include demographic variables to gain an a broader understanding of academic success prediction.

Historical data usage will allow for a broad range of examination. Portfolio scores, high school grade point average, and standardized test scores will all be able to be examined for predictive value not only through the first year but through graduation.

Statement of the Problem

A body of research has been compiled to help institutions to determine how well various admissions criteria will predict which students will be successful and should therefore be admitted to an institution. Although this information is used by art and design institutions through the establishment of admissions criteria, little direct research has

been conducted in that target group. With the unique nature of the educational goals and environment found at art and design institutions, many of the commonly found predictors may not have predictive value in the art and design environment or may not be predictive in the same traditional manner. It is also necessary to determine the reliability of the admissions portfolio grading process to examine its validity and predictive capacity.

Research Setting

The site of the study is a private, non-profit, independent college of art and design located in a metropolitan area. 1382 undergraduate students and 52 graduate students were enrolled for the Fall 2014 semester. The undergraduate population was 50 percent male and 50 percent female, with 81 percent of the students being full-time students. 82 percent were from the state the institution is located in and the average student age is 22. The demographic breakdown of the student population is: 7 percent international, 9 percent African American, less than 1 percent American Indian, 4 percent Asian, less than 1 percent Native Hawaiian or Pacific Islander, 4 percent Hispanic or Latino, 57 percent White, 4 percent 2 or more races, and 14 percent race unknown. The published 2013-2014 first to second year retention rate is 81 percent and the published 6-year graduation rate is 56 percent. The average grade point average from high school for incoming freshman is 3.19 and the average ACT score is 22.0.

The college was founded over 100 years ago as a society dedicated to the continuing education and development of artists and craftspeople. The college is accredited through the Higher Learning Commission and the National Association of Schools of Art and Design and grants both Bachelor's of Fine Arts and Master's of Fine

Arts degrees in addition to certificate programs and continuing education courses for the community.

Purpose of the Study

The researcher explored the admissions criteria at an art and design college to determine if there was an ability to predict academic student success through admissions standards or other information that is available about incoming students. The data for this survey was gathered during a time period that the admissions criteria were consistent to provide comparable data. During this time period, admissions decisions were based on three criteria: high school grade point average, standardized test score (primarily the ACT) and admissions portfolio score. These three criteria were combined into one composite which ultimately determined the student's financial aid award and admissions status. Fifty percent of the composite score came from the portfolio score and 25 percent came from each the high school grade point average and the standardized test score. The researcher also established the reliability of the portfolio grading process; critical to the overall prediction of academic success as a key component of the art school admissions process. This may enable administrators to not only gauge the readiness of applicants but to predict which students have the best chance of being successful at the institution as assessed by a number of student success indicators. This information may allow for informed and data driven choices for admissions criteria and related administrative processes. For the purpose of this study, academic success is defined with the guidelines of the research cite in mind. A successful grade point average would be anything greater than a 2.0 as below that number results in academic probation and/or suspension. Additionally, academic success would also include continued retention

through the second and third semester to graduation within six years from the initial date of enrollment.

The need to have valid predictive abilities through the admissions process enables both the acceptance of the most able students as well as the development of appropriate financial aid strategies, support programs, and teaching mechanisms. The researcher will look at the predictive value of traditional criteria for admission: ACT score and high school GPA, and the art school admissions portfolio score.

Research Questions

Is the admissions portfolio grading process reliable based on an inter-rate reliability test?

Are the characteristics of incoming students as determined during the admissions process correlated to academic success markers after the first academic year and through graduation?

Can persistence to graduation, course grades, and cumulative GPA be predicted by the characteristics of incoming students?

The academic success markers considered are:

1. Persistence to the second year
2. Cumulative GPA in the first semester
3. Cumulative GPA after the final semester
4. Persistence to graduation

The characteristics of incoming students that are identified through the admissions process are:

1. High School GPA

2. Standardized Testing Score (ACT at the research site)

3. Portfolio Score

Significance of the Study

Although formal studies on the predictive value of admissions criteria have been done regarding specific target populations (e.g. African American males, first generation students, Hispanic students), specific fields of study or academic populations (business students, engineering students, or graduate students), and demographic disparities (gender achievement gaps, racial success gaps, or socioeconomic impact), little work has been done on the art and design population. Little research has been done to examine the validity or reliability of long held standards for admissions at independent colleges of art and design. The reliability, validity, and value of the art school portfolio has recently been called in to question and there is no formal information regarding long held standards like standardized test scores at art and design colleges specifically. The aim is to fill that void. A formal examination of admissions standards and how they correlate to academic success will be highly useful in the art and design educational community.

The researcher attempted to determine through solid research technique and statistical examination whether or not the admissions standards and practices at an independent college of art and design are predictive of academic success at that institution. Due to the overlapping characteristics of independent colleges of art and design and their similarity in admissions criteria, this study should be indicative of the predictive value of admissions criteria at other independent colleges of art and design.

Recently, questions regarding the validity of long held art school admissions standards have emerged. O'Donoghue (2011) and Burke (2011) have called on the

industry to look at the validity and purpose of the art portfolio used as major admissions component at most independent colleges of art and design. O'Donoghue (2011) asks if the portfolio still retains its original purpose of establishing a skill level minimum standard prospective students must demonstrate in order to be successful, while Burke calls in to question the portfolio's impartiality. This study should help to answer this question at the research site while providing insight at other similar institutions.

Limitations of the Study

Due to the unique nature of art and design college admissions practices, this study may be only applicable to institutions that share similar admissions processes and criteria. Applicability beyond independent art and design institutions is unlikely. The data set is limited to historical data from admissions records from 2009 and earlier to allow for six year graduation rates to be considered.

Assumptions

Variables are linearly related, normal distribution, homoscedastic.

The sample population is made up of similar demographic characteristics as the target population. Admissions standards have also remained the same during the years that the sample population was drawn from. The information gained from the sample population is able to be extrapolated to the target population.

Definition of Terms

Academic Success

Continued retention through the second and third semesters to graduation within six years of initial enrollment. An institutional grade point average above 2.0.

AICAD – Association of Independent Colleges of Art and Design

Membership in AICAD is open to colleges in the US and Canada that are: private, nonprofit, free-standing (that is, not a department of a larger college or university), specialized colleges of art and design, BFA and/or MFA degree granting, and accredited by NASAD (the National Association of Schools of Art & Design) and the appropriate regional accrediting agency (New England, Middle States, North Central, Northwest, Southern, and Western).
We also have International Affiliates which must meet the equivalent criteria in their home countries. (www.aicad.org/about)

Art and Design College

For the purposes of this study, an art and design college is defined as a college that is a member of AICAD and, as such, is an independent institution and not affiliated with a traditional college or university.

Cumulative GPA in the first semester

The cumulative GPA attained by a student at the end of their first semester at the institution.

Cumulative GPA after the final semester

A student's cumulative GPA after their last semester of enrollment in courses at the institution whether due to attrition or graduation.

High School GPA

The cumulative GPA that was attained by the student in their high school career.

Persistence to graduation

A yes or no classification of whether the student graduated from the institution or not in a six year period.

Portfolio Score

A numerical score given to an applicant's artistic portfolio by an admissions counselor ranging from one to five. Scores of a five represent the best portfolios while a one represents the worst and would be considered inadmissible.

Retention after the first year

A yes or no classification of whether or not the student enrolled in the second year (third semester) at the institution.

Standardized Testing Score

The score an applicant attained on the ACT and submitted through the application process.

CHAPTER 2 REVIEW OF RELATED LITERATURE

History

College admissions criteria is a well-studied component of the university process. This is true in part to the universality of the topic. With few specific exceptions, all prospective students are faced with some form of an admissions process. Typically, colleges will require at a minimum prospective students to submit high school transcripts and often a standardized test score such as the ACT or SAT. A second significant reason for the prevalence of research on admissions processes is the opportunity for prediction. Without a doubt, it would be hugely beneficial for the college community to be able to statistically identify which prospective students are likely to succeed and which are likely to struggle. This level of interest from the research community has produced a great deal of information that can be extrapolated to the test population of this study. Through this study, the researcher will aim to produce direct information about the test population that has had little direct research conducted on it.

Marlene Moslemi (1966) conducted a study to examine the predictive value of ACT English test scores for general studies English course grades. Moslemi (1966) uncovered studies examining correlations between pre-college variables and in-college success indicators as early as 1917 with a study conducted of Harvard students. The study that Moslemi (1966) cites shows a correlation of .69 between high school standing and college standing, a relatively strong correlation. Moslemi (1966) goes on to cite another study that found correlations between pre-college variables and post-college variables ranging from .38 to .74. Moslemi (1966) summarizes her review of the related literature by saying "little progress has been made toward improvement of prediction. Current studies and reports

reflect findings similar in precision and level to those reports and studies done thirty or forty years ago". In her own study, Moslem (1966) continued the pattern and found inconsistent correlations between predictors and outcome measurements. This pattern of inconsistency has continued from 1966 to present. A portion of the studies conducted comparing entrance criteria variables with academic success variables have found strong correlations between variables like high school grade point average and standardized test scores and outcome measurements like retention rates and college grade point averages, while other studies have found rather weak correlations between these variables.

One possible reason for this variability in study findings is the growing diversity in the college and university environment and in colleges and universities themselves. The National Center for Education Statistics (2015) lists 2,870 4-year colleges for the 2010-2011 academic year which is an increase of 913 institutions from the 1980-1981 academic year. Similarly, degrees granted to minority students have increased from the 1999-2000 year to the 2009-2010 year by varying amounts and the enrollment of minorities has also increased steadily from 1967 to 2012.

A second reason for inconsistent findings may be the lack of influencing variables included in many studies examining college success prediction and limited definitions of collegiate success. Most studies of college success predication examine high school grade point average and/or entrance examination scores as the predictors of success and focus primarily on retention into the third semester and first academic year grade point average as measures of college success. Based on the studies that will be examined later in this study, it seems that the limited variables used for success prediction often do not yield enough usable information and provide only marginal correlations with

student success. Similarly, first year grades and retention may not be enough to show student success. Graduation rates at a minimum must be examined as a marker of student success and each individual institution of higher education should assess how they define academic success and appropriate measurement variables. A review of the related literature will shed light on what variables have been examined and what the results have looked like. The examination of prior research may also inform further research topics that related to art and design admissions and academic success.

There is also a growing body of research that examines target population success prediction. While these target population studies have value in adding to the broader understanding of student success prediction, they may have little direct value to a specific enrollment manager at their unique college due to the unique nature of the study population. These target population studies have found varied levels of correlation but with less variability than broader population studies. The studies examining specific target group populations are in many ways comparable to the test population of this study. Art and design institutions differentiate themselves in much the same manner as an MBA program as an example. Art and design institutions often have unique populations, admissions criteria, and curricular attributes that separate them from traditional colleges and universities. Target population studies may lead to insight in how the unique characteristics of a population will affect the comparison of admissions variables with success variables.

It seems likely that to generate usable information for the admissions process regarding student success predictors at an individual college or university campus, studies are best designed with a wide range of prediction variables and success markers.

