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Disability and Community College Retention Rates

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DISABILITY AND COMMUNITY COLLEGE RETENTION RATES

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ABSTRACT

The rise in the enrollment of persons with disabilities in post-secondary institutions has introduced a need for the identification of services and/or pre-entry variables that assist in the elevation of retention rates. There is a growing substantiation that connects support service usage with a successful academic experience. However, there is little in literature that is specifically designed for students with disabilities. Furthermore, larger gaps are located when determining the effects of educational background on future successful retention within the same population. This study was conducted to examine the relationship between disability classification, educational background and retention rates.

The study identified 250 students who have self-identified as having a disability and must be also be classified as FTICs or first time in college enrollees. Qualified participants were identified through Disability Support Services at Tallahassee Community College. Three separate ANOVA’s were used to analyze the data set. The Bonferroni correction was used to reduce the chance of a family wise error or a false positive.

Services that demonstrated significance with relation to retention included the use of assistive technology and tutoring. Educational background also showed significance with high school diploma recipients, generally, performing better than their GED counterparts. Age and disability classification maintained no identifiable relationship with retention.
CHAPTER 1
INTRODUCTION

In most modern cultures, education is vital to upward mobility. Likewise, there is an inherent or instinctive value placed on achieving academically. Usually, the pursuance of scholarly degrees guides the individual into obtaining an advanced skill-set that places the person in a career which may seem to have high standing in society. It is imperative that each individual have an equal opportunity at completing an educational program that allows for the study and assimilation of such a skill set. However, there are segments of the populace that face challenges in the successful completion of a college degree and who require certain support services to increase their retention rates at institutions of higher education.

Individuals who have a disability are one such segment of the college populace that needs further acknowledgment and support in addressing educational needs that may hinder retention. To address this segment of the college population adequately, it is critical that research be conducted to identify connections between disability and support services in the successful completion of a degree. In this manner, patterns of success can be replicated in order to achieve an improved retention rate.

Statement of the Problem

According to the Americans with Disabilities Act (ADA; Equal Employment Opportunity Commission [EEOC], 2008) of 1990, a person with a disability is anyone who has a physical (i.e., quadriplegia) or mental (i.e., anxiety disorder) impairment that substantially limits one or more major life activities, who has a record of such an impairment, or who is regarded as having such an impairment. There are three classifications of disability: learning related, psychiatric, and physical and health related (EEOC, 2008). In terms of postsecondary education, a qualified student with a disability is one who is able to meet a program's admission, academic, and technical standards (that is, all essential nonacademic admissions criteria) either with or without accommodation (Rehabilitation Act of 1973, 34 C.F.R. Section 104).

Section 504 of the Rehabilitation Act of 1973 requires that no person with a disability who is otherwise qualified may be denied participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance due to disability (Rehabilitation Act of 1973, 29 U.S.C. Section 794(a)). Likewise, Title II of the
ADA prohibits public entities such as state government, public schools, and public colleges from denying qualified persons with disabilities the right to participate in or benefit from their services, programs, or activities, and from discriminating against such individuals if the exclusion or discrimination is due to the person having a disability (ADA of 1990, 42 U.S.C. Section 12132). Furthermore, institutions are responsible for providing outreach and support aimed at meeting the needs of students with disabilities (Graham-Smith & Lafayette, 2004).

Research reveals that support services are imperative for students’ transition and adjustment to college, particularly those students with disabilities (Allison, 1994; Appleby, 1994; Bishop & Walker, 1990; Wilson, Mason, & Ewing, 1997). English (1993) conducted a survey to determine the role of disability support services in integrating and retaining 35 college students with hearing impairments. Results showed that support services had a direct effect on academic integration, and an indirect effect upon intention to stay in college. In a study conducted by Turner and Berry (2000), retention rates were examined to determine whether rates were higher among students who utilized mental health services than their non-using counterparts. A statistically significant difference in retention rate was identified, indicating that students who utilized support services were more likely to graduate.

While most students report satisfaction with support services, many report experiencing barriers to their education. A survey conducted by West, et al. (1993), of 40 college and university students with disabilities revealed that most were challenged by a lack of understanding and cooperation on the part of administrators, faculty, staff, and other students; lack of adaptive aids and other accommodations; and problems with accessibility in the buildings and on the grounds. Zadra (1982) interviewed 52 mobility-impaired college freshmen at 11 higher educational institutions. Although evaluations of the support services were generally positive, elevators and lavatory facilities were strongly criticized.

Despite the laws noted above and the efforts of colleges and universities to accommodate students with disabilities, there remains a significant disparity in retention rates. Specifically, only 12% of persons with a disability graduate college, compared to 23% of their non-disabled cohort (Harris & Associates, 2000). Studies continue to produce results that suggest that barriers still exist that may affect their participation and retention in higher education (Stanley, 2000). It is pertinent that current support services and interrelated variables are explored and modified, if necessary, in order to ensure that students with disabilities succeed in their pursuit of
a higher education. However, services offered are not the only concern noted in the literature. Pre-academic variables (Astin 1993, 1999; Tinto, 1993) have been studied in the general college population. However there is a paucity of information related to pre-entry academic variables with students with disabilities. No studies specifically examine retention and the effects of achieving a GED versus a high school diploma. However, Horn and Berktold (1999) suggest that students with disabilities are not as academically prepared as their non-disabled cohorts. A reasonable explanation for the absence of research may be that students with disabilities are less likely to obtain a GED than others that do not (Marder & Damico, 1992).

The identification of further pre-entry variables that predict academic success certainly would further current research. However, the measurement of success is also influx within the research literature. The educational variable of retention is often measured in different manners. The consensus in the literature defines retention dichotomously, either the student graduates or fails to complete and therefore is not retained. Seidman (1996) suggests that this observation may be too narrow and offered different perspectives for measuring retention. He offers a retention/attribution perspective that takes in account both graduate rates and the students’ perceptions of achieving their academic goals.

Depending upon how a researcher defines the educational outcome variable, a measurement of persistence or attrition can be interchanged or can overlap with regard to definitions of retention. For example, in some studies persistence can be determined by credit hours completed (Adelman, 2006; Eastman & Gusky, 1982). The concern is that retention can also be characterized in this manner (Seidman, 1996).

Under Section 504 of the Rehabilitation Act and the ADA, colleges and universities must provide reasonable accommodations to students with disabilities in order to provide equal access to the institution's programs, classes, and activities (Ofiesh, Rice, Long, Merchant, & Gajar, 2002). However, in order to provide a quality education to students with disabilities and to promote success with their education, gaps in the literature must be addressed. Therefore, the goal of the present study is to determine whether educational background, gender, type of disability, and utilization of support services have an influence on retention of college students with disabilities. The findings of this research may help administrators, counselors, and others in an environment similar to Tallahassee Community College to better design and implement
programs intended to provide support services to disabled students, as well as to tailor such programs to meet the needs of subgroups within the population.

**Significance of the Research**

College enrollments of students with disabilities increased steadily in the 20 years between 1978 and 1998. During those 20 years, enrollments of college students with disabilities increased to 140,142—a 6% increase; this number accounted for 9% of all incoming freshmen in 1998 (HEATH Resource Center, 1995, 1998). In 1994, 40% of these students had orthopedic and neurological disabilities. The remainder reported learning disabilities, visual impairments, and other physical and psychiatric disabilities (Department of Health, Education, and Welfare, 1995). In 1999–2000, 9% of all undergraduate students reported having a disability. Of these students, 29% had an orthopedic or mobility impairment, 17% had a mental illness, 15% a health impairment, 12% a visual or hearing impairment, 11% a learning disability, and 15% had some other type of disability (National Center for Education Statistics [NCES], 2003).

A variety of variables affecting students with disabilities and experiences with education have been identified in the literature. These variables include the attitudes of others, classroom accommodations, accessibility, and support services. Support services for students with disabilities typically consist of study preparation assistance, examination accommodations, and classroom accommodations (Hudson, 1994). However, relatively little is known about the relationship between the provision of support services and student outcomes, particularly retention. There have also been relatively few studies into the relationship between retention and demographic variables such as educational-level at enrollment (whether GED or high school diploma), age, and type of disability. This represents a significant gap in the research and is the focus of this present study.

While it is important to explore the relationship between support services and student retention, only a few studies (e.g., Allison, 1994; Keim, 1996) have examined the relationship between support services and the retention of students with disabilities in higher education. The results of these studies were mixed. For example, Allison (1994) did not find substantial differences between graduates and students who dropped out in terms of accommodation usefulness, but did find significant differences in terms of the social support network of the two groups. Keim (1996) examined academic achievement and use of various academic support
services for students with learning disabilities. The results supported the effectiveness of university support programs toward academic achievement for students with disabilities.

While more research is needed to clarify the nature of the relationship between support services for students with disabilities and their retention, previous studies have established that there are a range of other variables that affect retention levels. For example, the attitudes of others (West et al., 1993; Benham, 1995; Mowbray et al., 2005), social support (Kroeger & Schuck, 1993; Allison, 1994; Collin & Mowbray, 2005), and educational level on entry to college (Flowers, 1993) have been identified as major factors influencing retention of students with disabilities. In order to provide a context for this study, the following section contains a brief overview of the key findings of previous research into the retention of students with disabilities.

**Retention of Students with Disabilities**

Despite the importance of higher education, many people with disabilities are unable to gain access to educational resources or maintain their involvement with educational institutions (Collin & Mowbray, 2005). A 1995 study by Kessler, Foster, and Saunders et al. revealed that nearly 4.29 million U.S. residents at the time would have graduated from college if they had not experienced an early-onset psychiatric disability. Without support, most individuals with disabilities have not been able to successfully pursue higher education goals (Austin, 1999).

Elacqua (1996) surveyed 37 college students with disabilities to assess their perceptions of the accommodation process at a medium-sized Midwestern university. Most respondents reported satisfaction with the accommodations they received and felt they were familiar with the referral procedures and support services available. However, they felt that professors were not familiar with their disabilities or with available services. The students also felt that requesting a classroom accommodation was often stressful.

**Attitudes of others.** Attitudes toward students with disabilities affect students’ own attitudes toward their disabilities, their interpretations of life events, level of self-esteem, self-efficacy, independence, frustration, motivation, and expectations of benefits from attending college. In the United States, individuals with disabilities, particularly those that are psychiatric in nature, remain one of the most stigmatized groups of people (Collin & Mowbray, 2005). West et al. (1993) found that students with disabilities in colleges and universities in Virginia reported
resistance and discrimination from instructors, university personnel, faculty, and other students. The perceived bias by students with disabilities could have profound effects on retention rates.

Benham (1995) examined faculty attitudes toward students with disabilities, their knowledge of the ADA, and their knowledge about various specific disabilities. Male faculty and faculty members with greater than 10, but less than 20 years of teaching experience in higher education, tended to have more negative attitudes toward students with disabilities than did female faculty or faculty members with less than 10 or greater than 20 years of teaching experience. Similarly, a study of 422 faculty of a large Northeastern metropolitan university indicated that the majority were not able to identify students with disabilities unless students disclosed their disability. Results also showed that faculty lacked experience teaching students with disabilities, were unfamiliar with disability rights and laws, and were not familiar with university-wide services available to students with disabilities (Baggett, 1994).

**Social support.** Cobb (1976) defines social support as the knowledge that one is loved, cared for, and part of a network of shared support and concern. Social support has been described as an important factor in successfully coping with and adjusting to major life-events (Spekman, Goldber, & Herman, 1992) and is known to directly enhance psychological well-being, which may buffer the effects of stress on students (Delworth & Hanson, 1989). Furthermore, results of a study by Sanders and DuBois (1996) indicate that social support from friends, faculty, and campus organizations is positively associated with retention. Since students with disabilities experience greater pressure than traditional students to adjust to the educational environment, they are at a greater risk for dropping out of college.

Researchers have found that grade performance is influenced by students' level of comfort and satisfaction with the college environment (Graham-Smith & Lafayette, 2004). According to Thomas, Cooper, and Quinn (2003), "Students are more likely to persist when they find themselves in settings that hold high expectations for their learning, provide needed academic and social support, and actively involve them with other students and faculty in learning" (p. 5).

Crouse (1982) and Mutter (1992) report that positive classroom experiences and interaction with peers, faculty, and counselors who provide emotional support and encouragement are critical for college success. Such individuals serve as important sources of validation, empathy, and reflection (Rogers, 1951), as problem-solvers (Shure & Spivak, 1978),
and models of new behaviors (Bandura, 1997). For example, individuals with disabilities are prone to isolate themselves by failing to initiate social contacts with other students, and students with disabilities who do initially attempt to socialize with others may be excluded due to social awkwardness or discrimination. In either case, social avoidance becomes a reinforced behavior. As a result, college students with disabilities are often unable to reap the benefits of social networks (Spekman et al., 1992).

Kroeger and Schuck (1993) point out those social networks may be “as crucial for the success of students with disabilities as ensuring academic accommodations” (p. 64). Participants in a study by Graham-Smith and Lafayette (2004) responded that while extra time, alternate testing sites, tutoring, and accommodations were helpful, "caring people" were most crucial to navigating through their college years. In fact, students with disabilities who drop out of college report lack of social support (family, friends, and teachers) as a major contributing factor in their decision to discontinue their education (Allison, 1994; Collin & Mowbray, 2005).

Blake (1992) conducted a survey study to examine whether academic and social integration could differentiate levels of academic persistence (categorized as returners and nonreturners) among students with disabilities at a large urban university. Results showed that academic and social integration variables did not discriminate between nonreturners and returners or between students with disabilities and students with no reported disabilities.

**Education level.** National survey data have indicated that individuals with disabilities are less likely to earn a GED than others (Marder & D'Amico, 1992). The National Longitudinal Transition Study (NLTS) examined the participation of school leavers with disabilities in postsecondary education. These data showed an average participation rate of 14% for all school leavers (N = 1,741) who had been out of high school for less than 2 years (Wagner, D'Amico, Marder, Newman, & Blackorby, 1992). Graduates had higher participation rates (19%) than did dropouts (6%), and people with physical or sensory disabilities had higher participation rates (28%-36%) than did those with cognitive, emotional, or severe disabilities (4%-17%). This research would suggest that individuals who obtain a high school diploma would have a higher retention rate than those who leave high school and obtain a GED.

