HIGHER EDUCATION SUPPORT STRATEGIES:

AN EVALUATION OF NEEDS SATISFACTION ON AUTISTIC COLLEGE STUDENT RETENTION

A Dissertation

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by

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BIOGRAPHICAL SKETCH

Kenneth James Hoerricks is an autistic adult whose higher educational journey began in 1988 at Long Beach City College in Long Beach, California. From that time, Mr. Hoerricks remained enrolled in a variety of colleges and universities in pursuit of his educational goals. Being mostly non-verbal, he proceeded through his college journey taking and passing one class at a time. He received an Associate of Science degree in Political Science from Santa Rosa Junior College in 1992, a Bachelor of Arts degree in Organizational Leadership from Woodbury University in 2009, a Master of Arts degree in Organizational Leadership from Woodbury University in 2010, and a Doctor of Philosophy in Educational Leadership from Trident University International in 2018.

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DEDICATION

I would like to dedicate this work to my wonderful wife, Teresa, and our amazing children. Without the grounding of my family, this dissertation would not be possible.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

ASD – Autism Spectrum Disorders

CDC – US Centers for Disease Control and Prevention

IAN – Interactive Autism Network

SNS – Student Needs Survey

Defining terms

For the purpose of this research, the following definitions will be utilized:

- The teacher is the person responsible for delivering the curriculum in class. This person may have other titles such as Professor, Adj. Professor, Assoc. Professor, Instructor, Aid, Graduate Assistant, and so on.
- Retention is the continued enrollment of students in the study from enrollment until graduation within the same institution.
- Attrition is the voluntary withdrawal of individual students.
- Voluntary student withdrawal is student departure from the institution of choice for initial enrollment that is not a result of academic or disciplinary dismissal.
- Basic needs are those needs for survival, freedom, fun, love and belonging, and power (Glasser, 1998).

ABSTRACT

The retention of students has long been a focus of administrators of higher education institutions. The voluntary withdrawal of students represents a significant loss of time and money for both schools and students. The issues of retention and attrition have been explored extensively over the preceding decades, yet the problem of voluntary withdrawal within the autistic student community remains. Previous studies have examined the issue from many angles utilizing many theoretical constructs. One of the more prominent theories concerning this student exodus is that of Vincent Tinto (1993), who theorized that a lack of social and academic integration contributed to voluntary student withdrawal. However, as many autistic students lack the necessary skills to engage successfully with others in a social / school setting (National Autism Society, 2015), Tinto's work on retention will not be useful in designing a study of autistic students.

The aim of this research study was an examination of the factors involved in the retention of college students (adults) with Autism Spectrum Disorders (ASD). This study applied William Glasser's (1998) choice theory, which explores behavior based on the internal motivation to succeed to the problem of autistic college student retention, and explored the relationships among need satisfaction, demographic factors, and retention.

This study assessed the strength of basic needs fulfillment satisfaction in autistic college students, and examined predictive relationships associated with the retention of this growing population of students that can serve as a model for others to consider. This study featured a survey of the Interactive Autism Network's (IAN) pre-screened

autistic participants. This survey utilized the Student Needs Survey (SNS) developed by Burns, Vance, Szadokierski, and Stockwell (2006). Given a four to one male to female diagnosis rate and the fact that autism is present in all classes and races of society, controls for age, gender, ethnicity, residency status, household income, curriculum, and the highest undergraduate grade level achieved were utilized.

The survey results and subsequent data analysis found significance in four areas: the individual covariates of age, special curriculum, and living alone, and the independent variable of power. The results indicated that those autistic students who were in the 45-64 age group, those with access to a special curriculum, those able to live alone, and those able to match their educational life to their Quality World would have the greatest chance of graduating.

Autism, as a developmental disorder, may delay the development of skills such as communication. However, autism does not prevent a person from changing and maturing over time. Tasks that may have been impossible in early life can become routine as one becomes older (Hoerricks, 2016). By the time autistic people are 40 - 60 years of age, they tend to have more awareness of their unique needs and can control and plan for meeting those needs much more effectively than they could as children (Endow, 2015).

In terms of access to a special curriculum or other accommodations, students transitioning directly from a supportive K-12 environment to an unsupported college environment may experience difficulties, particularly those who have been in special education programs (Wiorkowski, 2015). Unsupported autistic students often fall behind academically in college, as K-12 special education programs often do not teach the basic skills needed for a more rigorous class schedule. Autistic students coming from these

programs may have particular difficulty with science, math, and English (Wiorkowski, 2015).

In a general sense, living alone / independently gives individuals the ability to focus on what they like to do and to have control over their home environments (Adreon & Durocher, 2007; Palmer, 2006, Wiorkowski, 2015). The modification of one's environment is the most frequent recommendation in accommodating sensory issues (Richey, 2009). Part of the ability to control the living environment is the ability to create a safe and calm space. Sensory processing problems and anxiety are generally comorbid with autism (Lipsky, 2009, 2011). Wiorkowski (2015) noted that, even for those living in a dormitory, having a private room meant that autistic students had a place to which to retreat when they felt overwhelmed or were simply finished with social interaction.

The needs fulfillment profile of power revolves more around personal self-worth than does power over others. This need is related to a personal sense of competence, ability, and recognition of value that can come from accomplishment and recognition. It is connected to the idea of the quality world and one's ability to achieve goals. The need for power is also the need to feel in control of one's life. Many autistic people have developed a special interest in a topic that may be pursued at college. They may arrive in class knowing more about the subject than the instructor does. In their quality world, they are an expert on the subject. Feelings of powerlessness can occur when the student is not allowed flexibility to complete assignments when there is a dispute over facts or procedures with the instructor, or when communication issues complicate student / teacher / peer interactions. This study contributes vital data to the study of autistic college students' attrition. The results can be applied to the greater population of autistic students

as schools and administrators who seek to transform their institutions into a welcoming place that attracts and retains this dynamic group of learners.

CHAPTER ONE

Introduction

Given the axiom that leadership is helping things to go right, or doing the right thing, college and university leaders are nervous about the numbers of K-12 students diagnosed with Autism Spectrum Disorders (ASD), and the government mandate supports that they receive from local school districts (Konrad, 2008; Howlin, 2012). These autistic children will grow older and will graduate from high school, and many will apply for admission to college. These students will require, or demand, some form of support or accommodation similar to that which they received in their K-12 setting (Konrad, 2008).

This group that transitioned directly from K-12 to college is but one group of autistic students that universities must find some way to accommodate. A second, and perhaps larger and more challenging group, is older adults who are entering college later in life to build on existing skills in the hope of a promotion, to pursue a new career, or for other reasons. These older adults may or may not have had a history of support for their ASDs. In fact, some may not even have been diagnosed with ASDs, or may be self-diagnosed or have had a recent clinical diagnosis (Rosqvist, 2012). These older adults may not yet know why they are having difficulty relating to their peers, having trouble with the classroom setting, or having problems with the new sights and sounds that they encounter on campus. The world of on-line schools further magnifies the problem, as these new students find that their usual ways of navigating the complex world of

interpersonal-communication rarely apply (Wyatt, 2010). In addition, they may still be putting the pieces together with regard to how ASDs fit into their personal big picture (Rosqvist, 2012).

Thus, the context of this study involves both the college leadership and the college faculty in examining how best to accommodate or satisfy, and therefor retain, these groups of students. From a customer service standpoint, schools will want to know how best to achieve high levels of satisfaction and retention scores within an economic environment of shrinking budgets. At the same time, schools will want to tread carefully in order not to stigmatize students who do not choose to self-identify as autistics, Aspies, or any of the other labels given to autistic persons (Butler, 2011).

The timing for narrowing the knowledge gap, as implied by Konrad (2008), alluded to by Cohen (2011), and clearly articulated by Brown (2012), could never be better. Howlin (2011) pointed out this gap when noting that autistic adults are usually disadvantaged with regard to employment, social relationships, physical and mental health, and quality of life. In addition, supports to facilitate integration within the wider society are frequently lacking. Even so, there has been almost no research into ways of developing more effective intervention programs for autistic adults attending college.

This study endeavored to fill that gap by collecting data on the satisfaction and retention of this growing and diverse group. This study's feasibility and necessity have already been established by work previously performed under the auspices of the IAN and addresses their stated research goals (IAN, 2013).

Thus, in examining the potential cause/effect relationship between need fulfillment and retention/satisfaction, this study paves the way for future experimental

studies that will examine the variables and results featured in this study more closely from an evidence-based intervention standpoint (US DOE, 2003).

Problem Statement

There are tens of thousands of studies on student attrition that focus on gender, race, ethnicity, geography, and other popular demographics. As an example of the depth of retention programs, the retention of African-American students by the Indiana State University (ISU) system is enabled by a strategic plan that seeks to narrow the difference between retention and graduation rates by a minimum of 50%, as well as a plan to increase the overall enrollment of African Americans. Part of this plan includes the hiring of more African-American faculty members (Childs, 2011).

Plans to address traditional minority recruitment and retention issues, such as ISU's, are not at all uncommon. In many states, these programs are mandatory. Conversely, master plans that address the recruitment and retention of autistic people are incredibly rare. With the US Department of Education (2013) noting the number of degree-granting higher education institutions as being over 2300, and the schools with identified programs of base-line services for autistic support being less than 30% of that number (Brown, 2012), the need for this study becomes obvious.

Purpose of the Study

This study applied William Glasser's (1998) choice theory to the problem of autistic students' voluntary withdrawal to explore the relationships between need satisfaction based on choice theory and basic needs, demographic variables, and retention. The study assessed the strength of basic needs fulfillment satisfaction in autistic students and, in so doing, examined the predictive relationships associated with

autistic students' voluntary withdrawal that may be valuable to college administrators.

Justification for the Study

The cost of student departure to institutions and individual students, coupled with the new requirements for increased accountability in higher education, place continual pressure on college and university administrators to provide students with a quality educational experience. If institutions cannot retain students, considerable human and financial resources must be expended to recruit new students to replace those who have left. Obviously, these are resources that could be better spent in other areas with the potential to add to the quality of the undergraduate educational process.

Gaining a better understanding of the factors behind the voluntary withdrawal of this unique group of students provides educators with valuable tools to intervene and decrease attrition rates.

When examining the voluntary withdrawal of autistic students within a larger context, considering the act of withdrawal as a specific behavioral choice encourages a paradigm shift with regard to the study of this area. While much of the attrition / retention research has attempted to provide explanations of the influences on this particular behavior, there remains room for additional research that explores the cognitive and/or emotional process(es) leading up to the choice to withdraw from school or to remain and graduate.

It is important to note that, as opposed to obvious racial or gender identifiers, administrators cannot simply look out of their windows and count the autistic students that they may see walking past. The total number of autistic students on campus is unknown because the only figures come from college offices at which students can

register for assistance (usually in an office or program that supports disabled students). However, these enrollments are easily double of what they were five years ago, and officials believe many more students who do not disclose that they are autistic are on campus (Wilson, 2012).

Given that autism occurs in all races, genders and economic situations, the value of drawing from more than one theory to explain student attrition is important. Cabrera, Castaneda, and Nora (1993) studied the complementary elements of Tinto's (1993) model and Bean's (1979) attrition theory, which is based on the concept of organizational turnover and emphasizes the importance of individual intentions as shaped by beliefs and attitudes. Milem and Berger (1997) studied the value of the relationship between Tinto's (1993) theory and Astin's (1984) theory of involvement, which hypothesizes that student retention is related to the investment of psychological energy. It is this type of investment that may be particularly troublesome for the autistic student (Grimes, 2010).

If voluntary student withdrawal from an institution is considered to be a behavioral choice (Price, 2010), it is worth considering a theoretical framework that attempts to explain retention from such a standpoint. William Glasser (1986, 1990, 1998, 2000) has long advocated the idea that the educational experience could be influenced positively by the understanding and use of choice theory. According to Glasser (1998), choice theory involves a lifelong process whereby individuals formulate perceptions of the world; through a continual comparison of these individual perceptions and ideas of the world as he or she would like it to be, also known as the "Quality World," the individual chooses behaviors to meet those expectations and basic needs more effectively.

According to Glasser (1998), a Quality World consists of pictures (people, places, things, activities, ideas, and belief systems) that we perceive as being need-fulfilling, regardless of whether anyone else may consider them to be need-fulfilling or not. These pictures relate to our past experiences, future aims and ambitions, and relate to our idealized selves. Our personal Quality World pictures direct our efforts to fulfill our vision of our basic needs and thereby direct our behavior. Behavior, as Glasser saw it, comprises thinking, doing, feeling, and physiology (Total Behavior). Thus, "[l]earning what is in a person's 'Quality World' and trying to support it, will bring us closer to that person than anything else we can do" (Glasser, 1998 p. 51).

Glasser (1998) maintained that all human behavior is chosen in order to meet one or more of four individual psychological needs at any given time, namely love and belonging, power, freedom, and fun, and one physiological need, survival. Mapping these needs across the five domains creates a student's need fulfillment profile (Glasser, 1998). Considering student departure within the framework of prior research, but from the perspective of Glasser's (1998) basic needs and choice theory, could assist in providing additional means for identifying those autistic students at risk of attrition.

In addition, such an understanding could provide an effective explanation that would enhance prior studies of student withdrawal.

Research Questions

Given the Centers for Disease Control and Prevention's (CDC) Identified Prevalence Rate of Autism Spectrum Disorders of one in 68 children, or 14.6 per 1000 school-aged children (CDC, 2016), and given that ASDs occur in all ethnic, racial, and socioeconomic groups, as well as the legal special education requirements for autistic

children, this means that students will expect a certain type of learning environment as they transition to college. Thus, the research questions for this study are:

1. Are there statistically significant relationships between need fulfillment profiles and retention among autistic college students?
2. Are there statistically significant relationships between need fulfillment profiles and retention while controlling for demographics among autistic college students?

The data were analyzed to identify relationships and commonalities among the variables, and implications are presented for the autistic college population at large.

CHAPTER TWO

Literature review

Studies on student attrition have been conducted since the first part of the twentieth century. From school administrators to government agencies, groups have wanted to know why students do not stay enrolled through completion of their degrees. Many theories have been proposed and tested. Controls for just about every sub-group of students and demographics have been included. This study will examine the problem as it relates to the autistic college students, a previously unexplored demographic.

To conform to previous studies of college student attrition, the review of literature that follows will be organized under six main sections. The first section includes a brief overview of early research related to the problem of student departure. The second section examines student departure from common individual constructs. The third section contains studies that examine student departure from an institutional perspective. The fourth section contains a description of Tinto's (1993) theory of student departure. The fifth section provides a brief overview of general needs theories. Finally, the last section includes a description of Glasser's (1998) choice theory and basic needs (Grimes, 2010; Price, 2010), as well as a summary that illustrates the gaps in previous studies and the need for a study of autistic student attrition.

Early Research on Attrition

Although not specifically identified as such, theories proposed for the explanation of college student attrition and retention have existed since the establishment of institutions of higher education in the United States. These institutions became focused on attrition after societal trends of industrialization and urbanization became well

established (Berger & Lyon, 2005). Overall increases in student enrollment nationally, and a student population more focused on degree completion as a valuable process, led to more diversity among institutions and students. An increasing awareness of these differences in attrition rates among institutions led to some of the first studies in the field of student withdrawal (Berger & Lyon, 2005).

McNeely (1937) published one of the first studies that focused on institutional student loss entitled "College Student Mortality." McNeely studied attrition and cited reasons for departure such as financial / academic challenges and the pursuit of full-time employment. McNeely's (1937) study was widespread, and included data from 60 institutions. The study incorporated many variables, including both institutional and individual factors. Among the variables considered were institutional size, gender, age at entry into college, hometown, residence, and work status.

A 1942 study by Mitchell noted an approximate loss of 40% of freshmen from schools of higher education at that time. Mitchell (1942) summarized the data collected after questioning over twelve hundred Michigan State College male freshman students over a three-year period. Data were gathered in two ways, the first through individual interviews upon withdrawal during the fall semester, and the second after registration in the spring term. Those students who did not return or re-enroll were contacted by mail and asked why they had chosen to depart. Mitchell (1942) noted that few students were unresponsive to the request for information. The study reported that the reasons for departure centered on issues such as finances, academic challenges, and employment.

Mitchell's (1942) study provided an example of some of the problems that plagued the early research in this area. As an example, the combining of reasons for

departure, such as “discouraged – inadequate preparation, too long to work for a degree, too much outside work, family affairs;” and the vague “transferred to another school” without any explanation as to “why” did not provide sufficiently specific information regarding the events leading up to these students’ departures. Mitchell (1942) did, however, provide insight and guidance for future research by identifying three areas as being of common concern for incoming students: (a) Transition from high school to college;

(b) the history of the institutions, including customs and traditions; and

(c) adjustments with regard to finances, new situations, and academic ability.

Mitchell also recognized the importance of identifying the trends related to the reasons for student departure, as evidenced by his observation that most of the reasons for departure varied little from year to year (Price, 2010).

Yoshino’s (1958) study, in which he stated that an average of only 38% of the freshmen at his own institution would actually graduate, found that the “drop-out rate is greatest in the freshman year.” The study identified several reasons that students chose to leave, including factors such as academic challenges, inadequate finances, difficulty with personal adjustment, and misconceptions regarding what to expect being the most common. Ii is interesting that, in his study, Yoshino (1958, p. 42) noted, “The problem of drop-outs from our schools continues to be a major concern to educators, and it represents a considerable loss of human resources to society”. This statement is illustrative of current institutional concerns with regard to the voluntary withdrawal of students.

Recent studies in this area have investigated factors beyond the merely observable

or reportable reasons that students withdraw. Studies and theories examining student engagement and retention have evolved to include both individual and institutional constructs such as student involvement, perceived reward, institutional environment, interpersonal factors, and student characteristics (Beekhoven, de Jong, & van Hout, 2002; Brower, 1992; Carini, Kuh, & Klein, 2006; Freeman, Anderman, & Jensen, 2007; Lau, 2003; Pascarella & Terenzini, 2005; Titus, 2004; Price, 2010).

Previous Study Domains

While the literature is rich in studies regarding retention practices from the perspective of constructs related to the individual student, many of these studies overlap in terms of the overall factors considered. The research typically includes four main constructs and their sub-constructs, namely economic influences, psychological influences, sociological and/or cultural influences, and student spirituality. They are presented here in order of relative appearance in the literature.

Economic Influences

Theories that have their roots in the construct of economic influence focus on the costs and benefits of attending a particular college or university, and on the student's ability to pay (Braxton & Hirschy, 2005). The early research in this area focused primarily on the impact of financial aid on retention. This research, however, failed to note the ways in which financial influences often interact with non-economic factors (St. John, Cabera, Nora, & Asker, 2000). Recent studies have attempted to address the ways in which other variables relate to financial influences and retention.

Reynolds and Weagley's (2003) student-centered study evaluated specific variables as they related to retention through degree completion, including the impact of

financial aid. Ii is interesting that from a demographic standpoint, the study found that male students were less likely to persist to degree. Given these results, and a four to one male to female autism diagnosis rate, autistic males would seem to be at even greater risk of voluntary withdrawal. Academic background variables indicated that students with greater high school grade point averages, students who applied for college early, and those who had some prior college credit hours were more likely to persist to graduation. In addition, students who were involved in leadership activities and athletics were more likely to graduate; these activities are often beyond the capabilities of autistic students. With regard to the financial variables considered, it was found that the greater the family income, the more likely the student was to persist to graduation (Reynolds & Weagley, 2003). In other words, lack of financial pressure was found to be related to greater student success. The authors of this study noted that economic influences should be considered together with other variables when examining student departure and retention issues.

Within the economic construct, the nexus model has emerged over time as the need to consider both economic influences and student-institution fit has become more apparent within the research (St. John et al., 2000). This model hypothesizes that economic factors are part of a process that shapes students' persistence. In this process, socioeconomic factors, academic ability, benefits and costs estimations, and positive social and academic experiences influence both college choice and the decision to persist. Financial aid and/or the ability to pay, combined with academic and social experiences, are thought to impact on students' persistence decisions by influencing individual student's perceptions of the balance between costs and benefits (St. John et al., 2000).

Paulsen and St. John (2002) noted that the nexus model assisted researchers to understand the factors affecting both college choice and student retention. Specifically, these researchers noted that students' perceptions of factors such as tuition cost and financial aid, combined, with actual dollar costs, influenced persistence or departure behavior. In essence, students compared the experience of costs and benefits and decided to re-enroll or to depart from the institution. For autistic students, these financial considerations may also include medical costs not usually encountered by neuro-typical students, as well as the availability of reasonably priced support services in close proximity to their chosen school.

Suggesting that most integration theory-based models do not explain the differences in student persistence adequately, Beekhoven et al. (2002) proposed to improve upon these models by looking to rational choice theory. While the authors recognized that all student departure research should be based on interactionalist theories such as Tinto's (1993), they argued that these models paid little attention to such individual internal variables as student choice and decision making.

Rational choice theory proposes that individuals make choices based on a cost to benefit analysis of the alternatives. As noted previously, and relating specifically to college retention, students assess the chance of success versus the cost of success and choose which is more potentially advantageous to them as individuals. Beekhoven et al. (2002, p. 581) proposed that a combination of integration theory and rational choice theory would provide a better picture of the influences on students' persistence, noting "students trying to integrate into the student community are likely to be rational actors who make cost benefit analysis". The study's premise was that the influential factors of

both integration and rational choice theories also influenced each other.

Although understanding of the individual construct of economic influence and its relationship with non-economic variables concerning persistence has evolved, the basic premise of cost and benefit remains important to the examination of student retention. This construct is comprised of the material, such as income, financial aid, and tuition, and the intangible, such as students' perceptions of their financial situations and the value of persisting in college (St. John et al., 2000). This implies that students can continually modify their personal evaluations of the value of persisting in college, as this can be affected by any number of other factors. While this may be applicable for neuro-typical students, it remains to be seen if this is the case for autistic students. Glasser (1998) noted that one's "Quality World" or "personal picture album" can serve as an anchor point in one's life, implying permanence and inflexibility.