This model will allow for an enrollment manager to make informed decisions as to what information to place greater emphasis on in the admissions process to build the incoming class that they are looking for. Each college and university campus would identify different needs and different variables for prediction based on their unique characteristics. In fact, at some institutions, it may be necessary to conduct this type of examination at the programmatic level. Looking at academic success prediction studies as a mass shows that what may be a predictive variable in one circumstance may be far from predictive in another.

Common Admissions Criteria

Sawyer (2013) writes that enrollment and admissions officers from around the country are tasked by their institutions to identify two main groups of students: 1. students that will be successful at their institution and 2. students that will learn and grow at their institution. At most institutions there are also considerations for building a diverse class, balancing socioeconomic characteristics, fostering growth, building brand image, developing appropriate support services, and other tangential goals that relate to the overall strength of an incoming class and fostering progress at the institution overall. These tangential goals are dictated by a college's mission and purpose. To do this, admissions officers must be able to utilize standardized criteria for the selection of the incoming student body and in some cases specialized measurement and assessment tools.

The most statistically significant measure of likely future academic achievement has been regularly shown to be previous academic achievement. For the undergraduate population this has been shown to be true through countless studies examining the

correlation of high school grade point average to college grade point average. Studies have regularly shown that high school grades are positively correlated with retention and graduation (Waugh, G., Micceri, T., Takalkar, P., 1994; Sawyer, 2013) and with college grade point average (Daniels, L., Gibson, N., Carmack, P., Smith, T., 2012; The Office of Research and Development, 2000; Perfetto, 2002). Commonly, high school grades are seen as an indicator of academic persistence or work ethic. Students with higher high school grade point averages are seen as having qualities that will translate well to the new environment of college education due to the similarity in the manner in which academic evaluation is done at the high school and college levels.

Most colleges and universities do not look at high school grade point average in isolation though. Patterson, Mattern, and Swerdzewski (2012) point to an NACAC report that indicates that '89.8 percent of colleges attributed either "considerable" or "moderate" importance to admission test scores in the admissions process.' Although standardized test scores have not shown the same level of correlation to college academic performance as high school grades, there has been consistent research to show a positive correlation (Marsh, C., Vandehey, M., Diekhoff, G., 2008; Munday, 1967; Educational Testing Service, 2013). Where high school grade point average is interpreted as an indicator of academic work ethic, standardized test scores are seen to provide insight into a prospective student's academic aptitude. It is these two complimentary characteristics that explain the findings in the study conducted by the Educational Testing Service in 2013.

Research conducted by the Educational Testing Service (2013) has shown that high school grade point average is a more powerful predictor of future success when

combined with the predictive value of standardized admissions tests (SAT scores in the study). Although the Educational Testing Service found that both high school grade point average and SAT scores were both positively correlated to academic achievement in the college environment, they were more powerful when used in tandem. This finding reinforced the long held belief that most enrollment officers have held: more information is better. Students that exhibit both evidence of prior academic performance, indicative of strong work ethic, and strong academic aptitude are those students that are most likely to succeed at the collegiate level.

High school grade point average and college entrance exam scores have long held the primary role of admissions criteria but additional criteria have emerged over the years. Moslemi (1966) found Harvard utilizing high school rank as a predictive figure for future college rank as early as 1917. Researchers have also identified that psychological variables can be an indicator of future academic success as well. Digman (1989) identified conscientiousness to be correlated with college success, Piedmont and Weinstein (1994) found resiliency to be positively correlated with occupational performance, and Tross (2000) reaffirmed that these psychological variables in addition to traditional performance indicators did positively correlate with academic performance in the college environment. Many institutions use personal essays or other writing samples to help select their incoming class or may use the supplemental writing test from either the SAT or ACT tests. Generally speaking, the more selective an institution considers its admissions process to be, the more materials will be required from the admissions office.

There are varying amounts of formal research that have been done on these alternative admissions process components but the research that has been conducted all have one significant quality in common: they have not been conducted at an independent college of art or design. The foundation of knowledge that AICAD member institutions have utilized to establish their admissions processes is extrapolated from solid research that has been conducted at institutions that may or may not be all that similar to an art and design college.

High School GPA and College Admissions

High school cumulative grade point average is frequently cited as the single best predictor of future academic success. It is logical to equate prior performance to future performance and this is the strength of the argument for using high school grade point average as a predictor of academic success in the collegiate environment. The predictive value of high school grade point average results in most colleges and universities using it as a key component of the admissions process. High school grade point average regularly shows up as a minimum for admission to a higher education institution, as well as being found as a common standard for merit based financial aid awards.

Geiser and Santelices (2007) point out that there are potentially flaws in using high school grade point average as an admissions criteria. One of the arguments against the use of high school grade point average is the fact that high school grades are not subject to a set of universal standards and could therefore vary greatly between high schools, making comparisons between schools dubious. Geiser and Santelices (2007) refute this claim through the fact that high school grade point averages are better predictors of future academic success than standardized tests and all other single independent variables in

their research. Speaking to the lack of significant studies conducted on the prediction of

high school grade point average and standardized tests beyond the first year, they sought

to find out if the predictive qualities extended to year four of a college student's academic

career and ultimately graduation. Their research found that high school grade point

average accounted for 20.4 percent of the variance in a student's four year grade point

average at the research site. This was the biggest percentage of variance accounted for

by a significant margin in their study. The research also found that the prediction was

stronger at year four than it was at year one of the student's college career. There was

also a strong prediction between high school grade point average and four-year

graduation rates.

Geiser and Santalices (2007) do point out that there is a possibility that the strong

correlation between high school grade point average and college grade point average

could be influenced by method covariance. It is possible that there is a strong correlation

between the two measures simply because they are created in the same manner whereas

a measurement like the ACT or SAT are completely different measurement tools. This

was only speculative though and could be an area for future research.

The Community College Research Center (2012) refutes, in part, the possibility of

method covariance:

> High school transcripts may be an alternative to placement tests for deciding
> whether students should enroll in developmental education. In contrast to a single-
> value placement test score, high school transcripts may yield a wealth of
> information. Potentially, they can reveal not only cognitive competence but also
> student efforts and college-level readiness.

Although the research in this study was conducted at a community college and not a four

year degree granting institution, the findings can still reinforce the fact that high school

grade point averages are predictive of college success. The study found correlation ranging from 0.34 to 0.36 based on comparisons between high school grade point average and grades in a variety of college courses. Not only did they find significantly higher correlation scores between high school grade point average and college grades than with other variables, the correlations were more consistent as well. This could be indicative of a stronger measurement tool. The study also found that high school grade point average accounted for 21 percent of the variation in college grade point average and 14 percent of the variation in college credits earned.

Although the general consensus of the available research is that high school grade point averages are positively correlated to college grade point averages, this is not a universal finding. Some studies have shown that high school grade point averages are not the best predictors for college grades when a student's high school grade point average is very high. In cases of institutions that are highly selective and have only students with high grade point averages from high school, standardized tests tend to be a stronger predictor of college success (Noble and Sawyer, 2002). This is not to say that there is no correlation between higher grade point averages in high school and college grade point averages, but in limited situations the conventional wisdom and findings that high school grades being the best predictor does not always hold true. This type of unique finding reinforces the need for individual institution enrollment managers to understand how incoming student characteristics affect academic success at their institution.

ACT Scores and College Admissions

Jeff Allen and Jim Sconing (2005) summarize the purpose of the ACT in the ACT Research Report Series as:

> The ACT tests are designed to measure academic skills that are taught in typical college-preparatory curricula in high school and are necessary in the first year of college. High scores on these tests show that a student is proficient in these subject areas and is ready for college-level work. Thus, ACT scores may be used to help determine if a student is academically prepared for the first year in college.

The ACT test is designed to test the academic accomplishments and readiness of high school students as it relates to the demands of college curricula. There are mixed results from the research that has been conducted on whether this goal has been met or not. Numerous studies have examined the relationship between ACT scores and college academic success; success defined in a variety of ways. As early as 1967, research conducted by Leo Munday (1967) found positive correlations between both high school grades and ACT scores to college grades. His research has been expanded on significantly since 1967.

Allen and Sconing (2005) sought to validate the statement that "the advantage of using the ACT Assessment scores is that they are standardized measures that sustain meaning across schools and years" while also supporting studies that had previously been conducted and found correlations between ACT scores and college grade point averages. Their research found that the ACT scores were positively correlated with college grades but there were key factors that influenced that correlation.

Allen and Sconing's (2005) study set benchmarks for what a successful college grade point average was and their findings showed mixed results in the correlation of ACT scores and those benchmarks based on a number of conditions. Key findings were that the correlation was only predictive of academic success for lower and middle score ranges of ACT scores. High ACT scores had little predictive value. Second, the cutoff ACT score for a prediction of college success varied based on college course content.

This finding will become relevant as further research on the correlation of ACT scores and college success is explored. Numerous other studies have found there to be both support for the ACT being positively correlated to college grades, while other studies have found that there was little correlation or predictive power found between ACT scores and college grades.

Jon Bontekoe (1992) writes that: the ACT should be considered for "its relation to the high school GPA is important because the ACT, taken most often toward the end of the third year in high school, either validates or repudiates what has been accomplished in high school". In other words, students can back up a high grade point average from high school with an additional demonstration of cognitive ability or a potential weakness can be brought to light. The ACT is also praised as a fair and neutral indicator of academic ability that is unaffected by the subjective nature of high school grades and transcripts. The ACT is often criticized for being too narrow of a window into a student's performance. It is taken on one day and is often seen as an overly pressurized situation that is not conducive to success. Bontekoe (1992) compared six ranges of ACT scores to college grade point averages and found significant results that showed that as a student's ACT score increased, their college grade point average did as well. He also found that if the data were simplified and the success benchmark was defined as have a college grade point average of 2.0 or better after two semesters, a much higher percentage of students with a score of 21 or better on the ACT achieved that success benchmark than their peers that had an ACT score of 20 or less.

Geiser and Santalices (2007) did find that standardized tests account for a small percentage of the variance in college grade point averages and four-year graduation rates

but a much smaller portion than high school grade point average. Where they found standardized tests to be the most useful was in combination with high school grade point average. The percentage of variance explained increased in a statistically significant amount if a standardized test score was considered in addition to a student's high school grade point average. High school grades alone accounted for 20.4 percent of the variance in college grades in their study. The addition of ACT score to high school grades added an additional six percent to the explained variance. The researchers noted that there is also value in the usage of standardized tests when evaluating prospective students from very small schools where a class rank or high school grade point average may not be reliable.

Radunzel and Noble (2012) conducted a similar study to the one conducted by Geiser and Santalices (2007) but extended their measures of academic success to graduation rates and long term cumulative grade point averages. They found that the probability of a student with a score of 25 on the ACT completing a bachelor's degree was 0.54, versus the probability of 0.31 for a student with a score of 16 on the ACT completing a bachelor's degree. Although they found differences based on institution type and characteristics, the general trend they found was that the higher a student's score of the ACT, the higher their probability of graduation.