Flowers (1993) studied the relationship between academic achievement and academic persistence (the number of semesters attended) among students with disabilities in a large Midwestern university. Academic achievement, as measured by GPA, was found to be the best
predictor for academic persistence, which was determined to be the best predictor of academic achievement. Furthermore, acceptance of disability was a significant predictor for both academic achievement and academic persistence.

**Purpose Statement**

This research investigated whether educational background, age, type of disability, and utilization of support services have an influence on retention of college students with disabilities. Previous research in this area has been limited and the results have been mixed, making it difficult to understand how the retention rates of college students with disabilities are influenced by these types of variables, and how they are interrelated. Most of this research has been conducted in universities. This study adds to the knowledge base in this area by investigating these relationships using a sample of students with disabilities in a community college environment. Results may be of specific interest to administrators, educators, and counselors of Tallahassee Community College and other similar educational institutions when planning and delivering support services to students with disabilities.

**Research Questions**

The research questions for this investigation were:

What are the relationships between types of disabilities, educational background, use of support services, and academic retention rates?

a) What is the relationship between use of services and retention when controlling for age?

b) What is the relationship between educational background (high school diploma or GED) and retention rates with respect to use of services?

c) What is the relationship between type of disability and retention with respect to use of services?

**Definition of Terms**

_Type of Disability._ According to the ADA (1990), a person with a disability is anyone who has a physical (i.e., quadriplegia) or mental (i.e., anxiety disorder) impairment that substantially limits one or more major life activities, who has a record of such an impairment, or who is regarded as having such an impairment.
For the purpose of this study, type of disability was defined according to the classification system used by Tallahassee Community College (TCC). The TCC Disability Services Center classifies disability into 5 types: Learning Disabled, Hearing Impaired and Deaf, Physical, Visually Impaired, and Mental/Psychological. However, only the learning disabled and mental/psychological categories were used for this study due to the highest frequency of students being classified in these groups.

**Educational Background.** No information could be found in the literature regarding the possible relationship between education at college entry of students with disabilities (e.g. GED vs. high school diploma) and retention, although there is evidence (Flowers, 1993) that academic achievement while at college is positively associated with retention. For the purpose of this study, educational background was defined as whether a student received a GED or high school diploma.

**Accommodation.** An accommodation is any type of manipulation or adaptation done to an environment to provide equal opportunity for individuals who may have a disability. Three types of accommodation available at the college level are: academic adjustment, modification, or alteration of course examinations or providing support services.

**Support Services.** Support services are any designed programs or services offered by the disability support services center that aid in establishing equal opportunity at TCC for students with disabilities. Services provided by the TCC Disability Services Center were divided into five categories: Assistive technology, tutors, isolated testing, received two services, received no services.

**Assistive Technology** consists of any equipment or technology that can aid in manipulating the environment to increase chance of success. This category can include: Braille, tape recorders, books on tape, magnification devices, furniture, headphones, amplification devices, spelling devices, adaptive computers and film captioning.

**Tutors** are classified as any supplemental assistance from a staff or faculty member in any subject.

**Testing** involves allowing the opportunity of any student to utilize a separate center, outside of the classroom, for the purpose of taking a test or quiz.

**Retention.** While the variable of retention is often measured dichotomously, graduate versus non-graduate (Turner & Berry, 2000), Seidman (1996) suggests that this observation may
be too narrow and offered different perspectives for measuring retention. Specifically, Seidman offers successful credit hour completion as an operational definition of retention. Wild and Ebbers (2002) concur that tracking credit hours completed, over time, will assist programs in increasing retention rates. This operationalization of the retention variable, in the manner of measuring successful hours completed, has been used in the literature albeit at a smaller frequency (Glass & Garret, 1995). The present study defined retention as the enrollment and successful completion of courses as a means towards the successful completion an Associate’s degree (A.A.).

**Summary**

The purpose of this chapter was to introduce the topic of the research study, which is the possible relationships among type of disability, type of diploma upon entrance to college, age, and academic retention rates. Despite laws mandating accommodations for students with disabilities and the efforts of colleges and universities to comply and to accommodate students with disabilities, this population still faces barriers to participation that may affect the chances of their continuing higher education to completion. Owing to the increasing numbers of incoming freshmen who have disabilities, it is important for administrators, educators, and counselors to have as great an understanding as possible of the needs of these students. The present study will contribute to this body of knowledge by examining whether the nature of prior educational experience (HS diploma or GED), type of disability, and type of service received are related to whether or not students with disabilities drop out or remain enrolled. The next chapter of the study reviews the research literature on these topics in depth.
CHAPTER 2
REVIEW OF THE LITERATURE

The first chapter of this study introduced the following research question: What is the relationship between type of disability and retention with respect to use of services? In this study, retention will be defined as continuing to degree completion through number of credit hours completed. Variables of interest are gender, education (GED vs. high school diploma), and support services. The purpose of the present chapter is to review the research available on these variables in the context of the history of college education for students with disabilities. Subsequent sections are ordered accordingly.

Historical Overview of College Students with Disabilities

Until the early 1900s, education for people with disabilities, if provided at all, was generally limited to special schools for people with sight or hearing impairments. Accommodations for persons with disabilities were virtually non-existent. For example, Annie Sullivan, Helen Keller’s tutor, contracted trachoma at the age of five. When her mother died and her father abandoned the family, the sight-impaired child was sent to the Tewksbury, Massachusetts poorhouse. At the age of 14 she was rescued and sent to the Perkins Institution for the Blind in Boston, where she learned to read and write. In 1900, as Helen Keller’s tutor and companion, Sullivan attended classes at Radcliffe (which was then an “annex” to Harvard University) and translated the lectures by spelling the words into Keller’s hand. However, when Keller, who was both blind and deaf, took exams at Radcliffe, Sullivan was not allowed to accompany her, and Keller had to rely on her memory alone (Ozick, 2003).

As late as the 1960s, many students with disabilities were refused admission to colleges and universities in the United States because they had disabilities. For example, a survey of 92 Midwestern colleges and universities in 1962 found that 65 colleges or universities would not accept students who used a wheelchair (Angel, 1969). Fonosch (1980) cited a 1974 survey of 1,000 four-year colleges that found that 18% of colleges surveyed rejected applicants who were blind, 27% rejected applicants in wheelchairs, and 22% rejected applicants who were deaf. Before 1973, the only federal law that provided extensive protection for people with disabilities was the Fourteenth Amendment, which requires states to provide for the equal protection of persons and ensure adherence to due process. In addition, federal law 42 U.S.C. Section 1983
(Civil Action for the Deprivation of Rights) permits a plaintiff to receive a jury trial and to be awarded damages where state action is responsible for a violation of federal, constitutional or statutory rights (Thomas & Russo, 1995, pp. 10-15). However, these laws did not provide persons with disabilities with protection specific to their situation in the same way that other laws provided protection on the basis of race, gender, and other forms of discrimination. Congress enacted the Rehabilitation Act and the ADA to provide additional protection and to extend coverage into the private sector.

Section 504 of the Rehabilitation Act of 1973 requires that no person with a disability who is otherwise qualified may be denied participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance due to disability (Rehabilitation Act of 1973, 29 U.S.C. Section 794(a)). Although this statute applies only to public and private recipients of federal aid, nearly all public and most private colleges are recipients, either directly or indirectly. In other words, if aid, such as federal financial aid to students, is received anywhere within a college, the entire institution must comply with the act's requirements. To show compliance, a college must file an assurance of compliance. This is a document stating that the institution does not discriminate based on disability. The college must also give notice that the recipient's program does not discriminate based on disability, identify a specific employee to deal with compliance issues, conduct a self-evaluation, take voluntary action to remedy circumstances that may have limited the participation by students with disabilities, develop grievance procedures, and remedy violations of the act (McCarthy, Cambron-McCabe, & Thomas, 1998, p. 168). The Office for Civil Rights (OCR) is responsible for much of the enforcement of Section 504 in educational institutions.

In addition to Section 504 of the Rehabilitation Act of 1973, Title II of the ADA prohibits public entities such as state government, public schools, public colleges from denying qualified persons with disabilities the right to participate in or benefit from their services, programs, or activities, and from discriminating against such individuals if the exclusion or discrimination is due to the person having a disability (ADA of 1990, 42 U.S.C. Section 12132). The OCR also is responsible for the enforcement of Title II of ADA.

**Conceptual Framework**

Tinto (1975; 1987; 1993) constructed a student retention theory that can be utilized for examining particular variables that influence student departure. The model ascribes both pre-
entry variables as well as institutional integration concerns as major contributors to a student’s decision to leave college.

Pre-entry variables such as prior schooling and skill level have been identified as a predictor of academic persistence (Smith, Edminster, & Sullivan, 2001). Likewise, other variables identified by Tinto have also been validated by the literature. Family background, such as the level of academic completion (Pascarella & Terenzini, 1991) and socioeconomic status (Astin, 1993) has been demonstrated to have a relationship with retention. Following this thought process; the pre-entry grouping can be assumed to include pre-college degree attainment of either a high school diploma or GED which is a proposed area of study for the current research.

Tinto suggests that institutional integration concerns include both formal and informal experiences with faculty, peers, and programs. Bonds are developed through participation in these opportunities and increase student investment with the university (Tinto, 1987). The belief is that when an agreement is derived between institution and faculty within the context of student retention, students are more apt to continue their academic careers. Tinto (1990) continues:

Students are more likely to stay in schools that involve them as valued members of the institution. The frequency and quality of contact with faculty, staff and other students have repeatedly been shown to be independent predictors of student persistence. (p.5)

Using this approach, the proposed study is predominantly concerned with programs offered at post-secondary level and effects with student departure.

Summarizing, it is clear that programs and services that promote the recommended interactions are a key component to assisting student retention. Furthermore, with an increased focus on inclusion on college campus, traditionally underrepresented populations, such as persons with a disability, are on the rise. The natural progression of Tinto’s environmental interaction theory is to apply the standard findings to nontraditional student populations.

**Types of Disabilities**

According to the ADA of 1990, a person with a disability is anyone who has a physical (e.g., quadriplegia) or mental (e.g., anxiety disorder) impairment that substantially limits one or more major life activities, has a record of such an impairment, or is regarded as having such an impairment. Disabilities are usually classified as learning related, physical or health related, and/or psychiatric. In terms of postsecondary education, a qualified student with a disability is
College enrollments of students with disabilities have been steadily increasing in recent years. In the 20 years between 1978 and 1998, enrollments of college students with disabilities increased to 140,142, (a 6% increase) to 9% of all incoming freshmen (HEATH Resource Center, 1995; 1998). A more recent report by the National Council on Disability (2000) indicated that as many as 17% of all students attending higher education programs are now identified as having a disability. In 1994, 40% of students had orthopedic and neurological related disabilities; the remainder reported learning disabilities, visual impairments, and other physical and psychiatric disabilities (Department of Health, Education, and Welfare, 1995). In 1999-2000, 29% of students with disabilities had an orthopedic or mobility impairment, 17% had a mental illness, 15% a health impairment, 12% a visual or hearing impairment, 11% a learning disability, and 15% had some other type of disability (NCES, 2003). This section of the chapter describes the types of disabilities found among contemporary college students.

Learning Disabilities

Of particular significance in recent years has been the growth in the number of students with learning disabilities. Over 35% of the freshmen in 1996 who reported having a disability reported having a learning disability. This represents an increase of 10%, from 24.9% in 1991 (HEATH Resource Center, 1998). In 1999, Lewis and Farris surveyed 1,000 postsecondary institutions in the United States and estimated that 195,870 students had identified themselves as having a learning disability, representing 1.34% of the national population of 14.6 million students. Learning disabilities include dyslexia, attention deficit hyperactivity disorder (ADHD), and others listed in the fourth edition of the American Psychiatric Association’s (APA) Diagnostic and Statistical Manual of Mental Disorders, fourth edition (DSM-IV).

The increased numbers of students with learning disabilities have challenged faculty and colleges to alter the way they teach. Many professors believe that all students should meet the same set of requirements, within the same period of time (Morse v. University of Vermont, 1992). Research conducted by Sweener, Kundert, May, and Quinn (2000) indicated that many faculty feel uncomfortable providing students with accommodations, particularly those that demand additional time and effort on the part of the instructor. In addition, faculty are not always prepared to change their instruction to address the individual needs of students or to find
appropriate, fair, and reasonable accommodations (Morse v. University of Vermont, 1992). This trend is offset somewhat by the help provided by administrative units such as student disability services. Such units review students’ documentation and determine eligibility status and appropriate accommodations and adjustments, when applicable.

Health Impairments

The health impairments category of disability includes individuals with physical conditions which do not affect cognitive functioning, such as asthma, and some that do. Some health impairments such as environmental illnesses, allergies, and chronic fatigue syndrome can impact reading and writing due to deficits in attention, organization, distractibility, and concentration (Books, 1998; Glines & Rapp, 1988; Hadjistavropoulos, Dash, Hadjistavropoulos, & Sullivan, 2007; Simon, Katon, & Sparks, 1990). Other health impairments, such as spinal cord injuries, and hearing and visual impairments are discussed below.

Spinal cord injuries (SCI). A perusal of the literature revealed a dearth of information on college students with SCI. Furthermore, within resources for adults with SCI, educational considerations are rarely addressed (Shannon, 2003). In 1992, Krause investigated the relationship between education level and employment among individuals with SCI. Over 70% of the participants with a total of 16 years of education were gainfully employed, compared with only 3% of participants with less than 12 years of education. Later research by Krause and Anson (1997) revealed that post-injury education, rather than total years of education obtained, seems to be the primary steppingstone to gainful employment for individuals with SCI.