Psychological Influences

The second organizing construct for research in the area of student withdrawal is that of psychological influences. Braxton and Hirschy (2005) noted that the psychological processes examined in the research that may influence student attrition included academic aptitude and skills, motivation, and personality traits (Braxton & Hirschy, 2005; as cited in Walpole, 2005, p. 453).

Astin's (1991) input-environment-outcome (I-E-O) model and theory of involvement laid the foundation that encouraged new research in the area of interaction between college students and the institutions they attend (Pascarella & Terenzini, 2005). Considering the college experience in terms of outcomes, Astin (1991) proposed that students were affected by this experience through a combination of three elements:

1. Inputs (students' demographic characteristics, family structure, and social / academic experiences);
2. the environment (the college experience as a whole, including fellow students and staff, classrooms, programs, residence, and so on); and
3. outcomes (the students' characteristics, beliefs, and personas as they exist after the transformational experience of college).

Astin (1985) proposed that students are transformed during their college experience based on "involvement," borrowing from the Freudian idea of "cathexis," or the "release of psychological energy." Freud's notions of cathexis and anti-cathexis carry with them an implied intentionality (Niculescu, 2005), from which Astin (2006) ties in the idea of involvement or withdrawal as being purposeful. Astin suggested that involvement for a college student entailed five basic postulates:

(1) The investment of psychological and physical energy in "objects" such as people, tasks, or activities;

(2) involvement as a continuous concept;

(3) quantitative and qualitative features of involvement;

(4) the amount of learning or development being directly proportional to the quality and quantity of involvement; and

(5) the educational effectiveness of any policy or practice as related to its capacity to induce student involvement.

In an attempt to develop a prediction model specific to freshman attrition, Zhang and RiCharde (1998) investigated the predictive qualities influenced by psychomotor, cognitive, and affective qualities. Zhang and RiCharde's study identified three potential

causes for withdrawal behavior, namely inability to handle stress, a mismatch between personal expectations and college reality, and a lack of personal commitment (or buy-in) to the college education experience. The researchers suggested that the psychological adjustment necessary for a successful college experience proved to be most pressing for college freshmen during the first few weeks of the freshman year.

Zhang and RiCharde's (1998) analysis of the collected data indicated that judging, which refers to a student's cognitive style with regard to decision making, self-efficacy, empathy, and physical fitness were significant factors related to persistence or departure.

Those students who scored high on judging tended to place greater importance on closure than on process, and to make unemotional decisions regarding the end of the educational process based on expectations and the reality of the college experience. Students with higher scores on judging were at greater risk of leaving. Zhang and RiCharde (1998) defined self-efficacy as a student's belief that he or she was capable of meeting new challenges, and found that increases in self-efficacy had a positive influence on the probability that a student would persist. Empathy was defined as the awareness of the impact of one's decisions and actions on others, with a tendency to demonstrate concern for society at large. The results indicated that empathy was negatively associated with freshmen's persistence. Finally, physical fitness was shown to have a positive impact on freshmen's persistence.

By exploring academic performance and persistence from a social-cognitive model, Nauta and Kahn (2000) sought to determine the extent to which social cognitive career theory (SCCT) factors could predict freshmen's persistence. The authors noted that research and efforts to understand voluntary student withdrawal at the college level

focused largely on the student and institutional match. However, as the previous results had been mixed, Nauta and Kahn suggested that alternative theoretical explanations were needed.

According to Nauta and Kahn (2000, p. 2), SCCT "explains performance as a function of ability, self-efficacy, outcome expectations, and performance goals". Their research focused on the suggestion that SCCT may assist in explaining academic performance and students' persistence.

The effect of a student's internal processes continues to develop in the research as being important in understanding the decision to withdraw from the educational environment. Specifically, the transition to the college environment and a student's ability to adjust accordingly is a promising area of focus for understanding the cognition and psychological processes related to attrition (Price, 2010). This research is particularly important because autistic students move from a supportive K-12 school environment to a less supportive college environment. In this respect, the concept of emotional intelligence and its impact may be an important factor in understanding student retention (Swenson, 2012).

When Daniel Goleman's 1996 book, *Emotional Intelligence: Why It Can Matter More Than IQ*, spent over a year and a half on the New York Times' Best Sellers List, the world became aware of the term and its potential to illuminate the causes behind human success. Swenson (2012), commenting on Goleman's work, stated that emotional intelligence (EQ) is generally understood to be a person's ability to identify and assess his / her emotional state, as well as the emotional states of others. She noted that is not related to the kind of intellectual capability or intelligence typically assessed by IQ tests.

Instead, it corresponds to a person's ability to relate to others, work in groups, read between the lines in conversations, and interpret behaviors and moods displayed by others. It also relates to an individual's understanding and regulation of those qualities within. High emotional intelligence thus provides a type of shorthand for smooth interpersonal relationships and communication.

One study examined the predictive influence of EQ with regard to academic success among undergraduate students (Barchard, 2003). Barchard noted that very little research that has endeavored to investigate the predictive qualities of EQ as related to academic success existed; however, because EQ has shown to be helpful for predicting success in other areas of personal development, the author hypothesized that prediction in the area of academics would be applicable.

Barchard (2003) found that, within the cognitive domain, verbal ability showed a correlation with the prediction of academic success. Within the personality domain, Barchard found that the two measures of conscientiousness and openness had significant correlations with academic success, but did not assist in the improvement of the prediction of academic success. Within the EQ domain, the measures of emotional understanding, social intelligence, and the tendency to express positive emotions all had positive correlations with academic success. Overall, Barchard determined that EQ measures were not as effective at predicting academic success as were measures of cognitive abilities and personality characteristics.

Nelson and Nelson (2003) conducted a study designed to operationalize and examine EQ skills as related to achievement and retention among college freshmen students. The study was part of one university's desire to develop an emotional skill

development program through the school's Counseling Department, and as a personal development component of the Freshman Seminar.

The researchers found that the emotional skills of time management and assertive communication, and the demographic characteristic of gender (female) were significant predictors of academic achievement. Ethnicity (Caucasian) was a significant factor in the emotional skill of time management. Females indicated higher emotional skills of rapport, empathy, and anger control, and males indicated higher emotional skills for problem solving. As freshmen, high achieving students scored high on the emotional skills of goal achievement, time management, and personal satisfaction. Those students who persisted to graduation had a characteristic pattern of strengths in the emotional skills of positive self-efficacy, assertive communication, rapport, empathy, and time management. Nelson and Nelson (2003) indicated that emotional intelligence skills were significant factors in the consideration of achievement and retention of the freshmen in this study.

The findings of this research indicated the importance of college and university administrators considering the impact of the intrapersonal psychological and emotional processes as related to college students' success and persistence. However, they also pointed to the potential roots of some of the problems of persistence within the autistic student population.

DeBerard et al. (2004) investigated academic, coping, demographic, health, and social characteristics of incoming freshmen. Specifically, this study assessed the interrelation among these factors, the attrition rate and academic achievement rate for the students, the correlation between risk factors, academic achievement, and attrition, and

prediction factors for academic achievement and attrition. The researchers found that factors such as academic achievement, alcohol consumption behaviors, coping skills, and overall mental health were indicative of student persistence. The findings indicated that, while several variables emerged as significant predictors of achievement including coping skills, drinking and smoking, high school GPA, level of social support, and SAT scores, only a low high school GPA showed a significant impact on retention. The authors noted that their results indicated that the issue of student retention was complicated and required further refinement in the area of predictive models.

Considering retention from a cognitive behavioral standpoint may assist in identifying some of the possible influences on attrition. Keup (2006) cited intellectual development theory and the importance of providing programs and learning environments that were consistent with the stage of personal and intellectual development in which most traditional freshmen find themselves. Intellectual development theorists have asserted that individuals progress from dualistic to relativistic ways of thinking and knowing as they advance along the intellectual development continuum. Thus, intellectual development is not a measure of intelligence; instead, it is a measure of the complexity of thinking and knowing and the sources of authority referenced when making behavioral decisions (Perry, 1999). Hypothesizing that the purpose of higher education is primarily to encourage the development of intellectual and personal skills among students, this study examined data related to the experiences of first-year college students and their impact on academic and cognitive outcomes.

With regard to academic engagement, Keup (2006) found that, while 80% of the students surveyed attended class and labs, only one-third spent a comparable amount of

time studying or doing schoolwork outside of class. In addition, 40% of the students sampled reported that they often felt bored in class. Nearly two-thirds of the students reported being tardy to class on occasion, while just over one-third of the sample reported having skipped class frequently during the first year. Even more discouraging was that only 23% of the students reported that the courses in which they were enrolled inspired them to think in new ways. Such responses suggest a troubling level of detachment on the part of these students.

Keup (2006) also found that high school grades and students' perceptions of academic ability were correlated with a decrease in first-year students' GPAs from high school to college, with the most potent indicator of a decline in grades being academic detachment. Keup suggested that this result, paired with the behaviors identified above, pointed to a need for staff working with first-year students to identify ways in which these students could be more effectively engaged intellectually.

Based on the findings, Keup (2006) recommended that higher education administrators should consider elements such as campus policy, pedagogies, requirements, and structure utilized in first-year classes and programming. In addition, Keup pointed out the importance of empowering first-year students with regard to classroom participation and engagement with the material, and encouraging students' feelings of satisfaction with regard to their academic experiences. This type of research speaks to the importance of understanding the internal evaluations and processes in which first-year students are engaged, how these evaluations and processes are related to academic performance and, ultimately, to success and persistence. However, when dealing with a diverse set of students, staff must be aware that autistic students may differ

significantly from their neuro-typical peers in all of these areas.

In a similar study, Freeman, Hall, and Bresciani (2007) concentrated on the cognitive processes leading to the decision to depart, identifying the variables of satisfaction with the institution and a lack of emotional preparedness and emotional stability as having significant influences on departure behavior. These authors noted that very little research had been conducted on the thoughts and thought processes students have regarding departure, and / or why they had these thoughts.

The results showed that five variables had a significant influence on students who reported having thoughts, talking to someone, or having taken steps toward withdrawal (Freeman, Hall, & Bresciani, 2007). These variables included being academically unprepared for college, being emotionally unprepared for college, insufficient diversity, that the social life had not met the students' expectations, and being dissatisfied with experiences at college. The authors reported that those students who exhibited these characteristics were at higher risk of departing from the institution. They also found six variables that indicated significance with regard to having thoughts and talking to someone about leaving, but not with regard to taking steps to leave. These variables included becoming a part of the institution, classes being a waste of time, developing meaningful relationships, feeling that nobody would help them, not feeling a connection with the institution, and satisfaction with residence hall experiences.

Variables affecting only the behavior of taking steps toward withdrawal included encountering psychological problems, and a lack of support from family and friends.

Freeman, Hall, and Bresciani (2007) identified student satisfaction with the institution and emotional preparedness and stability as having the greatest influence on

student withdrawal behavior, and recommended that schools facilitate student connectedness both academically and socially to encourage persistence. In addition, the researchers identified the importance of providing mental health support to students in the form of campus counseling services due to the correlation between withdrawal behaviors and emotional unpreparedness and stability issues. These authors also suggested that future studies should examine the ways in which schools could understand and therefore influence the decision-making processes among college students.

In a study designed to investigate perceptions of first-year students with regard to retention, researchers sought to identify factors influencing freshmen students' needs and desires during their first semester of college (Thompson, Orr, Thompson, & Grover, 2007). It is interesting that the authors argued that, while the characteristics of an incoming freshman class could be distinct to the particular institution, most faculty and administrators did not know much about what those characteristics were. In addition, the researchers maintained that much of the information gathered by institutions with regard to incoming students was demographic and academic in nature, thus omitting valuable information that was related to students' expectations, relationships, and goals.

The findings showed that students who felt they belonged at the university were more likely to persist. Specifically, students who lived on campus, who felt stimulated by coursework, and who were satisfied with their experiences at the university felt a greater sense of belonging (Thompson et al., 2007).

The area of individual psychological constructs offers much to be considered with regard to neuro-typical student attrition and retention. However, research that includes factors such as engagement, emotional intelligence, and integration, do not have controls

that account for an autistic student's limitations in these areas. Given that autism is a neurological difference, as opposed to a psychiatric condition, psychological constructs must be a factor in the wiring differences in the autistic brain (Stadnick, N., et. al, 2016).

Sociological Influences

The sociological perspective of student departure and research takes important influences such as family and peer relationships, socioeconomic status, and other types of socialization and interpersonal relationships on student departure decisions into account. In addition, these studies consider the importance of cultural influences related to student attrition (Braxton & Hirschy, 2005).

The most widely cited theory in the area of the sociological study of student withdrawal is that of Tinto (1975, 1993). Proposing that student departure from an individual student's institution of choice prior to completion of the degree can be explained principally by a lack of social and academic integration, Trident University's on-line library reported that well over 2000 journal articles and dissertations have cited Tinto's theory. In brief, Tinto suggested that the greater a student's level of academic and social integration within an institution, the more likely it will be that the student would remain at that given college or university through graduation.

Bank, Slavings, and Biddle (1990) explored student persistence from a relational aspect by examining social influences on undergraduate college students' decisions to withdraw or remain at a given school. These researchers organized their study around four main questions:

(1) Which persons were likely to influence students' decisions to leave or stay?

(2) Through what means do influential persons affect undergraduates' decisions

about whether to drop out?

(3) Does social influence take place because of compliance or noncompliance with external influences, or is it a process in which some students accept and internalize the influences to which they are exposed?

(4) What is the relative importance of social influence variables as predictors of student attrition?

Bank et al. (1990) based their work on earlier research that identified three types of people as being most influential on a student's decision to leave his / her given institution, namely friends, faculty, and parents. In an attempt to answer the question of whether or not social influence played a part in students' withdrawal behavior, the researchers proposed that the influences of faculty, peers, and parents had a specific effect on retention outside of any other characteristics such as background and academic performance.

Bank et al.'s (1990) research found that social influence had a significant impact on decision making among college students. Specifically, the results showed a correlation between retention and parental and peer influences. The results suggested that college students placed great importance on their relationships, and that interpersonal need satisfaction could have an impact on the processes, thus leading to persistence or withdrawal behavior.

In a study intended to expand upon and refine Tinto's theory, Braxton et al. (2000) proposed that while prior research has supported that institutional commitment is related to social engagement, research has largely left social integration unexplained. Drawing on other perspectives such as expectation fulfillment, involvement, institutional

type, life-task predominance, self-efficacy, and student motivation, the researchers sought a better understanding of social integration and student departure by examining the influence of active learning.

Active learning is a model of instruction that focuses the responsibility of learning on the student. Active learning is an approach to instruction in which students engage with the material they study through reading, writing, talking, listening, and reflecting. Active learning is in contrast to "standard" modes of instruction in which teachers do most of the talking and the students are passive (Petress, 2008).

Braxton et al. (2000) built on Tinto's (1993) contention that social integration must take place in the classroom in addition to other areas, and thus identified the importance of classroom integration, combined with active learning, for a more comprehensive picture of students' withdrawal decisions and behavior. Active learning thus increases students' knowledge and understanding, and when students believe that they are gaining knowledge and understanding material, they are more likely to consider the experience as rewarding. With this in mind, students are more willing to devote the psychological and emotional energy necessary to continue.

In addition to the importance of social structures and relationships within the college experience is the importance of these relationships and standing with regard to a student's family. Given that parents of autistic students tend to be heavily involved in the student's K-12 experience, the pre-college effects of students' characteristics as related to family structure are important considerations in the research. Ishitani (2006) noted that a student's background characteristics have been found to be particularly influential as a major component in withdrawal and persistence models.

First-generation college students are traditionally defined as those students whose parents never attended college. Some researchers include students whose parents enrolled but failed to complete college in this category of student. The research has typically revealed that these students are at higher risk of voluntary withdrawal than are their peers (Ishitani, 2006).

Ishitani (2006) concluded that pre-college factors and their effect on college students' persistence and progress toward a degree were important considerations for institutions of higher education. It could also be noted from this type of research that students come to college with contexts for persistence behavior related to family issues that include the importance (or lack thereof) of degree completion and educational goal attainment. Exploring the effects of sociological constructs on student needs, educational values, and personal goals could reveal important contributions to the understanding of departure behavior (Price, 2010).

When considering individual student behaviors related to sociological constructs, researchers are recognizing the importance of the sense of belonging as related to integration into the educational environment. According to Laursen and Yazdgerdi (2012), this may prove to be particularly troublesome for autism research, as autistic people tend to focus more on objects than on people. Freeman, Anderman, and Jensen (2007) noted that, although some research has been conducted with regard to the concept of the sense of belonging and educational experiences, there has been very little focus on college-aged populations. The purpose of their study was to examine questions related to freshman college students' subjective sense of belonging at both the class and campus levels. With regard to the class level, the researchers studied two areas, namely the

relationship between class belonging and indicators including intrinsic motivation, self-efficacy, and task value, and a sense of belonging and students' perceptions of instructors' characteristics. The study also explored the relationship of belonging at the campus level by considering students' perceptions of faculty care with regard to pedagogy and students' perceptions of overall campus acceptance.

Not surprisingly, a student's sense of belonging was significantly associated with a campus sense of belonging; however, when the sense of social acceptance and professors caring about the students were included in the factors, this significance decreased. Social acceptance was also found to be a significant predictor of a campus sense of belonging (Freeman, Anderman, et al. 2007).

Anderman later joined Kaplan (2008) to note that the literature in this area of study was limited by the broad variety of theoretical frames, operational definitions, and methods used to study that which has been termed social motivation. The goal of their 2008 paper was to illustrate this range while highlighting the need for further research.

Building on Tinto's (1993) model, specifically his belief in the importance of individual student's integration, Hausmann, Schofield, and Woods (2007) investigated belonging and the effects of intervention to enhance belonging related to first-year African-American and white college students. Hausmann et al. surveyed African-American students and their white peers at a predominantly white mid-Atlantic university. All African-American first-year students were invited to participate, while a random sample of white first-year students was invited to participate.

For this study, Hausmann et al. (2007) included measures to study factors of students' persistence indicated by previous research, including academic integration,

institutional commitment, intentions to persist, peer and parental support, pre-college characteristics, sense of belonging, and social factors. Their results indicated that a sense of belonging and institutional commitment were significant predictors of the intention to persist at the beginning of the academic year, but that the sense of belonging declined significantly over the course of the year. The researchers found that academic integration was associated with the rate of change in the students' sense of belonging over time. Hausmann et al. suggested that this indicated a relationship between adjustment to the academic environment and a sense of belonging with the institution. It remains to be seen whether this relationship between adjustment and integration will appear in the research when autistic students are studied (Laursen; Yazdgerdi, 2012).

Woosley and Miller (2009) investigated a possible connection between early college experiences and academic persistence. Their study examined academic integration, institutional commitment, and social integration during the third week of the fall semester to determine whether retention into the second year could be predicted. The authors noted that previous research had pointed to different assessment periods related to first-year students' transition, including the first half of the fall semester and following the completion of the second semester. Woosley and Miller sought to determine whether the earliest assessments of students' transition experiences were reflective of temporary struggles, or of future academic and / or departure decisions.

The results of the study suggested that the early transition experiences of freshman students could predict retention and academic performance (Woosley & Miller, 2009). Academic integration, institutional commitment, and social integration were all predictors of retention and academic performance. The authors noted that assessments of

students' transition experiences that were made as early as three weeks into the fall semester could be significant predictors of outcomes in the following semester.

Research in the area of sociological influences has much to offer with regard to the problem of autistic students' attrition. Although it is a complicated and little studied picture, the relationship between autistic students' departure decisions and autistic students' perceptions related to interpersonal relationships, faculty interaction, self-efficacy, and a sense of belonging speaks to the importance of institutional awareness of these factors. In particular, colleges and university staff should consider the variables that are within their grasp. However, many of the sociological influences noted occur in relationships and settings outside of the reach of institutions, such peer and family relationships and expectations; therefore, it is logical that institutions should focus on things such as staff development and education regarding autistic students' needs in an attempt to encourage autistic students to continue with their studies more effectively.

Spiritual Influences

Norenzayan et al. (2012) noted that religious believers intuitively conceptualized of deities as intentional agents with mental states who anticipate and respond to human beliefs, desires, and concerns. It follows that the mentalization deficits associated with the autistic spectrum may undermine this intuitive support and reduce belief in a personal god. Norenzayan et al. reported that autistic adolescents expressed less belief in a god than did matched neuro-typical controls. Creech et al. (2013) noted that students' attendance of ritual and non-ritual religious practices, along with their overall spirituality, decreased in students from their first year of college to their last.

With this limitation in mind, spiritual factors have begun to emerge in the

research as an influential individual factor as related to students' integration and persistence (Morris et al., 2003; 2004). Such research indicates an understanding on the part of administrators and researchers that individual student's constructs are complex and their impact on withdrawal behavior is mixed.

Morris et al. (2003) examined Tinto's (1993) model of student departure within the context of a mid-sized private Christian university, and found that spiritual integration was a significant predictor of students' persistence. Specifically, they found that students who were more satisfied from a spiritual standpoint on campus were more likely to persist to their sophomore year and beyond.

Building on the previous study, Morris et al. (2004) used a different analysis technique to determine the exact relationship between spiritual integration and Tinto's (1993) core constructs of academic integration, social integration, and goal and institutional commitment. The researchers found that a spiritual integration variable was shown to be equally as valuable in the prediction of the constructs found in Tinto's model.

Kneipp, Kelly, and Cyphers (2009) studied the relationship between religiosity, spirituality, and college adjustment. In this study, researchers made a distinction between horizontal and vertical spirituality. The concept of horizontal spirituality relates to how an individual perceives his / her spirituality personally, in relation to others, and in relation to his / her surroundings. The concept of vertical spirituality pertains to how an individual perceives their relationship with his or her deity. The authors found that both religiosity and spirituality were positively related to college adjustment, and that spiritual well-being would be more predictive of students' college adjustment than would

religiosity.