Radunzel and Noble (2012) found similar results when they compared ACT scores to six year cumulative grade point averages. As a student's ACT score increased, the probability of that student earning a higher college grade point average also increased. The study examined the probability of earning a grade point average in college that fell into one of five categories: an earned 2.80, 3.00, 3.25, 3.50, or 3.75. The study found

that a given score will demonstrate a decreasing probability as the college grade point average benchmark increases, which is logical. The comparison that is meaningful is that the comparisons of a lower ACT score to a higher ACT score results in higher levels of probability in achieving the benchmark college grade point averages. Taken together, these two findings indicate that a student with a higher ACT score will be more likely to graduate and have a higher cumulative grade point average than a student with a lower ACT score.

Bridgeman et. al (2008) found an interesting wrinkle in the prediction of college grade point average based on standardized test scores (SAT in their study). Although their study reinforced a common theme that high school grade point average is the single best predictor of a college population, the standardized test was a better predictor in specific populations. The SAT was a better predictor of college success for minority males and Asian and African American women. They also found that the SAT was far better predictor of success for students who were high performing in high school. Given a similar high achievement level in their high school record, students with a low SAT score had a success rate of 16 percent while students with a high SAT score had a 73 percent success rate. This finding was unique to high achieving students and was not seen in this study in low to moderate performing students in high school. Universities that are highly selective and/or highly rigorous should take note of this type of finding and determine if it holds true at their institution.

Another common critique of standardized testing is that the tests often demonstrate bias against minority and female students. Myers and Pyles' (1992) study found results that support this idea. Although their research found similar levels of

correlation between high school grade and college grades for white students and black students (0.36 and 0.37), significantly different correlations were found between ACT scores and college grades. The r for white students was 0.53 while the r for black students was only 0.26; a rather large disparity. This type of finding, taken with other research that shows high school grades are often a stronger predictor of college success, leads many to the conclusion that the best model for predicting college success includes the use of both the ACT score (or other standardized test score) and high school grades. Using both a standardized test score and a high school transcript provides a system of checks and balances for the strengths and weaknesses of both measure.

ACT and High School GPA Taken Together

It is increasingly clear through recent research that the highest levels of correlation and prediction of academic success in the college environment is through the combination of high school grade point averages and standardized tests like the ACT or SAT. Sawyer (2010) cites numerous studies that found increases in correlation between incoming student characteristics and college success ranging from .03 to .11 by adding standardized test scores to high school grade point averages for the comparison. The research in this study found that "in most scenarios, using both high school grades and test scores jointly is better than using either by itself." Although varying degrees of correlation were found, the study did, as a whole, indicate that a standardized test combined with a high school grade point average will explain more of the variance in collegiate performance than either variable would alone. Similarly, Myers and Pyles (1992) had found that taking high school grades and ACT scores together produced a multiple r of 0.57, explaining 32 percent of the variance in college grades.

A key finding in Radunzel and Noble's (2012) study was that while both ACT score and high school grades were predictive of long term academic success, the combination of high school grade point average and ACT score was more powerful than either variable independently.

> In general, typical maximum accuracy and corresponding success rates were slightly higher for HSGPA than for ACTC score at four-year institutions, but were comparable at two-year institutions. However, across college outcomes at both types of institutions, using both ACTC and HSGPA was generally more beneficial for improving prediction accuracy and success rates over those based on single-predictor models.

Their findings showed that students with similar high school grade point averages will have different predicted success rates based on their ACT score. Students with higher ACT score were more likely to graduate and attain a higher college grade point average compared to fellow students with a similar high school grade point average, but lower ACT score. This finding leads Radunzel and Noble (2012) to the conclusion that a prediction model based on both high school grade point average and ACT score will yield the most correct classifications of students likely to be successful in the college environment. A joint model "allowing higher ACTC scores to compensate for lower HSGPAs and vice versa contributes to the increase in the percentage of correct classifications based on the joint model." The strengths and weaknesses of a standardized test score will be balanced by the strengths and weaknesses of the high school grade point average.

Bridgeman et. Al (2008) found similar results in their work testing the predictive value of the SAT and high school grade point averages. Their study found that there was a roughly 10 percent increase in explained variance in college grade point average when the standardized test score was added to the comparison of high school grade point

average. Their research found that the amount of variance in college grade point average was dependent on the test population though. The SAT was a better predictor of college grades for minority males and for Asian and African American women, while high school grade point average was a better predictor for the remaining populations. The test population reinforced the usual findings that high school grade point average was the strongest predictor of college grades and the standardized test (SAT in this case) added a small but significant percentage of explained variance.

High school grade point average yields the highest level of prediction for early academic success indicators (i.e. first year college grade point average), while ACT score seems to be the strongest predictor for long term academic success (i.e. degree completion). As colleges and universities face ever increasing levels of scrutiny for the success of their students, each individual institution will have to determine what the right balance of criteria are to meet their needs for academic success. Institutions that maintain high standards for admissions in both standardized test score and high school grade point average are likely to continue to do so as high scores in both areas are going to remain predictive of college success. Institutions struggling to increase graduation rates may want to examine standardized test score admissions standards, while those struggling to produce higher levels of first year retention may need to examine high school grade point average standards. It is important for the research site to also understand how the artist portfolio influences the admissions process and prediction of student success.

The Art School Admissions Portfolio

The research site requires that students submit an artist's portfolio during the admissions process, as do most art and design colleges and programs. The artist's

portfolio is intended to accomplish two main goals. The first goal is to demonstrate that the potential student has prepared himself or herself to begin studying at an art or design college. Much in the way high school grade point average and standardized tests scores provide insight into the academic preparation that a student has undertaken, the artist's portfolio is seen as providing similar insight into the student's artistic preparation. Potential students whose portfolio is deemed to be inadequate by the admissions staff will often be advised to enroll in community college courses or workshops to learn the skills that they may be lacking that their peers that have been admitted have demonstrated. The second main goal of the artist's portfolio is to gauge potential. Admissions teams will review the artist's portfolio with the hope of being able to identify which potential students have some level of talent and passion for their future field of study. These two goals are meant to be complementary. Ideally, a prospective student will demonstrate through their portfolio that they have developed a base of artistic knowledge that has prepared them to learn and grow as an artist or designer.

Schneider (2009) in an essay regarding the alternative practice of portfolios as part of the admissions process states that standardized tests have "helped perpetuate the patterns of stratification and unequal opportunity that still disfigure our democracy" and that "SAT scores are so tightly correlated with family income that higher education would have gotten the same level of (modest) predictive validity if it had used family income instead of test". The answer, Schneider (2009) suggests, is the portfolio. Although not referring to the artist portfolio or art school, her opinion that portfolios "enable us to see what a student is working on over time, to discern an emerging sense of purpose and direction, and to review samples". What Schneider (2009) is offering as justification for

the usage of a portfolio in the admissions process is strikingly similar to the reasons that art colleges have stated for using portfolios in their admissions process.

Mailloux (1983) writes that "creativity is much a matter of attitude established by an early home environment that encourages curiosity concerning many subject matters. The resulting dedication and willingness to solve problems enables a creative person to develop a viewpoint different from an average person". This is precisely what the art school admissions process goals point to. Finding students with talent and passion that will both be challenged by the curriculum and be successful in that same curriculum. These attributes are impossible to be discovered through either a student's high school grade point average or the standardized test score. Mailloux (1983) explains that the "combination of high academic records as well as a portfolio of creative samples indicates applicants who have the best potential to continue their artistic education". The belief and anecdotal evidence supports the idea that the best way to gauge artistic talent, passion, drive, and potential is through a review of previous work. Johnson and Gentry (2000) in the examination and development of new practices in graduate admissions build on this idea:

> The goals for a new admissions procedure were to: ensure candidate/program match; provide information about the candidate's interests, strengths, and abilities; model best practices in identification/selection; and provide opportunities beyond standardized measures for students to demonstrate their strengths, and thereby attract quality students who might otherwise be overlooked or not apply.

The desire to enable applicants to demonstrate individual strengths and interests is the primary reason art schools engage a portfolio in the admissions process and one that Johnson and Gentry (2000) indicate is a primary outcome of a portfolio review process

even outside of the art school realm. Does the admissions portfolio actually provide this type of information though?

There has been little research conducted on the portfolio as part of an admissions process, at an art school or otherwise. Dodge and Derwin (2008) conducted one of the few studies comparing the performance of students admitted through a portfolio process to those admitted through a traditional process. Their study examined graduate students; although the results cannot be directly compared to an undergraduate art school, their results can be informative. Two groups of students were similar with one notable exception: students admitted through the portfolio process had a significantly lower grade point average at the time of admission than the students admitted through traditional admissions processes. The mean grade point average for the traditional group was 3.45 at the time of entry compared to the portfolio group mean of 2.60. The study compared the two groups for college grade point average and earned credits at the time of measurement. The portfolio group had earned slightly more credits at the time of measurement than the traditional group (mean of 24.22 compared to 22.16) but this result was not statistically significant. The traditional group had a higher grade point average than the portfolio group at the time of measurement (mean of 3.85 compared to 3.74). Although this finding was statistically significant, the effect size for the t-test was a relatively small 0.54. For practical purposes, the achievement of the two groups of students was essentially the same leading the authors to the conclusion that both admissions procedures were equally successful in identifying students that would be successful in the graduate program that their study examined.

O'Donoghue (2009) conducted the only study found to examine the predictive value of the art school admissions portfolio. His study was conducted in the United Kingdom so the test population is not directly comparable to the test population in this study, but a great deal of insight can be gained from his work as it was conducted at an independent art education institution similar to the research cite. O'Donoghue (2009) examined the two main forms of admission criteria in Ireland, an entrance portfolio and a standardized test, the Leaving Certificate Examination. The dependent variable examined was first year academic performance measured by an aggregate score of the first year marks a student received. A statistically significant positive correlation was found between both portfolio score and entrance examination score and the dependent variable for academic performance. Although both were positive correlations, they were also rather weak. The r of the portfolio was 0.29 and the r of the entrance exam was 0.275, indicating that as scores in both variables increase, academic performance would also increase. O'Donoghue (2009) was deliberate in his reinforcement that these correlations were small and the findings preliminary based on a relatively small sample size (the study had an n of 101). Further analysis of the data found that the entrance examination and the portfolio combined to explain 15.5 percent of the variance in first year academic performance. Although this finding is relatively small, the percent of explained variance is similar to the explained variance found in other studies examining the predictive value of entrance criteria and academic performance.

The researcher will use O'Donoghue's work as a springboard to not only examine similar questions in a United States college but also to extend the analysis to cumulative academic performance and graduation prediction. In addition to correlation, the

researcher will utilize a cross-validation model to generate a predictive model for admissions criteria both for first year performance indicators and for cumulative academic performance indicators. An inter-rater reliability test will also be conducted on the portfolio grading process.

The portfolio process is not without limitations or criticisms. Shavelson and Klein (2009) point out three major areas of concern regarding the portfolio process. "They are (a) not standardized, (b) not feasible for large-scale assessment due to administration and scoring problems, and (c) potentially biased". They go on to contend that "descriptions of scoring criteria are not sufficient to ensure comparable grading standards even when benchmark answers are used to train raters". To date, no study establishing the reliability or validity of the art school admission portfolio has been conducted. Shavelson and Klein (2009) even argue that a large scale assessment of the portfolio process is not feasible due to time and staff capacity limitations.