In a study of 245 college students with disabilities (14.7% with spinal cord injuries), none of the students were able to accurately describe how the ADA protects them; further, they were not confident in their ability to disclose their disability to an employer (Thompson & Dickey, 1994). In addition, being a client of vocational rehabilitation or having participated in career counseling did not account for any of the variability in the study’s factors. According to Thompson and Dickey, this result may indicate that students were not receiving adequate skills training from their counselors. Further misunderstanding of students with SCI among university counselors was found in a study by Javorek (2001). More specifically, 193 counselors employed in university counseling centers across the United States expressed an assumption that students with SCI would have more difficulty with issues of body image, sexuality, dating, and discrimination than would students with other disabilities. Considering the gap in the research on
college students with SCI and the findings of studies that do exist, further research should investigate the specific needs of college students with SCI.

**Hearing impairments.** Research indicates that hearing-impaired students who do not use available support services are more likely to drop out of college. In fact, the college dropout rate for students with hearing impairments is 71%, compared to a 47% dropout rate for students without disabilities (Marschark, Lang, & Albertini, 2001). Hearing-impaired students who drop out of college have reported feeling isolated. Brown (1991) interviewed 30 full-time hearing-impaired students at the Rochester Institute of Technology (RIT), a setting designed specifically to integrate deaf and hearing students. Although the students with hearing impairments were placed successfully on the campus with hearing students for educational purposes, social integration did not occur. Similar results were found by Foster, Long, and Snell (1999), whose research revealed that hearing-impaired students did not feel as much a part of the “university family” as did their hearing peers. In addition, the majority of the faculty indicated that they made few if any modifications for hearing-impaired students, as they believed that the support service staff was responsible for their success or failure.

According to Cuculick and Kelly (2003), if universities are to provide effective support and guidance to hearing-impaired students, faculty and support staff needs to have an in-depth understanding of the students' reading and language skills. Cuculick and Kelly estimated that of all the hearing-impaired students enrolled in college, only 8% read at the 8th grade level or higher. Furthermore, about 3/4 of all hearing-impaired students entering college are likely to have received their earlier education in mainstream environments augmented by special services, with only 1/4 having graduated from schools specifically for the deaf that teach, among other things, communication skills (Seal, 1998).

Research suggests that hearing-impaired college students who are more comfortable in using speech are able to receive and send a greater amount and a higher quality of information than hearing-impaired students who are not comfortable using speech (Stinson, Liu, Saur, & Long, 1996). Considering these findings, there is concern that hearing-impaired college students coming from mainstream learning environments may not be receiving adequate preparation for college. Under the ADA, institutions are required to provide effective communication in the college classroom for students who are deaf. Interpreters are one of the most valuable sources of support a college can provide a hearing-impaired student (Marschark et al., 2001).
Visual impairments. Research indicates that only about 37% of high school graduates with visual impairments attend postsecondary school, compared with 78% of high school graduates generally (Wagner & Blackorby, 1996). Furthermore, outcome data from the 21st Annual Report to Congress and the National Longitudinal Transition Study related to youths with visual impairments indicate that postsecondary education does not translate into increased employment opportunities (Nagle, 2001). Therefore, it is vital that universities ensure that their visually impaired students are receiving effective and meaningful support services.

Acquisition of information is vital in academic life, and students with visual impairments should receive the same degree of access as their sighted peers. Learning to engage actively in listening requires the development of programs that respond to their unique educational needs (Tuncer & Altunay, 2006). Social support is positively related to visually impaired students’ success in post secondary education. However, research shows that nondisabled students are less at ease interacting with peers who have disabilities than with those who are able-bodied (Fichten, Robillard, & Tagalakis, 1991). In addition, research indicates that people have more difficulty understanding low vision than blindness (Roy & MacKay, 2002). Hodges and Keller (1999) recommend that assignments and projects that bring together students with and without visual impairments might facilitate social relationship for visually impaired college students.

Psychiatric Disabilities

Another significant group is students with psychiatric disabilities, who can have academic deficits due to cognitive processing problems (Thomas & Grimes, 1987), which can be exacerbated or improved with medication. Likewise, emotional disorders (e.g., depression), in which cognitive processing problems are absent, can also have a significant impact on students (American College Health Association [ACHA], 2006). In 1995, Kessler, Foster, Saunders, and Stang (as cited in Megivern, Pellerito, & Mowbray, 2003) estimated that nearly 4.29 million people would have graduated from college had they not had a serious mental illness. A number of studies have shown that between 5% and 12% of the college population reports emotional difficulties serious enough to warrant psychiatric intervention (Megivern et al., 2003).

Loewen’s 1993 work (as cited in Megivern et al., 2003) indicated that barriers to participation in higher education by this group of students include side effects of medication, poorly coordinated care among service providers, lack of faculty support, and social stigma. In a study of the experiences of college students with mental illness, Megivern et al. (2003) found
that approximately 36% of individuals surveyed cited mental illness as their reason for dropping out of college. Nearly 22% attributed their dropping out to lack of integration into campus life. Further, when asked what could have prevented their departure from college, 16% of respondents in this study said that coordinated educational and mental health services (such as supported education or case management) would have helped; 20% mentioned accessible mental health services; 9% said that more support from their peers would have helped them stay in college. However, 90% of respondents had not sought assistance from college counseling services or student disabilities services; in fact, many were unaware that such services existed. Those who did receive counseling found that although it was helpful, they did not receive adequate support in dealing with the effects of their medications on their cognitive abilities. The authors concluded that campus services for students with psychiatric disabilities should include better coordination of care between community mental health providers and college services, as well as support service development to enable this group of students to help with managing symptoms and side effects of medications, develop accommodations and provide psychoeducation.

In addition to serious and persistent mental illnesses such as schizophrenia, college students are also subject to other psychiatric problems that can interfere with completing their education. These include eating disorders, substance abuse, and depression, among others. These are discussed below.

**Eating disorders.** The pervasive desire to reach the “body beautiful” image developed by western society has decimated the self-image of young adults, mainly young women, for years. Many young women struggle to combat the never-ending barrage of media and Hollywood propaganda that pontificates thinness as ideal. The byproduct is a significant population of college students who are overzealous about body image (Bishop, Bauer, & Baker, 1998; Schwitzer, Rodriguez, Thomas, & Salimi, 2001).

It has been suggested that as many as 20% of college women might have eating disorders (Nielsen, 2000). They are usually diagnosed with anorexia, self-starvation, or bulimia,(cycle of binging and purging). Other estimates of less severely disordered eating patterns have been identified as high as 25% to 40% of the student body (Schwitzer et al., 2001) and as high as 64% in college females (Mintz & Betz, 1988). College males are also affected by eating disorders but are less likely to recognize and report symptoms (O’Dea & Abraham, 2002). According to Eliot
and Baker (2001), there is a general belief that eating disorders are a female problem, which often leads to misdiagnosis and silence among males.

**Substance abuse.** Perceptions of the social atmosphere on college campus have regularly included drastic imagery consistent with substance abuse. This thought process is not without warrant. Researchers continue to report the alarming incidence of abuse and the negative consequences that result (Arnstein, 1995; McMillan & Conner, 2002; Prendergast, 1994; Wechsler et al., 2002a; Wechsler, Lee, Nelson, & Kuo, 2002b).

Binge drinking, or the consumption of five or more drinks at one sitting, has been a primary concern of the recent literature. Findings report that two out of every five college students participate in this behavior (Wechsler et al., 2002a; Wechsler et al., 2002b). This drinking pattern has been suggested to increase delinquent behavior such as drunk driving, accidental injury, and sexual assault. In fact, approximately 50% of all sexual assaults on college campuses involve alcohol consumption by the perpetrator, the victim, or both (Abbey, 2002).

Drug usage, other than alcohol, also has been observed to be more prevalent among students on college campuses as compared to their non-college attending counterparts (McMillan & Conner, 2002). There is no consensus regarding the reason for the disparity, but a prevailing theory suggests that “for college and university students, it is a time when they are no longer under direct parental supervision, are faced with new social and academic pressures [and] enter an environment where the use of intoxicating substances...is normative” (Prendergast, 1994, p. 99).

**Emotional disorders.** The prevalence of elevated emotional distress on campus has been well documented throughout the literature (Adlaf, Gliksman, Demers, & Newton-Taylor, 2001; Astin, 1993; Bertocci, Hirsch, Sommer, & Williams, 1992; Furr, Westefeld, McConnell, & Jenkins, 2001; Rimmer, Halikas, & Schuckit, 1982; Roberts, Golding, Towell, & Weinreb, 1999; Rosenthal & Schreiner, 2000; Sax, 1997; Westefeld & Furr, 1987). Some observers report that between one half to three quarters of the student population may have significant emotional difficulties (Bertocci et al., 1992). The bulk of the research has identified depression as a leading concern on campus.

A 1987 study by Westefeld and Furr reported that 81% of surveyed self reported what they identified as depression. The follow-up study (Furr et al., 2001) identified a decrease in
perceived depressive psychopathology. Yet, a significant number, 53% of students surveyed, stated that they had experienced depression since entering college.

Some believe that the prevalence and intensity of emotional concerns are increasing (Heppner, Kivligham et al., 1994). In fact, in the aforementioned studies, suicidal thoughts occurred in 9-32% of students surveyed. In a national survey of 23,863 college students conducted by the ACHA (2006), 8.5% of the students reported they “seriously considered suicide” 1-10 times during the past year. Over 35% reported that they “felt so depressed it was difficult to function” 1-10 times during the past year. The students also ranked depression as one of the top 10 impediments to academic performance (ACHA, 2006).

Increased accessibility, services, and technology have increased the prevalence of students with a disability. The significant minority demands that quality mental health service, as well as other services, be available and accessible to the student population. The following section reviews information on a range of support services for college students.

**Student Support Services**

Smith, English, and Vasek (2002) assert that the college experience should involve a series of services intended for student growth beginning in the freshman year and continuing through to graduation. As all new students need to make adjustments, most universities have an orientation program for their incoming population. However, this type of support alone is not sufficient for students with disabilities. For example, Appleby (1994) found that nearly one-half of college students with disabilities seek personal counseling services and suggested that the kinds of issues related to their transition and adjustment can be very different from the problems presented by the nondisabled population owing to physical and attitudinal barriers. Furthermore, the number of college students with mental illness is increasing (Hodges, 2001). In their examination of data from a university counseling center located in a large Midwestern university, Benton, Robertson, Tseng, Newton, and Benton (2003) discovered that undergraduate students were more likely to seek services the longer they remained in school.

Hodges (2001) reported that many college counseling centers have moved away from dealing with academic issues and the developmental transition from home to college to diagnosing and treating major mood disorders and other emotional disturbances. Gallagher et al.’s (2000) survey of counseling center directors revealed that 82% of respondents said that in the previous five years, increasing amounts of time were being spent on mental health services.
with students who have serious psychological difficulties. According to Benton et al.’s (2003) research at a large Midwestern university, students who were seen frequently in the counseling center had complex problems such as anxiety, depression, and suicidal ideation, sexual assault, and personality disorders. In addition, the number of students seen each year with depression doubled and the number of suicidal students tripled.

**Mental Health Services**

In the case of student mental health, goals for college counseling centers can be drawn from early literature. Summarizing an article from 1920, the goal of university counseling centers is to preserve student mental health in order to reduce incidence of withdrawal, “forestalling of failure in the form of nervous and mental diseases,” “minimizing of partial failure in later mediocrity, inadequacy, inefficiency, and unhappiness,” and “the making possible of a larger individual usefulness by giving to each a fuller use of the intellectual capacity” (Williams, 1920, p. 301). Determination of impact resides within the fulfillment of these goals.

According to Patterson (as cited in Hodges, 2001), during the 1930s and 1940s, some scholars believed that counseling should be provided by faculty interested in the counseling field. Others argued that counseling provided by faculty should be limited to academic issues and that professional counselors should provide students with psychological services (Lloyd-Jones & Smith, as cited in Hodges, 2001). Today, the majority of student counseling is offered by mental health professionals in university counseling centers (Stone, Vespia, & Kanz, 2000), and is delivered through the use of brief therapy (Archer & Cooper, 1998; Borkovec & Whisman, 1996; Cooper & Archer 1999; Glasscote, Fishman, & Reifler, 1973; May, 1988; Talley, 1992).*Brief therapy.* The literature identifies brief therapy as one of the most utilized methods in addressing the broad range of campus concerns (Archer & Cooper, 1998; Borkovec & Whisman, 1996; Cooper & Archer 1999; Glasscote et al., 1973, 1988; Talley, 1992). The rationalization for brief treatment resides within the characteristics of the population. Students “are close in time to contributing factors and astute enough about their nature to be able to respond to psychotherapeutic measures rather quickly,” adding that, “their defenses have not yet hardened or crystallized into fixed but inappropriate patterns (Glasscote et al., 1973, p. 16). Other researchers agree that college students possess a population distinctiveness, which incorporates a high intelligence and an ability to focus in the present (Borkovec & Whisman, 1996; May, 1988).
In addition, Archer and Cooper (1998) offered a list of rationales for the usage of brief therapy on campus which include:

1. Growing research evidence of its effectiveness with a wide range of clients and problems;
2. The types of developmental, crisis, and situational problems often presented by students who are particularly well suited for brief therapy;
3. The realities of limited resources the necessitate rank-ordering services to provide as equitable a distribution as possible;
4. The need for consultation and prevention work on serious campus-wide issues, such as hiv, sexual violence, and diversity, that demand time and attention from college counselors;
5. The need for consulting and program development to help students integrate personal and classroom learning and use their educational opportunities effectively as higher education dollars are further stretched and less individual attention is available to students; and,
6. The growing demand for counseling created by the increasing awareness and acceptance of therapy as a reasonable and normal way to confront a problem. (p. 47)

However, there is no doubt that some exceptional cases will require longer outcome measures as well as referrals to outside resources (Benton et al., 2003).