There are no available studies that have examined the influence of spirituality on autistic college students' retention. However, Price (2010) noted that the available religiosity and spirituality studies emphasized the importance of a nuance in the more traditional student-fit considerations within the student retention literature. This evidence suggests the possibility of the existence of other factors that are variations on the previous research and generally accepted influences of individual students' constructs as related to students' persistence.

Institutional Perspectives on Attrition

Organizational, or institutional, theory and research consider the influences of organizational structure and behavior related to the student departure process (Braxton & Hirschy, 2005). Factors such as campus characteristics, environment, institutional size, programming, and selectivity are all important considerations from an institutional perspective. These theories often postulate that administrators and the faculty play an important role in the improvement of students' persistence, and point to the influence of improved financial resources and other types of assistance for students and faculty intervention as being key to students' persistence and success (Lau, 2003).

In an attempt to provide an explanation for students' attrition behavior from the organizational standpoint, Bean (1979) proposed his student attrition model, which built upon Price's (1977) model of employee turnover. Bean's (1979) theory has proven to be foundational to the research within the construct of organizational factors and student retention.

According to Bean (1979), voluntary student withdrawal can be compared to

turnover in the workplace. He identified behavioral intentions (whether to stay or leave) as being crucial to the prediction of departure. An internal process in which individual beliefs impacted on attitudes, which then impacted on behavior, influenced these intentions. Bean considered such student beliefs to be influenced by both institutional factors, such as academic, residential, and social experiences, and by factors separate from the institution, such as parental support.

In his study, Bean (1979) sought to apply Price's (1977) theory of organizational turnover, and to test the theory's explanatory strength relation to the problem of student attrition. Bean found that Price's model proved useful for prediction with regard to student attrition. Although there was some variation in the reasons that male and female students left college, the variable of institutional commitment was consistent as being the most important as it pertained to explaining voluntary withdrawal for both genders.

Pascarella, Terenzini, and Wolfle's (1986) study emphasized the importance of exploring withdrawal behavior related to the influence of institutional intervention on students' withdrawal behavior. The researchers studied the effectiveness of a specific institutional intervention, a pre-college orientation program, with regard to freshmen's persistence. Utilizing and improving upon Tinto's (1975) model of student integration, this program was designed to facilitate students' knowledge of the institution and its traditions, as well as to enable the students' integration into the school's academic and social structures.

Traditionally, higher education institutions have developed orientation programs that are designed to help students make a successful transition to college. These programs typically serve the purpose of providing an opportunity for incoming students to become

acquainted with important campus life areas, such as campus regulations and expectations of student behavior, student services, student organizations, and academic advice (Scagnoli, 2001). While orientation programming can vary from institution to institution (both on-line and on-campus), the literature shows that these programs share the general goal of assisting the student to integrate into the new campus environment. In this regard, Pascarella et al. (1986) notes that orientation programs could be seen as a form of pre-emptive or anticipatory socialization.

Pascarella et al. (1986) hypothesized that, because anticipatory socialization is viewed as the process of a person coming to anticipate the expected behaviors, norms, and values of a new environment correctly, the extent to which this anticipated socialization is effective would impact on the level of successful integration. Thus, a pre-college orientation program could serve as a resource for students and institutions seeking successful college integration.

Unfortunately, Pascarella et al. (1986) found that attending orientation programming did not have a direct effect on students' persistence. However, it did have a direct effect on both social integration and institutional commitment. In addition, these two variables showed the largest direct significant effect on freshmen's persistence of all the variables considered.

Therefore, Pascarella et al. (1986) concluded that attending pre-college orientation programming had an indirect influence on freshmen's persistence. The researchers noted that increasing the direct impact of orientation programs would be valuable to students and to the institution, and recommended that this would necessitate the restructuring of pre-college orientation programs.

Pascarella et al. (1986) proposed an orientation program that, as opposed to an exclusively pre-college experience, extended into the fall semester in order to increase the impact of the initial orientation experience. Many institutions now incorporate freshman seminars that are designed in a very similar way to that recommended by these researchers. In some instances, and at some colleges and universities, this concept has evolved into more comprehensive first-year program or first-year experience offices. A few universities, such as Marshall University in West Virginia and the University of Alabama in Tuscaloosa, have programs that assist incoming autistic students with the transition to college life. These programs also assist students throughout their academic careers.

Research in the area of first-year programming includes a significant and oft-cited study, in which Reason, Terenzini, and Domingo (2006) explored the significance of the first-year experience and the development of academic competence and student engagement. Identifying the first year as important for laying the foundation on which students' subsequent academic success and persistence rest, these researchers sought to identify environmental, individual, organizational, programmatic, and policy factors that influenced first-year students' experiences.

The studies of pre-college and first-year orientation programs tended to examine how a student would integrate into the existing culture and climate of a college. None examined the impact on the students or attrition rates when the college did not meet the student's expectations or Quality World picture. In other words, the colleges expect the student to blend in and assimilate, and generally have no provisions for changing to meet students' expectations.

Acknowledging the work of Pascarella and Terenzini (2005) that pointed to the importance of multiple forces operating in multiple settings as being influential on students' learning and persistence, Reason et al. (2006) explored a broad examination of first-year experiences. They noted, however, that with very few exceptions, studies of college effects on students were highly segmented and based on overly narrow conceptual perspectives, concentrating only on a handful of relevant factors at a time. The result, as these authors pointed out, was a body of evidence that ''present[s] only a partial picture of the forces at work'' (Reason et al., 2005, p. 630) in shaping student learning and development.

Guided by Astin's (1993) inputs-environment-outputs approach, as well as by prior research and theoretical frameworks, Reason et al. (2006) examined as many of the factors influencing first-year students' success as possible, while also identifying the primary influences of the college experience. It was the authors' belief that the more actively students were involved in curricular and co-curricular experiences, the more growth they would experience, and therefore the more engaged they would become.

Reason et al. (2006) identified several individual and institutional variables that contributed to first-year students' development and academic competence, with individual student's experiences emerging as the most powerful predictor examined. In particular, first-year students' perceptions with regard to the institutional support that they received were the single greatest influence on their development of academic competence. In addition, those students who reported feeling that the faculty and staff at their college provided the support they needed, both academic and non-academic, and who reported that they had good relationships with both faculty and administrative staff,

proved to be more likely to report individual academic gains than were similar students who did not report such feelings.

As an interesting follow up to Reason et al.'s (2006) study, Watson (2014) examined the probability of persistence for first-generation students who chose to attend a less-selective, private, faith-based university with strictly limited resources available to support high-risk students. Watson (2014) found that the self-reported academic failures of the studied students during the first semester were based almost exclusively on their unwillingness to perform the required academic work at college independently, rather than on their inability to perform the required academic work. However, these students reported great appreciation for the opportunity to have structured out-of-class collaboration with other students to extend their engagement with the class material.

Other studies have considered the influence of high school educational practices from an institutional standpoint. Ishitani and Snider (2004) studied the impact of high school college preparation programs in combination with aptitude scores and students' background characteristics on freshman retention. In their study, the researchers examined data regarding first-time college freshmen and their participation in programs such as admission test preparation courses, assistance with financial aid, and assistance in writing college entrance essays.

Ishitani and Snider (2004) found that those high school seniors who took ACT/SAT preparation courses were 33% less likely to withdraw than were those who did not. Moreover, students whose parents received contact from school personnel regarding the selection of a college were 14% less likely to withdraw. Furthermore, those students who received assistance via financial aid preparation were 21% more likely to withdraw

than were those who did not. Clearly, the results of this particular study were mixed with regard to pre-college programming and its effect on freshman persistence, but suggested a positive influence between institutional communication with students and their parents and students' persistence.

In a follow up to Ishitani and Snider's (2004) study, Holodick-Reed (2013) studied first-generation, first-time students in their third and fourth years of college. Using Stanton-Salazar's (1997) social capital framework, the research questions focused on the students' experiences that contributed to their persistence in college prior to and while enrolled in college. The results of the study found that the knowledge and experience acquired in preparation for college, a focus on one's future, application for and receipt of financial aid, the aid of supportive family members, the cultivation of friendships, caring faculty and staff, and the feeling of comfort on campus helped these first-generation college students to persist at college.

Pascarella, Seifert, and Whitt (2008) investigated first- to second-year retention from an institutional standpoint by examining instructional clarity within the classroom and its impact on students' persistence. Building on research (Pascarella & Terenzini, 1991; 2005) that suggested the quality and nature of classroom instruction was related to students' departure, the authors conducted their study at a large (thirty thousand students) public, primarily residential research university located in a small mid-western city. The authors predicted that, if course-level learning could be improved by clear and organized instruction, the overall instructional clarity would encourage academic achievement. Furthermore, the researchers theorized that a positive aggregate academic effect would influence students' satisfaction and personal academic goals.

Pascarella et al. (2008) found that, when controlling for demographic characteristics, overall exposure to clear and organized instruction had a significant influence on re-enrolment in the sophomore year. The significant influence of clear and organized instruction continued to be found even when the researchers controlled for the influence of cumulative first-year grades and degree attainment goals. This study's authors noted that the findings supported the importance of in-class interactions and the faculty's influence on students, and pointed out the impact of clear and organized instruction on a student's future enrollment behavior.

Despite the wide availability of college preparatory programs in high schools, studies have shown that high school students were generally entering college less prepared and less academically engaged than they were in previous generations (Erickson & Strommer, 2005). It is primarily for this reason that some researchers believe additional work in the area of academic development, achievement, and institutional influence among first-year students is needed. If the importance of integration related to persistence were true, it would stand to reason that some students depart from their initial college of choice when they feel academically incompetent. Understanding the institutional impact of academic empowerment and achievement could assist administrators in the process of helping first-year students with adjustment and persistence issues more effectively (Price, 2010).

Tinto's (1975; 1993) Theory and Research

As illustrated previously, many researchers in the area of student departure have been influenced by Tinto's (1975; 1993) sociologically based theory of students' departure and have drawn on it in numerous ways to inform more specific components of

student withdrawal studies. Written well before the conceptual development of autism as a spectrum of disorders (Maloret & Sumner, 2014), the ProQuest database notes that Tinto's papers have been cited thousands of times. Cabrera et al. (1993) tested the integration of Tinto's model with Bean's (1979) student attrition model, which utilizes models of organizational turnover to explain college persistence. In their study, these authors pointed out the comprehensive nature and tested validity of Tinto's integration theory. Morris et al. (2003) considered Tinto's theory within the constructs of Christian higher education, and added the element of spiritual integration to their research. Price (2010) added Glasser's (1998) choice theory to examine freshman retention at two small private schools in the southern United States.

Tinto's (1975; 1993) original work was influenced by Emile Durkheim and his theory concerning the act of suicide (1951). The act of suicide is a very simple one at its core; it is solely the attempt to depart. With regard to suicide and the study of voluntary departure from higher education, the most obvious analogy is that both forms of behavior can be understood, in most circumstances, to represent a form of voluntary withdrawal from local communities that is as much a reflection of the community as it is of the individual who withdraws (Tinto, 1975). It could be argued that any individual's attempt at departing from any number of situations, be it a marriage, a job, or a college, involves a decision influenced by a unique combination of variables that convinced the individual of one thing: Despite the consequences, to be out of the situation is preferable to remaining in the situation.

Durkheim's (1951) work on suicide and the process leading to it focused largely on the idea of the relationship between two independent variables – integration and

regulation. Durkheim's theory held that, when people find meaning in life, they integrate well; when they do not find meaning and integrate, or when they fail to connect and are isolated socially, they may choose departure – or commit suicide.

Influenced by this idea of integration, Tinto (1993) found parallels between the processes leading to suicide and those leading to leaving the college environment. Throughout his work, Tinto (1993) noted that the underlying concept of students' departure focused on students' integration (or lack thereof) into the academic and social structures of an institution.

According to Tinto (1993), there are common elements in voluntary student withdrawal, including individual disposition, interactional experiences with the institution after entry, and the influence of external forces. Specifically, with regard to the individual, Tinto identified intention and commitment as being two important influences on departure. Intention involves an individual's personal educational goals, while commitment encompasses a person's willingness to work toward those goals. Tinto (1993) recognized that both intention and commitment can change over time and depend on an individual student's circumstances, and theorized that both come to reflect the character of individual experiences within the institution.

Tinto (1993) also noted that there were two distinct types of voluntary student withdrawal, institutional withdrawal and system departure. Institutional withdrawal occurs when a student leaves a particular school, and system departure occurs when a student withdraws from all forms of formal higher education. In making this point, Tinto observed that researchers often employ one definition of departure in attempting to study two different types of behavior (Astin, 1975; Ethington, 1990). Tinto noted that, in multi-

institutional studies such as Astin's (1975) examination of a national sample of college students, dropping out is commonly defined as referring to those persons who fail to obtain their college degrees within a specified period. Institutional departures who transfer and obtain their college degrees elsewhere are not counted as having dropped out. This hints at an intentionality or willingness to follow through and finish his / her degree on the student's part.

With regard to the idea of individual student's willingness or intentionality, Tinto (1993) felt that this lack of willingness contributed significantly to the departure process. He believed that students were in a continual process of assessing their experiences at a given college and, in so doing, developed perceptions concerning the benefits verses the costs of continued enrollment. If the benefits continued to outweigh the costs, individual willingness would increase. By contrast, the perception of greater personal cost may lead to departure.

Tinto (1993) identified the concept of incongruence, or a feeling of being out of place, when discussing individual departure. He noted that students made decisions regarding their persistence at a given school based on their perception of the desirability or undesirability of integration at that institution. In other words, students weighed what was perceived against what was desired, and made a decision that led to departure/persistence behavior.

The research in the area of student attrition continues to be influenced heavily by Tinto's (1993) theories and support of the importance of student engagement. When discussing Tinto, however, some researchers (Braxton et al., 2000; Cabrera et al., 1993; Morris et al., 2003; Price 2010) have indicated that there remains room for further

exploration with regard to the act of student departure. Tinto (2006) even stated in a more recent article that there continue to be many researchers who do not know about student withdrawal, and indicated that there is still much work to do in the way of translating such research into practice. In order to provide a more comprehensive investigation of student engagement theory while taking complementary explanations for student departure into consideration, the area of needs-based theory will be examined.

Needs-based Theory

The fact that something significant is happening between the time a student is admitted to a specific school and he / she voluntarily withdraws from that school is undeniable. In the 2012 National Freshman Attitudes Report, conducted by Noel-Levitz, nearly 96% of first-year students indicated that they generally had a great desire to finish college. When asked to respond to the statement, "I have a very strong desire to continue my education, and I am quite determined to finish a degree," 94 to 96% of incoming first-year undergraduates in the fall of 2011 reported that they strongly desired to finish a college degree (Noel-Levitz, 2012). It would seem that incoming freshmen are generally optimistic and motivated about their college experience. However, compared to their female counterparts, many more incoming first-year males exhibited attitudes that reflected a low level of academic engagement; a factor that may prove significant given autism's disproportionate male diagnostic rate in the population.

Similar to Tinto's (1993) theories on incongruence, other researchers have identified concepts such as disengagement and lack of involvement as indicators of poor performance and a lack of persistence among students, starting in elementary school and continuing through secondary and post-secondary education (Carini et al., 2006; Finn,

1989; Price, 2010; Rumberger, 1987, 2001). What appears to be similar among these findings is that, whilst the studies identify behaviors, relationships, and academic achievement, there is little explanation for what might be involved in the origin of the cognitive processes leading to withdrawal behavior.

Based on personal experience, anecdotal evidence, and research, educators have acknowledged that the more involved and integrated the typical student becomes, the more likely it is that he or she will persist beyond the freshman year. Nonetheless, the question of why some students choose not to integrate remains. Despite all of the research that is available on this subject, student attrition remains a mystery to college and university administrators to some degree. Taking all of the above into consideration, it could be assumed that voluntary student withdrawal is essentially the result of a mismatch between the student's anticipation (or Quality World picture) of the college experience and the reality of the college experience, resulting in individual student's needs being unmet (Price, 2010).

According to Maslow (1970), all behavior is motivated. The basis of Maslow's motivation theory is that human beings are motivated by unsatisfied needs, and that certain lower factors (physiological / safety needs) need to be satisfied before higher needs (social / esteem / self-actualization) can be satisfied. The work of researchers such as Maslow (1970), Murray (1938), and Rogers (1951) has contributed to the body of knowledge that links individual human needs and human behavior. Each of these theorists suggested that human beings are born with specific needs that are inherent to motivation and to understanding that which is observable.

Maslow (1970) hypothesized that all human behavior is an attempt to avoid

frustration and to satisfy needs. Distinguishing between "D-needs," or deficiency needs such as shelter and safety, and "B-needs," or being needs such as love and self-esteem, Maslow felt that self-actualization and fulfillment hinged upon the successful hierarchical satisfaction of these needs.

Murray (1938) conducted far-reaching research on human needs and constructed one of the most thorough lists of human needs in the field of psychology at the time. Murray defined a need as a construct that represented a force in the human brain responsible for organizing perception, understanding, and behavior in such a way as to decrease unsatisfying situations and increase satisfying situations. Murray differentiated each need as unique, but recognized commonalities among the needs. Behaviors may meet more than one need: For example, performing a difficult task for your school may meet the needs of both achievement and affiliation. In brief, the typical individual chooses a behavior in order to manipulate his or her environment in an attempt meet specific needs. The problem of applying Murray's list to autistic students lies in the fact that autistic brains perceive the world differently.

In other research, Carl Rogers, a humanistic psychologist who agreed with the main assumptions of Maslow, added that for a person to grow, he or she needed an environment that provided him or her with genuineness (openness and self-disclosure), acceptance (being seen with unconditional positive regard), and empathy (being listened to and understood) (McLeod, 2014).

According to Rogers (1951), each individual exists in the center of a "phenomenal field," which provides that individual with a perception of reality; behavior is a goal-directed attempt to meet individual needs based on that perception at any given time.

In addition, Rogers felt that individuals were ultimately striving towards a state of congruence, in which a person's perceived reality reflected the experience of actual reality. The more congruence an individual experiences, the better adjusted and content that individual will be.

As with Murray, Rogers' ideas do not apply readily to the autistic person. Rogers believed that every person could achieve his or her goals, wishes, and desires in life. When individuals did so, self-actualization took place. For Rogers (1995), people who were able to self-actualize were called fully functioning persons. This means that the person is in touch with the here and now, his / her subjective experiences and feelings, and was continually growing and changing. In many ways, Rogers regarded the fully functioning person as the ideal, and that people did not ultimately achieve this state. For Rogers, fully functioning people were well adjusted, well balanced and interesting to know. Critics have claimed that the fully functioning person was a product of Western culture. In other cultures, such as Eastern cultures, the achievement of the group is valued more highly than is the achievement of any one person (McLeod, 2014). As much as Rogers informed the many researchers studying attrition, Rogers' fully function person bears almost no resemblance to the typical autistic adult (Lai et al., 2014).

However, needs-based theory shares one important fundamental tenet with student departure theory, which is that of the importance of congruence, or integration, between both internal and external forces as related to feelings and behavior (Price, 2010). This factor continues to be of great interest to the subject of voluntary student withdrawal; therefore, it is worth considering as a theory within the realm of needs-based theories that could improve upon that which is currently known about this phenomenon.

Whilst many studies have been conducted in the area of attrition and an excess of potentially influential factors have been identified, a significant gap concerning a needs-based explanation for voluntary student departure remains. Milem and Berger (1997), using Astin's (1984) behavioral models to clarify Tinto's (1975, 1993) theories, noted that much of the research had focused on a student's academic and social integration while generally ignoring behavioral issues. In so doing, Milem and Berger (1997) emphasized the importance of considering the relationship between students' perception and behavior.

Of particular significance in the practical use of needs-based theories is psychiatrist William Glasser (1986, 1990, 1998, 2000), who maintained that education could be positively influenced by the understanding and use of choice theory. Whilst Glasser's application of choice theory focused primarily on the elementary and secondary educational process, the fundamental concepts of the theory, particularly when taken into consideration as informed by student integration research, make the application of these theoretical beliefs to higher education and autistic college student behavior worth examining. With Glasser in mind, the act of withdrawing from a given college can be seen as a chosen behavior implemented by the individual student specifically to meet his / her needs.

It is thus not implausible to propose that, when studying voluntary student withdrawal behavior, there is an element of influence that is directly related to individual perceptions of needs and satisfaction of needs met. The research has undoubtedly provided support for the impact of engagement on voluntary student withdrawal behavior (Price, 2010). However, there has been little explanation of that which actually promotes

engagement on a pre-cognitive level.

Given the incredible amount of support provided to the autistic student in the K-12 setting, an incoming student's background characteristics are certainly important. These characteristics have not yet been studied with regard to their impact on persistence. These background characteristics have a significant impact on students beyond their mere existence. However, in order to understand accurately why the choice to depart from a particular institution, or from the educational system altogether is made, the needs that autistic students bring with them must be considered. Perhaps the inclusion of autistic students' needs when considering pre-college characteristics can provide insight into autistic students' perceptions, which could ultimately provide insight into autistic students' departures.

Glasser's Choice Theory and Basic Needs

Choice theory, developed by William Glasser, MD., provides an explanation of motivation that is very different from the views of other researchers in this area of study. A central aspect of choice theory is the belief that we are internally motivated, not externally motivated. While other theories propose that outside events may cause us to behave in certain predictable ways, choice theory teaches that outside events never make us to do anything. What drives our behavior are internally developed conceptions of what is most important and satisfying to us. Our "Quality World Pictures," these internally created ideas of how we would like things to be, are related to specific basic needs built into the genetic structure of every human being. These basic needs that provide the foundation for all motivation are to be loving and connected to others, to achieve a sense of competence and personal power, to act with a degree of freedom and autonomy, to

experience joy and fun, and to survive (Glasser, 1998). Through a constant comparison of these individual perceptions and ideas of the world as he / she would like it to be, the individual chooses behaviors to meet those expectations more effectively. Glasser maintained that all human behavior is intentional, and that a given behavior is chosen in order to meet individual needs at any given time. Glasser noted that we are genetically programmed to satisfy four psychological needs, namely love and belonging, power, freedom, and fun, and the physiological need of survival.