Both Burke and McManus (2011) and O'Donoghue (2001) have raised concerns that the portfolio is much more a benchmark of socioeconomic standing than it is a benchmark of potential, talent, and prior artistic education. Students from affluent, privileged backgrounds have access to better art courses in their K-12 education than students from lower socioeconomic groups. The ability to produce a portfolio that is acceptable to the admissions staff may be an indicator that a student has merely had access to art education, or has not had that access. It has also been suggested that the portfolio does a poor job of judging artistic ability based on the way contemporary art and design professionals work and develop concepts. These criticisms regarding the ability of the portfolio to accurately judged artistic ability are left unanswered due to the lack of

reliability and validity studies and weak statistical evidence from limited studies that the portfolio is predictive of academic success. These criticisms are important to examine though. The implication of the criticism would be that a widely used and accepted tool for art school admissions may be discriminatory and biased based on socioeconomic and demographic factors. The first step will be to examine the reliability and predictive potential of the portfolio, in additional to traditional admissions criteria, in the hope of identifying future research needs.

These criticisms have gained little traction in the world of art and design college admissions though. The common belief among art and design educators based on personal experience and often anecdotal evidence is that the portfolio is simply the best way to gauge which potential students are the most likely to succeed or have the drive to succeed. Unfortunately, little to no formal research has been done on the reliability, validity or predictive ability of the artist's portfolio. Internal investigation at the research site has long suggested that the portfolio is a predictor of which students will be retained after the first academic year, but this assessment has not been established as statistically significant nor has that assessment carried beyond first year retention to graduation. Beyond this internal knowledge, practically no formal research has been conducted on the artist's portfolio in the art and design college admissions process. What little research has been conducted on academic portfolios in general, most of what has been conducted is focused on graduate student populations and is not directly comparable. The small body of research on the portfolio is promising though in that it is at least as predictive as traditional admissions processes. The portfolio plays a vital role in the admissions decision, financial aid award, and student support services decisions at the research site

and a full understanding of the potential impacts of the portfolio are vital to an understanding of student success prediction at the research site. Determining the reliability of the portfolio process would also be beneficial to the overall validity of the admissions process at the research site.

Target Population Studies as Comparison to AICAD Admissions

Given the unique population, curriculum, and admissions standards at AICAD institutions, a potential model for art and design colleges to use to develop studies to explore the predictive value of admissions standards would be to consider similar studies conducted around specific target populations. There are numerous studies that have been conducted about the predictive value of common admissions standards like high school grade point average and standardized entrance exams in target populations like African American students, minority group studies, underrepresented groups like women in STEM programs, graduate populations, and even major areas of study like business students. Although these studies should not be considered appropriate to apply to the art and design population as they have little in common regarding admissions standards or curricular content, they do provide insight into how the predictive value of admissions criteria can change significantly depending on the test population characteristics.

A study conducted by Jacqueline Fleming (2002) was designed to examine how the type of institution may affect the predictive value of the SAT for college grades in minority students, specifically Black students. Fleming (2002) sought to determine if Black students' grades were better predicted by the SAT at historically black colleges than at predominately white institutions. Ultimately, Fleming (2002) did find significant differences in predictive value for Black students at different types of institutions; the predictive value

was also significantly more powerful for Black male students than for any other studied subgroup. For example, Fleming (2002) found that the average correlation between SAT and college grades for Black male students at historically black colleges were 0.436 compared to 0.219 for Black male students at predominately white colleges.

DeAngelo et al. (2011) completed a meta-analysis of numerous studies regarding the correlations and predictive value between a variety of admissions standards and academic success indicators in numerous target populations as a means of overall comparison. For instance, simply the type of institution has an overall impact on four year completion rates. Students at private universities have a four year graduation rate of 64.0%, compared to public colleges with a graduation rate of only 23.5%. Of course there are going to be numerous conflating variables that are going to explain a great deal of this variation, but the point remains that the numerous factors will affect the success of an incoming class and the more information that an enrollment officer has at their disposal will produce more powerful prediction and ultimately student success. Their findings also included achievement gaps based on gender, race/ethnicity, and SAT scores and grade point averages. The study even found predictive qualities in personal information gathered through the Cooperative Institutional Research Program (CIRP) survey in characteristics like early decision status, drive to achieve (self-rating), and working full-time while in college.

Studies have also shown results that contradict most of the body of research in unique populations. One example is an internal study through the Office of Planning and Analysis at the University of South Florida (2010) where it was found that the use of standardized entrance exam scores unfairly discriminates against minority and female

students during the admissions process at the institution. One example from their research shows that while female students average higher grade point averages through graduation, their incoming SAT/ACT scores were lower than their male peers. For minority students, there was no increased likelihood found for farther progression through the academic program based on increased SAT/ACT scores. The study summarizes their findings by saying that SAT/ACT score policies in the admissions process could be seen as discriminatory towards female and minority students at their institution because the test scores were not fairly representing their academic potential. Although the policy implications of this finding are unclear, it is very clear that the results should be important to the enrollment team at the University of South Florida.

Mary Cunningham (1982) conducted a study concerning predicting academic success in a school of social work. One of the important take a ways for the purpose of this study is that she chose to define academic success as success in the fieldwork program that all social work students were required to participate in. Cunningham (1982) recalls "students who did not perform well in academic courses but did well in fieldwork and later professional careers, and straight 'A' students who afterwards were unable to function in an agency".

To understand the real predictive value of incoming student characteristics, it is necessary to properly define the measures of success and how that information can add value to the admissions decision. Among the findings, three strong correlations between admissions information and success in the fieldwork program were found. Incoming grade point average, age, and other service experience were all found to be correlated to success as defined by the author. Grade point average being a well-established predictor

for future academic performance was no surprise to Cunningham (1982) and would have little impact on theoretical changes to the admissions process. Finding that "other service experience" was strongly correlated to the definition of academic success in this study could have significant implications for the admissions process. The university could make the decision to place more weight on that component of the admissions process to find students that would be more likely to succeed later in their academic and professional careers. The fact that age was correlated with academic success was surprising to the author, as younger students tended to perform better in their fieldwork component. Although admissions decision based on age would be legally and ethically wrong, this information could call for further research to determine why this phenomenon exists and how student support services could be established to mitigate this phenomenon. Defining academic success at the research site may have an impact on the outcome of the study and should be done with consideration for the institution's mission and goals.

The validity of admissions prediction is under constant scrutiny though. In direct conflict with Cunningham's (1982) findings, Dennis Dailey (1979) conducted a replication study of admissions standards in a school of social work and success in academic work and field work in the social work program that found no statistically significant correlation between admissions standards and field work performance by those students at his research site. Dailey (1979) did find that there were statistically significant correlations between admissions standards and college grade point averages, but not the field work performance that Cunningham (1982) would later find. These two directly contradictory studies show that admissions prediction is an institutionally specific field of study and that

one institution may not be able to utilize information produced through the study of even a comparable institution.

Yang and Lu (2001) focused on the predictive quality of admissions standards in an MBA program. The main research question that they addressed in their study was that there is a high need in a competitive field like MBA programs to ensure that the students who are admitted will be successful in the program. The study aimed to identify which admissions standards were able to be identified as the most useful in making that determination. Yang and Lu (2001) found that age and gender had no significant predictive ability in their test population, while standardized entrance exams and undergraduate grade point average were very strongly correlated with academic success. Although their research fell in line with the majority of study findings, it would be helpful from the perspective of the enrollment officer's vantage point to know that the information your team is using in making admissions decisions are the most statistically powerful criteria that they could be using.

Ting (1998) examined the admissions information about a test population of low income and first generation college students in an attempt to estimate academic achievement. The study uncovered much of the same information that other studies have found. Ting (1998) found high school rank, leadership experience, and community service to be the strongest predictors of success in the test population. A variety of cognitive and psychosocial variables were also found to be predictive of academic success. Contrary to some studies though, the ACT composite score was not found to be a significant predictor of academic success in the test population.

What do studies like this mean in the context of art and design institutions and academic success prediction? To begin with, it is critical to understand the population that is being studied and what sets that population apart from the college population on a national level. The variations in student population, degree concentration, institutional type, and factors like ethnicity, gender, and age can all play a role in understanding the predictive value of admissions standards at a specific institution. This understanding is critical to enrollment officers as they set admissions standards and priorities. To better understand the correlations between various admissions standards at an art and design institution and academic success indicators will enable the art and design institution to better understand their incoming class, target the students that they want for their incoming class, and develop the support services and educational goals for that incoming class. At this time, little direct research has been done in regards to art and design colleges as a unique target population and much of what has been done has been conducted in the United Kingdom. Although art and design institutions in the UK are relatively comparable to their US counterparts, there are differences that make direct comparisons difficult. Chief among those differences is the lack of direct comparisons for the K-12 grading systems and standardized tests. A direct examination of incoming student variables and academic success markers in a US art and design college should yield direct and powerful prediction and correlational information.

Summary

Without intending to do so, and certainly having occurred prior to many studies on the subject, Decker et al (1974) summarizes most of the findings related to ACT scores and correlation to college success quite well. The findings varied greatly based on a

number of conditions. There were a range of correlations between ACT scores and college grades found depending on the type of student, type of course, and previous educational performance found. The study also found that at the research site, which was an open enrollment junior college, the overall correlation between ACT scores and college grades was lower than other studies had found. In short, the correlation between ACT scores and college success is institution dependent and specific. In a large scale meta-analysis, Robbins et. al (2004) found that the ACT had a mean correlation score of only .121 to first year retention and .368 to college grade point average. The latter is a moderate correlation but the former represents only a very mild correlation. To be useful to an individual college, it is necessary to know exactly what the value is of the ACT score to the benchmarks of success at that institution.

Findings are similar but less varied for high school grades. There is a general consensus that high school grades are the single best predictor of college grades but even in that framework there is still a fair amount of variation. Colleges that have a student body with high average high school grade point averages may find lower correlations with college grades than colleges with a wider range of incoming high school grade point averages. There are also concerns about the universality of high school grades. Critics of using high school grades in the admissions process point to the lack of universal high school grading criteria as a large point of concern. In the meta-analysis by Robbins et. al (2004), they again found a very mild correlation between first year retention and high school grade point average, with a mean correlation of .239. The correlation increased when compared to college grade point average where the mean correlation rose to .413. Here again, it is important for an individual institution to know exactly what the correlation

is for high school grade point average and their indicators of success to know if there is value in the admissions criteria of grade point average.

Most research is finding that the strongest correlations between incoming student characteristics and college academic success come from the combination of high school grades and standardized test scores. This general consensus has held true through a number of specific target population studies as well as broader population studies. Taken as a whole, the examination of prior research leads to the conclusion that a combination of standardized test scores and prior academic performance (as measured by high school grade point average) will lead to a positive correlation between incoming student characteristics and college academic performance at the research site. With little to no formal research having been conducted at an independent college of art and design, there are little data to use as a point of comparison.

Similarly, little formal research has been conducted regarding the validity or predictive value of the art school admissions portfolio. Anecdotal evidence suggests that the portfolio score should be highly correlated with academic success at the research site. This anecdotal evidence is largely tied to the first year grades of new art school students. The portfolio is a significant reason for the extension of academic success criteria being extended beyond the first year retention rate and college grade point average that is often used in admissions criteria prediction studies. Does the portfolio have a strong correlation with graduation and cumulative grade point average? If so, there would potentially be policy implications for the research site. This examination may also uncover any bias, should any exist, in the admissions process.