Some researchers have proposed a situational adaptation of the abbreviated therapy as the most efficient method of treatment (Burrall, 1991; Chislom, 1998; Steenbarger, 1992; Whitaker, 1996). Summarizing the most pointed concerns, observers suggest that counselors may have to modify desired strategic methodologies to meet university-imposed time limits, which may lead to reduced effectiveness. In addition, long-term therapy to overcome profound disorders is suggested to be beneficial over time for prolonged adjustment, as well as, the cited economic advantages of the reduction of recidivism. Those opposed to the brief treatment approach argue that university centers are short staffed and unable to devote enough time to handle the more severe cases (Benton et al., 2003). As a result, these students are referred to out of house resources, which may become too costly and lead to a termination of services.

**Quality of mental health services.** The source of therapeutic services has also been a point of contention in the literature (Arnstein, 1995; Chislom, 1996; Coll, 1995; Stone et al., 2000). Criticisms of university counseling centers suggest lack of quality, competence, and supervision of counselors. Additionally, smaller colleges suffer with lacking resources (Stone et al., 2000) and under-supervised staffs (Coll, 1995).
A recent study (Stone et al., 2000) incorporating directors of university counseling centers spanning 38 states addressed concerns surrounding the quality and competency of the staff. It found that 94% were staffed with PhDs in counseling or psychology and 96% of staffers possessed credentials in their respective field. Furthermore,

… 65% of counseling centers reported 100% of their staff receiving training in the DSM-IV [with] a few counseling center directors (range 1-5) [reporting] that none of their staff members had training in the following areas: eating and mood disorders, sexual abuse, sexual orientation, and substance abuse. [Larger schools] had significantly more staff members than small schools, as well as more staff [with credentials such as] professional license, PhD in counseling/clinical psychology, master’s degree in another field, and predoctoral interns. (Stone et al., 2000, p. 502)

Smaller colleges, however, specifically community colleges, appear to be at a disadvantage in dealing with psychological disorders. Generally, the counseling staff at these institutions is focused on academic advisement (Coll, 1995; McAuliffe, 1992). Clinical supervision is also an issue for community college counselors. Coll (1995) observed that community college counselors receive much less supervision than school, community health, and private practice counterparts. Due to the smaller and under supervised staff, this area of college mental health appears to be in need of attention. Determining impact of counseling services may provide universities with reason to increase budgetary concerns and therefore, increase staff and/or propose inclusion of psychological services in smaller colleges that are not providing service at the present (Ryan, 2003).

**Vocational Counseling**

Following World War II, large numbers of former GIs flocked to colleges under the GI bill. The Federal Veterans Administration (VA) provided financial support for veterans to pursue higher education following military service. As a result, federal legislation was central in making a college education available for adult, married students, many of whom had been previously denied access to higher education owing to lack of funds. College counseling centers helped veterans by providing counseling services to individuals to whom higher education was a new experience. Federal funds provided assistance to veterans for vocational planning and also for their transition to college. With the VA emphasis on vocational preparation and job training, university guidance services expanded to assist in both academic and vocational development (Forest, as cited in Hodges, 2001).
Like all college students, students with disabilities often seek advice about their future careers. Although relatively little is known about career development processes in the lives of people with disabilities (Hershenson & Szymanski, 1992; Victor, McCarthy, & Palmer, 1986), the presence of a disability alone does not determine a person's career development (Szymanski & Hanley-Maxwell, 1996). Rather, career development is a process that involves the interplay of numerous factors beyond disability, including an individual's abilities, family, education, socioeconomic status, ethnic identity, culture, gender, self-efficacy, and eventually job satisfaction (Lent, Brown, & Hackett, 2000; Szymanski, Hershenson, Enright, & Ettinger, 1996). Through reviewing surveys of adults with disabilities conducted by the National Council on Disability, Kohler and Field (2003) found that individuals with disabilities lag far behind individuals without disabilities in employment.

Student Satisfaction with Support Services

Under Section 504 and the ADA, college and university DSP must provide reasonable accommodations to students with a disability in order to provide equal access to the institution's programs, classes, and activities (Ofiesh et al., 2002). However, services that are available to students with disabilities are not always effectively advertised or implemented (Rice-Mason, 2001). In a review, Stanley (2000) noted that West et al. conducted a study of a sample of 40 college and university students with disabilities. The purpose of West et al.'s study was to determine students’ satisfaction with accessibility, special services, and accommodations at their colleges. Respondents were asked to identify barriers to their education. Although most were satisfied with the services they had received, most stated that they had experienced barriers to their education. These included lack of understanding and cooperation on the part of administrators, faculty, staff, and other students; lack of adaptive aids and other accommodations; and problems with accessibility in buildings and grounds.

In a similar study, Elacqua (1996) surveyed 37 college students with various disabilities to assess their perceptions of the accommodation process at a medium-sized Midwestern university. Students were surveyed about particular accommodations requested and positive and negative aspects of the accommodation process. The survey also gathered descriptive information on perceptions of classroom accommodation requests, perceived instrumentality of classroom accommodations to enable students to achieve personal and academic objectives, availability of information regarding support and referral services, and the overall satisfaction...
with classroom accommodations. The majority of students felt satisfied with the accommodations they received and felt they were familiar with the referral procedures and support services available, but they felt that professors were not familiar with their disabilities or available services. The students felt that requesting a classroom accommodation was often stressful. The study went on to emphasize the need for in-service training about students with disabilities in higher educational institutions.

Faculty and social support factors. Denny and Carson (1994), in an effort to understand the perceptions of students with disabilities about their college climate, surveyed 41 students with disabilities from a large urban university. These students were surveyed to obtain their perceptions about how other students, faculty, and staff viewed them and to collect data about the accessibility features of the university campus. One-fourth of the students surveyed felt that the university community responded to them in a supportive manner. One-half believed that others did not react to their disability in any negative manner.

Denny and Carson (1994) developed a social attitude scale to measure the students' perceptions of their nondisabled peers' interaction with them. The scale identified social behavior as the strongest factor in explaining variance. Subjects who had a positive perception of others perceived less resentment from others. These subjects also made some recommendations to encourage acceptance and increase social contact for students with disabilities. These recommendations included faculty modeling of positive behavior in interacting with students with disabilities and increased use of cooperative work in classrooms. These participants believed that decreasing physical barriers could increase social interaction by way of improved access to various university-wide activities.

In a qualitative study a number of years before the passage of the ADA, Farbman (1983) explored the experiences of a select group of university science faculty members with students with disabilities. Analysis of in-depth interviews revealed that the faculty members mostly had contact with mobility impaired or visually impaired students. The approaches of the faculty members appeared to occupy opposite ends of a spectrum. Some were willing to modify their teaching styles, to give out copies of their notes, and to spend extra time outside of class. Other professors refused to do those things. With the exception of Braille terminals, the students with disabilities rarely used special equipment. Most academic accommodations involved logistical arrangements such as more time or scheduling. Accommodations seemed to be directly related to

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how the students approached the faculty members. The more articulate and precise the student was about his or her needs, the more likely he or she was to receive accommodations. The researcher concluded that the amount of autonomy allowed to professors by academic freedom may be detrimental to students with disabilities. Likewise, research conducted by Sweener, Kundert, May, and Quinn (2000) indicated that many faculty feel uncomfortable with providing students with accommodations, particularly those that demand additional time and effort on the part of the instructor. Farbman (1983) recommended that the possession of advocacy and negotiation skills would best enhance students’ educational opportunities.

Baggett (1994) surveyed 422 faculty of a large Northeastern metropolitan university about their awareness of students with disabilities. The university had a large population of students with disabilities which included learning disabilities, mobility impairments, visual and hearing impairments. The survey revealed that 77% of the faculty had taught five or fewer students with disabilities during the last 4 years. Faculty indicated that they could identify only students who disclosed their disability. Data analysis indicated that the faculty lacked experience teaching students with disabilities, were unfamiliar with the various disability rights and laws, and were unfamiliar with the various university-wide services available to these students with disabilities. Among the disability groups, the faculty was more familiar with teaching learning disabilities than the other groups of disabilities.

In an effort to understand the faculty attitudes and knowledge of disability laws, Benham (1995) conducted a mail survey study of three large universities in a Southern state. The purpose of the study was to examine the faculty's attitude toward students with disabilities, their knowledge of the ADA, their knowledge about various specific disabilities and how these three factors related to faculty rank, gender, age of faculty, academic area, years of teaching, prior experience with individuals with disabilities before university teaching, prior experience in accommodating people with disabilities, and the types of accommodations used. Data revealed significant independent relationships between gender of faculty member, and years of teaching experience in higher education and faculty attitudes toward students with disabilities. Both males and faculty members with more than 10 but less than 20 years of teaching experience in higher education tended to have more negative attitudes toward students with disabilities than females or faculty members with less than 10 or more than 20 years of teaching experience. The results
showed that in general faculty members appeared to have some preliminary knowledge about various disabilities.

Backles and Wheeler (2001) examined the perceptions of mental health issues among faculty. The study presented the faculty a questionnaire consisting of three questions pertaining to 15 common presenting problems such as anxiety, stress, death of a parent, eating disorders, substance abuse, suicidal ideation, and depression. The faculty was asked to report perceptions on a five point Likert scale ranging from no effect to very significant effect. The purpose of the research was to explore faculty perceptions pertaining to the effects of such stressors on academic performance, and to determine possible academic concessions pertaining to academic obligations.

More than 50% of the faculty sample believed 14 of the 15 presenting problems had a significant effect on academic performance. However, only crisis situations, death of a parent and rape, received comparable academic flexibilities. Other concerns rated as highly significant such as anxiety, depression, and substance abuse, did not receive corresponding concessions. This suggests that faculty understands the importance of mental health maintenance, but is less flexible when it pertains to academic obligation. As an area of concern, the authors suggest “proactive efforts [by] providing guest lecturers, facilitating class discussions, and presenting at departmental meetings” (Backles & Wheeler, 2001, p. 176). Nonetheless, the results report faculty’s acknowledgement of the impact of mental health services.

In summary, despite the availability of support services, many students are either unaware of the services or they are not properly implemented (Rice-Mason, 2001). In addition, not all faculties have experience teaching students with disabilities or are unfamiliar with the various disability rights and laws and available support services (Baggett, 1994; Elacqua, 1996). Students with disabilities have also reported experiencing a lack of understanding and cooperation on the part of administrators, faculty, staff, and other students, and inadequate accommodations (West et al., as cited in Stanley, 2000). Students who do not receive needed accommodations are more likely to experience anxiety, stress, and academic failure (Bradford-Kruse, Elacqua, & Rapaport, 1998). What can be discerned is that proper utilization of assistive services can effect student satisfaction and retention.


**Student Retention**

Improving student retention is one of the most important ongoing challenges for universities (Bradford-Kruse et al., 1998). The effectiveness of a university’s support services has a significant impact on college student retention, educational performance and degree completion. When examining the effectiveness of such programs on retention it is critical to not simply focus on the variable of retention, but similarly measured constructs such as persistence.

The reason for including persistence is the interchangeability of the concepts. Seidman (2005) believes the concept to be measured is defined by perspective. If the perspective is that of a student-initiated decision, the concept is described as persistence. However, when the perspective is from an institutional viewpoint it is identified as retention. Both can be measured through a “series of status to status ratios. These may be called transition ratios, persistence rates, retention rates, completion rates, cohort survival rates or graduation rates” (p. 32).

This inclusion is imperative when looking at the relationship of service usage within the community of individuals who have a disability. To gain a better understanding of service effectiveness the following section will examine general retention literature specific to the community college environment and effectiveness of both mental health services and non-psychiatric service as measured by both persistence and retention.

**Retention and the Community College**

The particular investigation into retention rates at the community college level is thin (Wild & Ebbers, 2002). Most of the outcomes derived from the literature, as it relates to college retention, were normalized on the figures obtained at four year universities. It is still unclear that models constructed from these studies can be generalized to community colleges (Elkins, Braxton, & James, 2000; Wild & Ebbers, 2002). Nevertheless, there is a developing amount of research that focuses attention at this category of institution.

Much of the research conducted in this area revolves around the theoretical operating standards of the community college system. Plainly, community colleges are to provide an open admission policy that is relatively inexpensive and geographically accessible (Craig & Ward, 2008). The tendency of this philosophy is to develop a student body that, often, is underprepared (Fike & Fike, 2008). McCabe (2000) points out that:

Ninety five percent of community colleges offer remedial education courses, most in multiple ability levels. Forty-one percent of entering community college students and 29
percent of all entering college students are underprepared in at least one of the basic skills (reading, writing, mathematics). (p. 4)

Remedial course work, described by McCabe (2000) has been directly indentified as a predictor of retention.

In a study by Fike and Fike (2008), a multivariate analysis was conducted to indentify indicators of retention between semesters. The study showed that successful completion in remedial reading, math, and writing had a powerful relationship on whether students progressed from semester to semester. Remedial reading was identified as the strongest predictor of persistence. While remediation is an obvious starting point in the discussion of retention, research identifies other variables unique to the two year university.

The community college is distinctive in the manner in which students can achieve goals. Goal attainment can be satisfied by any number of measures such as a certificate, continuing vocational education, associate’s degree or for personal growth (Derby & Smith, 2004; Kenneth & Vonseggern, 1991). Categories like continuing education and personal growth do not lend, well, to the concept of the oft dichotomously researched variable of retention. In these instances, the goal is not to obtain a degree or certificate but to reach a desired level of growth or enrichment. Once that level is achieved, academic pursuits are discontinued. Certainly, this is not classified as an academic failure, but much of the literature does not take into account these circumstances leading to low levels of retention (Conklin, 1993; Grimes & Antworth, 1996).

Other distinguishing characteristics on the community college campus include concentrations in first generation students and individuals from a lower economic background (Grimes & Antworth, 1996; Fike & Fike, 2008; Thayer, 2000). Both groupings of students have been shown to have reduced retention levels then the rest of their cohorts. While a large part of the retention literature deals with pre-entry variables, there are significant institutional predictors that influence retention.