Considering autistic students' departure as informed by Glasser's (1998) basic needs and choice theory provides an additional frame of reference for identifying those students who are at risk of attrition, and provides an effective explanation that can enhance prior studies of voluntary student withdrawal.

When studying choice theory, it is important to understand its three basic facets, which are basic needs, the quality world, and total behavior. One's behavior is one's best attempt to satisfy one or more of the needs described above at any given time. In order to understand why people make the behavioral choices they make, it is first necessary to understand what need or needs the individual is seeking to satisfy (Glasser, 1998).

Of Glasser's basic needs, the survival need is the only one of the basic needs that is purely physiological. Similar to Maslow's (1970) physiological needs for food and shelter, Glasser's (1998) survival need involves staying alive and feeling secure. Glasser and Maslow differ, however, with regard to whether or not these needs are hierarchical. Glasser (1998) did not see the five basic needs as being developmental, but rather as competing with each other for the same level of attention. For example, an anorexic is obviously denying his or her basic need for survival by depriving him- or herself of food

in favor of another, more pressing need (Goldfarb et al., 2011).

The love / belonging need, as defined by Glasser (1998), involves a connection with other people, with God, pets, and sometimes even inanimate objects. "Power" refers more to personal power / self-worth as opposed to power over others. This need is related to a personal sense of competence, ability, and recognition of value that can come from accomplishments and recognition. Glasser saw this as being the most distinctively human of the basic needs. When describing "freedom," Glasser contended that this need was the psychological desire to have choices about one's life. It entails the need to be free from coercion, threat, and external control – to do what one wants. Glasser saw the freedom need as being directly related to the ability to be creative. Finally, the need for fun is the need to find pleasure, to play, and to laugh. Glasser linked the need for fun to learning. All of the higher animals (dogs, dolphins, primates, and so on) play. As they play, they learn important life skills. Glasser saw human beings as no different in this area. The "fun" need is also the psychological desire to find meaning and enjoyment in whatever one is doing.

Another part of Glasser's (1998) choice theory is the concept of the quality world. The quality world is an important part of our perceived world. Glasser described the quality world as a personal picture album of all the people, things, ideas, and ideals that we have discovered increase the quality of our lives. Glasser maintained that each individual has a small, personal world that begins to take shape in one's memory shortly after birth, and contains these pictures of the best ways individuals know how to satisfy one or more of the five basic needs. Glasser stated that what these pictures symbolize fall into one of three categories:

(a) The people we most want to be with;

(b) the things we most want to own or experience; or

(c) the ideas or systems of belief that govern much of our behavior.

While the basic human needs are the general motivation for all human behavior, the quality world is the specific motivation. The basic human needs describe what we need; the quality world pictures detail how we meet those needs. The basic human needs are universal; our quality worlds are unique. The pictures (knowledge) we hold in this quality world are extremely important to us as individuals, and we tend to care about them very much.

Achieving / securing one of these pictures (goals) is enjoyable and satisfying; failing to attain one of these pictures is extremely distressing. Either working towards or failing with regard to these pictures is what informs our behavioral choices. Glasser (1998) noted that a common misconception in the psychological world regarding emotional difficulties stemmed from this very issue. As opposed to "being depressed," he stated that we "choose to depress," because something in the real world and a picture we have in our quality world do not match. This is the act of the concept known as "total behavior" (Glasser, 1998).

When describing total behavior, Glasser (1998) maintained that people choose behavior and feelings that provide the most effective control over their individual lives at the time and in a way that reasonably fulfills or completes the pictures in their quality worlds. Another way of thinking about this is that all of our behavior is an attempt at making the real world conform to the pictures in our quality world. Total behavior involves doing (active behaviors), thinking (cognition, either voluntary or involuntary),

feeling (pleasurable or painful), and physiology (voluntary and involuntary body mechanisms). Glasser conceived of these four components as working together constantly to form total behavior. As such, they exercise control / choice over the thinking and doing elements and promote change in the feeling and physiological elements.

Glasser (1998) noted that the five basic needs combine with the pictures in the quality world to promote expectations on the part of the individual. Based upon the level on which needs are being met, an individual will choose some form of total behavior.

With regard to voluntary student withdrawal, it might be helpful to consider the behavior of leaving an institution from the perspective of choice theory and basic needs (Glasser, 1998). It is worth considering the possibility that withdrawal behavior represents a student's attempt to maintain balance in his / her quality world, basic needs, and his or her perceived experience.

Whilst many researchers use a wide variety of theories to attempt to explain withdrawal behavior (Thompson-Ebanks, 2011), there is very little research available in the area of examining voluntary student withdrawal behavior from the perspective of choice theory (Glasser, 1998). One study examined high school dropout behavior as informed by this theoretical framework. Bonuccelli (1993) conducted interviews with eight female high school students who withdrew voluntarily prior to graduating and concluded that each of these students dropped out due to specific, basic personal needs at the time. Whilst these students cited such things as pregnancy, poor grades, and absenteeism, upon further examination Bonuccelli believed that these behaviors could be explained from a more global perspective. Postulating that Glasser provided a theory of

motivation that was effective when considering high school drop-out, the author proposed that understanding which of the basic needs was not being met would assist the school in understanding why these students chose to withdraw.

A study by Loyd (2005) examined the effect of choice theory principles on high school students' perceived satisfaction regarding the four psychological needs and on behavioral change. The researcher hypothesized that a lack of need satisfaction may contribute to high school students' maladaptive behaviors, lack of academic motivation and performance, and unfulfilling social relationships. As a result of a lack of understanding with regard to effective basic needs fulfillment, these students chose ineffective and sometimes self-destructive and/or disruptive behaviors.

Loyd (2005) discovered that exposure to choice theory principles was effective in increasing post-test satisfaction scores among the treatment group with regard to the basic needs of power, freedom and fun. In addition, Loyd found that exposure to choice theory principles had a positive influence on thought processes and behavior, as indicated by the qualitative interviews. Loyd noted that exposure to these principles helped students to understand their choices, responsibility, and consequences, thereby influencing students' individual internal loci of control.

A study conducted by Price (2010) used choice theory to examine freshman student attrition from the fall semester to the spring semester at two small private universities in the southern United States. The findings of the study indicated that none of the variables was significant to predict enrollment status in the spring semester. This was not entirely surprising, as the study was limited in scope. Although significance was not found, the findings did provide a starting point for this and future research, including

considerations of possible factors such as autism influencing students' withdrawal behavior.

The research conducted by Bonuccelli (1993), Loyd (2005), and Price (2010) demonstrated the potential value for further research with regard to Glasser's (1998) choice theory and the basic needs as related to college students' withdrawal behavior. In a study cited previously, Freeman, Andermen, et al. (2007) noted that first semester college students were comparable to younger adolescents in terms of their academic motivation and belongingness needs. The extrapolation of the importance of the basic needs as related to high school behavioral choices to that of autistic college students' behavioral choices is not an unrealistic step for research in the area of student departure.

Filling in the Missing Pieces – the Basic Needs of Autistic Students

A search of the available literature yielded results that suggested that, while the Individuals with Disabilities Act heavily influences K-12 programs for autistic children, support programs for higher education students with autism are rare (Konrad, 2008). Howlin (2012) supported this, noting that research on prognosis, outcomes, or effective interventions for autistic adults was limited. Howlin's findings indicate that, as adults, many autistic people, including those of average or above average IQ, are significantly disadvantaged regarding employment, social relationships, physical and mental health, and quality of life. Supports to facilitate integration within the wider society are frequently lacking, and there has been almost no research into ways of developing more effective intervention programs for adults. Moreover, most of the research on outcomes has involved relatively young people who were in their 20s and 30s - much less is known about outcomes for autistic people as they reach mid-late adulthood. Konrad's (2008)

literature review article focused on programmatic issues involved in transitioning students from K-12 to higher education, but offered little information beyond this age group. Banda's (2009) article also addressed the issue of transitioning, but from an in-class activity standpoint. The articles seemingly suggest that educational funding for autistic support programs in K-12 schools, as required by the IDEA, has a lot to do with the emphasis on the topic in terms of research (and the corresponding lack of funding for educational studies of autistic adults in higher educational settings).

Cohen (2011) alluded to the future implications for education in the ASD diagnostic rate, with a substantially higher diagnostic rate in males. Cohen also touched on the problem that college schools of business and their students will face by noting that there is widespread agreement in the literature that impairment in social interactions and relationships, a core characteristic of ASD, is very difficult to eliminate. For some autistic students, it is the predominant characteristic of their autism. In addition, Cohen noted that, although K-12 social skills intervention programs have reported improvement in this area, the degree of change is usually either small or moderate, and often does not generalize to different situations.

Densmore (2009) added insight into the issues surrounding the classroom environment when examining Sensory Processing Disorder (SPD), which often accompanies ASDs, suggesting that educators should be aware of sensory issues in which over/under stimulation can cause much anxiety and tension. Students with SPD may appear uncooperative, difficult to reach, distractible, overly cautious, and avoidant.

Thus, it becomes clear that, just as the various minority rights movements began in the universities in the 1950s and 1960s due to a need for inclusion and equity, the

available literature supports the idea that there is a need for a similar movement for autistics today. This study seeks to not only improve upon the understanding of what it means to be an autistic adult on a university campus, but also to identify what types of obstacles are in the way of success, what types of supports (or inclusion strategies) work for the largest number of autistic students, and how best to make use of limited resources to extend the goals of campus inclusion and retention to include autistics. Just as in the study of gender and ethnic minorities, retention here is defined as progressing steadily at a single school from enrollment to graduation.

Summary

Based on the research thus far, the phenomenon of voluntary college student withdrawal has been examined from a variety of perspectives. The most prolific and well-researched theoretical framework seems to be that of Tinto (1993). In addition, Tinto's theory has been compared to and combined with other theoretical perspectives in order to continue the enhancement of understanding in this area.

Building on the evidence from prior studies that student persistence involves successful integration, or congruence, for the student on a series of levels including social, academic, and cognitive, Glasser's (1998) theory of behavior and basic needs has provided a framework for considering the correlation between unmet basic needs and autistic students' attrition. Referring to the secondary educational process, Rose (2003) proposed that, in order to enhance learning, schools must set up environments in which the basic needs are met and whereby students perceive school to be an important part of their quality world. It is not difficult to see the importance of this ideal for the post-secondary environment as well.

Building on the findings of previous research, it can be argued that theories based on student integration can be effective in explaining and sometimes predicting voluntary student withdrawal behavior. While researchers have investigated many factors, there remains room for discussion with regard to more intrinsic sources of influence on student choices and behavior. Understanding the importance of a student's basic needs is only part of the answer to the question of attrition – if college administrators can gain more insight regarding exactly what is informing the cognitive processes that lead to an autistic student's withdrawal, another piece of the puzzle concerning why students leave might fall into place.

Bearing in mind the contributions of previous research that sought to integrate known student departure theories with conceptual frameworks outside of those same traditional theories, and taking some of the noted omissions in Tinto's (1993) theory into consideration, this research considered autistic students' departure behavior from a perspective enhanced by Glasser's (1998) needs-based choice theory. In so doing, the research identified correlates that provide valuable insight into the processes and changes in the environment that lead to a lack of student integration and, ultimately, to disengagement that leads to attrition.

Conceptual Framework

The lack of research into the higher educational outcomes of autistic adults notwithstanding, what little existing literature there is points to a lack of support / accommodation, or even to a lack of awareness of the needs of autistic higher education students. According to Glasser (1998), all human behavior is driven by people attempting to satisfy basic needs. These needs include the physiological need for survival (desires for

food, water, shelter, reproduction, safety, and security) as well as the four psychological needs of power, belonging, freedom, and fun.

To address this knowledge gap, this study conducted a survey of consenting participants (pre-screened members of the IAN; N=250) to answer questions about autistic student retention and basic needs fulfillment. The IAN research is an on-line, longitudinal database and research registry created to accelerate autism research.

RQ1 tests the relationship of need fulfillment profiles (IV): 1) survival, 2) freedom, 3) fun, 4) belonging, and 5) power on the (DV) 1) retention of autistic students via a binary logistic regression analysis. RQ2 tests the relationship of the IV on DV with a binary logistic regression analysis whilst controlling for (CV) 1) age, 2) ethnicity, 3) gender, 4) residency status, 5) curriculum, 6) household income, and 7) undergraduate grade level upon withdrawal. For each of the IVs, a five-point Likert scale was used to quantify responses that include "never true," "almost never true," "don't know," "almost always true," and "always true."

Hypotheses

RQ1: Is there a statistically significant relationship between need fulfillment profiles and retention among autistic college students?

- RQ1 H_0: There is no statistically significant relationship between the need fulfillment profiles and retention among autistic college students.
- RQ1 H_a: There is a statistically significant relationship between the need fulfillment profiles and retention among autistic college students.

RQ2: What is the relationship between the need fulfillment profiles on retention while controlling for demographics among autistic college students?

- RQ2 H_0: There is no statistically significant relationship between the need fulfillment profiles and retention while controlling for demographics among autistic college students.
- RQ2 H_a: There is a statistically significant relationship between the need fulfillment profiles and retention while controlling for demographics among autistic college students.

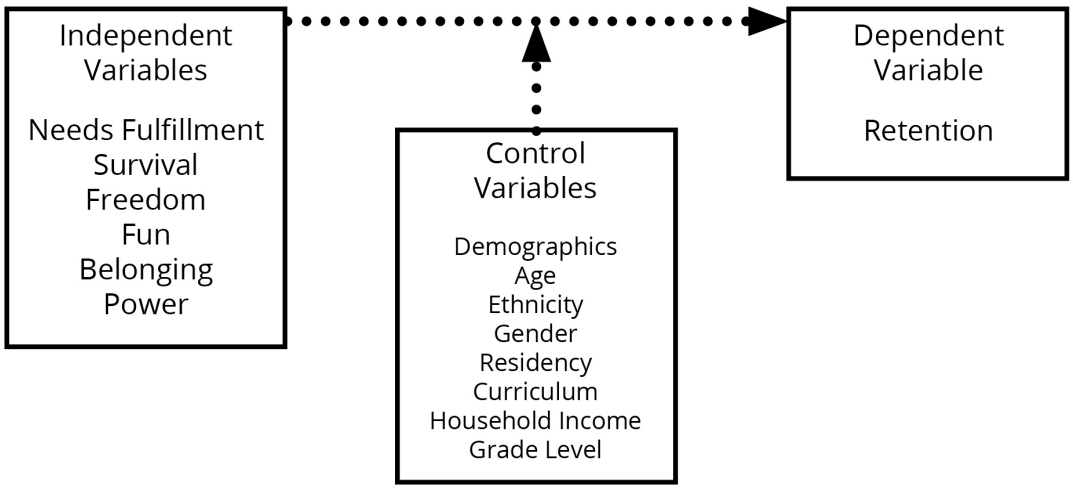

Figure 1 - Relationship of Variables

CHAPTER THREE

Quantitative Research Design

This quantitative study applied William Glasser's (1998) choice theory, which explores behavior based on the internal motivation to succeed, to the problem of autistic college student retention and explored the relationship of need satisfaction, demographic factors, and retention. This study assessed the strength of basic needs fulfillment satisfaction in autistic college students and examined the predictive relationships associated with the retention of this growing population of students.

According to Chao-Ying et al. (2002), logistic regression is best suited to describing and testing hypotheses about relationships between a categorical outcome variable and one or more categorical or continuous predictor variable(s). The study's method and design are appropriate, as the study's dependent variable is categorical and dichotomous and its independent variables are continuous.

As is common with multivariate data, multiple tests are possible depending on the types of variables examined and the questions posed. In RQ1, the survey results and descriptive statistics are presented. A binary logistic regression is utilized in asking about the relationship between the need fulfillment profiles and retention among autistic college students. In RQ2, a binary logistic regression is utilized to analyze the relationship between the need fulfillment profiles and retention while controlling for demographics among autistic college students.

Study Population

The IAN is an innovative online initiative of the Kennedy Krieger Institute, and is sponsored by the Simons Foundation and the National Institutes of Health (NIH). IAN's

primary goal is to accelerate ASD research. To address the questions that so many researchers have, IAN provides a wide variety of services and tools, including subject recruitment assistance (IAN, 2013). The IAN maintains a private database of pre-screened subjects who have consented to participate in studies and research projects such as this. With the IAN assisting in subject recruitment via its usual e-mail invitation procedure, the study population is estimated at n=250.

A power analysis for a binary logistic regression was conducted using the guidelines established by Lipsey (2001). G*Power 3.1.7 (Faul, Erdfelder, Buchner, & Lang, 2013) was utilized to determine a sufficient sample size using an alpha 0.05, a power of 0.80, a medium effect size (odd ratio = 1.72) and a one-tailed test. Based on the aforementioned assumptions, the desired sample size was 139. With over 54,000 consenting participants in the IAN database, receiving sufficient responses was not difficult, as participants sign up with the goal of assisting in research related to ASDs.

Data Collection Tools

The study's data were collected via an Internet survey, facilitated securely by the IAN. The survey questions utilized were the SNS and the listed demographic questions (CV). The raw data were coded for entry and analyzed utilizing descriptive statistics, namely binary logistic regression (RQ1) and binary logistic regression (RQ2).

With regard to the creation of the SNS, Burns et al. (2006) stated that the data derived from the SNS were both highly reliable and measured what the survey purported to measure (the five basic needs). The authors reported that reliability and validity were evaluated via internal consistency, test-retest reliability, and estimates of construct validity. The SNS utilizes five questions for each of the five basic needs. Internal

consistency was estimated by computing a coefficient alpha for the 25 items, and resulted in a score of .92. An alpha was also computed for each subscale, and found coefficients of .69 for Belonging, .69 for Power, .75 for Freedom, .71 for Survival, and .71 for Fun. A test-retest reliability estimate was conducted with a Pearson product moment, and the resulting coefficients were .96 for the total score, .91 for Belonging, .88 for Power, .80 for Freedom, .88 for Survival, and .88 for Fun (Burns et al., 2006).

To gauge validity, the SNS was evaluated by the authors using three approaches (Burns et al., 2006). First, each item was correlated with its respective area subscale score. Second, a confirmatory factor analysis was conducted using the five subscales based on the five basic needs. Burns et al. noted that data were treated categorically as opposed to continuously in order to represent the nature of the items and response choices more accurately. The resulting statistic was significant. The goodness of fit index was .94, and the comparative fit index was .81. Third, the mean SNS total scores of three schools were compared (Burns et al., 2006).

Of particular concern when working with autistic people is the length of time it takes to complete the survey, as many may also suffer from Attention Deficit Disorder (ADD). To that end, the entire survey instrument, the SNS and accompanying demographic questions combining for 32 questions in total, should not take more than 15 minutes (on average) to complete.

Variables

The binary dependent variable (DV) that was tested was 1) retention. For the DV, the study examined whether a student was retained from enrollment to graduation or, if not, how long a student remained at the school (CV = highest grade level achieved).

All the independent variables (IVs) were continuous variables.. The study examined the extent to which the various IVs affected the DVs, followed by the extent to which the IVs affected the DV whilst controlling for CVs.

The IVs for this study were:

- Belonging. Belonging refers to the need to be with others, to feel cared for, and to be in cooperative relationships (Glasser, 2001). This variable was operationalized via a five-part Likert scale: never true, almost never true, don't know, almost always true, always true. The importance of this variable is related to social impairment and isolation (Cohen, 2011). As an example, many autistics are non-verbal, which could cause problems in class or with peers.
- Power. The Power need relates to the desire for status, dominance, respect, and achievement, and it is the need that is the most difficult to satisfy (Glasser, 2001). This variable was operationalized via a five-part Likert scale: never true, almost never true, don't know, almost always true, always true. The importance of this variable is related to educational aspirations and the degree to which student/parent expectations of the post-secondary institution meet the institution's ability to fulfill those needs (Camarena, 2009)
- Freedom. Freedom, a need which often conflicts with Power and with Belonging to some extent, is the desire to do what one wants to do and to be able to make choices (Glasser, 2001). This variable was operationalized via a five-part Likert scale: never true, almost never true, don't know,

almost always true, always true. The importance of this variable is related to the degree to which the student can manage his/her own sensory issues by making necessary changes to the environment (lights, chairs, no group assignments, and so on) (Densmore, 2009).

- Fun. The need for Fun is the desire to play, to laugh, and to seek enjoyment, and is hypothesized to be linked to the ability to learn (Glasser, 2001). This variable was operationalized via a five-part Likert scale: never true, almost never true, don't know, almost always true, always true. The importance of this variable is related to the problems autistic students have with social interaction and social isolation in a school setting (Frankel, 2010).
- Survival. The physiological need for Survival represents the biological desires for food, water, shelter and reproduction, as well as safety and security (Glasser, 2001). The importance of this variable is related to the staff's ability to recognize and manage their response to seizure disorders and/or other medical comorbidities that are common in autistics (Bauman, 2010). In addition, many autistics have trouble with bright lights (sensory processing disorder) or chairs that are attached to desks (generalized claustrophobia). The importance of this variable is also related to sensory issues and their relationship to anxiety and tension (Densmore, 2009).

There are both retention and satisfaction-based questions for each of the IVs.

The control variables for this study were:

- Age. The current generation of students may have received a diagnosis as

children. Older students may or may not have received a diagnosis, but childhood diagnosis and interventions are unlikely (Sarris, 2017). Operationalization: 18-24, 25-34, 35-44, 45-54, 55-64, 65-74.