CHAPTER 3 METHODOLOGY

Restatement of the Problem

Little direct research has been conducted regarding the predictive value of admissions criteria for independent colleges of art and design. With the unique nature of the educational goals and environment found at art and design institutions, many of the commonly found predictors of academic success at traditional institutions may not have predictive value in the art and design environment. The need to have valid predictive abilities through the admissions process enables both the acceptance of the most able students as well as the development of appropriate support and teaching mechanisms. A key feature to the admissions process at an art and design institution is the artist's portfolio. Very little research has been conducted on academic portfolios and next to no formal research has been conducted on artistic portfolios. The reliability and validity of the artist's portfolio must be examined to establish its predictive value in the art college admissions process.

Research Design

This study was a predictive non-experimental design using historical data. The dependent variables and measures are:

1. Persistence to the second year – this was measured as a categorical variable with 1 representing yes and 0 representing no. Persistence to the second year is one of the more common academic success markers used in studies examining admissions prediction, academic preparedness, and similar studies.

2. Cumulative GPA in the first semester – the research site uses the common 4.0 grading scale that is used in most higher education institutions in the United States.

The grading scale follows a conversion of letter grades to numerical grades beginning with "A" being a 4.0, an "A-" being a 3.7, a "B+" being a 3.3 and so on, through an "F" being a 0.00. The cumulative GPA for the semester is the average of the grades a student received in the courses they completed in the first semester. First semester GPA is not a variable often used as a dependent variable in success prediction studies and is more likely to be an independent variable used for comparisons with dependent variables like cumulative GPA or graduation rates. The research site uses first semester GPA as a benchmark for interventions throughout the site and prediction of low first semester GPA would help in assessing the need for additional support mechanisms. The use of first semester GPA as an independent variable in this study is for this reason.

3. Cumulative GPA after the final semester – this is calculated in the same fashion as the cumulative GPA in the first semester, but is an average of all courses completed during the time that a student was enrolled in the research site. The last semester included in the measure is either the semester of graduation or the last semester on file that was completed by the student.

4. Persistence to graduation – this is a categorical measurement of whether or not a student graduated within six years of the first semester of enrollment as has been established by IPEDS reporting standards.

The independent variables that were used for prediction are:

1. High School GPA – retrieved from the student's official high school transcript.

2. Standardized Testing Score (ACT at the research site) – the student's ACT test score was retrieved from their admissions materials. The institution does accept

SAT scores in place of ACT scores but the ACT is much more common. SAT scores will be converted to ACT scores using the results chart from a concordance study found at www.act.org. Similar to the conversion for high school grade point average, no SAT scores were found in the data set so no conversions took place. Students without an ACT or SAT score were excluded from the analysis.

3. Portfolio Score – admissions staff members at the research site assign each submitted portfolio a numerical score ranging from one to five. Portfolios receiving a score of five are considered exemplary and receive higher levels of merit based scholarships. A score of one represents an unacceptable portfolio and admission to the institution is not granted. Portfolios with scores of three or four are considered acceptable. Scores of four receive merit based financial aid while scores of three do not. Students who receive a portfolio score of two, while able to be admitted to the institution, are strongly encouraged to attend another institution for a year to better prepare for enrollment at the research site.

Population

The population of this study includes all first time in any college students enrolled in the research cite. Transfer students are excluded from the population due the use of transfer grade point averages in the admission process as opposed to high school grade point average used for first time students. International students are excluded from the population if their admission information did not include a standardized test score, which is not required by the research cite for international student admission. Data was not gathered on demographic information for the population for the purposes of this study. The researcher chose to not include demographic information in the analysis in this study

due to the limited available existing research on independent colleges of art and design and portfolio reliability and validity. This choice is made knowing that further research on how demographic characteristics effect the predictive ability of the independent variables should be completed. Since no exiting studies established the overall effect of the independent variables at an independent college of art and design, this study is intended to establish that information.

Sample of Study

The data used was from the incoming class of the Fall 2008 academic year through the Fall 2010 incoming class for the correlational and predictive analysis. This data range was set to establish a cohort that would have had an opportunity to graduate within a period of 6 years. The year 2008 was chosen to use as a start date because admissions criteria were changed for the 2008 class to present at the research site. Participants represented only those that are traditional first time freshmen. Data for the inter-rater reliability test for the portfolio grading process will be taken from the Fall 2014 incoming class. Portfolio guidelines for grading were established in 2004 that are in current use. Evaluation of new admissions portfolios can be extrapolated to earlier portfolio grading. While the portfolio guidelines were revised in the 2004 cohort year, data was only used from the 2008-2010 cohort due to admissions process changes unrelated to the portfolio guidelines and to allow for a six year graduation rate.

Data Collection Procedures

Data was collected through the institution's internal student data management software programs. The student data management program is Colleague by Datatel. Reports of the data contained within Colleague will be produced utilizing the Datatel

program Informer which extracts data from Colleague through prescribed reporting criteria and produces workable spreadsheets through Microsoft Excel. Data are carefully reviewed to remove any duplicate records. Any identifying information will be removed to ensure confidentiality of student records.

Data Analysis

Descriptive statistics such as mean, median, mode, and standard deviations were used to describe the data that were used in the study. The use of descriptive statistics enabled the researcher to identify broad variations between different incoming classes of students if any are present.

An inter-rater reliability test was conducted on the portfolio grading process to determine reliability. Portfolios from the Fall 2014 incoming student cohort were randomly sampled to conduct the inter-rater reliability test. Each portfolio had received a score ranging from one to five as part of the admissions process for the Fall 2014 academic year. Two additional trained admissions evaluators then assigned a second and third score to the randomly selected portfolios. Kendall's Coefficient of Concordance (W) was calculated for the set of three scores for each portfolio enabling the researcher to establish the general reliability of portfolio scores. Portfolio grading guidelines have remained the same for the entire length of the time that the sample population represents, enabling for the reliability estimates to be extrapolated from the sample population for the inter-rater reliability test to the sample population for success prediction. Kendall's W was able to be used because the portfolio dataset meets the three assumptions necessary to calculate Kendall's W: 1. the scores were ordinal, 2. all three raters reviewed the same

portfolio materials to generate a score, and 3. the raters were independent of each other in their rating process.

Inferential statistics were used to identify correlations and prediction coefficients between the independent and dependent variables in the study. Both logistic and linear regression calculations were used to identify correlations and ultimately predictions based on the influence an independent variable would have on a dependent variable. Linear regression was used to examine nominal variables and logistic regression was used to examine dichotomous variables.

The first stage of the inferential analysis was to calculate the Pearson product-moment correlation coefficient (or r) for each independent variable in relation to each dependent variable. Through this calculation, the strength of correlation was determined between each comparison enabling further analysis. Scores for r were calculated for the planned comparisons which were supported by the literature as likely to have significant correlation:

High School Grade Point Average : College First Semester Grade Point Average

High School Grade Point Average : College Cumulative Grade Point Average

High School Grade Point Average : Third Semester Retention

High School Grade Point Average : Six Year Graduation

Standardized Test Score : College Cumulative Grade Point Average

Standardized Test Score : Six Year Graduation

Additionally, scores for r were calculated for the following planned comparisons that directly address the research questions regarding the prediction of the art school

admissions portfolio, even though there was limited research in the literature body to support any type of correlation:

Admissions Portfolio : College First Semester Grade Point Average

Admissions Portfolio : College Cumulative Grade Point Average

Admissions Portfolio : Third Semester Retention

Admissions Portfolio : Six Year Graduation

Scores for *r* were calculated for the following planned comparisons for the purposes of completeness. The following correlations have evidence in the literature that indicate weak correlations:

Standardized Test Score : College First semester Grade Point Average

Standardized Test Score : Third Semester Retention

Finally, scores for *r* were calculated for the following planned comparisons to determine if any of the independent variables are correlated with each other:

High School Grade Point Average : Standardized Test Score

High School Grade Point Average : Portfolio Score

Standardized Test Score : Portfolio Score

The second stage of the inferential statistical calculations was to conduct a linear regression for any of the correlation comparisons that yielded a strong *r* to determine if the independent variable was predictive of the dependent variable in addition to being correlational. The regression coefficients were used to create a multiple regression model utilizing the regression coefficients that are highly correlated with the criterion variables without being highly correlated with other prediction variables.

CHAPTER 4 RESULTS

The results of the research are discussed in this chapter in two parts. The first section is comprised of descriptive statistics for both the inter-rater reliability test conducted on the admissions portfolio rating system and for the data that makes up the prediction tests for how well the admissions criteria variables (independent variables) predict student success based on the chosen academic success prediction variables (dependent variables). The second section is comprised of the inferential statistics used to determine the prediction value the independent variables have on the dependent variables in the data set through the percentage of explained variance in the dependent variables from the independent variables.

Descriptive Statistics

The population for the portfolio rating system inter-rater reliability test was made up of 140 students that were first time in any college students that ultimately enrolled in the research site and each received one portfolio score through the standard admissions process at the research site. The population included only first time full time students which excluded all transfer students. Of the 140 students in the population, 66 (47 percent) were randomly selected by assigning each subject a number 1 through 140 and then numbers were selected through a random number generator. The 66 portfolios were then given a second and third score by independent trained admissions counselors to provide each subject with three scores for an inter-rater reliability comparison. The additional raters are members of the admissions team that routinely assesses ratings to prospective student portfolios and were not staff selected only for this study. Score 1 yields a mean of 3.39 and a standard deviation of 1.036; Score 2 yields a mean of 3.32

and a standard deviation of 1.139; Score 3 yields a mean of 3.86 and a standard deviation of 0.959.

     The population for the prediction tests is 797 students all of whom were first time full time students and excluded any transfer students. Of those 797 students, a total of 655 had scores for all points of comparison. Table 1 below shows the N, minimum, maximum, mean, and standard deviation for all scores. A significant reason for the decreased number of students with valid scores in all categories is due to international students not having ACT scores as part of their admissions process. Future research may look to treat international students as a test population for further analysis. For this study, multiple regression tests were used and therefore the results are based on a total of 655 students that had valid data for all variables both dependent and independent.

Table 1

Variable Descriptive Statistics

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Admissions portfolio score	790	2	5	4.06	.84
High school grade point average	779	.00	5.40	3.16	.55
ACT score	666	12	34	21.60	4.08
First semester grade point average	797	.00	4.00	2.45	1.31
Cumulative grade point average	797	.00	4.00	2.49	1.24
Enrollment in the 2nd semester	797	0	1		
Enrollment in the 3rd semester	797	0	1		
Student graduated	797	0	1		
Valid N (listwise)	655				

Inferential Statistics

Portfolio Score Inter-Rater Reliability

To determine the inter-rater reliability of the portfolio grading process, the three scores produced by the three independent raters were compared using Kendall's Coefficient of Concordance. The null hypothesis for this test is that the distribution of Score 1, Score 2, and Score 3 are the same. The significance level of the test is .05 and the null hypothesis is rejected. The mean of rank one was 1.84; score two was 1.73; score three was 2.43. The Kendall W of .235 represents very low reliability when all three scores are compared. The low reliability of the portfolio grading process does represent limitations in the prediction comparisons conducted in the second phase of the inferential statistics. There are additional implications of the low inter-rater reliability measure that are discussed in the future recommendations section. The portfolio score was used in further analysis for academic success prediction with the understanding that the portfolio is at this time not highly reliable.