A frequently studied predictor of retention at the community college level is grade point average (GPA) (Mohammadi, 1994; 1996; Stahl & Pavel, 1992). The consensus viewpoint suggests that there is a positive relationship between retention and cumulative GPA. Simply, the probability for retention increases with individual students overall grades. In addition, pre-entry GPA has also been recognized as maintaining a significant positive relationship with retention
The finding gives credence to the suggestion of Tinto’s belief that academic skill level, prior to post-secondary school, is relevant to student departure.

The philosophy of the community college system provides for many unique challenges in the form of pre-entry demographics. Retention levels are manipulated not only by pre-matriculation characteristics, but influenced by institutional predictors such as GPA and service usage. In the following section, particular attention will be focused on service usage and the disability community.

**Mental Health Services**

The impact of university counseling services is usually determined by student retention rates. A recent study (Turner & Berry, 2000) examined, through use of a six-year longitudinal assessment, if retention rates were higher among students who utilized mental health services with their non-using counterparts. A statistically significant difference in retention rate was identified in four out of the five academic school years. It was determined that students who utilized services had repeatedly higher retention rates. On average, the retention rate was 85.2% for counseled students and 73.8% for those of the general student population. The outcome confirms earlier studies in this area (e.g., Bishop & Walker, 1990; Wilson, Mason, & Ewing, 1997).

Referring back to William’s (1920) article, the goal of university counseling centers is to preserve student mental health in order to reduce incidence of withdrawal, “forestalling of failure in the form of nervous and mental diseases, minimizing of partial failure in later mediocrity, inadequacy, inefficiency, and unhappiness, [and] the making possible of a larger individual usefulness by giving to each a fuller use of the intellectual capacity” (p. 301). Literature supports the effectiveness of university mental health services in the attainment of these goals (Clark, Wettersten, & Mason, 1999; Hoffman & Mastianni, 1989; Mathers, Shipton, & Shapiro, 1993; Turner & Berry, 2000). Personal problems are often cited as a major self reported explanation for the cessation of educational pursuits (Meilman, Manley, Gaylor, & Turco, 1992; Payne, Pullen, & Padgett, 1996; Rummel, Acton, Costello, & Pielow, 1999).

As discussed by Turner and Berry (2000), personal problems could most probably be completely addressed by university mental health. The counseling outcomes of developing “a sense of social responsibility” and instituting “a more positive sense of self” (Hoffman & Mastianni, 1989, p. 17) support this notion. Furthermore, the goals set forth in 1920,
psychological distress has been identified as maintaining a higher negative correlation with maximum “intellectual capacity” (Haines, Norris, & Kashy, 1996; Parkinson, 2000; Spence, Duric, & Roeder, 1996). The consensus suggests that in the midst of a psychological stressor or prolonged psychological illness students have an overall diminished ability for academic excellence. However, observers have noted that participants in counseling often improve grade point average (Clark et al., 1999; Schwitzer, Grogan, Kaddoura, & Ochoa, 1993). While it is imperative to suggest that goals are being met, further potential impact can be derived from the beliefs of students and faculty as stakeholders.

Studies have indicated that both students and faculty are enthusiastic about maintaining accessible mental health services (Backles & Wheeler, 2001; Lore, 1997; Turner & Quinn, 1999). Turner and Quinn (1999) surveyed 346 college students from a western state university and found that 97% believed access to mental health services is critical.

Non-Psychiatric Disabilities

Faced with numerous challenges in higher education, students with disabilities are more likely than other students to leave college before attaining a degree (Horn & Berktold, 1999). According to Humphreys (1998), students with disabilities often find campus climates to be unresponsive to their needs, past experiences, and educational expectations. A number of studies have examined factors influencing the retention of college students with disabilities.

Zadra (1982) interviewed 52 mobility-impaired college freshmen at 11 higher educational institutions in the New York metropolitan area at the beginning and at the end of the 1980-81 academic year and compared students’ anticipated versus actual use of special college support services. In general, students in the sample were older than traditional college students, had graduated from public or private high schools, and said that getting a better job was the primary motivation for college enrollment. Although less than half (46%) of the students used a wheelchair, all had limitations in mobility. Findings in the study indicated all students overestimated their need for academic services. They all agreed upon the need for rest areas and personal counseling. Ambulatory students underestimated their need for architectural accommodations, notably ramps, handrails, and curbcuts. However, wheelchair users accurately anticipated services needed for mobility. Evaluations of services were generally positive although elevators and lavatory facilities were strongly criticized. Zadra (1982) suggested strategies such as bringing potential freshmen on campus to check facilities prior to enrollment.
Also, pre-registration interviews between college counselors and entering freshmen were suggested as one way to gather accurate information about the needs of mobility impaired students.

Keim (1996) examined academic achievement and use of various academic support services among 125 university students with learning disabilities. Results supported the effectiveness of university support programs toward academic achievement for students with disabilities. In a similar study, English (1993) conducted a survey to determine the role of the college’s disability support services in integrating and retaining 35 hearing impaired college students. Results showed that support services had a direct effect on academic integration, and an indirect effect upon intention to stay in college. However, support services had no significant effect on social integration. Students felt moderately integrated into their academic systems, but did not feel as integrated into their social systems. The college’s support services did not contribute to social integration.

Allison (1994) examined the use of reasonable accommodations for university students with disabilities and their relationship to graduation rates in a large suburban university. There were no substantial differences between graduates and students who dropped out in terms of accommodation usefulness. However, there were significant differences in terms of social support network. Students who dropped out reported lack of social support (family, friends, and teachers) as one contributing factor.

Blake (1992) sought to determine whether academic and social integration could differentiate levels of academic persistence (categorized as returners and nonreturners) among students with disabilities at a large urban university. The sample consisted of 59 randomly selected students with reported disabilities who had attended the university between August 1984 and August 1990, 78 students with disabilities who were currently enrolled with the institution's disability services office and 150 students with no reported disabilities. Unlike the results from English’s (1993) and Allison’s (1994) studies, the academic and social integration variables did not discriminate between nonreturners and returners or between students with disabilities and students with no reported disabilities.

Flowers (1993) conducted a correlational study predicting academic achievement and academic persistence among students with disabilities at a higher education institution. Results suggested that academic achievement, as measured by GPA, was the best predictor for academic
persistence, which was measured by the number of semesters attended. Academic persistence was found to be the best predictor of academic achievement. Also, acceptance of disability was a significant predictor for both academic achievement and academic persistence. Finally, a significant positive relationship was found between age (18-25 years of age) and academic achievement and academic persistence. Older students tended to have better GPAs and had attended more semesters than younger students.

While there are instances where students may overestimate the need for accommodations, it is clear that support services can assist in several facets of campus life. Primarily, academic integration, in the form of increased performance and retention, is the oft cited result of service utilization. The literature is mixed on the helpfulness of such programs to socially integrate students to their respective campus. However, it is notable that while some researchers are unwilling to attach socially integrative benefits to program utilization, students who drop out have self-reported having less support.

**Education (GED vs. HS Diploma) at Entry and Retention**

Research indicates that students with disabilities are not as academically-prepared for college as their non-disabled peers. As such, students with disabilities are less likely to be academically qualified for admission into a 4-year college (Horn & Berktold, 1999). However, no information could be found in the literature regarding a possible relationship between education at college entry of students with disabilities (i.e., GED vs. high school diploma) and retention. On the other hand, research conducted on the general population suggests no increase in performance for those who graduate with a high school diploma or GED (Soltz, 1996). This represents an important gap in the research and is therefore of interest in the present study.

In what follows, information on research into predictors of post-secondary education in students with disabilities is reviewed. It should be noted that statistics on the percentage of GED exam takers with disabilities are not published in the annual report, *Who Took the GED?* However, national survey data have indicated that those with disabilities are less likely to earn a GED than others are (Marder & D'Amico, 1992). Further, of all persons who took the GED exam between 1972 and 1998 (some of whom were not school dropouts), approximately 60% passed (ACE, 1998).
Predictors of Post-Secondary Education

When considering the participation of school leavers in postsecondary education, it is important to examine both the rate of participation and the predictors of participation. The rate of participation has received increased attention since 1984, which is when the Office of Special Education and Rehabilitation (OSERS) of the U.S. Department of Education first identified transition to postsecondary education or work as a priority (Will, 1984). Since 1984, OSERS has funded more than 300 model demonstration projects in the area of transition, including approximately 100 projects that focus on postsecondary education as a transition outcome (Kohler, Rubin, & Rusch, 1994). In a review, Bursuck and Rose (1992) found participation rates ranged from 9% to 50% of the samples of school leavers with disabilities.

The National Longitudinal Transition Study (NLTS) also examined the participation of school leavers with disabilities in postsecondary education. NLTS findings showed an average participation rate of 14% for all school leavers (N = 1,741) who had been out of high school for less than 2 years (Wagner, et al., 1992). Graduates had higher participation rates (19%) than did dropouts (6%), and people with physical or sensory disabilities had higher participation rates (28%-36%) than did those with cognitive, emotional, or severe disabilities (4%-17%). The NLTS found no large differences in participation based on gender or ethnicity.

The NLTS is one of few projects that also explored the predictors of participation in postsecondary education (Wagner, Blackorby, Cameto, & Newman, 1993). Logistic regression analysis techniques were used to examine the predictive ability of five variables, which, it should be noted, do not include type of disability: Gender of the school leaver, "mental skills" of the school leaver, the presence or absence of "transition planning" that included postsecondary education as a transition goal, the presence or absence of parental expectations that their child would participate in postsecondary education, and student grade-point average (GPA) as a presumed indicator of high school academic achievement.

The predictive models included participation in postsecondary academic training and postsecondary vocational training as separate dependent variables (Wagner et al., 1993).

Although neither gender nor "mental skills" predicted either of the dependent variables, it should be noted that the results regarding mental skills may have reflected a measurement problem. This is because the mental skills variable was assessed by parent ratings on five somewhat limited items: telling time, reading common signs, counting change, looking up names
in a telephone book, and using the telephone. Although these skills are important, it is probable that the construct "mental skills" is more complex and comprehensive than these five items alone. However, parental expectations and transition planning were found to be positively related to both dependent variables. Likewise, student high school GPA was found to be positively related to participation in an academic postsecondary program.

Conclusion

This chapter reviewed research available on the history of college education for students with disabilities, types of disabilities, legal provisions for students with disabilities, and research focusing on retention, support services and other factors possibly influencing retention. It is notable that prior to the 1970s, students with disabilities faced major obstacles to participating in higher education. Between 1973, with the passage of Section 504 of the Rehabilitation Act and 1990, when the Americans with Disabilities Act (ADA) was passed, colleges and universities made uneven progress in making their programs more accessible. However, once the ADA was passed and amended and regulations were promulgated, institutions increased their efforts. Nevertheless, students with disabilities still face barriers to participation that may have an impact on their continuing higher education to completion. Research indicates that little is known about the relationship between education at enrollment (whether GED or high school diploma) and retention. Similarly, little is known about the relationship between type of disability and retention. It does appear that accessibility of support services, including positive faculty attitudes, has a positive relationship with retention.
CHAPTER 3
METHODOLOGY

This chapter reiterates the purpose of this study and introduces the methodology implemented. The research questions and hypotheses are provided, as well as variables, research design, participant selection, instrumentation, and data collection and analysis. Limitations of the study are discussed.

The purpose of this study was to determine potential relationships between college student disability classification and academic retention rates. Further variables that might influence college students' pursuance of graduation were also examined. These were: age, educational background (GED vs. high school diploma), and type of support services.

Research Question and Hypotheses

This study posed the following research questions: What are the relationships between types of disabilities, educational background, use of support services, age, and academic retention rates? Specifically:

1. What is the relationship between use of services and retention when controlling for age?
2. What is the relationship between educational background (high school diploma or GED) and retention rates with respect to use of services?
3. What is the relationship between type of disability and retention with respect to use of services?

In an attempt to answer the research questions, the following hypotheses were tested:

H₁: Type of support services has a significant effect on retention when controlling for age.
H₂a: Type of high school diploma has a significant main effect on retention.
H₂b: Type of support service has a significant main effect on retention.
H₂c: There is a significant interaction between type of high school diploma and type of service with respect to retention. That is, the relationship between diploma and retention is not the same for different levels of use of services.
H₃a: Type of disability has a significant main effect on retention.
H₃b: Type of support services has a significant main effect on retention.
H₃c: There is a significant interaction between type of disability and type of service with respect to retention. That is, the relationship between type of disability and level of retention is not the same regardless of use of services.

Variables and Research Design

Independent Variables

This study was based on the assumption that certain variables, in relation to disability, have a relationship to college retention. These variables included type of disability, educational background, age, and support services, and were the non-manipulated independent variables used in this study.

Type of disability. Too few participants were identified to include all areas of disability recognized by the TCC Disability Service Center. Therefore, the two most prevalent groupings, mental/psychiatric and persons with learning disabilities were the particular areas used in this study.

Educational background. Whether a student received a GED or high school diploma was determined from the student records.

Support services. Services distributed by the TCC Disability Services Center were disseminated into five categories: Assistive technology, tutoring, and isolated testing, received two services, received no services.

Assistive technology included the provision of any technology or service administered for environmental accommodation. Readers who assisted in the reviewing and reading of texts also will be included in this category, as well as any assistive technology such as tape recorders.

Tutoring included any form of structured tutoring directed from the disability services center.

The isolated testing category consisted of alternate test-taking environments (isolation in a suitable area in order to reduce distractions and control potential anxiety), and proctored exams in which students were aided with reading comprehension.

Age. The chronological age of each participant was documented for effect. The categories of age were dependent upon the distribution of the sample.
Dependent Variable

In order to assess student retention as accurately as possible, retention was identified by interval scale rather than dichotomously (either/or; graduated/didn't graduate). Thus, the dependent variable of retention was measured through the identification of successful credit hours completed (0-60) as they progress to the acquisition of an associate’s degree. Retention was measured as the total credit hours completed in nine semesters of attendance.

Research Design

The research design was a co-relational design investigating factors related to level of retention in students with disability.