- Gender. Autism is four times more likely to be diagnosed in males than it is in females (Cohen, 2011). Operationalization: Male, Female.
- Ethnicity. While autism is present in all racial groups, race may have a role in the delivery or availability of services (Shattuck, 2012). Operationalization: White, Non-White.
- Residency Status. Does the student live at home with family, on his or her own, or in some other situation? The level of support at home may play a role in retention. Operationalization: With Family / Friends, Alone, Other.
- Curriculum. Is a special curriculum available? Problems tend to occur when the literally minded autistic encounters a poorly worded lesson or exam under difficult physiological conditions (Constable, 2013). Operationalization: Developmental / Special Services, Non-developmental / Non-special Services (regular or typical).
- Socio-economic Level / Household Income. As with race, socio-economics may play a role in the delivery or availability of services (Shattuck, 2012). Operationalization: $0 up to $25,000, $25,000 up to $50,000, $50,000 up to $75,000, $75,000 up to $100,000, $100,000 or more.
- Highest Grade Level Achieved. If the student did not remain enrolled through to graduation and withdrew voluntarily, at what grade level did

the student leave the school? Operationalization: Freshman, Sophomore, Junior, Senior.

Table 1

Study Variables

Variable Type	Variable (LOM)	Operationalization	Coding	Source
IV	Belonging (Continuous)	• Never True = 1 • Almost Never True = 2 • Don't Know = 3 • Almost Always True = 4 • Always True = 5	Belonging	Q4, Q7, Q8, Q13, Q21
IV	Power (Continuous)	• Never True = 1 • Almost Never True = 2 • Don't Know = 3 • Almost Always True = 4 • Always True = 5	Power	Q9, Q10, Q11, Q15, Q18
IV	Freedom (Continuous)	• Never True = 1 • Almost Never True = 2 • Don't Know = 3 • Almost Always True = 4 • Always True = 5	Freedom	Q2, Q12, Q16, Q17, Q19
IV	Survival (Continuous)	• Never True = 1 • Almost Never True = 2 • Don't Know = 3 • Almost Always True = 4 • Always True = 5	Survival	Q1, Q14, Q20, Q22, Q23
IV	Fun (Continuous)	• Never True = 1 • Almost Never True = 2 • Don't Know = 3 • Almost Always True = 4 • Always True = 5	Fun	Q3, Q5, Q6, Q24, Q25
CV	Age (Nominal)	• 18-24 • 25-34 • 35-44 • 45-54 • 55-64 • 65-74	Age	QI/2
CV	Ethnicity (Nominal)	• White = 1 • Non-White	Ethnicity	QI/4
CV	Gender (Nominal)	• Male = 1 • Female = 2	Gender	QI/3
CV	Residency Status (Nominal)	• With Family / Friends = 1 • Alone = 2	Residency	QI/6

CV	Curriculum (Nominal)	• Other = 3 • Developmental / Special Services = 1 • Non-Developmental/non-special services = 2	Curriculum	QI/7
CV	Socioeconomic Level (SES) or Household Income (ordinal)	• $0 up to $25,000 = 1 • $25,000 up to $50,000 = 2 • $50,000 up to 75,000 = 3 • $75,000 up to $100,000 = 4 • $100,000 or more = 5		QI/5
CV	Grade level (ordinal)	• Freshman = 1 • Sophomore = 2 • Junior = 3 • Senior = 4		QI/8
DV	Retention (Nominal)	• Remained Enrolled Through Graduation = 1 • Voluntary Student Withdrawal = 2	Retention	Q30

Statistical Analysis

According to Chao-Ying et al. (2002), binary logistic regression is best suited to describing and testing hypotheses about relationships between a categorical outcome variable and one or more categorical or continuous predictor variable(s). The study's method and design are appropriate, as the study's dependent variable is categorical and dichotomous and its independent variables are continuous.

To examine the research questions, a binary logistic regression was conducted to investigate whether or not the independent variables of Belonging, Power, Freedom, Survival, and Fun predicted the dependent variable of Retention, which is a mutually exclusive dichotomous dependent variable. The Nagelkerke R^2 assessed the variability accounted for on the dependent variable by the independent predictor variable. The overall model significance for the binary logistic regression was examined by the

collective effect of the independent variable, presented via a $\chi 2$ coefficient. Individual predictors were assessed using the Wald coefficient. Predicted probabilities of an event occurring were determined by Exp (B). For significant predictors, greater than one indicates that, for a single unit increase in the independent variable, the dependent variable was X times more likely to be coded 1. Significant predictors with an Exp (B) less than a value of 1 were evaluated by 1/Exp (B), suggesting that a single unit increase in the independent variable was X times more likely to be coded 0.

Logistic regressions, by design, overcome many of the restrictive assumptions of linear regressions. For example, linearity, normality and equal variances are not assumed, nor is it assumed that the error term variance is normally distributed. The major assumption is that the outcome must be discrete, otherwise explained as the dependent variable being dichotomous in nature. Moreover, there should be a linear relationship between the odd ratio and the independent variable. Creating a new variable that divides the existing independent variable into categories of equal intervals and running the same regression on these newly categorized versions as categorical variables can check linearity with an ordinal or interval independent variable and the odd ratio. Linearity is demonstrated if the b coefficients increase or decrease in linear steps.

Finally, a larger sample was recommended in keeping with the maximum likelihood method; using discrete variables requires there to be sufficient responses in each category (Statistics Solutions, 2013).

Delineation of Research Variables and Method of Data Analysis for Each RQ

Table 2

Delineation of Research Variables and Method of Data Analysis

RQ 1: Is there a statistically significant relationship between need fulfillment profiles and retention among autistic college students?

Type of Analysis: Binary Logistic Regression

Variables	Operationalized	Measurement/Scale
Predictor Variable		
Survival	Likert Scale	Continuous
Freedom	Likert Scale	Continuous
Fun	Likert Scale	Continuous
Belonging	Likert Scale	Continuous
Power	Likert Scale	Continuous
Outcome Variable		
Retention	Enrolled through graduation	Nominal
Covariate Variables		
None		

RQ 2: What is the relationship between the need fulfillment profiles on retention while controlling for demographics among autistic college students?

Type of Analysis: Binary logistic regression

Variables	Operationalized	Measurement/Scale
Predictor Variable		
Survival	Likert Scale	Continuous
Freedom	Likert Scale	Continuous
Fun	Likert Scale	Continuous
Belonging	Likert Scale	Continuous
Power	Likert Scale	Continuous
Outcome Variable		
Retention	Enrolled through graduation	Nominal
Covariate Variables		
Age	18-24	
	25-34	
	35-44	
	45-54	
	55-64	

	65-74	
Ethnicity	White Non-White	Nominal
Gender	Male Female	Nominal
Residency Status	With Family / Friends Alone Other	Nominal
Curriculum	Developmental / Special Services Non-Developmental / non-special services	Nominal
Household Income	$0 - $25,000 $25,000 - $50,000 $50,000 - 75,000 $75,000 - $100,000 $100,000 +	Ordinal
Grade Level (highest grade level completed before departure)	Freshman Sophomore Junior Senior	Nominal

Limitations of the Study

A study of this nature is limited by the completeness of responses to survey questions and demographic data. As stated previously, every effort was made to ensure that the survey instrument met the needs of the studied population in terms of language and length to increase the likelihood that the survey would be completed accurately and in a timely manner.

In addition, this study did not attempt to examine the potential influence of the participants' theory of mind (Baron-Cohen, et. al, 1985) or quality world (Glasser, 1986), or any deficits related to these constructs.

Delimitations

The delimitations of the study were that only data from US-based students/schools were considered. It was assumed that an autistic student who gained admission to a college would be sufficiently competent to complete his/her schooling. As such, the study was limited to only those US-based students who had been admitted to a US-based college/university. In addition, only completed surveys were included in the study, thus ensuring a data set without missing data. Finally, while some may consider the fact that I am a diagnosed autistic to be a potential bias, I find that my experience as an autistic person in a higher education setting (as both a student and as an adjunct professor) to be a benefit and not a hindrance to this process. It might be said that my experiences at the various schools that fill my résumé have provided the direction for this study.

Expected Outcomes / Significance

According to Burns et al. (2006), all human behavior is driven by people attempting to satisfy basic needs. Knowledge of the needs that are not being met in individuals' lives is important for understanding their behavior and determining interventions to create a needs-satisfying environment. The sensory processing problems and anxiety that often accompany autism can lead a student to process his/her school environment as uncomfortable at best, or unsafe at worst. Autistic students may choose to retreat to a place at the school where they have greater ability to control their environment. If no such place exists, they may choose to withdraw from the school. Given this, it was expected that autistic students who had chosen to withdraw from a school may score low on the Survival, and/or Freedom questions within the Student Needs Survey. Students who managed to persist at a single school through to graduation

would be likely to have a high Power score.

Additional Information

The participants in the study came from the community of pre-screened individuals and families that constitute the Interactive Autism Network's IAN community. The IAN was established in January 2006 at Kennedy Krieger Institute. IAN's stated goal is to facilitate research that will lead to advancements in understanding and treating ASDs. The IAN is a partnership of the Kennedy Krieger Institute and the Simons Foundation (IAN, 2015).

Without leaving home, participants used a secure on-line setting to provide information about their diagnoses, behavior, health, family, environment, and services received. Participating parents reported on their child's progress over time. Autistic adults shared information about their experiences and needs. Researchers from different institutions across the country work with this information to learn about the effect and interaction of factors such as genetics, the environment, and treatment, as well as the current situation and needs of those affected by ASD (IAN, 2015).

Each year, many useful and innovative studies are not completed or are delayed significantly because researchers cannot find enough participants who qualify; thus, valuable opportunities to learn about autism are lost. The IAN research matches willing individuals and families to appropriate local and national research projects. This partnership solves one of the major difficulties that autism research projects face, which is recruiting enough participants (IAN, 2015).

Autistic individuals and their families may benefit directly from this match because they will be able to participate in research that they would not have known about

without the IAN. Participation may also provide opportunities to learn more about ASD and its impact (IAN, 2015).

As the IAN performs the function of maintaining the database of participants, the personal / private medical information is protected by IAN under the terms of the various federal privacy rules and laws. Participants sign a blanket consent form (https://www.ianresearch.org/pdfs/ian_consent.pdf), and such consent can be revoked at any time. Again, participants understand in advance that they will be contacted by the IAN to participate in research studies related to ASDs.

CHAPTER FOUR

Data Analysis

In April 2017, the IAN's pre-screened participants were notified by email that the SNS was available and were invited to participate. The IAN staff had estimated that about 250 of their participants fit the profile for participation in this study. The sample size for this study was previously calculated at 139. A total of 205 people responded to the email and visited the survey site. Of these 205, 176 completed the survey. With the data collected, the analysis began in July 2017.

It is interesting that the survey result data were returned with skewed results for ethnicity. The variable's operationalization was returned as American Indian, Asian, Black, Hispanic, More than one, No Response, White, and Missing, as well as White / Non-White. More than 80% of the respondents identified as White. The analysis was conducted first with the expanded operationalization, then with the simplified operationalization of White / Non-White.

Results for RQ 1

Summary statistics were calculated for each interval and ratio variable. Frequencies and percentages were calculated for each nominal variable.

Frequencies and Percentages

The most frequently observed category of Age was 18-24 (n = 70, 35%). The most frequently observed category of Gender was Male (n = 107, 53%). The most frequently observed category of Income was 0-25k (n = 74, 37%). The most frequently observed category of Residency was With friends/family (n = 136, 67%). The most frequently observed category of Special Curriculum was Non-developmental/Non-special services

(n = 141, 70%). The most frequently observed category of Highest Undergrad was Senior (n = 110, 54%). The most frequently observed category of Race was White (n = 166, 82%). The most frequently observed category of Retention was Graduated (n = 110, 54%). Frequencies and percentages are presented in Table 3.

Table 3

Frequency Table for Nominal Variables

Variable	n	%
Age		
18-24	70	35
25-34	43	21
35-44	33	16
45-54	32	16
55-64	17	8
65-74	7	3
Missing	0	0
Gender		
Female	95	47
Male	107	53
Missing	0	0
Income		
0-25k	74	37
25-50k	41	20
5	38	19
50-75K	20	10
75k+	29	14
Missing	0	0
Residency		
Alone	51	25
other	15	7
With friends/family	136	67
Missing	0	0
Special_Curriculum		
Developmental/Special Services	61	30
Non-developmental/Non-special services	141	70

Missing	0	0
Highest_Undergrad		
Freshman	46	23
Junior	17	8
Senior	110	54
Sophomore	29	14
Missing	0	0
Race		
American Indian	2	1
Asian	5	2
Black	4	2
Hispanic	5	2
More than one	13	6
No Response	2	1
White	166	82
Missing	5	2
Retention		
Did not graduate	92	46
Graduated	110	54
Missing	0	0

Note. Due to rounding errors, percentages may not equal 100%.

Summary Statistics

The observations for Belonging ranged from 1.00 to 5.00, with an average of 2.97 (SD = 0.84). The observations for Power ranged from 1.40 to 4.80, with an average of 3.52 (SD = 0.70). The observations for Freedom ranged from 1.00 to 4.80, with an average of 2.87 (SD = 0.69). The observations for Survival ranged from 1.60 to 5.00, with an average of 3.68 (SD = 0.61). The observations for Fun ranged from 1.40 to 5.00, with an average of 3.04 (SD = 0.72). Skewness and kurtosis were also calculated in Table 4. When the skewness is greater than or equal to 2 or less than or equal to -2, the variable is considered to be asymmetrical about its mean. When the kurtosis is greater than or equal to 3, the variable's distribution is markedly different from a normal distribution in its tendency to produce outliers (Westfall & Henning, 2013).

Table 4

Summary Statistics Table for Interval and Ratio Variables

Variable	M	SD	n	Min.	Max.	Skewness	Kurtosis
Belonging	2.97	0.84	176	1.00	5.00	0.17	-0.49
Power	3.52	0.70	175	1.40	4.80	-0.66	0.17
Freedom	2.87	0.69	176	1.00	4.80	-0.03	-0.25
Survival	3.68	0.61	176	1.60	5.00	-0.78	0.89
Fun	3.04	0.72	176	1.40	5.00	0.13	-0.44

Multivariate Analysis of Variance

A multivariate analysis of variance (MANOVA) was conducted to assess whether there were significant differences in the linear combinations of Belonging, Power, Freedom, Survival, and Fun and the levels of Retention. Prior to conducting the analysis, the assumptions of multivariate normality, absence of multicollinearity, and homogeneity of covariance matrices were assessed. To assess the assumption of multivariate normality, Mahalanobis distances were calculated and plotted against the quantiles of a chi-square distribution (Figure 5). The assumption is met if the points form a relatively straight line.

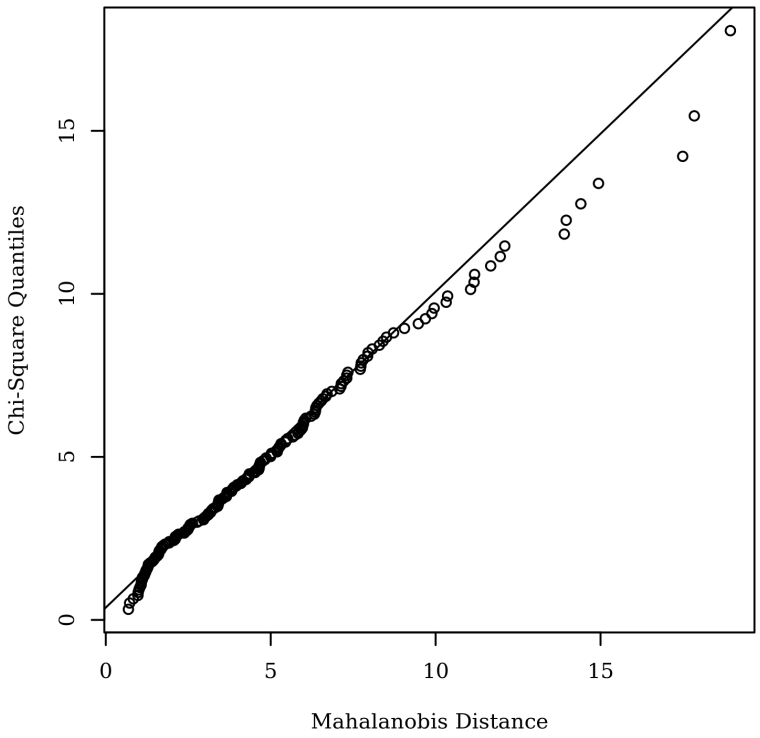

Figure 2 - Mahalanobis distance scatterplot.

To examine the assumption of homogeneity of covariance matrices, Box's *M* test was conducted. The results were not significant, $\chi^2(15) = 12.20$, $p = .664$, indicating that the covariance matrices for each group of Retention were similar to one another and that the assumption was met.

The main effect for Retention was not significant, $F(5, 169) = 0.76$, $p = .577$, Partial $\eta^2 = 0.02$, suggesting that the linear combination of Belonging, Power, Freedom, Survival, and Fun was similar for each level of Retention. To examine the effects of Retention on Belonging, Power, Freedom, Survival, and Fun further, an analysis of variance was conducted for each dependent variable.

Table 5

MANOVA results for Belonging, Power, Freedom, Survival, and Fun by Retention

Variable	*Pillai*	*F*	*df*	*Residual df*	*p*	η^2p

Retention	0.02	0.76	5	169	.577	0.02

Analysis of Variance

An analysis of variance (ANOVA) was conducted to determine whether there were significant differences in Belonging by Retention. Prior to the analysis, ANOVA assumptions were examined. The assumption of normality was assessed by plotting the quantiles of the model residuals against the quantiles of a chi-square distribution, also called a Q-Q scatterplot (DeCarlo, 1997). This scatterplot is presented in Figure 3. For the assumption of normality to be met, the quantiles of the residuals must not deviate strongly from the theoretical quantiles. Strong deviations could indicate that the parameter estimates are unreliable. Levene's test for equality of variance was used to assess whether the homogeneity of variance assumption was met (Levene, 1960). The homogeneity of variance assumption requires the variance of the dependent variable to be approximately equal in each group. The result of Levene's test was not significant, $F(1, 173) = 0.13$, $p = .717$, indicating that the assumption of homogeneity of variance was met.

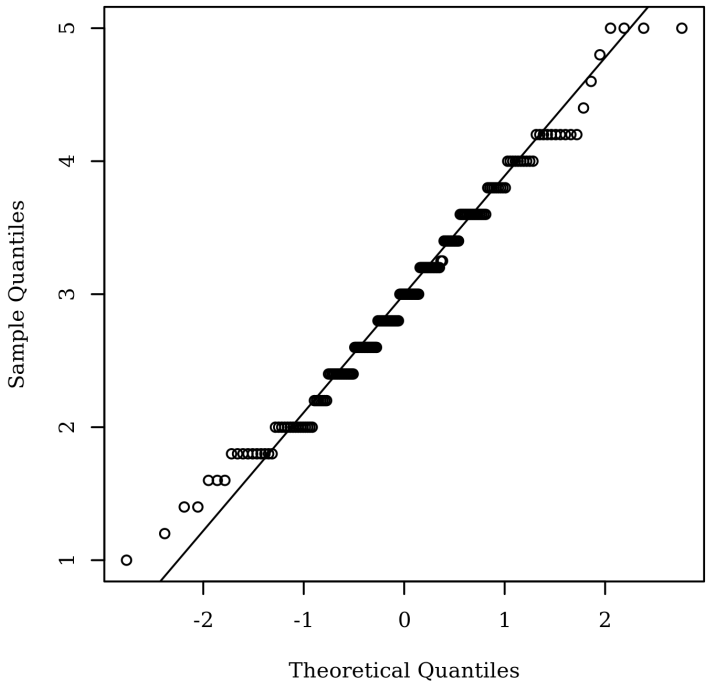

Figure 3 - Q-Q scatterplot for normality for Belonging.

The results of the ANOVA were not significant, $F(1, 173) = 0.69$, $p = .409$, indicating that the differences in Belonging among the levels of Retention were all similar (tbl). The main effect, Retention, was not significant at the 95% confidence level, $F(1, 173) = 0.69$, $p = .409$, indicating that there were no significant differences of Belonging by Retention levels. The means and standard deviations are presented in Table 7.

Table 6

Analysis of Variance Table for Belonging by Retention

Term	*SS*	*df*	*F*	*p*	η^2_p
Retention	0.48	1	0.69	.409	0.00
Residuals	121.57	173			

Table 7

Means, Standard Deviations, and Sample Size for Belonging by Retention

Retention	*M*	*SD*	*n*
Did not graduate	2.92	0.83	79
Graduated	3.03	0.85	96

There were no significant effects in the model. As a result, post hoc comparisons were not conducted.

An analysis of variance (ANOVA) was conducted to determine whether there were significant differences in Power by Retention. Prior to the analysis, ANOVA assumptions were examined. The assumption of normality was assessed by plotting the quantiles of the model residuals against the quantiles of a chi-square distribution, also called a Q-Q scatterplot (DeCarlo, 1997). This scatterplot is presented in Figure 4. For the assumption of normality to be met, the quantiles of the residuals must not deviate strongly from the theoretical quantiles. Strong deviations could indicate that the parameter estimates are unreliable. Levene's test for equality of variance was used to assess whether the homogeneity of variance assumption was met (Levene, 1960). The homogeneity of variance assumption requires the variance of the dependent variable to be approximately equal in each group. The result of Levene's test was not significant, $F(1, 173) = 2.26$, $p = .135$, indicating that the assumption of homogeneity of variance was met.