Enrollment in the Second Semester

The first of the planned comparisons for the prediction of academic success was to examine the relationship between the dependent variable of enrollment in the second semester and the independent variables of portfolio score, high school grade point average, and ACT score. Enrollment in the second semester is a critical marker for the research site as it is used for early intervention programming and support services to boost overall retention rates. Binomial logistic regression was performed to examine the relationship between all three independent variables and the dependent variable at once.

The procedure did produce 10 studentized residuals with standard deviations ranging from -2.559 to -3.029. The studentized residuals were examined and determined that none of the studentized residuals represented faulty or incomplete data so they were included in the analysis.

Six hundred fifty-five students were included in the analysis after students with missing data points were removed. When the model is created with no independent variables included, the data produces a best guess that students will enroll in a second semester and this best guess is correct 76 percent of the time.

The omnibus tests of model coefficients, Table 2, showed that the model is statistically significant (p<.005) and does show prediction by the independent variables on the students' enrollment in the second semester. The Hosmer and Lemeshow Test found that the model is a good fit based on a result that is not statistically significant (p=.974).

Table 2

Model Coefficients Second Semester Enrollment

		Chi-square	df	Sig.
Step 1	Step	28.596	3	.000
	Block	28.596	3	.000
	Model	28.596	3	.000

Although the model is statistically significant and a good fit, the explained variance in second semester enrollment is very low. The Cox & Snell R Square of .043 indicates and explained variance of only 4.3 percent and the Nagelkerke R Square of .064 shows an explained variance of 6.4 percent. The dependent variables explain an almost insignificant amount of the variance in whether students will enroll in a second semester at the research site.

The variables shown in Table 3 were found in the equation of the model. The Wald test results did confirm the statistical significance of the independent variables portfolio score (p=.000) and ACT score (p=.036) while high school grade point average was not statistically significant (p=.761). It is important to again note that while the results of the logistic regression did produce a mode of good fit and show two of the independent variables to have statistically significant impact on the dependent variable enrollment in the second semester, the percentage of explained variance was very low.

Table 3

Summary of Regression for Second Semester Enrollment

	Variable	B	S.E.	Exp(B)
Step 1[a]	portfolio	.504	.112	1.655*
	hsgpa	-.068	.224	.934
	act	.059	.028	1.060*
	Constant	-1.863	.742	.155*

a. Variable(s) entered on step 1: portfolio, hsgpa, act.
*p<.05

Enrollment in the Third Semester

The second of the planned comparisons for the prediction of academic success was to examine the relationship between the dependent variable of enrollment in the third semester and the independent variables of portfolio score, high school grade point average, and ACT score. Enrollment in the third semester is used at the research site for both internal and external reporting. Reporting to internal and external stakeholders uses enrollment in the third semester, or second year, as the mark for first year retention. A stronger predictive relationship between incoming admissions standards and third semester retention would be invaluable to the research site. Binomial logistic regression was performed to examine the relationship between all three independent variables and

the dependent variable at once in the same procedure that was used to examine the relationship of enrollment in the second semester. The procedure did not produce any studentized residuals.

Six hundred fifty five students were included in the analysis after students with missing data points were removed. When the model is created with no independent variables included, the data produces a best guess that students will enroll in a third semester and this best guess is correct 66.9 percent of the time.

The omnibus tests of model coefficients, Table 4, shows that the model is statistically significant ($p<.005$) and does show prediction by the independent variables on the students' enrollment in the third semester. The Hosmer and Lemeshow Test showed that the model is a good fit based on a result that is not statistically significant ($p=.275$). It is worth noting that this is a weaker result than the model for the dependent variable enrollment in the second semester.

Table 4

Model Coefficients Third Semester Enrollment

		Chi-square	df	Sig.
Step 1	Step	32.323	3	.000
	Block	32.323	3	.000
	Model	32.323	3	.000

Although the model is statistically significant and a good fit, the explained variance in third semester enrollment is very low much like the findings for enrollment in the second semester. The Cox & Snell R Square of .048 indicates and explained variance of only 4.8 percent and the Nagelkerke R Square of .067 shows an explained variance of 6.7 percent. The results of the comparison for the dependent variable of enrollment in the third semester is very much like enrollment in the second semester. With the importance of

both measures of academic success, these low results will have implications for both practice and further research.

The variables in Table 5 were found for the equation of the model. The Wald test results did confirm the statistical significance of the independent variables. Portfolio (p=.000) contributed significantly while ACT (p=.159) and High School GPA (p=.302) contributed less. It is important to again note that while the results of the logistic regression did produce a model of good fit and show the independent variables to have statistically significant impact on the dependent variable enrollment in the third semester, the percentage of explained variance was very low.

Table 5

Summary of Regression for Third Semester Enrollment

	Variable	B	S.E.	Exp(B)
Step 1[a]	portfolio	.483	.103	1.621*
	hsgpa	.208	.202	1.231
	act	.035	.025	1.036
	Constant	-2.623	.682	.073*

a. Variable(s) entered on step 1: portfolio, hsgpa, act.
*p<.05

Graduation in Six Years

The final dependent variable examined using binomial logistic regression is student graduation in six years. There were no studentized residuals present when the procedure was performed to compare the dependent variable of graduation in six years to the three independent variables portfolio score, ACT score, and high school grade point average.

Six hundred fifty five students were included in the analysis after students with missing data points were removed. When the model is created with no independent

variables included, the data produces a best guess that students will not graduate in six years and this best guess is correct 52.1 percent of the time.

The omnibus tests of model coefficients, Table 6, shows that the model is statistically significant (p<.005) and does show prediction by the independent variables on the students' enrollment in the second semester. The Hosmer and Lemeshow Test showed that the model is a good fit based on a result that is not statistically significant (p=.440). This is a stronger result than the comparison for enrollment in the third semester but weaker than enrollment in the second semester.

Table 6

Model Coefficients Graduation in Six Years

		Chi-square	df	Sig.
Step 1	Step	35.984	3	.000
	Block	35.984	3	.000
	Model	35.984	3	.000

The model is statistically significant and a good fit, the explained variance in graduation within six years is very low. The Cox & Snell R Square of .053 indicates and explained variance of only 5.3 percent and the Nagelkerke R Square of .071 shows an explained variance of 7.1 percent. The results of the comparison for the dependent variable of graduation within six years is like both enrollment variables although slightly higher.

Table 7 lists the variables found in the equation of the model. The Wald test results used to determine statistical significance of each independent variable found the portfolio (p=.041) and high school gpa (p=.000) both added to the prediction model and ACT (p=.729) did not. The results of the logistic regression did produce a mode of good fit and showed the independent variables to have statistically significant impact on the dependent variable graduation in six years, the percentage of explained variance was very low.

Table 7

Summary of Regression for Graduation in Six Years

	Variable	B	S.E.	Exp(B)
Step 1[a]	portfolio	.200	.098	1.222*
	hsgpa	.838	.196	2.312*
	act	.008	.023	1.008
	Constant	-3.720	.658	.024*

a. Variable(s) entered on step 1: portfolio, hsgpa, act.
*p<.05

First Semester Grade Point Average

Multiple linear regression was used to compare the independent variables of high school grade point average, ACT score, and portfolio score to the dependent variable first semester grade point average. A strong prediction between the independent variables that make up the admissions process and the first semester grade point average would allow the research site to provide better support services and interventions based on how likely an incoming class is to perform well in the classroom during their first semester.

The comparison is found to be statistically significant through an ANOVA calculation, Table 8. Weak correlations between the independent variables and the dependent variables were found through the test. The independence of residuals was established by the Durbin-Watson statistic of 1.978. The calculated R of .278, R Square of .077, and Adjusted R Square of .073 all indicate a weak correlation between the independent variables and the dependent variable explaining very little of the variation in first semester grade point average.

Table 8

ANOVAª First Semester Grade Point Average

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	85.796	3	28.599	18.189	.000[b]
	Residual	1023.559	651	1.572		
	Total	1109.355	654			

a. Dependent Variable: First semester grade point average

b. Predictors: (Constant), ACT score, Admissions portfolio score, High school grade point average

Table 9 shows that there are no correlations between dependent variables greater than 0.7 indicating no multicollinearity among the independent variables in the test for first semester grade point average.

Table 9

Correlations First Semester Grade Point Average

		First semester grade point average	Admissions portfolio score	High school grade point average	ACT score
Pearson Correlation	First semester grade point average	1.000	.202	.208	.162
	Admissions portfolio score	.202	1.000	.121	.125
	High school grade point average	.208	.121	1.000	.531
	ACT score	.162	.125	.531	1.000
Sig. (1-tailed)	First semester grade point average		.000	.000	.000
	Admissions portfolio score	.000		.001	.001
	High school grade point average	.000	.001		.000
	ACT score	.000	.001	.000	
N	First semester grade point average	655	655	655	655
	Admissions portfolio score	655	655	655	655
	High school grade point average	655	655	655	655
	ACT score	655	655	655	655

The coefficients in Table 10 were found through the regression for first semester grade point average.

Table 10

Coefficientsª First Semester Grade Point Average

Model		Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Zero-order	Parti al	Part	Toler ance	VIF
1	(Constant)	-.333	.386		-.863	.388	-1.092	.425					
	Admissions portfolio score	.275	.059	.176	4.626	.000	.158	.391	.202	.178	.174	.980	1.020
	High school grade point average	.411	.116	.157	3.527	.000	.182	.640	.208	.137	.133	.715	1.398
	ACT score	.018	.014	.056	1.266	.206	-.010	.046	.162	.050	.048	.715	1.399

a. Dependent Variable: First semester grade point average

Cumulative Grade Point Average

Multiple linear regression was used to compare the independent variables of high school grade point average, ACT score, and portfolio score to the dependent variable cumulative grade point average. The cumulative grade point average was the grade point average a student had achieved regardless of how many semesters the student was enrolled at the research site or if they graduated. The cumulative grade point average is one quantifiable measure how well a student had performed academically while at the research site.

The comparison is found to be statistically significant through an ANOVA calculation, Table 11. Weak correlations between the independent variables and cumulative grade point average were found. The independence of residuals established by the Durbin-Watson statistic of 1.915. The R of .301, R Square of .091, and Adjusted R Square of .086 all indicate a weak correlation between the independent variables and the dependent variable explaining very little of the variation in cumulative grade point average.

Table 11

ANOVA^a Cumulative Grade Point Average

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	88.860	3	29.620	21.617	.000^b
	Residual	891.995	651	1.370		
	Total	980.855	654			

a. Dependent Variable: Cumulative grade point average

b. Predictors: (Constant), ACT score, Admissions portfolio score, High school grade point average

Table 12 shows that there are no correlations between dependent variables greater than 0.7 indicating no multicollinearity among independent variables for the test done regarding cumulative grade point average.