Participants

The study sample consisted of all students who registered with the Tallahassee Community College (TCC) Disability Services Center in the academic years of 2002-2005. In order to utilize this student population for this study, approval from the Florida State Human Subjects committee and the Tallahassee Community College office of enrollment was sought and approved. In order to be eligible for the study, the students must be no longer attending the college. This aspect is integral to maintaining the categorization of information as archival, and implies that no consent or compensation to participants is necessary.

As indicated in Table 1, the sample was almost evenly divided on gender, with a slight majority (52%) being female. The majority of participants were Caucasian (72%). Ninety-five percent of participants were under the age of 30 years. Of those, three-quarters (73%) were between the ages of 15 and 19 years. The majority (80%) of participants had a high school diploma. Disability types were learning disability (66%) and mental disability (34%) (Table 2).

One-third (33%) of participants with learning disabilities were diagnosed with a mathematics disability (Table 2). Reading disabilities accounted for 20%, followed by speech/language (8%), dyslexia (2%), and auditory processing (≤ 1%). Twenty percent (20%) of participants with a mental disability were diagnosed with Attention Deficit/Hyperactivity Disorder. The remainder of participants with mental disabilities reported a diagnosis of Bipolar disorder (5%), Attention Deficit Disorder (4%), traumatic brain injury (4%), Anxiety disorder (2%), autism (1%), and Obsessive-compulsive disorder (less than 1%).
Table 1
Sample Demographics (N = 250)

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>121</td>
<td>48.4</td>
</tr>
<tr>
<td>Female</td>
<td>129</td>
<td>51.6</td>
</tr>
<tr>
<td><strong>Ethnicity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>179</td>
<td>71.6</td>
</tr>
<tr>
<td>African American</td>
<td>57</td>
<td>22.8</td>
</tr>
<tr>
<td>Asian</td>
<td>2</td>
<td>0.8</td>
</tr>
<tr>
<td>Other</td>
<td>12</td>
<td>4.8</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15 – 19</td>
<td>177</td>
<td>73.4</td>
</tr>
<tr>
<td>20 - 24</td>
<td>42</td>
<td>17.4</td>
</tr>
<tr>
<td>25 – 29</td>
<td>11</td>
<td>4.6</td>
</tr>
<tr>
<td>30 or more</td>
<td>11</td>
<td>4.6</td>
</tr>
<tr>
<td><strong>High School Education</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GED</td>
<td>50</td>
<td>20.0</td>
</tr>
<tr>
<td>Diploma</td>
<td>200</td>
<td>80.0</td>
</tr>
<tr>
<td><strong>Disability</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mental</td>
<td>90</td>
<td>36.0</td>
</tr>
<tr>
<td>Learning Disability</td>
<td>160</td>
<td>64.0</td>
</tr>
</tbody>
</table>

*Age for 9 students was missing.*

Services received (Table 2) ranged from no services (37%) to tutoring (11%). Twenty-two percent (22%) received assistive technology services, 14% received isolated testing (14%), 11% received tutoring, and 16% received two services.

The majority (69%) of participants did not obtain a degree. Thirty-one percent (31%) graduated with an Associate of Arts degree.
Table 2
Sample Educational Characteristics

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnosis of Learning Disability</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mathematics</td>
<td>83</td>
<td>33.2</td>
</tr>
<tr>
<td>Reading</td>
<td>49</td>
<td>19.6</td>
</tr>
<tr>
<td>Speech/language</td>
<td>21</td>
<td>8.4</td>
</tr>
<tr>
<td>Dyslexia</td>
<td>6</td>
<td>2.4</td>
</tr>
<tr>
<td>Auditory processing</td>
<td>1</td>
<td>0.4</td>
</tr>
<tr>
<td>Diagnosis of Mental Disability</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attention deficit/hyperactive</td>
<td>50</td>
<td>20.0</td>
</tr>
<tr>
<td>Bipolar</td>
<td>13</td>
<td>5.2</td>
</tr>
<tr>
<td>Attention deficit</td>
<td>11</td>
<td>4.4</td>
</tr>
<tr>
<td>Traumatic brain injury</td>
<td>9</td>
<td>3.6</td>
</tr>
<tr>
<td>Anxiety</td>
<td>4</td>
<td>1.6</td>
</tr>
<tr>
<td>Autism</td>
<td>2</td>
<td>0.8</td>
</tr>
<tr>
<td>Obsessive compulsive</td>
<td>1</td>
<td>0.4</td>
</tr>
<tr>
<td>Services Received</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Received no services</td>
<td>92</td>
<td>36.8</td>
</tr>
<tr>
<td>Assistive Technology</td>
<td>56</td>
<td>22.4</td>
</tr>
<tr>
<td>Received two services</td>
<td>39</td>
<td>15.6</td>
</tr>
<tr>
<td>Isolated testing</td>
<td>35</td>
<td>14.0</td>
</tr>
<tr>
<td>Tutoring</td>
<td>28</td>
<td>11.2</td>
</tr>
<tr>
<td>Achieved Associate Degree</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>78</td>
<td>31.2</td>
</tr>
<tr>
<td>No</td>
<td>172</td>
<td>68.8</td>
</tr>
</tbody>
</table>
As shown in Table 3, the percentage of participants completing 20 semester hours increased from 5.2% after two semesters to 27.6% after three semesters.

Table 3
Percent Achieving AA by End of Second and Third Semesters

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>At least 20 credits after two semesters</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>13</td>
<td>5.2</td>
</tr>
<tr>
<td>No</td>
<td>237</td>
<td>94.8</td>
</tr>
<tr>
<td>At least 20 credits after three semesters</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>69</td>
<td>27.6</td>
</tr>
<tr>
<td>No</td>
<td>181</td>
<td>72.4</td>
</tr>
</tbody>
</table>

Table 4 shows the sample descriptive statistics for disability by participant gender and degree. Most participants had learning disabilities ($n = 166$) followed by mental disabilities ($n = 86$). With respect to mental disability, 58% of participants were females and 42% were males. With respect to learning disability, 48% were female and 52% were males.
Table 4
Sample Descriptives for Disability by Gender and Degree

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Disability by Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mental</td>
<td>84</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>35</td>
<td>41.7</td>
</tr>
<tr>
<td>Female</td>
<td>49</td>
<td>58.3</td>
</tr>
<tr>
<td>Learning disability</td>
<td>166</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>86</td>
<td>51.8</td>
</tr>
<tr>
<td>Female</td>
<td>80</td>
<td>48.2</td>
</tr>
<tr>
<td><strong>Disability by Degree</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mental</td>
<td>84</td>
<td></td>
</tr>
<tr>
<td>No degree</td>
<td>64</td>
<td>76.2</td>
</tr>
<tr>
<td>AA</td>
<td>20</td>
<td>23.8</td>
</tr>
<tr>
<td>Learning disability</td>
<td>166</td>
<td></td>
</tr>
<tr>
<td>No degree</td>
<td>108</td>
<td>65.1</td>
</tr>
<tr>
<td>AA</td>
<td>58</td>
<td>34.9</td>
</tr>
</tbody>
</table>

**Procedures**

**Data Collection**

The sensitive nature of student records required that a research aide, employed by Disability Support Services, be utilized to obtain pertinent information. The primary investigator conducted a meeting with the research aide to discuss information regarding educational background (attainment of high school diploma or GED), disability classification, and number of successful credit hours completed at TCC. Frequency of student usage of support services was obtained by the research aide from the physical records kept by Disability Support Services. Data concerning disability classification and educational background were obtained through the DSS database. All data were anonymous and condensed into a singular database for analysis.

Data were collected for students who registered for the first time, at TCC and with disability support services, in the academic years of fall 2002-2005 and measured for three years or nine semesters from the time of matriculation. The time frame was selected to increase the
probability that any student included in the study would no longer be active at TCC and thus, remain viable.

Data Analysis

Descriptive statistics was collected pertaining to the mean credit hours completed for each of the nine semesters measured. Data was then plotted on line graphs to determine relevant trends in retention.

In addition, data collected were analyzed using 1 Analysis of Covariance (ANCOVA) and 2 separate Analyses of Variance (ANOVA). The examination of research question 1 required an ANCOVA with the covariate as age and independent variable as the type of service used (tutoring, assistive technology, isolated testing, two services used and no services used). The relationship between these service levels and retention was examined. Pair-wise t-tests were used as post hoc tests to determine where the differences due to type of service were. As there were 10 pair-wise tests, alpha was corrected to .005 using Bonferroni’s correction factor (.05/10) A 2x5 ANOVA was used to inspect research question 2 with 2 levels of educational background (GED and high school diploma) and 5 levels of service with respect to retention. With a significant interaction, t-tests were conducted for each service level to determine if there is significant difference in retention between GED and high school diploma.

To investigate research question 3, a 2x5 ANOVA was developed with 5 levels of service and 2 levels of disability (Learning Disabled, Mental/Psychological) with respect to retention.

Data was analyzed using Statistical Package for the Social Sciences (SPSS). Because of multiple measures on the same data set, alpha was modified from .05 to .017 using the Bonferroni method (.05/3). The Bonferroni correction reduces the chance of a family wise error or a false positive. Beta was set at .80 resulting in a necessary sample n=250. The hypotheses were tested as follows:

H₁: If significant differences in retention among the five levels of "Support Services" are identified, Post-hoc comparisons, pair-wise t-tests, will be performed to determine which levels differ significantly.

H₂: If a significant main effect of "Educational Background" is identified, post-hoc comparisons using t-tests for differences between educational backgrounds for each service level will be conducted.
H₃: If a significant main effect of "Type of Disability" is demonstrated, post-hoc comparisons using t-tests will be conducted.
CHAPTER 4
RESULTS

This quantitative, archival study investigated whether educational background, gender, type of disability, and utilization of support services have an influence on retention of college students with disabilities. Previous chapters have introduced the problem of the study, provided an overview of variables related to the research questions, and presented an account of the method used to test the study hypotheses and answer the research questions. The present chapter presents analysis of the data, beginning with sample descriptives and proceeding to inferential statistical analyses. A summary concludes the chapter.

Retention Trends

Mean credit hours for each semester attended were calculated (Table 5). Line charts were constructed for the 9 semesters attended (Figures 1 & 2). The line charts were constructed to determine trend lines of successful credit hour completion.

As shown in Figure 1 and Table 5, participants completed the lowest mean credit hours during the first semester. Mean credit hours completed increased in the second and third semesters, peaking during the fourth through the eighth semesters (mean credit hours completed ranged from 8 – 9 per semester), and declining in the ninth semester.

As shown in Figure 1, types of service received showed the following trends. First, participants who received tutoring completed more semester credits during the first four semesters than did participants receiving the other types of services. Those receiving isolated testing completed fewer semester credits during the first three semesters and increased during the 4th – 7th semesters. Semester hours completed each semester by participants who received assistive technology services increased until the 7th semester. They remained high in the 8th and 9th semesters compared to students receiving other services. As noted previously, the sample consisted of an initial 2500 students who were followed for 9 semesters; although there was some attrition in the sample, no new members of the sample were added.
<table>
<thead>
<tr>
<th>Service</th>
<th>Semester</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>0S M</td>
<td>5.4</td>
<td>6.5</td>
<td>6.5</td>
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<td>8.1</td>
<td>7.7</td>
<td>8.0</td>
<td>7.4</td>
<td>6.3</td>
<td></td>
</tr>
<tr>
<td>SD</td>
<td>2.9</td>
<td>3.4</td>
<td>3.1</td>
<td>3.7</td>
<td>3.0</td>
<td>3.8</td>
<td>3.9</td>
<td>3.6</td>
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<td>68</td>
<td>51</td>
<td>45</td>
<td>38</td>
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<td>26</td>
<td>14</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>AS M</td>
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<td>6.4</td>
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<td>7.8</td>
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<td>8.1</td>
<td>8.2</td>
<td>7.7</td>
<td></td>
</tr>
<tr>
<td>SD</td>
<td>2.5</td>
<td>3.0</td>
<td>3.1</td>
<td>3.9</td>
<td>3.7</td>
<td>2.9</td>
<td>3.8</td>
<td>4.1</td>
<td>4.0</td>
<td></td>
</tr>
<tr>
<td>n</td>
<td>56</td>
<td>50</td>
<td>42</td>
<td>40</td>
<td>38</td>
<td>34</td>
<td>32</td>
<td>21</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Tut M</td>
<td>5.6</td>
<td>6.6</td>
<td>8.1</td>
<td>8.6</td>
<td>7.5</td>
<td>8.0</td>
<td>7.8</td>
<td>7.4</td>
<td>5.5</td>
<td></td>
</tr>
<tr>
<td>SD</td>
<td>2.6</td>
<td>2.9</td>
<td>3.0</td>
<td>3.3</td>
<td>3.4</td>
<td>5.1</td>
<td>4.4</td>
<td>3.9</td>
<td>3.6</td>
<td></td>
</tr>
<tr>
<td>n</td>
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<td>25</td>
<td>23</td>
<td>23</td>
<td>22</td>
<td>21</td>
<td>16</td>
<td>10</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>IT M</td>
<td>4.7</td>
<td>5.6</td>
<td>5.8</td>
<td>7.5</td>
<td>7.9</td>
<td>9.0</td>
<td>8.5</td>
<td>7.0</td>
<td>7.0</td>
<td></td>
</tr>
<tr>
<td>SD</td>
<td>2.5</td>
<td>3.1</td>
<td>2.1</td>
<td>3.6</td>
<td>3.1</td>
<td>3.8</td>
<td>3.6</td>
<td>2.4</td>
<td>1.4</td>
<td></td>
</tr>
<tr>
<td>n</td>
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<td>25</td>
<td>22</td>
<td>17</td>
<td>13</td>
<td>11</td>
<td>7</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>2S M</td>
<td>5.6</td>
<td>7.2</td>
<td>6.3</td>
<td>6.7</td>
<td>7.9</td>
<td>7.9</td>
<td>7.5</td>
<td>7.6</td>
<td>6.6</td>
<td></td>
</tr>
<tr>
<td>SD</td>
<td>2.6</td>
<td>3.5</td>
<td>3.6</td>
<td>3.2</td>
<td>4.1</td>
<td>3.2</td>
<td>2.3</td>
<td>3.0</td>
<td>2.1</td>
<td></td>
</tr>
<tr>
<td>n</td>
<td>36</td>
<td>25</td>
<td>23</td>
<td>19</td>
<td>16</td>
<td>16</td>
<td>11</td>
<td>8</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Total M</td>
<td>5.1</td>
<td>6.3</td>
<td>6.6</td>
<td>7.7</td>
<td>7.9</td>
<td>8.3</td>
<td>8.0</td>
<td>7.7</td>
<td>6.7</td>
<td></td>
</tr>
<tr>
<td>SD</td>
<td>2.7</td>
<td>3.2</td>
<td>3.1</td>
<td>3.6</td>
<td>3.4</td>
<td>3.7</td>
<td>3.6</td>
<td>3.2</td>
<td>3.2</td>
<td></td>
</tr>
<tr>
<td>n</td>
<td>239</td>
<td>198</td>
<td>164</td>
<td>149</td>
<td>131</td>
<td>117</td>
<td>96</td>
<td>60</td>
<td>37</td>
<td></td>
</tr>
</tbody>
</table>

**Note.** Tut = tutoring, AS = assistive technology, IT = isolated testing, 2S = received two services, 0S = no services received   M = mean, SD = standard deviation, n = sample size
Figure 1. Mean semester hours for the first nine semesters attended by type of service the students received.