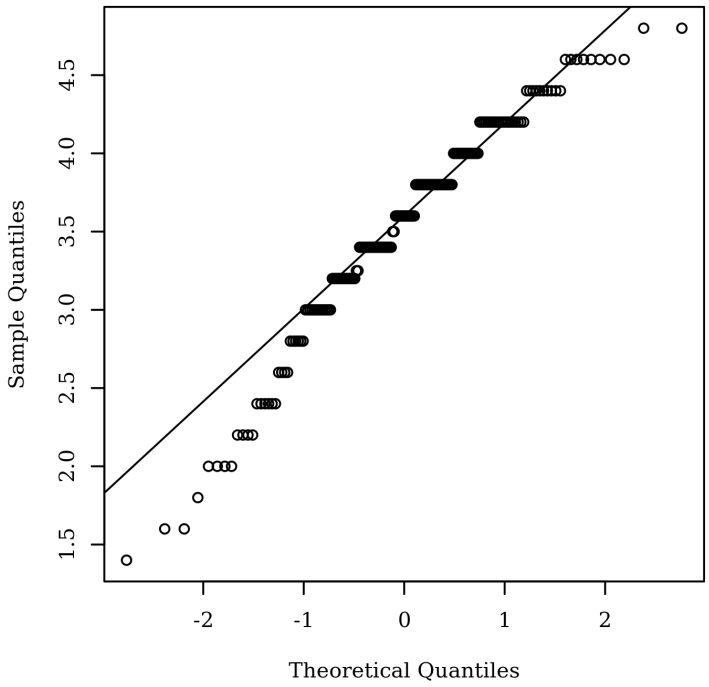

Figure 4 - Q-Q scatterplot for normality for Power.

The results of the ANOVA were not significant, $F(1, 173) = 2.81$, $p = .096$, indicating that the differences in Power among the levels of Retention were all similar (tbl). The main effect, Retention, was not significant at the 95% confidence level, $F(1, 173) = 2.81$, $p = .096$, indicating that there were no significant differences of Power by Retention levels. The means and standard deviations are presented in Table 9.

Table 8

Analysis of Variance Table for Power by Retention

Term	*SS*	*df*	*F*	*p*	η^2_p
Retention	1.37	1	2.81	.096	0.02
Residuals	84.21	173			

Table 9

Means, Standard Deviations, and Sample Size for Power by Retention

Retention	*M*	*SD*	*n*
Did not graduate	3.43	0.75	79
Graduated	3.60	0.65	96

There were no significant effects in the model. As a result, post hoc comparisons were not conducted.

An analysis of variance (ANOVA) was conducted to determine whether there were significant differences in Freedom by Retention. Prior to the analysis, ANOVA assumptions were examined. The assumption of normality was assessed by plotting the quantiles of the model residuals against the quantiles of a chi-square distribution, also called a Q-Q scatterplot (DeCarlo, 1997). This scatterplot is presented in Figure 5. For the assumption of normality to be met, the quantiles of the residuals must not deviate strongly from the theoretical quantiles. Strong deviations could indicate that the parameter estimates are unreliable. Levene's test for equality of variance was used to assess whether the homogeneity of variance assumption was met (Levene, 1960). The homogeneity of variance assumption requires the variance of the dependent variable to be approximately equal in each group. The result of Levene's test was significant, $F(1, 173) = 5.14$, $p = .025$, indicating that the assumption of homogeneity of variance was violated. Consequently, the results may not be reliable or generalizable.

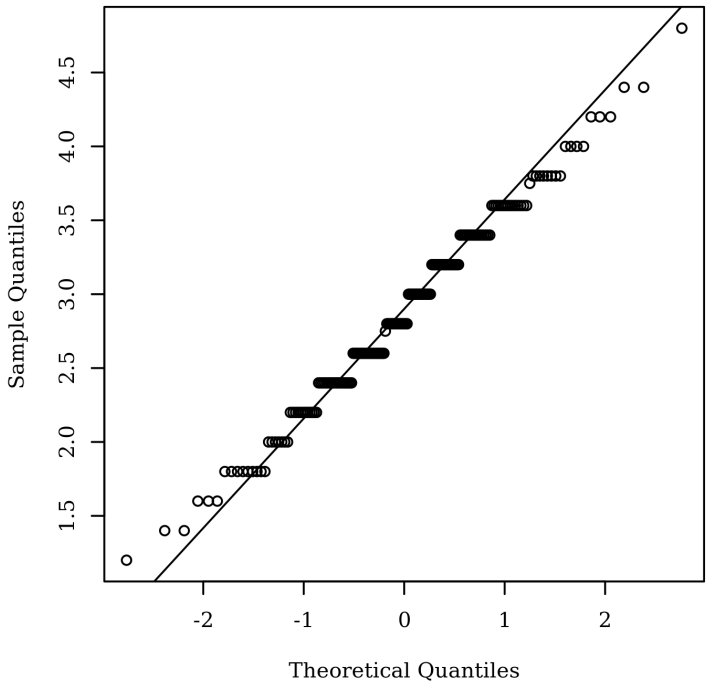

Figure 5 - Q-Q scatterplot for normality for Freedom.

The results of the ANOVA were not significant, $F(1, 173) = 0.35$, $p = .553$, indicating that the differences in Freedom among the levels of Retention were all similar (tbl). The main effect, Retention, was not significant at the 95% confidence level, $F(1, 173) = 0.35$, $p = .553$, indicating that there were no significant differences of Freedom by Retention levels. The means and standard deviations are presented in Table 11.

Table 10

Analysis of Variance Table for Freedom by Retention

Term	*SS*	*df*	*F*	*p*	η^2_p
Retention	0.16	1	0.35	.553	0.00
Residuals	80.09	173			

Table 11

Means, Standard Deviations, and Sample Size for Freedom by Retention

Retention	*M*	*SD*	*n*
Did not graduate	2.85	0.76	79
Graduated	2.91	0.61	96

There were no significant effects in the model. As a result, post hoc comparisons were not conducted.

An analysis of variance (ANOVA) was conducted to determine whether there were significant differences in Survival by Retention. Prior to the analysis, ANOVA assumptions were examined. The assumption of normality was assessed by plotting the quantiles of the model residuals against the quantiles of a chi-square distribution, also called a Q-Q scatterplot (DeCarlo, 1997). This scatterplot is presented in Figure 6. For the assumption of normality to be met, the quantiles of the residuals must not deviate strongly from the theoretical quantiles. Strong deviations could indicate that the parameter estimates are unreliable. Levene's test for equality of variance was used to assess whether the homogeneity of variance assumption was met (Levene, 1960). The homogeneity of variance assumption requires the variance of the dependent variable to be approximately equal in each group. The result of Levene's test was not significant, $F(1, 173) = 1.32$, $p = .253$, indicating that the assumption of homogeneity of variance was met.

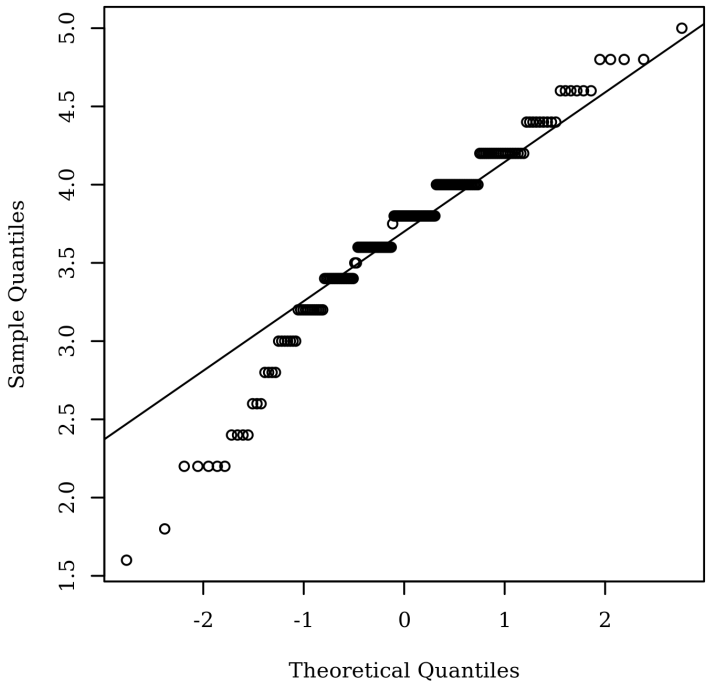

Figure 6 - Q-Q scatterplot for normality for Survival.

The results of the ANOVA were not significant, $F(1, 173) = 1.33$, $p = .250$, indicating the differences in Survival among the levels of Retention were all similar (tbl). The main effect, Retention, was not significant at the 95% confidence level, $F(1, 173) = 1.33$, $p = .250$, indicating that there were no significant differences of Survival by Retention levels. The means and standard deviations are presented in Table 13.

Table 12

Analysis of Variance Table for Survival by Retention

Term	*SS*	*df*	*F*	*p*	$\eta^2 p$
Retention	0.49	1	1.33	.250	0.01
Residuals	64.01	173			

Table 13

Means, Standard Deviations, and Sample Size for Survival by Retention

Retention	*M*	*SD*	*n*
Did not graduate	3.62	0.62	79
Graduated	3.72	0.59	96

There were no significant effects in the model. As a result, post hoc comparisons were not conducted.

An analysis of variance (ANOVA) was conducted to determine whether there were significant differences in Fun by Retention. Prior to the analysis, ANOVA assumptions were examined. The assumption of normality was assessed by plotting the quantiles of the model residuals against the quantiles of a chi-square distribution, also called a Q-Q scatterplot (DeCarlo, 1997). This scatterplot is presented in Figure 7. For the assumption of normality to be met, the quantiles of the residuals must not deviate strongly from the theoretical quantiles. Strong deviations could indicate that the parameter estimates are unreliable. Levene's test for equality of variance was used to assess whether the homogeneity of variance assumption was met (Levene, 1960). The homogeneity of variance assumption requires the variance of the dependent variable to be approximately equal in each group. The result of Levene's test was not significant, $F(1, 173) = 0.03$, $p = .866$, indicating that the assumption of homogeneity of variance was met.

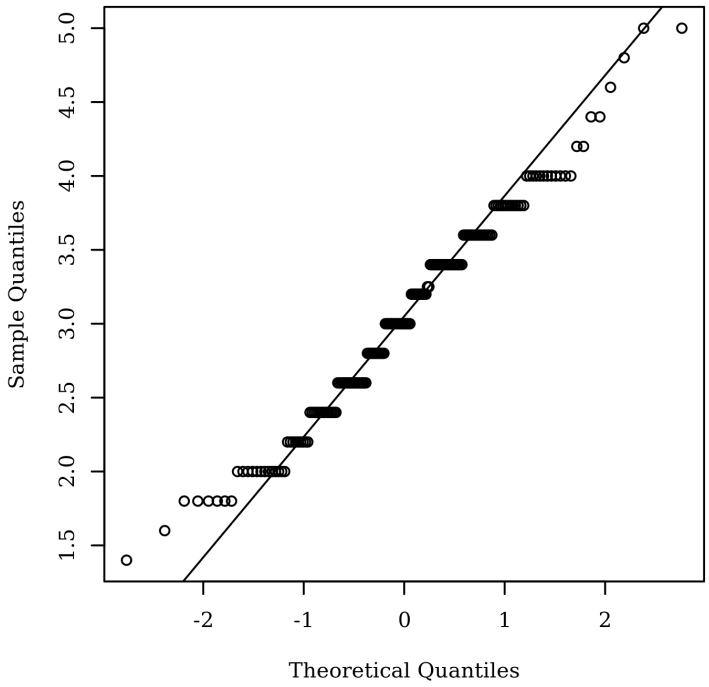

Figure 7 - Q-Q scatterplot for normality for Fun.

The results of the ANOVA were not significant, $F(1, 173) = 0.09$, $p = .762$, indicating the differences in Fun among the levels of Retention were all similar (tbl). The main effect, Retention, was not significant at the 95% confidence level, $F(1, 173) = 0.09$, $p = .762$, indicating that there were no significant differences of Fun by Retention levels. The means and standard deviations are presented in Table 15.

Table 14

Analysis of Variance Table for Fun by Retention

Term	*SS*	*df*	*F*	*p*	η^2_p
Retention	0.05	1	0.09	.762	0.00
Residuals	90.57	173			

Table 15

Means, Standard Deviations, and Sample Size for Fun by Retention

Retention	*M*	*SD*	*n*
Did not graduate	3.02	0.73	79
Graduated	3.06	0.72	96

There were no significant effects in the model. As a result, post hoc comparisons were not conducted.

Binary Logistic Regression

A binary logistic regression was conducted to examine whether Belonging, Power, Freedom, Survival, and Fun had a significant effect on the odds of observing the Graduated category of Retention. The reference category for Retention was Did not Graduate.

Assumptions

Variance inflation factors (VIFs) were calculated to detect the presence of multicollinearity between predictors. High VIFs indicate increased effects of multicollinearity in the model. Variance inflation factors greater than 5 are cause for concern, whereas VIFs of 10 should be considered the maximum upper limit (Menard, 2009). All predictors in the regression model had VIFs of less than 10. Table 17 presents the VIF for each predictor in the model.

Table 16

Variance Inflation Factors for Belonging, Power, Freedom, Survival, and Fun

Variable	VIF
Belonging	3.00
Power	2.61

Freedom	1.61
Survival	2.23
Fun	2.80

Results

The overall model was not significant, $\chi^2(5) = 3.90$, $p = .564$, suggesting that Belonging, Power, Freedom, Survival, and Fun did not have a significant effect on the odds of observing the Graduated category of Retention. McFadden's R-squared was calculated to examine the model's fit, whereby values greater than .2 are indicative of models with excellent fit (Louviere, Hensher, & Swait, 2000). The McFadden R-squared value calculated for this model was 0.02. Since the overall model was not significant, the individual predictors were not examined further. Table 17 summarizes the results of the regression model.

Table 17

Logistic Regression Results with Belonging, Power, Freedom, Survival, and Fun Predicting Retention

Variable	B	SE	χ^2	p	OR
(Intercept)	-1.01	0.99	1.04	.307	
Belonging	0.04	0.32	0.02	.893	1.04
Power	0.49	0.36	1.84	.175	1.63
Freedom	-0.04	0.29	0.02	.897	0.96
Survival	0.12	0.38	0.10	.749	1.13
Fun	-0.32	0.36	0.80	.372	0.73

Note. $\chi^2(5) = 3.90$, $p = .564$, McFadden's $R^2 = 0.02$.

Results for RQ 2

A binary logistic regression was conducted to examine whether Age, Gender, Income, Residency, Special_Curriculum, Belonging, Power, Freedom, Survival, Fun, and Race_recode had a significant effect on the odds of observing the Graduated category of Retention. The reference category for Retention was Did not Graduate.

Assumptions

Variance inflation factors (VIFs) were calculated to detect the presence of multicollinearity between predictors. High VIFs indicate increased effects of multicollinearity in the model. Variance inflation factors greater than 5 are cause for concern, whereas VIFs of 10 should be considered the maximum upper limit (Menard, 2009). All predictors in the regression model had VIFs of less than 10. Table 18 presents the VIF for each predictor in the model.

Table 18

Variance Inflation Factors for Age, Gender, Income, Residency, Special_Curriculum, Belonging, Power, Freedom, Survival, Fun, and Race_recode

Variable	VIF
Age	1.85
Gender	1.16
Income	1.47
Residency	1.38
Special_Curriculum	1.41
Belonging	3.18
Power	2.81
Freedom	1.89
Survival	2.42
Fun	2.79
Race_recode	1.10

Results

The overall model was significant, $\chi^2(19) = 41.36$, p = .002, suggesting that Age, Gender, Income, Residency, Special_Curriculum, Belonging, Power, Freedom, Survival, Fun, and Race_recode had a significant effect on the odds of observing the Graduated category of Retention. McFadden's R-squared was calculated to examine the model's fit, whereby values greater than .2 are indicative of models with excellent fit (Louviere, Hensher, & Swait, 2000). The McFadden R-squared value calculated for this model was 0.17. The regression coefficient for Age25-34 was not significant, B = 0.42, OR = 1.52, p = .382, indicating that Age25-34, did not have a significant effect on the odds of observing the Graduated category of Retention. The regression coefficient for Age35-44 was not significant, B = 0.94, OR = 2.55, p = .082, indicating that Age35-44, did not have a significant effect on the odds of observing the Graduated category of Retention. The regression coefficient for Age45-54 was significant, B = 1.77, OR = 5.87, p = .004, indicating that for this age group, the odds of observing the Graduated category of Retention increased by approximately 487%. The regression coefficient for Age55-64 was significant, B = 2.95, OR = 19.19, p = .009, indicating that for this age group, the odds of observing the Graduated category of Retention increased by approximately 1819%. The regression coefficient for Age65-74 was not significant, B = 0.17, OR = 1.19, p = .869, indicating that Age65-74, did not have a significant effect on the odds of observing the Graduated category of Retention. The regression coefficient for GenderMale was not significant, B = 0.29, OR = 1.34, p = .431, indicating that GenderMale, did not have a significant effect on the odds of observing the Graduated

category of Retention. The regression coefficient for Income25-50k was not significant, B = -0.11, OR = 0.89, p = .813, indicating that Income25-50k, did not have a significant effect on the odds of observing the Graduated category of Retention. The regression coefficient for Income5 was not significant, B = 0.55, OR = 1.74, p = .307, indicating that Income5, did not have a significant effect on the odds of observing the Graduated category of Retention. The regression coefficient for Income50-75K was not significant, B = -0.25, OR = 0.78, p = .702, indicating that Income50-75K, did not have a significant effect on the odds of observing the Graduated category of Retention. The regression coefficient for Income75k+ was not significant, B = -0.28, OR = 0.76, p = .619, indicating that Income75k+, did not have a significant effect on the odds of observing the Graduated category of Retention. The regression coefficient for Residency_other was not significant, B = -0.23, OR = 0.79, p = .774, indicating that Residency_other, did not have a significant effect on the odds of observing the Graduated category of Retention. The regression coefficient for ResidencyWith friends/family was not significant, B = -0.85, OR = 0.43, p = .072, indicating that ResidencyWith friends/family, did not have a significant effect on the odds of observing the Graduated category of Retention. The regression coefficient for Special_CurriculumNon-developmental/Non-special services was not significant, B = 0.48, OR = 1.61, p = .266, indicating that Special_CurriculumNon-developmental/Non-special services, did not have a significant effect on the odds of observing the Graduated category of Retention. The regression coefficient for Belonging was not significant, B = 0.39, OR = 1.48, p = .282, indicating that Belonging, did not have a significant effect on the odds of observing the Graduated category of Retention. The regression coefficient for Power was not significant, B =

0.29, OR = 1.34, p = .471, indicating that Power, did not have a significant effect on the odds of observing the Graduated category of Retention. The regression coefficient for Freedom was not significant, B = -0.14, OR = 0.87, p = .683, indicating that Freedom, did not have a significant effect on the odds of observing the Graduated category of Retention. The regression coefficient for Survival was not significant, B = -0.06, OR = 0.94, p = .897, indicating that Survival, did not have a significant effect on the odds of observing the Graduated category of Retention. The regression coefficient for Fun was not significant, B = -0.08, OR = 0.92, p = .836, indicating that Fun, did not have a significant effect on the odds of observing the Graduated category of Retention. The regression coefficient for Race_recodeWhite was not significant, B = -0.24, OR = 0.78, p = .631, indicating that Race_recodeWhite, did not have a significant effect on the odds of observing the Graduated category of Retention. Table 19 summarizes the results of the regression model.

Table 19

Logistic Regression Results with Age, Gender, Income, Residency, Special_Curriculum, Belonging, Power, Freedom, Survival, Fun, and Race_recode Predicting Retention

Variable	B	SE	χ^2	p	OR
(Intercept)	-1.46	1.49	0.95	.329	
Age25-34	0.42	0.48	0.76	.382	1.52
Age35-44	0.94	0.54	3.03	.082	2.55
Age45-54	1.77	0.61	8.48	.004	5.87
Age55-64	2.95	1.12	6.91	.009	19.19
Age65-74	0.17	1.04	0.03	.869	1.19
GenderMale	0.29	0.37	0.62	.431	1.34
Income25-50k	-0.11	0.48	0.06	.813	0.89
Income5	0.55	0.54	1.04	.307	1.74
Income50-75K	-0.25	0.66	0.15	.702	0.78
Income75k+	-0.28	0.56	0.25	.619	0.76

Residencyother	-0.23	0.81	0.08	.774	0.79
ResidencyWith friends/family	-0.85	0.47	3.24	.072	0.43
Special_CurriculumNon-developmental/Non-special services	0.48	0.43	1.24	.266	1.61
Belonging	0.39	0.36	1.16	.282	1.48
Power	0.29	0.41	0.52	.471	1.34
Freedom	-0.14	0.35	0.17	.683	0.87
Survival	-0.06	0.44	0.02	.897	0.94
Fun	-0.08	0.39	0.04	.836	0.92
Race_recodeWhite	-0.24	0.51	0.23	.631	0.78

Note. $\chi^2(19) = 41.36$, $p = .002$, McFadden's $R^2 = 0.17$.

Additional Analysis

Given the results, an additional analysis of the data was considered and conducted. Covariates that were clearly not significant were removed from the model, and some interesting effects emerged. First, an analysis of all covariates was conducted to determine what to remove. Second, because basic needs may be hierarchical, it was considered that a total sum score (TotalScore) across all questions might be appropriate (in other words, the higher the score, the higher one is in satisfying the hierarchy of needs). Each of the five items within each area subscale was totaled to equal a subscale score, and the five subscale scores were summed to create a total score (Burns et. al, 2006).

Within the survey, questions that created the Belonging score were Q4, Q7, Q8, Q13, and Q21. The questions that formed the Power score were Q9, Q10, Q11, Q15, and Q18. The questions that formed the Freedom score were Q2, Q12, Q16, Q17, and Q19. The questions that formed the Survival score were Q1, Q14, Q20, Q22, and Q23. The questions that formed the Fun score were Q3, Q5, Q6, Q24, and Q25 (see Table 1). The total score is derived from 25 questions, Q1 – Q25 inclusive (see Table 1). Cronbach's

alpha coefficients were calculated for TotalScore. Cronbach's alpha coefficients were evaluated using the guidelines suggested by George and Mallery (2016), where > .9 excellent, > .8 good, > .7 acceptable, > .6 questionable, > .5 poor, and ≤ .5 unacceptable. The items for TotalScore had a Cronbach's alpha coefficient of 0.92, indicating excellent reliability.