Table 12

Correlations Cumulative Grade Point Average

		Cumulative grade point average	Admissions portfolio score	High school grade point average	ACT score
Pearson Correlation	Cumulative grade point average	1.000	.200	.237	.194
	Admissions portfolio score	.200	1.000	.121	.125
	High school grade point average	.237	.121	1.000	.531
	ACT score	.194	.125	.531	1.000
Sig. (1-tailed)	Cumulative grade point average		.000	.000	.000
	Admissions portfolio score	.000		.001	.001
	High school grade point average	.000	.001		.000
	ACT score	.000	.001	.000	
	Cumulative grade point average	655	655	655	655
	Admissions portfolio score	655	655	655	655
	High school grade point average	655	655	655	655
	ACT score	655	655	655	655

The coefficients in Table 13 were found through the regression for cumulative grade point average.

Table 13

Coefficients^a Cumulative Grade Point Average

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	-.362	.361		-1.004	.316	-1.071	.346					
	Admissions portfolio score	.248	.055	.169	4.480	.000	.140	.357	.200	.173	.167	.980	1.020
	High school grade point average	.427	.109	.173	3.925	.000	.213	.640	.237	.152	.147	.715	1.398
	ACT score	.024	.013	.081	1.826	.068	-.002	.050	.194	.071	.068	.715	1.399

a. Dependent Variable: Cumulative grade point average

CHAPTER 5 SUMMARY, CONCLUSIONS, RECOMMENDATIONS

Zwick (2007) summarized the dilemma of higher education admissions decisions quite in her statement "the hard truth is that granting one candidate a seat at these institutions means keeping another one out". Enrollment managers and admissions teams are tasked with making the decision of which student gets that seat by their institutions. On top of the fact that admissions criteria drive the acceptance or rejection of a potential student's application, those same criteria are often linked to key institutional functions like financial aid and student support services while also attempting to balance often competing interests in the make-up of an incoming cohort. Enrollment managers are asked to build incoming classes that are diverse in numerous ways, to invest in students that will be successful, provide opportunity to students from underrepresented populations, and to be responsive to increasing demands for higher retention and graduation rates (Allen, J. & Sconing, 2005; Geiser, 2009; Munday, 1967, Bontekoe, 1992; Community College Research Center, 2012; Sawyer, 2013; Admissions to Higher Education Review; National Association of College Admission Counseling, 2013). To do all of this, enrollment managers and admissions teams need reliable and valid predictive data on what characteristics make a student successful at their institution.

The principal source of data that can be used to make decisions about which potential students meet the enrollment goals of an institution is the potential students' prior academic performance through the evaluation of the admissions criteria. Each institution is unique in exactly how they use admissions criteria information but there are a few main types of information that are used at most institutions of higher education. The most common admissions criteria are high school grade point average and a

standardized test score, the ACT or SAT most commonly (Patterson, Mattern, and Swerdzewski, 2012). Many institutions will also use additional information like essays, class rank, writing samples, interviews, portfolios, extracurricular involvement, and similar additional criteria to make admissions decisions (National Association of College Admission Counseling, 2013). The research site collects high school grade point average, ACT score, and a portfolio score to make admissions decisions for prospective students. Transfer grade point average would be included for students requesting admission through the transfer process instead of High School Grade Point Average as used in the process for first time students. Transfer students were not included in this analysis so no transfer grade point averages were considered for comparison.

The admissions portfolio at an art school is considered critical to the prediction of future academic success by most faculty and enrollment management staff even though little research has been done on the portfolio process reliability or validity. Few studies have looked in to the reliability or validity of the portfolio and many of those that have been done are not concerned with portfolios in art and design programs or institutions. Outside of the fields of art and design, there is little usage of a portfolio in the admissions process at institutions of higher education. The portfolio process is considered almost universal in the art and design fields though with the Association of Independent Colleges of Art and Design hosting national portfolio review days where institutions that are members of the Association provide feedback to prospective students on their admissions portfolio. The requirements of the portfolio may change between different institutions and often between majors, but the requirement to submit a portfolio as part of the admissions process is again almost universal at art and design institutions (www.aicad.org, 2016).

At the research site, there are specific criteria laid out for the portfolio ratings and universal training for all admissions staff that rate portfolios. All students receive a score ranging from one to five and these scores are generated by one staff member. Due to the volume of portfolios that must be rated, each portfolio is given one score from one trained portfolio rater. The rating score on the portfolio factors in to each student's admissions decision, financial aid package, and admissions status. At the research site, the portfolio score is treated as highly reliable and valid for predicting student academic success though no formal research has been conducted on the portfolio rating process prior to this study. The additional step of analyzing the predictive nature of ACT scores and high school grade point average is necessary to understand the predictive ability of the research site's admission process.

Method

This study was a predictive non-experimental design using historical data. The dependent variables were:

1. Persistence to the second

2. Cumulative GPA in the first semester

3. Cumulative GPA after the final semester

4. Persistence to graduation

The independent variables were:

1. High School GPA

2. Standardized Testing Score (ACT at the research site)

3. Portfolio Score

The data used was from the incoming class of the Fall 2008 academic year through the Fall 2010 incoming class for the correlational and predictive analysis. Participants represented only those that are traditional first time freshmen. Data for the inter-rater reliability test for the portfolio grading process was taken from the Fall 2014 incoming class. Evaluation of new admissions portfolios can be extrapolated to earlier portfolio grading as the portfolio requirements and staff training have remained the same from 2004 through the current cohort of students. Data was collected through the research cite's student data management software for the independent and dependent variable information for the predictive analysis. Data for the inter-rater reliability test of the portfolio rating process was collected through current admissions staff. The selected portfolios were rated a second and third time by additional trained admissions staff to be compared with the original rating that the selected portfolios was given through the normal admissions process.

Kendall's Coefficient of Concordance (W) was calculated for the set of three scores for each portfolio enabling the researcher to establish the general reliability of portfolio scores. Linear regression was used to examine nominal variables and logistic regression was used to examine dichotomous variables in the inferential analysis.

Scores for *r* were calculated for the following planned comparisons:

High School Grade Point Average : College First Semester Grade Point Average

High School Grade Point Average : College Cumulative Grade Point Average

High School Grade Point Average : Third Semester Retention

High School Grade Point Average : Six Year Graduation

Standardized Test Score : College Cumulative Grade Point Average

Standardized Test Score : Six Year Graduation

Admissions Portfolio : College First Semester Grade Point Average

Admissions Portfolio : College Cumulative Grade Point Average

Admissions Portfolio : Third Semester Retention

Admissions Portfolio : Six Year Graduation

Standardized Test Score : College First semester Grade Point Average

Standardized Test Score : Third Semester Retention

Finally, scores for *r* were calculated for the following planned comparisons to determine if any of the independent variables are correlated with each other:

High School Grade Point Average : Standardized Test Score

High School Grade Point Average : Portfolio Score

Standardized Test Score : Portfolio Score

The second stage of the inferential statistical calculations was to conduct a linear regression or logistic regression for any of the correlation comparisons that yielded a strong *r* to determine if the independent variable was predictive of the dependent variable in addition to being correlational.

This statistical analysis allowed the researcher to determine if the portfolio was a reliable score and to what extent the various admissions variables explained the variance in the chosen student academic success indicator.

Findings

The first question that this research sought to answer was if the portfolio grading process was reliable between independent raters used in the admissions process at the research site. 140 students were in the population of first time freshman students for the

Fall 2014 year. 66 of those 140 were randomly selected to receive a second and third rating on their previously rated portfolio for this analysis. Kendall's Coefficient of Concordance (W) was found to be .235 which means there was very low agreement between the three independent raters or very low inter-rater reliability. Raters one and two had similar means when looking at the descriptive statistics for the portfolio ratings of 3.39 and 3.32 respectively while rater three had a higher mean of 3.86. The low reliability of the inter-rater reliability test raises a number of questions as does the difference between the mean ratings between raters one and two and rater three. For the purposes of the research site, more investigation must be done to explain the difference in mean scores. Decreasing the variance in means between raters could be a goal for the research site. The low Kendall score may call in to question the results of the prediction calculations. The practice at the research site is to have only one rater review each portfolio for a score. The tests in this study are limited to determining inter-rater reliability as it exists in a vacuum and therefore direct implications for the research cite cannot be determined without additional investigation. A more reliable measure of the portfolio scores may show an increase in the portion of explained variance in the dependent variables of this study.

The second question that the research sought to answer was how well the research site's admissions measures explained the variance in the academic success indicators that were selected to evaluate individual student academic success. The tested independent variables were the score received on a student's admissions portfolio, the student's ACT score, and the student's high school grade point average. The dependent variables for evaluating a student's academic success were retention into the second and

third semesters, cumulative grade point average after the first semester, cumulative grade point average after the student's last semester enrolled at the research site, and if the student graduated within six years of enrollment. These markers of academic success were selected based on common usage in higher education reporting. Retention during the first year and after the first year are used by institutions as indicators of how likely a student is to graduate as well as often to evaluate how well admissions information is predicting student success. Retention information is also used at the research site to compare year to year student success as well as long term enrollment predictions that have implications for future budgeting calculations and other administrative functions related to student support services and resource allocation. Grade point averages in the first year are used as early warning information for students that are in academic trouble and may need additional student support services by the research site. Finally, graduation rates are being used by many higher education constituencies as a significant measure of student success and institutional effectiveness.

The first comparison conducted was enrollment in the second semester of the students' first year at the research site. Binomial logistic regression was performed to examine the relationship on the three admissions criteria to evaluate the amount of explained variance each criteria explained in whether a student enrolls in the second semester or not. Overall, 76 percent of students in the test population registered for a second semester. The rate at which students registered for a second semester may explain in part the low percentages of variance found in the admissions criteria. The model is statistically significant and a good fit but the explained variance in second semester enrollment is very low. The calculations found a Cox & Snell R Square of .043 and a

Nagelkerke R Square of .064. The dependent variables explain an almost insignificant amount of the variance in whether students will enroll in a second semester at the research site. The calculations show that the tested admissions criteria explain only 4.3 percent and 6.4 percent of the variance in students registering for a second semester. The Wald test results did confirm the statistical significance of the independent variables portfolio score (p=.000) and ACT score (p=.036) while high school grade point average was not statistically significant (p=.761).

The results of the examination of enrollment in the third semester, or first smester second year, are very similar to the model for enrollment in the second semester. The model is statistically significant and a good fit while the explained variance in third semester enrollment is very low. The Cox & Snell R Square of .048 indicates and explained variance of only 4.8 percent and the Nagelkerke R Square of .067 shows an explained variance of 6.7 percent. The Wald test results confirmed the statistical significance of the independent variables. Portfolio (p=.000) contributed significantly while ACT (p=.159) and High School GPA (p=.302) contributed less, though still contributing. This is somewhat dissimilar to enrollment in the second semester as all three variables do contribute to the model and explained variance whereas high school grade average did not contribute to the model for enrollment in the second semesters. The results of the logistic regression did produce a mode of good fit and show the independent variables to have statistically significant impact on the dependent variable enrollment in the third semester, the percentage of explained variance was very low. Taken together, the models for retention in the first and second years do not indicate that the admission criteria are

producing much insight into future academic success in an enrolling cohort as measured by retention in the second semester or third semester.