As shown in Figure 2 and Table 6, participants with both learning and mental disabilities completed a similar number of credit hours during the 1st – 7th semesters; students with learning disabilities students completed more credit hours in 8th - 9th semesters.
Figure 2. Mean semester hours for the first nine semesters attended by type of disability.
Table 6
Mean Semester Credit Hours by Semester Attended and by Disability

<table>
<thead>
<tr>
<th>Semester</th>
<th>Mental</th>
<th></th>
<th>Learning disability</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$M$</td>
<td>$SD$</td>
<td>$N$</td>
<td>$M$</td>
</tr>
<tr>
<td>1</td>
<td>5.0</td>
<td>2.6</td>
<td>81</td>
<td>5.2</td>
</tr>
<tr>
<td>2</td>
<td>6.5</td>
<td>3.6</td>
<td>66</td>
<td>6.2</td>
</tr>
<tr>
<td>3</td>
<td>6.6</td>
<td>3.1</td>
<td>52</td>
<td>6.6</td>
</tr>
<tr>
<td>4</td>
<td>7.2</td>
<td>3.9</td>
<td>49</td>
<td>7.9</td>
</tr>
<tr>
<td>5</td>
<td>8.2</td>
<td>3.2</td>
<td>41</td>
<td>7.7</td>
</tr>
<tr>
<td>6</td>
<td>8.2</td>
<td>4.2</td>
<td>32</td>
<td>8.3</td>
</tr>
<tr>
<td>7</td>
<td>8.0</td>
<td>3.5</td>
<td>23</td>
<td>8.0</td>
</tr>
<tr>
<td>8</td>
<td>7.0</td>
<td>3.2</td>
<td>16</td>
<td>7.9</td>
</tr>
<tr>
<td>9</td>
<td>6.0</td>
<td>2.3</td>
<td>7</td>
<td>6.9</td>
</tr>
</tbody>
</table>
Data Analysis

Services and Retention

Analysis of Covariance (ANCOVA) was used to test the hypothesis that type of support services has a significant effect on retention when controlling for age. In this analysis, the dependent variable was retention, defined as total credits completed for the first nine semesters attended. The covariate was age in the academic year first attended. The independent variable was type of service (none, assistive technology, tutoring, isolated testing, and two services).

Results of this analysis are shown in Tables 5 and 6.

As shown in Table 7, age was not significant, $F(1,235) = 1.48, p > .05$, meaning that age did not affect the relationship between retention and the type of service received. Type of service was significant [$F(4,235) = 4.66, p < .01$]. The effect size was medium ($\eta = .27$) (Leech, Barret, & Morgan, 2005). Post-hoc paired t-tests (Table 6) indicated that students who received tutoring ($t = 3.4, p < .005, d = .80$) and assistive technology ($t = 3.3, p < .005, d = .47$) had significantly higher retention than those who did not receive any services.

Table 7

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>F</th>
<th>$\eta$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>1</td>
<td>1.48</td>
<td>.08</td>
<td>.23</td>
</tr>
<tr>
<td>Type of Service</td>
<td>4</td>
<td>4.66**</td>
<td>.27</td>
<td>.00</td>
</tr>
<tr>
<td>Error</td>
<td>235</td>
<td>(564.11)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Italicized variable is the covariate. Value enclosed in parentheses represents mean square errors

* $p < .05$  ** $p < .01$

As shown in Table 8, mean retention (mean earned credit hours) for type of service ranged from a high of 46.8 for tutoring to a low of 28.9 for received no services.
Educational Background, Retention, and Services

Analysis of Variance (ANOVA) was used to test the hypotheses that (a) type of high school diploma or type of support service had a significant main effect on retention, and (b) that there was a significant interaction between type of high school diploma and type of services with respect to retention (i.e., the relationship between diploma and retention was not the same for different levels of use of support service). In this analysis, the dependent variable was retention (total credits completed for first nine semesters attended), and the independent variables were type of service (none, assistive technology, tutoring, isolated testing, two services) and type of diploma (GED, HS diploma). Results indicated a significant interaction, $F(4,240) = 3.01, p < .05$ (Tables 8 & 9; Figure 3). The effect size was medium ($\eta = .22$)(Leech et al, 2005).

Table 8
Mean Credit Hours Completed for Type of Service with Post-hoc Test Results (n = 241)$^a$

<table>
<thead>
<tr>
<th>Services</th>
<th>M</th>
<th>SD</th>
<th>n</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>I Tutoring</td>
<td>46.8</td>
<td>21.0</td>
<td>27</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Assist tech</td>
<td>40.4</td>
<td>24.8</td>
<td>56</td>
<td>.7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Isol testing</td>
<td>30.8</td>
<td>22.9</td>
<td>34</td>
<td>2.6</td>
<td>2.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 Two services</td>
<td>29.7</td>
<td>25.0</td>
<td>37</td>
<td>2.7</td>
<td>2.2</td>
<td>.1</td>
<td></td>
</tr>
<tr>
<td>5 None</td>
<td>28.9</td>
<td>23.7</td>
<td>87</td>
<td>3.4*</td>
<td>3.3*</td>
<td>.5</td>
<td>.3</td>
</tr>
</tbody>
</table>

Note. 1=tutoring, 2=assistive technology, 3=isolated testing, 4=received two services, 5=no services received
$a$Age was not reported for nine of the students
*p < .005(Bonferroni correction for multiple tests .05/10)
As shown in Table 9, there was a significant main effect for types of diploma, $F(1,240) = 4.72, p < .05$. The effect size was small ($\eta = .14$) (Leech et al, 2005). In general, the students with a high school diploma had more total semester credits earned ($m = 34.8$) than GED students ($m = 24.3$). There was a significant main effect for type of service, $F(4,240) = 6.51, p < .01$. The effect size was medium ($\eta = .31$) (Leech et al, 2005). As displayed in Table 8 in the previous section, the post-hoc paired t-tests for the five service levels indicated that students who received tutoring and assistive technology had significantly higher retention than those who did not receive any services.

*Figure 3. Retention (total semester credits earned) by type of service and type of diploma*
Table 9
ANOVA Results for Retention by Type of Support Service and Educational Background

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>F</th>
<th>η</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of service</td>
<td>4</td>
<td>6.51**</td>
<td>.31</td>
<td>.00</td>
</tr>
<tr>
<td>Type of diploma</td>
<td>1</td>
<td>4.72*</td>
<td>.14</td>
<td>.03</td>
</tr>
<tr>
<td>Service * diploma</td>
<td>4</td>
<td>3.01*</td>
<td>.22</td>
<td>.02</td>
</tr>
<tr>
<td>Error</td>
<td>240</td>
<td>(549.40)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Italicized variable is the covariate. Value enclosed in parentheses represents mean square errors.

* p < .05  **p < .01

Results indicated a significant interaction, $F(4,240) = 3.01, p < .05$ (Tables 8 & 9; Figure 3). The effect size was medium ($\eta = .22$) (Leech et al., 2005). As shown by the post-hoc t-tests displayed in Table 8, participants with a high school diploma who received isolated testing and two services earned higher total semester credits than the high school diploma students.

As shown by the post-hoc t-tests displayed in Table 10, participants with a high school diploma who received isolated testing and two services earned significantly more total semester credits than did participants with a GED. The GED students who received assistive technology earned significantly more total semester credits than did participants with a GED. Reported effect sizes consisted of $(t = 3.2, p < .01, d = 1.10)$ and $(t = 2.7, d = .90)$, respectively. The GED students who received assistive technology earned significantly higher total semester credits than the high school diploma students reporting an strong effect size of $(t = 3.2, p < .01, d = .97)$. 
Table 10
Mean Credit Hours Completed by Type of Service and Educational Background with Post-hoc Test Results (n = 250)

<table>
<thead>
<tr>
<th>Service</th>
<th>GED</th>
<th></th>
<th></th>
<th>HS diploma</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>n</td>
<td>M</td>
<td>SD</td>
<td>n</td>
<td>t</td>
</tr>
<tr>
<td>Tutoring</td>
<td>41.2</td>
<td>23.3</td>
<td>5</td>
<td>46.8</td>
<td>22.8</td>
<td>23</td>
<td>.5</td>
</tr>
<tr>
<td>Assist tech</td>
<td>58.6</td>
<td>13.1</td>
<td>8</td>
<td>39.2</td>
<td>27.0</td>
<td>48</td>
<td>3.2*</td>
</tr>
<tr>
<td>Isol test</td>
<td>15.4</td>
<td>12.2</td>
<td>9</td>
<td>35.7</td>
<td>24.6</td>
<td>26</td>
<td>3.2*</td>
</tr>
<tr>
<td>Two services</td>
<td>14.3</td>
<td>18.1</td>
<td>10</td>
<td>34.9</td>
<td>27.6</td>
<td>29</td>
<td>2.7*</td>
</tr>
<tr>
<td>No services</td>
<td>17.6</td>
<td>18.4</td>
<td>18</td>
<td>30.5</td>
<td>25.7</td>
<td>74</td>
<td>2.4</td>
</tr>
</tbody>
</table>

*p < .01 (Bonferroni correction for multiple tests .05/5)

Type of Disability, Retention, and Use of Services

ANOVA was used to test the hypotheses that (a) type of disability and type of support service have a significant main effect on retention and that (b) there is a significant interaction between type of disability and type of support services with respect to retention (i.e., the relationship between type of disability and level of retention is the same regardless of use of services). The dependent variable in this analysis was retention (total credits completed for first nine semesters attended). The independent variables were type of service (none, assistive technology, tutoring, isolated testing, two services) and type of disability (mental, learning disabled).

Results are shown in Tables 11 and 12 and Figure 4. No significant interaction was found, $F(4, 240) = 1.67, p > .05$. That is, there was no interaction between type of disability and
### Table 11
**Mean Credit Hours Completed by Type of Service and Type of Disability (n = 250)**

<table>
<thead>
<tr>
<th>Service</th>
<th>Mental</th>
<th></th>
<th></th>
<th>Learning Disability</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>n</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Tutoring</td>
<td>46.5</td>
<td>18.8</td>
<td>11</td>
<td>45.4</td>
<td>25.3</td>
</tr>
<tr>
<td>Assist tech</td>
<td>45.5</td>
<td>28.4</td>
<td>4</td>
<td>41.7</td>
<td>26.4</td>
</tr>
<tr>
<td>Isol test</td>
<td>25.8</td>
<td>22.0</td>
<td>29</td>
<td>53.2</td>
<td>19.3</td>
</tr>
<tr>
<td>Two services</td>
<td>22.8</td>
<td>26.1</td>
<td>12</td>
<td>32.7</td>
<td>27.2</td>
</tr>
<tr>
<td>No services</td>
<td>28.1</td>
<td>25.2</td>
<td>34</td>
<td>27.9</td>
<td>24.9</td>
</tr>
<tr>
<td>Total</td>
<td>29.7</td>
<td>24.4</td>
<td>90</td>
<td>36.0</td>
<td>26.5</td>
</tr>
</tbody>
</table>

### Table 12
**ANOVA Results for Retention by Type of Support Service and Type of Disability**

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>F</th>
<th>η</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of service</td>
<td>4</td>
<td>4.64**</td>
<td>.27</td>
<td>.00</td>
</tr>
<tr>
<td>Type of disability</td>
<td>1</td>
<td>0.43</td>
<td>.04</td>
<td>.51</td>
</tr>
<tr>
<td>Service * disability</td>
<td>4</td>
<td>1.67</td>
<td>.16</td>
<td>.15</td>
</tr>
<tr>
<td>Error</td>
<td>240</td>
<td>(573.83)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.* Italicized variable is the covariate. Value enclosed in parentheses represents mean square errors.

* p < .05  ** p < .01
Retention (total semester credits earned) by type of service and type of disability. Therefore no post-hoc tests were conducted. Main effect for types of disability was not significant, $F(1,240) = 0.43$, $p > .05$. This means that the type of disability had no main effect on retention. There was a significant main effect for types of service, $F(4,240) = 4.64$, $p < .01$. The effect size was medium ($\eta = .27$) (Leech et al, 2005). As displayed in Table 5 in the first results section, the post-hoc paired t-tests for the five service levels indicated that students who received tutoring and assistive technology had significantly higher retention than those who did not receive any services.

Summary

Research Question 1

The first research question was, what is the relationship between use of services and retention when controlling for age? The first hypothesis was:

$H_1$: Type of support services has a significant effect on retention when controlling for age.