Table 20

Reliability Table for TotalScore

Scale	No. of Items	α
TotalScore	25	0.92

Table 21

Summary of Numeric Variables

Variable	n	M	SD	Min.	Max.	Skewness	Kurtosis
Belonging	176	2.97	0.84	1.00	5.00	0.17	-0.49
Freedom	176	2.87	0.69	1.00	4.80	-0.03	-0.25
Fun	176	3.04	0.72	1.40	5.00	0.13	-0.44
Power	175	3.52	0.70	1.40	4.80	-0.66	0.17
Survival	176	3.68	0.61	1.60	5.00	-0.78	0.89
Q1	176	3.64	0.88	1.00	5.00	0.70	0.14
Q10	175	4.12	0.92	1.00	5.00	-1.12	1.35
Q11	175	4.02	0.90	1.00	5.00	-0.91	0.49
Q12	175	3.10	1.12	1.00	5.00	-0.25	-0.94
Q13	174	3.51	0.98	1.00	5.00	-0.48	-0.07
Q14	173	3.66	0.94	1.00	5.00	-0.78	0.43
Q15	173	3.35	0.94	1.00	5.00	-0.46	-0.38
Q16	175	3.78	1.01	1.00	5.00	-0.93	0.09
Q17	175	2.50	1.01	1.00	5.00	0.47	-0.67
Q18	175	3.21	1.01	1.00	5.00	-0.35	-0.72
Q19	174	2.49	1.13	1.00	5.00	0.60	-0.60
Q2	175	2.51	0.96	1.00	5.00	-0.10	-0.60
Q20	174	3.79	1.10	1.00	5.00	-0.88	0.10
Q21	173	2.23	1.22	1.00	5.00	0.77	-0.51
Q22	174	3.35	0.80	1.00	5.00	-0.78	0.98
Q23	174	3.96	0.71	1.00	5.00	-1.22	2.88
Q24	175	3.13	1.09	1.00	5.00	-0.36	-0.89

Q25	175	2.57	1.04	1.00	5.00	0.22	-0.89
Q3	173	2.74	1.19	1.00	5.00	0.08	-1.18
Q4	176	2.80	1.22	1.00	5.00	0.01	-1.23
Q5	176	3.39	0.83	1.00	5.00	-0.48	0.28
Q6	175	3.37	0.83	1.00	5.00	-0.36	0.31
Q7	176	3.40	0.79	1.00	5.00	0.16	0.71
Q8	175	2.93	1.29	1.00	5.00	-0.07	-1.17
Q9	173	2.91	1.21	1.00	5.00	-0.09	-1.0
TotalScore	163	80.56	15.01	44.00	117.00	-0.21	-0.20

On the TotalScore variable, living with friends/family was associated with a 56% decrease in the odds of having graduated (compared to living alone), and having had a special curriculum was associated with a 185% in the odds of having graduated. For each single unit increase on the needs score, the odds of having graduated increased by 2%. Note that this scale range is much larger than is the original 1-5 scale because it is a sum of all variables (it can take on values from 25 to 125). A person whose need score was 100 would have a 50% increase in the odds of having graduated, compared to someone whose need score was 75 (2% for each single unit increase = 2*25) (Menard, 2009).

On the Power subscale, living with friends/family was associated with a 58% decrease in the odds of having graduated (compared to living alone), and having had a special curriculum was associated with a 172% in the odds of having graduated. For every single unit increase in Power, the odds of having graduated increased by 81% (Menard, 2009). None of the other needs subscales were significant predictors of retention.

Total Score as a Variable

A binary logistic regression was conducted to examine whether Residency, Special_Curriculum, and TotalScore had a significant effect on the odds of observing the

Graduated category of Retention. The reference category for Retention was Did not Graduate.

Assumptions

Variance inflation factors (VIFs) were calculated to detect the presence of multicollinearity between predictors. High VIFs indicate increased effects of multicollinearity in the model. Variance inflation factors greater than 5 are cause for concern, whereas VIFs of 10 should be considered the maximum upper limit (Menard, 2009). All the predictors in the regression model had VIFs of less than 10. Table 22 presents the VIF for each predictor in the model.

Table 22

Variance Inflation Factors for Residency, Special_Curriculum, and TotalScore

Variable	VIF
Residency	1.02
Special_Curriculum	1.25
TotalScore	1.23

Results

The overall model was significant, $\chi^2(4) = 14.89$, $p = .005$, suggesting that Residency, Special_Curriculum, and TotalScore had a significant effect on the odds of observing the Graduated category of Retention. McFadden's R-squared was calculated to examine the model's fit, whereby values greater than .2 are indicative of models with excellent fit (Louviere, Hensher, & Swait, 2000). The McFadden R-squared value calculated for this model was 0.07. The regression coefficient for Residency_Other was not significant, B = -0.28, OR = 0.76, p = .702, indicating that Residency_Other, did not have a significant effect on the odds of observing the Graduated category of Retention.

The regression coefficient for ResidencyWith friends/family was significant, B = -0.82, OR = 0.44, p = .049, indicating that, for those autistic students living with friends/family, the odds of observing the Graduated category of Retention would decrease by approximately 56%. The regression coefficient for Special_CurriculumNon-developmental/Non-special services was significant, B = 1.05, OR = 2.85, p = .009, indicating that for those with Special_CurriculumNon-developmental/Non-special services, the odds of observing the Graduated category of Retention would increase by approximately 185%. The regression coefficient for TotalScore was significant, B = 0.02, OR = 1.02, p = .050, indicating that, for a one unit increase in TotalScore, the odds of observing the Graduated category of Retention would increase by approximately 2%. Table 23 summarizes the results of the regression model.

Table 23

Logistic Regression Results with Residency, Special_Curriculum, and TotalScore Predicting Retention

Variable	B	SE	χ^2	p	OR
(Intercept)	-1.85	1.20	2.35	.125	
Residencyother	-0.28	0.73	0.15	.702	0.76
ResidencyWith friends/family	-0.82	0.42	3.87	.049	0.44
Special_CurriculumNon-developmental/Non-special services	1.05	0.40	6.83	.009	2.85
TotalScore	0.02	0.01	3.85	.050	1.02

Note. $\chi^2(4) = 14.89$, p = .005, McFadden's $R^2 = 0.07$.

Power Subscale

A binary logistic regression was conducted to examine whether Residency, Special_Curriculum, and Power had a significant effect on the odds of observing the Graduated category of Retention. The reference category for Retention was Did not Graduate.

Variance inflation factors (VIFs) were calculated to detect the presence of multicollinearity between predictors. High VIFs indicate increased effects of multicollinearity in the model. Variance inflation factors greater than 5 are cause for concern, whereas VIFs of 10 should be considered the maximum upper limit (Menard, 2009). All the predictors in the regression model had VIFs of less than 10. Table 22 presents the VIF for each predictor in the model.

Table 24

Variance Inflation Factors for Residency, Special_Curriculum, and Power

Variable	VIF
Residency	1.03
Special_Curriculum	1.15
Power	1.13

Results

The overall model was significant, $\chi^2(4) = 18.74$, $p < .001$, suggesting that Residency, Special_Curriculum, and Power had a significant effect on the odds of observing the Graduated category of Retention. McFadden's R-squared was calculated to examine the model's fit, whereby values greater than .2 are indicative of models with excellent fit (Louviere, Hensher, & Swait, 2000). The McFadden R-squared value calculated for this model was 0.08. The regression coefficient for Residencyother was not significant, B = -

0.26, OR = 0.77, p = .720, indicating that Residencyother, did not have a significant effect on the odds of observing the Graduated category of Retention. The regression coefficient for ResidencyWith friends/family was significant, B = -0.87, OR = 0.42, p = .030, indicating that, for a one unit increase in ResidencyWith friends/family, the odds of observing the Graduated category of Retention would decrease by approximately 58%. The regression coefficient for Special_CurriculumNon-developmental/Non-special services was significant, B = 1.00, OR = 2.72, p = .007, indicating that, with access to Special_CurriculumNon-developmental/Non-special services, the odds of observing the Graduated category of Retention would increase by approximately 172%. The regression coefficient for Power was significant, B = 0.59, OR = 1.81, p = .017, indicating that, with an increase in Power, the odds of observing the Graduated category of Retention would increase by approximately 81%. Table 24 summarizes the results of the regression model.

Table 25

Logistic Regression Results with Residency, Special_Curriculum, and Power Predicting Retention

Variable	B	SE	χ^2	p	OR
(Intercept)	-1.93	1.05	3.40	.065	
Residencyother	-0.26	0.72	0.13	.720	0.77
ResidencyWith friends / family	-0.87	0.40	4.68	.030	0.42
Special_CurriculumNon-developmental / Non-special services	1.00	0.37	7.34	.007	2.72
Power	0.59	0.25	5.70	.017	1.81

Note. $\chi^2(4) = 18.74$, $p < .001$, McFadden's $R^2 = 0.08$.

CHAPTER FIVE

Discussion

Approximately 59% of US-based students who began seeking a bachelor's degree at a four-year institution in fall of 2009 completed that degree within six years; the graduation rate was higher for females than it was for males (62% versus 56%; NCES, 2017). The subject of college retention has been studied for over half a century. Studies have examined the role of almost every social and economic factor. Colleges and universities have implemented a variety of programs to increase the retention of students through to graduation. Nonetheless, after all of this effort, four in every ten freshmen will not graduate.

These figures represent the average incoming college student. For the incoming autistic freshman, there are a unique set of challenges to overcome if he / she is to persist to graduation.

This study sought to apply Glasser's (1998) choice theory to the problem of autistic students' voluntary withdrawal in order to explore the relationship of need satisfaction based on choice theory and basic needs, demographic variables, and retention. The study assessed the strength of basic need fulfillment satisfaction in autistic students and, in so doing, examined the possible predictive relationships associated with autistic students' voluntary withdrawal.

Given the CDC's Identified Prevalence Rate of Autism Spectrum Disorders of one in 68 children, or 14.6 per 1000 school-aged children (CDC, 2016), and given that ASDs occur in all ethnic, racial, and socioeconomic groups and that autism is diagnosed more often in males than it is in females (four to one), the research questions for this

study were:

1. Are there statistically significant relationships between need fulfillment profiles and retention among autistic college students?
2. Are there statistically significant relationships between need fulfillment profiles and retention while controlling for demographics among autistic college students?

The data were analyzed for relationships or commonalities among the variables such that generalizations for the autistic college population at large could be made.

This chapter will discuss the findings of the research and will outline implications related to the area of autistic students' attrition. The results of the research questions will be addressed, and conclusions will be drawn for educators and administrators, as well as for autistic students and their families / care-givers. Glasser's (1998) basic needs include the psychological needs for Power, Freedom, Fun, and Belonging, and the physiological need for Survival. The limitations of the study will be identified, and recommendations for future research will be discussed.

Research Question 1: Are there statistically significant relationships between need fulfillment profiles and retention among autistic college students? The Student Needs Survey assessed the basic needs of students by using 25 items (five items to assess each of the five basic needs) via students replying to statements by choosing a point on a five-point Likert scale ("never true" to "always true"). Each statement received a score of 1 ("never true"), 2 ("almost never true"), 3 ("don't know"), 4 ("almost always true") or 5 ("always true"), which gave each basic need subscale an average score that ranged from 1 to 5.

A binary logistic regression was conducted to examine whether Belonging, Power, Freedom, Survival, and Fun had a significant effect on the odds of observing the Graduated category of Retention. The reference category for Retention was Did not Graduate. Variance inflation factors (VIFs) were calculated to detect the presence of multicollinearity among predictors. All predictors in the regression model had VIFs of less than 5.

The overall model was not significant, suggesting that Belonging, Power, Freedom, Survival, and Fun did not have a significant effect on the odds of observing the Graduated category of Retention. Since the overall model was not significant, the individual predictors were not examined further.

Research Question 2: Are there statistically significant relationships between need fulfillment profiles and retention while controlling for demographics among autistic college students?

A binary logistic regression was conducted to examine whether Age, Gender, Income, Residency, Special Curriculum, Belonging, Power, Freedom, Survival, Fun, and ethnicity had a significant effect on the odds of observing the Graduated category of Retention. The reference category for Retention was Did not Graduate. Variance inflation factors (VIFs) were calculated to detect the presence of multicollinearity among predictors. High VIFs indicated increased effects of multicollinearity in the model. All the predictors in the regression model had VIFs of less than 5.

The overall model was significant, suggesting that Age, Gender, Income, Residency, Special_Curriculum, Belonging, Power, Freedom, Survival, Fun, and Ethnicity had a significant effect on the odds of observing the Graduated category of

Retention. McFadden's R-squared was calculated to examine the model's fit, whereby values greater than .2 are indicative of models with excellent fit (Louviere, Hensher, & Swait, 2000). The McFadden R-squared value calculated for this model was 0.17. The regression coefficient for Age45-54 was significant, B = 1.77, OR = 5.87, p = .004, indicating that, for a one unit increase in Age45-54, the odds of observing the Graduated category of Retention would increase by approximately 487%. The regression coefficient for Age55-64 was significant, B = 2.95, OR = 19.19, p = .009, indicating that, for a one unit increase in Age55-64, the odds of observing the Graduated category of Retention would increase by approximately 1819%. All other individual demographic variables were not significant.

Given the results, an additional analysis of the data was considered and conducted. Covariates that were clearly not significant were removed from the model, and some interesting effects emerged. First, an analysis of all covariates was conducted to determine what to remove. Second, because basic needs may be hierarchical, it was considered that a total sum score across all items might be appropriate (in other words, the higher the score, the higher one is in satisfying the hierarchy of needs).

For the TotalScore variable, living with friends/family was associated with a 56% decrease in the odds of having graduated (compared to living alone), and having had a special curriculum was associated with a 185% increase in the odds of having graduated. For each single unit increase on the needs score, the odds of having graduated increased by 2%. Note that this scale range is much larger than is the original 1-5 scale because it is a sum of all variables (it can accomodate values from 25 to 125). A person whose need score was 100 would have a 50% increase in the odds of having graduated, compared to

someone whose need score was 75% (2% for every single unit increase = 2*25).

For the Power subscale, living with friends/family was associated with a 58% decrease in the odds of having graduated (compared to living alone), and having had a special curriculum was associated with a 172% increase in the odds of having graduated. For each single unit increase in Power, the odds of having graduated increased by 81%. None of the other needs subscales were significant predictors of retention.

A binary logistic regression was conducted to examine whether Residency, Special_Curriculum, and TotalScore had a significant effect on the odds of observing the Graduated category of Retention. The reference category for Retention was Did not Graduate.

The overall model was significant, $\chi 2(4) = 14.89$, $p = .005$, suggesting that Residency, Special_Curriculum, and TotalScore had a significant effect on the odds of observing the Graduated category of Retention. The regression coefficient for ResidencyWith friends/family was significant, B = -0.82, OR = 0.44, p = .049, indicating that, for a one unit increase in ResidencyWith friends/family, the odds of observing the Graduated category of Retention would decrease by approximately 56%. The regression coefficient for Special_CurriculumNon-developmental/Non-special services was significant, B = 1.05, OR = 2.85, p = .009, indicating that, for a one unit increase in Special_CurriculumNon-developmental/Non-special services, the odds of observing the Graduated category of Retention would increase by approximately 185%. The regression coefficient for TotalScore was significant, B = 0.02, OR = 1.02, p = .050, indicating that, for a one unit increase in TotalScore, the odds of observing the Graduated category of Retention would increase by approximately 2%.

A binary logistic regression was conducted to examine whether Residency, Special_Curriculum, and Power had a significant effect on the odds of observing the Graduated category of Retention. The reference category for Retention was Did not Graduate.

The overall model was significant, $\chi 2(4) = 18.74$, $p < .001$, suggesting that Residency, Special_Curriculum, and Power had a significant effect on the odds of observing the Graduated category of Retention. The regression coefficient for ResidencyWith friends/family was significant, B = -0.87, OR = 0.42, p = .030, indicating that, for a one unit increase in ResidencyWith friends/family, the odds of observing the Graduated category of Retention would decrease by approximately 58%. The regression coefficient for Special_CurriculumNon-developmental/Non-special services was significant, B = 1.00, OR = 2.72, p = .007, indicating that, for a one unit increase in Special_CurriculumNon-developmental/Non-special services, the odds of observing the Graduated category of Retention would increase by approximately 172%. The regression coefficient for Power was significant, B = 0.59, OR = 1.81, p = .017, indicating that, for a one unit increase in Power, the odds of observing the Graduated category of Retention would increase by approximately 81%.

Conclusions

The survey results and subsequent data analysis found significance in four areas, namely the individual covariates of age, special curriculum, and living alone, and the independent variable of Power. As a middle-aged autistic college student who has struggled to keep pace with my neuro-typical peers, I had expected to see significance in these areas (Hoerricks, 2016).

The first generation of people diagnosed with autism in childhood is now reaching middle age, and mature adults are being diagnosed for the first time (NAS, 2013). Autism, as a developmental disorder, may delay the development of skills such as communication. However, autism does not prevent a person from changing and maturing over time. Tasks that may have been impossible in early life can become routine as one grows older (Hoerricks, 2016). By the time autistic people are 40 - 60 years of age, they tend to have more awareness of their unique needs and can control and plan for meeting those needs much more efficiently than they could as children (Endow, 2015). The fact the 45-54 and 55-64 age groups have a better chance of retention until graduation indicates the possibility that this delay may no longer be an issue.

In terms of access to a special curriculum or other accommodations, students transitioning directly from a supportive K-12 environment to an unsupported college environment may experience difficulties, particularly those who have been in special education programs (Wiorkowski, 2015). Unsupported autistic students often fall behind academically in college, as K-12 special education programs often do not teach the basic skills needed for a more rigorous class schedule. Autistic students transitioning from these programs may have particular problems with science, math, and English (Wiorkowski, 2015).

Other issues involved in accommodating special needs include the modification of classic curriculum models that focus on the memorization of names and dates, particularly when these types of courses are prerequisites or core requirements. In addition, courses that focus on or require group work may also become a problem for autistic students with communication / social difficulties (Wiorkowski, 2015).

In a general sense, living alone / independently gives the individual the ability to focus on what he or she likes to do and to have control over his or her home environment (Adreon & Durocher, 2007; Palmer, 2006, Wiorkowski, 2015). The modification of one's environment is the most frequent recommendation for accommodating sensory issues (Richey, 2009). Part of the ability to control the living environment is the ability to create a safe and calm space. Sensory processing problems and anxiety are generally comorbid with autism (Lipsky, 2009, 2011). Wiorkowski (2015) noted that, even for those living in a dormitory, having a private room meant that autistic students had a place to which to retreat when they felt overwhelmed or were simply finished with social interaction.

With this in mind, Reser (2011) suggested that autistic people may have a genetic predisposition to seek out isolation. He noted that autistic people generally withdrew from social contact and became absorbed in private worlds of obsessive interests and repetitive activities. Whilst autism prevalence rates are reported as increasing, and some less than reputable people try to link the increase to environmental chemicals and / or vaccines, Hartmann's (1997) work on ADHD hinted that the opposite may be true – that what we consider to be disorders (on the autism spectrum) were evolutionary advantages that helped our species to survive over the millennia. The increase in prevalence can thus be attributed to an awareness gained from our transformation from an agrarian society (emphasis on tools / tasks) to an industrialized society (emphasis on socialization / cooperation).

The needs fulfillment profile of Power revolves more around personal self-worth than it does power over others. This need is related to a personal sense of competence, ability, and recognition of value that can come from accomplishment and recognition. It

is related to the idea of the quality world and one's ability to achieve goals. The need for power is also the need to feel in control of one's life (Glasser, 1990, 1996, 1998).

As noted previously, many autistics have developed a special interest in a topic that may be pursued at college. They may arrive in class knowing more about the subject than does the instructor. In their quality world, they are experts on the subject. Feelings of powerlessness can occur when the student is not allowed flexibility regarding how to complete assignments, when there is a dispute over facts or procedures with the instructor, or when communication issues complicate student / teacher / peer interactions.

This need to feel in control is reflected in the positive results for Power when controlling for living alone and the presence of a special curriculum. When feeling a need to retreat, having control over one's home / safe space cannot be underestimated. This may relate to one's quality world pictures and the ability to maintain stability and order in one's home. In addition, given that the majority of autistics will have some difficulty with sleep (Richdale, Schreck, 2009), having the freedom to be awake and active at odd times of the day may help to relieve stress and anxiety (Baker, Richdale, 2015), and thus contribute to one's ability to graduate.

Implications

The significance of the results for the age group 45-64 does not necessarily mean that autistic people should delay starting college until later in life, although this may help. It does suggest that the traditional pathway of moving directly from K-12 to college and graduating within four years might not be appropriate for autistic students. This age group brings with it its own issues. Adult learners may have delayed entry to college. They may have dependents. They might be single parents. They could be employed full

time, or hold multiple part-time jobs. They are more likely to be financially independent. Considering all of these factors, they may wish to attend school on a part-time basis (Ross-Gordon, 2011).

Given the above, ideas regarding what constitutes full-time enrollment might need to be adjusted for autistic students. The neuro-typical student might be able to process the sensory environment and the stresses of four to six classes per term successfully, whilst the autistic student may have difficulty processing more than two. Financial support that is tied to full-time or part-time enrollment status should be adjusted to accommodate the autistic student.

When considering attendance at a particular school, the availability of specific supports / a special curriculum can play a major role. The fact that a minority of schools offer such supports means there is much work to do in this area. Just as the Americans with Disabilities Act mandated ramps and accessible toilets, it may become the vehicle to secure adequate support for autistic students. From the classroom environment (chairs, tables, lights, HVAC, and so on), to the availability of assistive technology, to flexibility in completing tasks / assignments, to continuing education programs for instructional and support staff to build awareness of the autistic student community and their unique needs, much can be done to accommodate and support autistic students.

It is extremely rare that colleges will guarantee that a student will be able to live alone in on-campus housing. Most schools reserve single rooms for students in their Junior or Senior years. In addition, student housing is a source of revenue for a school, and fewer occupants in dormitories means less revenue. Revenue is increased via multi-occupant housing schemes (doubles, triples, and quads).