Graduation was the final academic success marker to be examined through binomial logistic regression. The results in examining graduation in six years was found to be like the results found for retention. The model is a good fit and statistically significant and the percentage of explained variance is low. The Cox & Snell R Square of .053 indicates and explained variance of 5.3 percent and the Nagelkerke R Square of .071 shows an explained variance of 7.1 percent. These results are slightly higher than the percentages of explained variance in retention though still markedly low. The Wald test used to determine statistical significance of each independent variable found the portfolio (p=.041) and high school gpa (p=.000) add to the prediction and ACT (p=.729) did not.

Evaluation of the three tests together shows that in two of the models high school grade point average either do not contribute to the model (enrollment in the second semester) or contribute weakly (enrollment in the third semester) and ACT score does not contribute to the model (graduation in six years) leaving only portfolio score as the admissions criteria that contributed to all three models. The implications of the low inter-rater reliability test for portfolio grading are troubling based on these findings. The statistically strongest predictor of student success based on retention figures must be reliable for the research site to take advantage of this information.

The remaining comparisons were done using multiple linear regression. The regressions compared first semester grade point average achieved and cumulative grade point average achieved to the admission standards of portfolio score, high school grade point average, and ACT score. The models for first semester grade point average and

cumulative grade point average were both found to be statistically significant and no multicollinearity was found in either model between independent variables. The findings from the two comparisons were similar in nature to the findings from the models using binomial logistic regression. The models were all statistically significant and of good fit but explained very little of the variance in the measures of academic success.

The results of the model using the dependent variable grade point average in the first semester show very weak correlations. The found R of .278, R Square of .077, and Adjusted R Square of .073 all indicate a weak correlation between the independent variables and the dependent variable explaining very little of the variation in first semester grade point average as explained by the independent variables of admissions portfolio score, high school grade point average, and ACT score.

The model for the dependent variable of cumulative grade point average was also found to be statistically significant through an ANOVA calculation and the results show very weak correlations between the independent variables and the dependent variable. The R of .301, R Square of .091, and Adjusted R Square of .086 all indicate a weak correlation between the dependent variable explaining very little of the variation in cumulative grade point average as explained by the independent variables of admissions portfolio score, high school grade point average, and ACT score.

Conclusions

Institutions of higher education are under increasing pressure from a variety of sources to show quality and a return on investment both from individual students and in money allocated to higher education through federal and state governments. While the debate as to exactly what quality education means is wide open, many are looking to

student retention rates, graduation rates, and grade point averages as markers of academic success which in turn are seen as return on investment. Institutions of higher education are responding to this charge in a variety of ways. Colleges and universities are developing student support mechanisms, evaluating curriculum, and responding to the changing student demographics all to support student success in an effort to boost student retention and graduation rates. One of the ways that institutions of higher education can identify programmatic and curricular changes is through data about new incoming students generated through the admissions process.

Every institution of higher education has established its own unique set of admissions standards that prospective students are evaluated against. These standards ideally are designed to balance the variety of goals that an institution has in recruiting and selecting a new cohort of students. Enrollment managers at higher education institutions are asked to identify students that will be successful at their institution while also benefiting from the education that that institution provides. Students should be challenged by the curriculum of their institution but should also have the opportunity to succeed. Enrollment managers are also often asked to enroll a diverse student body, establish admissions criteria that are fair and impartial, and even to identify students who have less tangible qualities like talent, grit, potential, and other similar qualities. Institutions of higher education have established a number of standard admissions criteria that the vast majority of institutions now use. Two of the most common criteria for admissions offices are high school grade point average and standardized test scores like the ACT or SAT. Institutions will often use additional criteria like essays, personal statements, interviews, or additional demonstrations of college readiness.

The research site for this study is not unique in this respect. High school grade point average and ACT score are two of the three admissions criteria that are used at the research site. The third criteria sets the institution apart from many traditional colleges and universities but aligns it with other institutions of similar type, independent colleges of art and design. The research site is an independent college of art and design, part of the Association of Independent Colleges of Art and Design (AICAD). Like peer institutions in AICAD, the research site includes in their admissions process an artist's, or admissions, portfolio. Applicants submit a portfolio as part of the admissions process which is used to evaluate both their previous education in art and design as well as their future potential. Applicant's portfolios are given a score from one to five with one representing an unacceptable portfolio and five representing an exceptional portfolio. At the research site, this portfolio is a large portion of the admissions evaluation criteria and also factors in to merit based financial aid significantly. High school grade point average and standardized test score represent the rest of the admissions criteria and also factor in to the merit based financial aid package for incoming students. The research site must be able to rely on the admission information to make these decisions and this study's purpose is to determine just how valid the admissions criteria are at predicting students' success as much rides on those standards.

In short, the results of the study found very low prediction of academic success from the established admissions criteria at the research site. Of concern is the very low inter-rater reliability results from the analysis of the portfolio rating process. The procedure for portfolio rating at the research site begins with a pool of trained portfolio reviewers that are part of the admissions team. Applicant's portfolios are rated on a scale of one to five

but only by one admissions staff member. It is vital for the validity of the portfolio rating process that there is a high degree of agreement between the various portfolio raters. Unfortunately, the inter-rater reliability that was found is quite low. The low inter-rater reliability may or may not have implications for the research cite. The design of this study does limit the understanding of the impact a low inter-rater reliability score has on practice. The predictive value of the portfolio found in this study, while relatively small, is consistent with the research that O'Donoghue (2009) found in his study.

Additionally, the explained variance in academic success markers of first and second semester retention, six-year graduation, first semester grade point average, and cumulative grade point average were very low for all independent variables. Portfolio score was the only independent variable that statistically significantly contributed to the models produced in the research across all dependent variables. High school grade point average and ACT score both were not statistically significant contributors to at least one of the models produced in the study. When the various independent variables contributed to a model, the portion of explained variance was universally low with the independent variables only explaining about five percent of the variance in dependent variables. Factoring in the additional concerns regarding the low inter-rater reliability scores of the portfolio rating process, a fair assessment of the data suggests that the admissions criteria at the research site do a very poor job of predicting student success at the research site.

Limitations of the Research

There are two main limitations to this study. The first is that the research took place at an independent college of art and design. Many curricular and pedagogical differences

exist between colleges of this type and traditional colleges and universities. Colleges in the Association of Independent Colleges of Art and Design would likely be the only institutions able to utilize this research. Art programs at traditional colleges and universities may be able to utilize the results of this study if their admissions process mirrors the process of the research site and adequate similarities exist in the curriculum.

The second limitation is the admissions process utilizing an admissions portfolio. Institutions that do not use an admissions portfolio of similar nature to the research site would likely not be able to use the results of this study.

This study also used only admissions and academic records from first time students at the research site. Transfer students were excluded from the data pool.

Implications for Practice

The stakes are high for college admissions departments. The need for valid information that helps guide decisions on the likely success of applicants to any institution of higher education is huge. Predicting student success is the crux of what admissions office are asked to do. Low percentages of explained variance indicate a need to evaluate the admissions criteria. Identifying admissions criteria that have stronger prediction of student success will ultimately produce stronger student success at the research site.

The low inter-rater reliability scores for the portfolio rating process may have direct implications for practice at the research site. Creating a procedure that produces more reliable results for portfolio ratings would provide an opportunity to reexamine the prediction of academic success at the research site. While this study cannot say whether a stronger inter-rater reliability score would yield stronger prediction, this seems to be a question worth asking. Within the research site, there is a strong belief that the portfolio

is the best measure of a student's talent, previous education, and future potential. The findings of this study do not allow the affirmation of that belief.

Recommendations for Future Research

This study did not include demographic data as a factor in student success. Little research on student success and admissions criteria had been conducted at institutions like the research site. With the findings of low explained variance in academic success markers based on the independent variables in this study, it is worth exploring if this is true across common demographic groups like race, age, gender, and socioeconomic status.

The portfolio reliability is potentially the most concerning finding for the research site. The development of an intervention designed to improve portfolio rating reliability should initiated. This study produced a baseline for comparison purposes for that type of intervention. An increase in portfolio reliability may have an impact on how well the admissions portfolio predicts academic student success at the research site.

A comparison study of portfolio reliability would also be interesting to the Association of Independent Colleges of Art and Design member institutions. The opportunity to compare reliability measures for portfolio rating at different institutions would have implications for the usefulness of portfolios in the art and design college admissions process. An industry wide inability to produce reliable portfolio rating results could have significant implications for the entire field.

APPENDIX

THIRTY NINE ART SCHOOL ADMISSIONS TRAITS

Burke and McManus (2011) identified 39 unique items that admissions staff

identified as traits they were looking for in applicants. Those 39 traits are:
- Wide knowledge of contemporary art;
- Some knowledge of fashion;
- Design ability;
- Ability to visually interpret;
- Ability to develop ideas, visually and conceptually;
- Breadth of understanding of various media;
- Critical understanding;
- Demonstrate potential;
- Expected to visit the college/course/site;
- Willingness to budget for and cover the cost of resources;
- Has an easy journey into college
- 'unusual';
- 'on the edge of society';
- Looking for evidence of inspiration;
- Critical analysis and thought-process;
- Use of colour;
- Communication of ideas;
- Enthusiasm;
- Motivation;
- Good at self-promotion;
- Vibrant;
- Strong visual portfolio;
- 'talk really well';
- Great team player;
- 'incredibly interesting';
- 'incredibly entertaining';
- Creative mind;
- Invention;
- Wit;
- Reflective;
- Organized;
- Ability to meet deadlines;
- Putting it on paper – in words;
- Not averse to writing;
- Ability to express themselves;
- 'have they got something to say';
- Onus on student to know about the course;
- Attended an open day; and
- Knowledge of technology and computers.

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ABSTRACT

**THE PREDICTIVE VALUE OF ADMISSIONS STANDARDS FOR STUDENT
SUCCESS AT AN INDEPENDENT COLLEGE OF ART AND DESIGN**

by

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Identifying the right students starts for admission to an institution of higher education begins with the institution's admission criteria. Each institution must establish criteria for admissions that support their mission and their educational philosophy. Common standards for higher education admission include high school grade point average, transfer college grade point average, and standardized test scores (ACT or SAT). At an Independent College of Art and Design, the entrance or admissions portfolio is utilized evaluate applicants in a hope to identify those students that best meet the long list of desired attributes that admissions representatives are looking for. Little research has been conducted to establish the predictive qualities of these admissions criteria at colleges of art and design though and almost no research has been conducted on the reliability of the admissions portfolio in an art and design college. Three research questions are the focus of this study:

1. Is the admissions portfolio grading process reliable based on an inter-rate reliability test?

2. Are the characteristics of incoming students as determined during the admissions process correlated to academic success markers after the first academic year and through graduation?
3. Can persistence to graduation, course grades, and cumulative GPA be predicted by the characteristics of incoming students?

Descriptive and inferential statistics were used to analyze the data collected. The portfolio rating process was found to have a very low inter-rater reliability score and the admissions criteria were all found to explain very low amounts of the variance seen in the academic success indicators. Further research on demographic data and academic success in addition to research on improving the inter-rater reliability of the portfolio rating system are warranted.

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