For the most part, in order to guarantee that a student can live alone on campus, colleges require that the student have a documented medical condition that requires the student to live alone. The student must request and receive approval from the school, usually on a case-by-case / year-by-year basis. Such requests are subject to availability. Many autistic people, however, do not consider themselves to be disabled. Different, perhaps, but not disabled (Reser, 2011). In addition, doctors may be reluctant to document a treatment plan for autistics that requires an independent living arrangement. Students may thus choose to live alone in off-campus housing. Living off-campus adds transportation and parking costs that may put the college experience beyond reach.

Finally, what many consider to be a special curriculum can simply mean more flexibility regarding how assignments are completed and how the student interacts with the teachers. Autistic students may arrive on campus already knowledgeable in subjects related to their special interests. Teachers may expect a one-way flow of information from themselves to the students. This will frustrate autistic students whose high power needs often mean that they "own" their special interests, and have thus spent a great deal of time studying that topic well before enrolling for a class. Continuing education classes for educators can help to make them aware of this issue and offer suggestions for working with autistic students who enroll in their classes.

Recommendations for Future Research

The results of this study offer much to be considered in other areas related to the improvement of outcomes for autistic people. In addition to the implications for adult and continuing education, the significance found in the middle-aged groups can be explored from a medical / diagnostic / developmental standpoint. The significance found in the

area of special curriculum supports the need to explore curriculum models that best support the autistic population. Given the fact that not all students live on campus, living alone or having a quiet private space to which to retreat and recharge, presents numerous avenues for study that are not limited to the campus environment. As many autistic students receive government assistance, there are health, housing, and education policy considerations that could be studied. Finally, the significance of power needs speaks to the necessity of exploring the student – teacher relationship and how the school can cope with a student who may arrive on campus with a better grasp of certain subjects than the teachers with whom he or she will interact.

Summary

The retention of students has long been a focus of administrators of higher education institutions. The voluntary withdrawal of students represents a significant loss of time and money for both schools and students. The topics of retention and attrition have been explored extensively in preceding decades, yet the problem of voluntary withdrawal within the autistic student community remains. Previous studies have examined the issue from many angles, utilizing many theoretical constructs.

This study examined the factors involved in the retention of autistic college students. It applied William Glasser's (1998) choice theory, which explores behavior based on the internal motivation to succeed, to the problem of autistic college student retention and explored the relationship of need satisfaction, demographic factors, and retention. It assessed the strength of basic need fulfillment satisfaction in autistic college students, and examined the predictive relationships associated with the retention of this growing population of students.

In general, student attrition is a complex problem. In previous decades, attrition has been examined from a wide variety of viewpoints and theoretical constructs. The findings of this study can provide administrators with a starting point for considering the retention of this vulnerable group of students. Using this research to inform their own retention enquiries, higher education professionals and policy makers may discover more specific clues within their institutions regarding students' departure behavior that can provide valuable information for programming, instruction, and climate / culture decisions.

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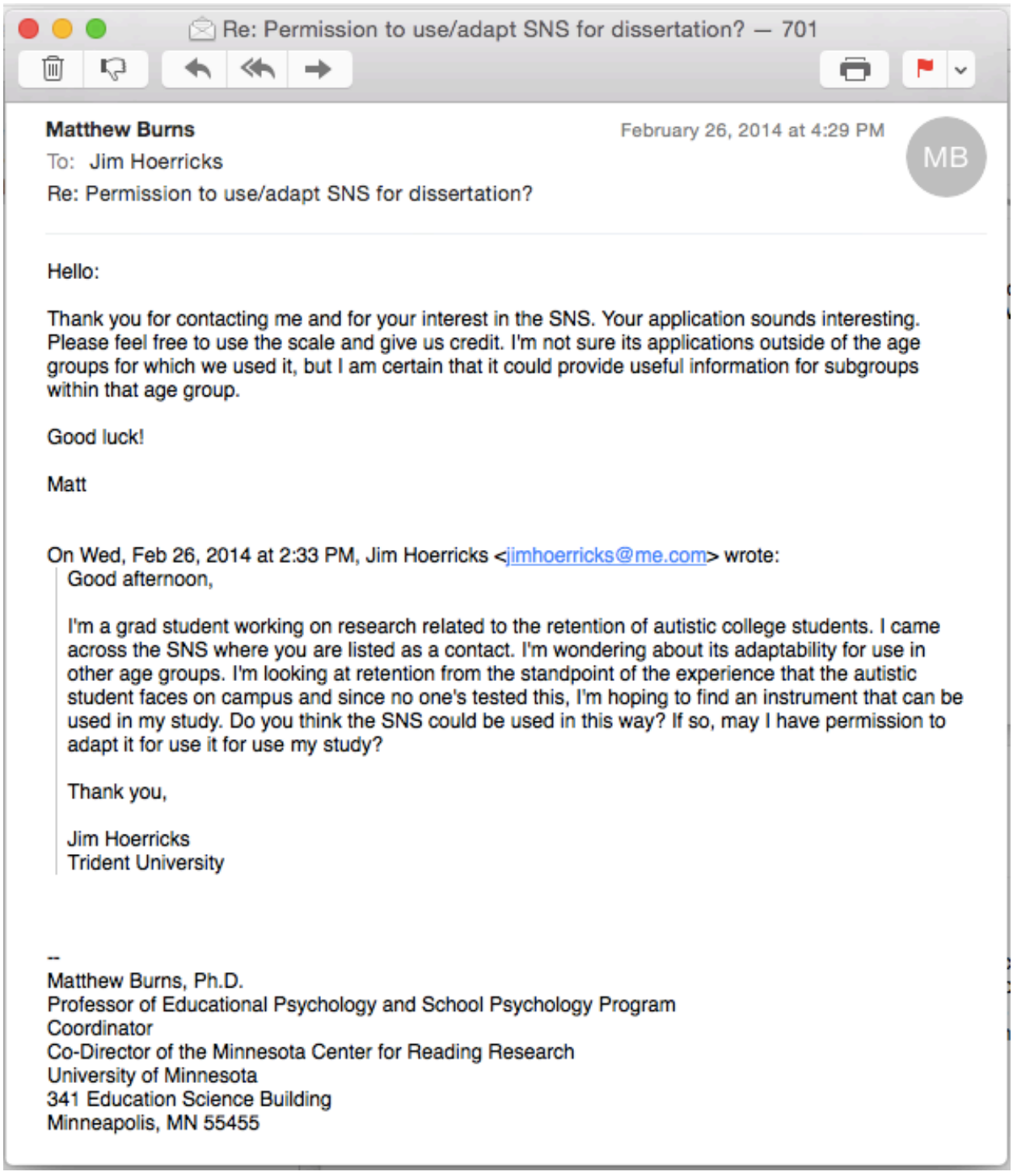
APPENDIX A



Re: Permission to use/adapt SNS for dissertation? — 701

Matthew Burns February 26, 2014 at 4:29 PM

To: Jim Hoerricks

Re: Permission to use/adapt SNS for dissertation?

MB

Hello:

Thank you for contacting me and for your interest in the SNS. Your application sounds interesting. Please feel free to use the scale and give us credit. I'm not sure its applications outside of the age groups for which we used it, but I am certain that it could provide useful information for subgroups within that age group.

Good luck!

Matt

On Wed, Feb 26, 2014 at 2:33 PM, Jim Hoerricks <jimhoerricks@me.com> wrote:

> Good afternoon,
>
> I'm a grad student working on research related to the retention of autistic college students. I came across the SNS where you are listed as a contact. I'm wondering about its adaptability for use in other age groups. I'm looking at retention from the standpoint of the experience that the autistic student faces on campus and since no one's tested this, I'm hoping to find an instrument that can be used in my study. Do you think the SNS could be used in this way? If so, may I have permission to adapt it for use it for use my study?
>
> Thank you,
>
> Jim Hoerricks
> Trident University

--
Matthew Burns, Ph.D.
Professor of Educational Psychology and School Psychology Program
Coordinator
Co-Director of the Minnesota Center for Reading Research
University of Minnesota
341 Education Science Building
Minneapolis, MN 55455

APPENDIX B

STUDENT NEEDS SURVEY

Instructions: Please complete both sections of this survey. Section I consists of questions concerning demographic information. Section II consists of questions concerning student need satisfaction. In Section I, please enter only the I.D. number that you received on your confirmation e-mail from the IAN. It is not necessary to enter your name.

SECTION I

IAN ID #

Age:

Gender: Male | Female

Ethnicity: White | Non-White

Household Income: $0 up to $25,000 | $25,000 up to $50,000 | $50,000 up to $75,000 | $75,000 up to $100,000 | $100,000 or more.

Residency Status: With Family / Friends | Alone | Other

Curriculum (Is a special curriculum available?): Developmental / Special Services | Non-developmental / Non-special Services.

Retention: Remained Enrolled Through Graduation | Voluntary Student Withdrawal

Highest Undergraduate Grade Level Achieved: Freshman | Sophomore | Junior | Senior

SECTION II

Please circle the choice that best answers each question.

There are no right or wrong answers.

1. Teachers at this school really care about students

[] Never True [] Almost Never True [] Don't Know [] Almost Always True [] Always True

2. Students help set school rules

[] Never True [] Almost Never True [] Don't Know [] Almost Always True [] Always True

3. I have fun with my friends in class

[] Never True [] Almost Never True [] Don't Know [] Almost Always True [] Always True

4. I feel included by other students at this school

[] Never True [] Almost Never True [] Don't Know [] Almost Always True [] Always True

5. Students at this school enjoy learning

[] Never True [] Almost Never True [] Don't Know [] Almost Always True [] Always True

6. Students in our class enjoy being around each other

[] Never True [] Almost Never True [] Don't Know [] Almost Always True [] Always True

7. The teachers seem to care for one another

[] Never True [] Almost Never True [] Don't Know [] Almost Always True [] Always True

8. Other adults in the building, besides my teacher, know me

[] Never True [] Almost Never True [] Don't Know [] Almost Always True [] Always True

9. I feel important when I am at school

[] Never True [] Almost Never True [] Don't Know [] Almost Always True [] Always True

10. My teachers expect me to get good grades on work and tests

[] Never True [] Almost Never True [] Don't Know [] Almost Always True [] Always True

11. I usually know how well I am doing in school

[] Never True [] Almost Never True [] Don't Know [] Almost Always True [] Always True

12. I can choose my own partners for projects

[] Never True [] Almost Never True [] Don't Know [] Almost Always True [] Always True

13. My teachers care about me

[] Never True [] Almost Never True [] Don't Know [] Almost Always True [] Always True

14. I feel like there is order in the school

[] Never True [] Almost Never True [] Don't Know [] Almost Always True [] Always True

15. The teachers are open to suggestions from students

[] Never True [] Almost Never True [] Don't Know [] Almost Always True [] Always True

16. At school, I get to learn things I am interested in

[] Never True [] Almost Never True [] Don't Know [] Almost Always True [] Always True

17. I have choices in my assignments

[] Never True [] Almost Never True [] Don't Know [] Almost Always True [] Always True

18. People at school listen to what I have to say

[] Never True [] Almost Never True [] Don't Know [] Almost Always True [] Always True

19. I have choices on different ways to complete assignments

[] Never True [] Almost Never True [] Don't Know [] Almost Always True [] Always True

20. I feel safe when I am at school

[] Never True [] Almost Never True [] Don't Know [] Almost Always True [] Always True

21. I have many friends at school

[] Never True [] Almost Never True [] Don't Know [] Almost Always True [] Always True

22. Students are kind to each other at this school

[] Never True [] Almost Never True [] Don't Know [] Almost Always True [] Always True

23. The school is neat and clean

[] Never True [] Almost Never True [] Don't Know [] Almost Always True [] Always True

24. We often laugh in my classroom

[] Never True [] Almost Never True [] Don't Know [] Almost Always True [] Always True

25. In our class we do special fun activities

[] Never True [] Almost Never True [] Don't Know [] Almost Always True [] Always True

APPENDIX C

CONSENT TO PARTICIPATE IN RESEARCH

HIGHER EDUCATION SUPPORT STRATEGIES:

AN EXPLORATION OF NEEDS SATISFACTION

OF HIGH-FUNCTIONING AUTISTIC COLLEGE STUDENTS' RETENTION

You are asked to participate in a research study conducted by Kenneth J Hoerricks from the Education Department at Trident University International. You were selected as a possible participant in this study because of your experiences in seeking a bachelor's degree at a higher education institution and because you have pre-registered as a survey participant with the Interactive Autism Network.

PURPOSE OF THE STUDY

This study will assess the strength of basic need fulfillment satisfaction in autistic college students and examine possible predictive relationships associated with the retention of this growing population of students, which can serve as a model for others to consider.

PROCEDURES

If you volunteer to participate in this study, you will do the following:

1. Log in to your account at ianresearch.org
2. Click on the link for the invitation to participate in this study (SNS) - Student Needs Survey in your task page.

3. Follow the instructions to complete the survey (which takes about 10 minutes to complete)

POTENTIAL RISKS AND DISCOMFORTS

There are no known risks or potential discomforts.

POTENTIAL BENEFITS TO SUBJECTS AND/OR TO SOCIETY

Subjects will not benefit individually from participation in this survey.

It is hoped that the results of this survey will help to inform college / university administrators regarding to ways to make their institutions safer / more welcoming to autistic students, thus increasing autistic student retention.

PAYMENT FOR PARTICIPATION

There is no payment for participation in this study.

CONFIDENTIALITY

Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission or as required by law.

PARTICIPATION AND WITHDRAWAL

You can choose whether to participate in this study or not. If you volunteer to be included in this study, you may withdraw at any time without consequences of any kind. You may

also refuse to answer any questions. The investigator may withdraw you from this research if circumstances arise that, in the opinion of the researcher, warrant doing so.

IDENTIFICATION OF INVESTIGATORS

If you have any questions or concerns about the research, please feel free to contact Kenneth Hoerricks at Kenneth.Hoerricks@my.trident.edu, or Dr. Wenling Li at Wenling.Li@trident.edu.

RIGHTS OF RESEARCH SUBJECTS

You may withdraw your consent at any time and discontinue participation without penalty. You are not waiving any legal claims, rights or remedies because of your participation in this research study. If you have questions regarding your rights as a research subject, contact the Institutional Review Board for the Protection of Human Subjects at Trident University International, 5757 Plaza Drive, Suite 100, Cypress, California 90630; Telephone: (714) 226-9840.

During this study, if the researchers discover any new information that might cause you to change your mind about participating, the researchers will share this new information with you.

APPENDIX D

PROTECTING HUMAN RESEARCH PARTICIPANTS CERTIFICATION

Certificate of Completion

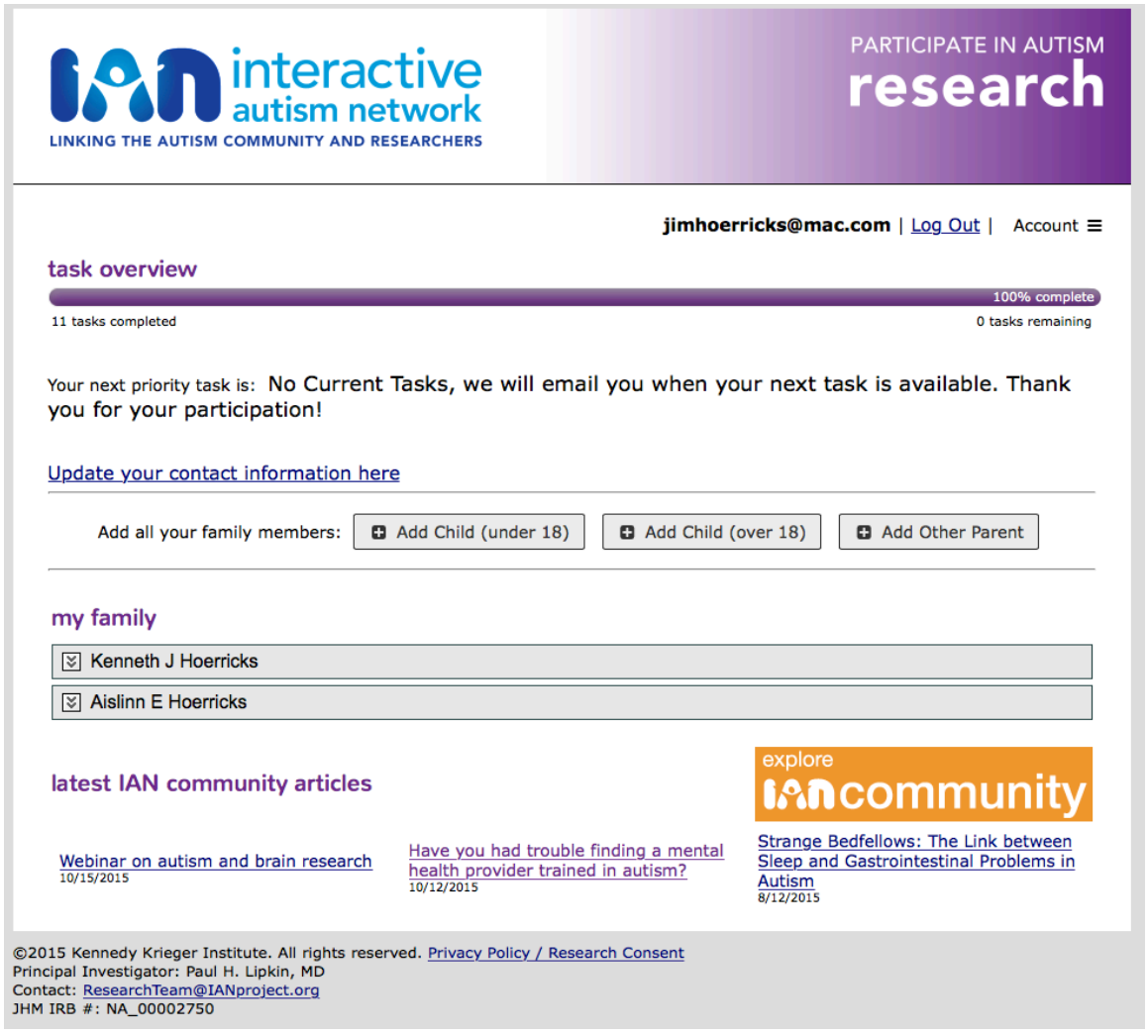
The National Institutes of Health (NIH) Office of Extramural Research certifies that **Kenneth Hoerricks** successfully completed the NIH Web-based training course "Protecting Human Research Participants".

Date of completion: 10/15/2015

Certification Number: 1893261

APPENDIX E

IAN WEB PAGE EXAMPLES


interactive autism network
LINKING THE AUTISM COMMUNITY AND RESEARCHERS
PARTICIPATE IN AUTISM research
jimhoerricks@mac.com | Log Out | Account
task overview
100% complete
11 tasks completed
0 tasks remaining
Your next priority task is: No Current Tasks, we will email you when your next task is available. Thank you for your participation!
Update your contact information here
Add all your family members: Add Child (under 18) Add Child (over 18) Add Other Parent
my family
Kenneth J Hoerricks
Aislinn E Hoerricks
latest IAN community articles
explore IAN community
Webinar on autism and brain research
10/15/2015
Have you had trouble finding a mental health provider trained in autism?
10/12/2015
Strange Bedfellows: The Link between Sleep and Gastrointestinal Problems in Autism
8/12/2015
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Principal Investigator: Paul H. Lipkin, MD
Contact: ResearchTeam@IANproject.org
JHM IRB #: NA_00002750

ResearchTeam@IANproject.org
To: Jim Hoerricks
Online intervention for parents of children with ASD

October 14, 2015 at 10:14 AM
Trash - .Mac

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Dear Kenneth Hoerricks,

When you joined the Interactive Autism Network (IAN Research Project), we promised to inform you about research projects that might be of interest to you. Here is an invitation from a team of researchers at Marquette University seeking parents with a child with ASD to **evaluate the effectiveness of an online intervention that aims to improve the well-being and coping skills** of the parent. This should, in turn, improve the well-being of their child with ASD.

Who qualifies? Parents with at least one child aged under 18 years with ASD. Only one parent per household may participate. This study is not open to researchers at Marquette University.

What is involved? This is an internet-based study. Parents will be randomly assigned to either an intervention group or to a control group. All parents will complete a 30-minute initial survey with questions about parental strategies and activities relating to ASD and a follow-up 30-minte survey six weeks later. Parents in the intervention group will receive a weekly voice over PowerPoint for six weeks (3-12 minutes to watch) that will teach strategies to cope with adversity and will be asked to complete one 5-minute review exercise each week for five weeks. All responses will be completely anonymous. You and your child will never be identified by name as part of this project.

Compensation. All participating parents will receive a $20 amazon.com gift card after completing the first survey and a $35 amazon.com gift card after completing the second survey. Those in the intervention group will also need to have watched the PowerPoint presentations and complete the review exercises. Parents in the control group will have the opportunity to receive the intervention materials after the completion of the study.

This is an IAN 1-Click study. Please click on the appropriate link below to indicate whether or not you are interested in the study. Once you have clicked on either the "interested" or "not interested/don't qualify" link, IAN will no longer send you notifications about this study.

Yes, interested: Click the following link ***when you are ready to take the first 30-minute survey*** Parental Strategies Intervention (SR00547)

No, not interested/don't qualify: Click here if you are Not Interested in joining this study

Questions? Please contact our research assistant for this study, Denise Matel-Anderson, at denise.matel-anderson@marquette.edu or Dr. Abir Bekhet at abir.bekhet@marquette.edu

Marquette University Principal Investigator: Dr. Abir Bekhet

IAN Research ID: SR00547. *You do not have to participate in this study and your non-participation will neither affect the care you receive from any health provider nor your standing as a participant in IAN Research. IAN Research is serving as a resource linking the autism community and researchers. This study is not endorsed by or performed under the auspices of the IAN Research project at Kennedy Krieger Institute. Please email ResearchTeam@IANproject.org if you are no longer interested in receiving information about subject recruitment opportunities from IAN, or if you have any questions or concerns that you would like to share.*