This hypothesis was supported. When controlling for age, significant difference in retention among the type of service levels was found. Specifically, the post-hoc paired t-tests for the five service levels indicated that students who received tutoring and assistive technology had significantly higher retention than those who did not receive any services.
Research Question 2

Research question 2 was: What is the relationship between educational background (high school diploma or GED) and retention rates with respect to use of services? This question was answered by testing the following hypotheses:

\( H_{2a} \): Type of high school diploma has a significant main effect on retention.
\( H_{2b} \): Type of support service has a significant main effect on retention.
\( H_{2c} \): There is a significant interaction between type of high school diploma and type of services with respect to retention.

Hypothesis \( H_{2c} \) was supported, as a significant interaction was observed between type of service and type of diploma with respect to retention. The GED students who received assistive technology services had higher retention than the students with high school diplomas who received assistive technology service. For isolated testing and two services, the students with a high school diploma showed higher retention levels than students with GEDs. \( H_{2a} \) was supported as differences due to type of diploma were found. The students with HS diploma showed higher retention than the students with GED. As with Question #1, \( H_{2b} \) was supported as differences in type of service were found.

Research Question 3

The third research question was: what is the relationship between type of disability and retention with respect to use of services? The question was answered by testing the following hypotheses:

\( H_{3a} \): Type of disability has a significant main effect on retention.
\( H_{3b} \): Type of support services has a significant main effect on retention
\( H_{3c} \): There is a significant interaction between type of disability and type of support services with respect to retention.

Results were mixed. \( H_{3b} \) was supported, as a difference due to type of service was found. Hypotheses \( H_{3a} \) and \( H_{3c} \) were not supported because there was no difference due to type of disability, and there was no significant interaction between type of service and type of disability with respect to retention (i.e., the relationship between type of disability and level of retention was the same regardless of use of services).
This chapter presented the results of data analysis examining dimensions of service use, age, educational background, and type of disability in relation to retention in a sample of college students with disabilities. Sample descriptive statistics were presented first, followed by results of hypothesis testing and answers to the research questions of the study. The next and final chapter presents discussion of results, conclusions, and recommendations.
CHAPTER 5
DISCUSSION

The chapter presents a discussion of the findings as well as limitations and implications for future research and practice. As described in chapter 2, Tinto’s (1975, 1987, 1993) theory of student attrition was used as the conceptual framework for this particular study. Utilization of this model suggests that pre-entry variables, such as educational background, and institutional integration variables, such as support services, have a dramatic effect on retention rates.

The core purpose of this research was to determine if there is a relationship between educational background, age, type of disability, utilization of support services, and retention rates of college students with disabilities. In addition, the research sought to identify the interactions of the above variables and effects on retention (successful credit hour completion). The community college environment was selected due to the paucity of research in this area as compared to four-year universities. Conclusions drawn from this study will help formulate an action plan to assist students with disabilities increase retention rates from what are presently well below those of students without disabilities.

This chapter begins with a summary of findings, including demographic results, and continues to a section explaining the findings in the context of existing research. Implications for future research and practice follow, and a concluding statement ends the chapter.

The ratio of female to male of the current research, 51.6% to 48.4%, is relatively consistent with national averages for community colleges, which is 58% to 42% (American Association of Community Colleges, 2006). Similar to national statistics, enrollment for females is higher than for males. However, in the present sample participation for females was lower, and for males it was higher, than the national average.

Racial breakdown of the current sample was slightly higher for two most-represented groups (Caucasian, 72%; African American, 23%) compared to the national average among community college enrollees (64% Caucasian, 13% African-American). Age also skewed younger, with the majority (73%) of participants ranging from 15-19 years old. The American Association of Community Colleges (2006) suggests the national average is closer to 47%. Students aged 20+ comprised 27% of the sample as compared to 53% nationally.
Support Services Usage, Retention, and the Impact of Age

One goal of the current study was to determine the relationship between support services and retention while identifying any impact of age. The findings from this study corroborate previous research that suggests support services have a significant effect on performance within the population of students with disabilities (Cunningham, 1997; English, 1993; Keim, 1996; Megivern et al., 2003; Stodden, Jones & Chang, 2002; Thompson & Bethea, 1997). Post hoc tests concluded that utilization of assistive technology and tutoring was associated with higher retention rates than not utilizing any support services at all. In fact, students who used no services at all maintained the lowest mean number of credits completed. It would be sensible to discuss this considerable segment of the sample and any rationale affecting help-seeking behavior prior to any discussing service interactions.

The most parsimonious explanation of non-usage would be that these students are ignorant of available resources or that there is insufficient advertisement of such resources (Elacqua, 1996; Forsbach & Rice-Mason, 2001). The concern with accepting these past findings at face value is associated with the sole reliance on self-reported data of the participants. It has been suggested that respondents to surveys do not often offer a clear representation of the population being studied. As recommended in the Forsbach and Rice-Mason study (2001), caution should be applied when interpreting the results, as the respondent population may have a more positive relationship with campus life than non-respondents. Furthermore, the surveys utilized in the studies where not assessed for validity and reliability.

Accessibility is also one of the more blatant rationales to non-utilization of services. Often, disability support services offices are only open during the day. This can exclude a significant number of students with disabilities who attend college on a part time basis in the evening. Likewise, services are often decentralized leaving a student to navigate to various locations in which their specific needs can be met (Mowbray et. al., 2006). The decentralization can often be a hassle to students who require more than one support service.

Another explanation of the high frequency of non-use may be related to the student’s level of adjustment. This can manifest itself in perceived, negative attitudes of others (Denny & Carson, 1994; Elacqua, 1996; Hartman-Hall & Haaga, 2002) as well as issues with self-worth and acceptance (Flowers, 1993; Hartman-Hall & Haaga, 2002; Szymanski & Trueba, 1994). Negative perceptions of disability, when adopted by the individual with a disability, can lead to
lower self-esteem (Dunn, 1995; Collins & Mowbray, 2005; Cosden & McNamara, 1997; Lowen, 1993; Thomas & Grimes, 1987). Although the current research did not study self-esteem in persons with disabilities, it is noteworthy that the literature suggests that, if there is a possibility of low self-esteem in the sample, help-seeking behavior will be diminished significantly (Hartman-Hall & Haaga, 2002; Heyman, 1990).

A final potential explanation for under-utilization of services involves student perceptions of faculty attitudes and level of disability awareness. Existing research conducted on attitudes of faculty is ample (e.g. Backles & Wheeler, 2001; Bagget, 1994; Benham, 1995; Farbman, 1983; Sweener, Kundert, May, & Quinn, 2000). The consensus suggests that a lack of understanding by faculty could negatively affect help-seeking behaviors. Theorizing for the current study, if a student anticipates a negative response, the student is less likely to seek help (Hartman-Hall & Haaga, 2002).

While the category no service use accounted for the highest number of participants, it also showed the lowest mean of successful credit hours completed (28.9). Tutoring reported having the highest mean (46.8), followed by assistive technology (40.4), and isolated testing (30.8). The use of two services produced a mean of 29.7 credit hours completed.

As discussed previously, post hoc tests showed that students who utilized assistive technology completed more credit hours successfully than their non-using counterparts. The finding coincides with past research that finds a positive connection between assistive technology usage and academic performance in students with disabilities (Belch, 2005; Day & Edwards, 1998; Raskind & Higgins, 1998; Sharpe, Johnson, Izzo, & Murray, 2005). The current findings also corroborate the only other extant research which concludes that assistive technology can positively influence persistence and retention rates (Sharp et al., 2005). A limitation to the Sharpe et al. study was that it relied on a post-graduation survey, in which students self-reported satisfaction. This method excluded any students who may have ceased their academic career and who may have reported differently. This limitation was overcome in the present study as the current methodology disregarded whether or not the participant graduated. Accordingly, graduates and non-graduates were included and measured.

Tutoring also was associated with a higher mean completion rate than non-utilization of services. No past research has been conducted identifying a connection between retention, disability, and tutoring. The scarcity of efficacy studies in this area may relate to a lack of
universality in delivery of tutoring services. For example, tutoring services offered under the same disability support center may manifest itself in the form of peer tutoring or a one on one session with a staff member. The complex nature of the variable, itself, makes it difficult to make sweeping generalizations about the effectiveness of tutoring.

However, in a comprehensive review of the benefits of tutoring as an intervention with individuals with a learning disability, Scuggs and Richter (1988) concluded that tutoring demonstrates “great power and utility” (p. 285) in the realm of education. Concurring, Keim (1996) identified tutoring as a factor associated with increased GPA. Furthermore, tutoring has been identified as a significant modality for educational assistance (Kowalsky & Fresko, 2002). It should be noted that Kowalsky and Fresko described the weakness of their findings as small sample size and use of self-reported satisfaction scales. Findings of the present study support previous recommendations supporting the benefits of tutoring (Kowalsky & Fresko, 2002; Rath & Royer, 2002; Scuggs & Richter, 1988; Ticani, 2004).

Interestingly, the use of two or more services had a negative effect on successful credit hours completed and was associated with only slightly better outcomes than using no services at all. Moisey’s (2004) study is the only instance in the literature in which to compare this result. The focus of the Moisey (2004) study was to determine the percentage of successful course completion. One finding was that persons with physical disabilities who used more services had a lower course completion rate. The implication was that severity of disability may affect performance. This could explain the outcomes of the current study as it pertains to the use of two or more services. However, Moisey’s study also produced outcomes contradictory to the current research. Specifically, it was identified that persons with psychological and learning disabilities had higher success rates when exposed to more support services. The incongruous findings require that more research be focused on the utilization of multiple support services.

Another conflicting finding of the present research was the lack of significance of the covariate, age. This finding is in contradiction to previous work where age was shown to be a factor, both in achievement (Owen, 2003) and attrition (Feldman, 1993; Mohammadi, 1994). A potential explanation for the lack of effect of age on retention may be the homogeneity of the sample. Traditional (aged 18-24) students made up roughly 91% of the sample, while older, non-traditional students (25+) made up a scant 9%. Clearly, in this case non-traditional students were
Influence of Educational Background on Retention and Service Effectiveness

The second objective of the present research involved an investigation of possible relationships between educational background and retention. Educational background, defined as GED versus high school diploma, was found to have a significant negative effect on retention. The current findings show that students who obtain a high school diploma successfully complete more credit hours than students with a GED. There is a dearth of research examining differences in achievement between students of these two degree types. However, Schillo (1990) reported that students with high school diplomas had higher college GPA’s than their GED counterparts. The maintenance of a higher GPA is significant. Prior research reveals GPA as being a strong predictor of retention (Flowers, 1993; Mohammadi, 1994; Sanders 2007; 1996; Stahl & Pavel, 1992). As previously identified in the literature review, there is a positive relationship between GPA and retention. As the student’s GPA rises, so does the probability of progressing towards graduation.

The present study also produced results that identified significant interactions between educational background and level of service. Specifically, post hoc tests indicated students with high school diplomas who used isolated testing or two or more services had higher mean completion rates. Students with GEDs successfully completed more credit hours when using assistive technology. Furthermore, in all but one level of service, assistive technology, students who obtained high school diplomas had higher mean completion rates. An obvious question here is: why does it appear that these particular services are more beneficial for students with high school diplomas?

There is scant, if any, research exploring the relationship between educational background and support services. However, past research provides an opportunity for hypothesizing regarding the current study. A possible explanation for the underperformance of services among students with GEDs, is emotional intelligence or “the ability to monitor one’s own and others’ feelings and emotions, to discriminate among them and to use this information to guide one’s thinking and actions” (Salovey & Mayer, 1990, p. 189). The research conducted in this field asserts that individuals who achieve a GED certificate have a lower emotional intelligence than high school graduates (Heckman & Rubinstein, 2001; Suh-Ruu, 2008).
addition, GED recipients rank lower on scales of optimism and life satisfaction, and higher in severe depressive symptomology (Suh-Ruu, 2008). These past findings suggest that it may be the type of services that is the issue. The present study did not include any services that affect or assist in the modulation of mental health. It may be that individuals who obtain a GED need support services in the realm of psychological health in order to better enable them to advocate for themselves or perform at a higher level. Certainly, this provides insight into the current study’s findings that high school diploma recipients maintain higher mean completion rates in all but one category. However, postulating on the specific interactions is complicated.

As stated before, there is no research that attempts to connect the attainment of a high school diploma or a GED with particular services. However, the fact that high school graduates perform significantly better when using more services could speak to the amount of extra time spent in high school. In other words, students who remain in high school have the opportunity to utilize transition programs that assist in the preparation for the college environment. These programs instruct students about self-advocacy and accommodations, as well as understanding of one’s disability and resulting concerns about self-esteem (Barretti, 1993; Gil, 2007). In Barretti’s study, 10 high school students with learning disabilities completed a series of educational training sessions that addressed the aforementioned issues. Pre and post evaluative instruments were administered to assess changes in level of ability. In every instance, students reported higher levels of academic and social aptitude following training. The increase in competency serves as a possible advantage of high school graduates over their GED counterparts, who may not be able to access such programs. Furthermore, this may explain why high school graduates maintain a higher mean credit completion rate compared to GED recipients in the current study.

The basis for GED recipients having a significantly higher retention rate while using assistive technology could be connected to the high percentage of persons with a learning disability obtaining a high school diploma in the current study. Students with learning disabilities accounted for 71% of all diploma recipients in the present study. Therefore, the grouping of high school diploma achievers may exaggerate the help-seeking behavior of learning disabled students as it relates to assistive technology. As suggested by several past studies (Denhart, 2008; Field, Sarver, & Shaw, 2003; Rath & Royer, 2002; Stodden, 2000), students with a learning disability fear possible misconceptions about their disability. In particular, students experience trepidation about whether instructors or peers will interpret the use of support services as an
advantage. This thought process instills a reluctance to inquire about assistive technology opportunities. Once again, adjustment to disability appears to be a necessary condition of service usage.

Disability, Service Effectiveness and Retention

The final area for investigation involved the interaction of services and the two classifications of disability. Interestingly, there was no significance delineated by disability. However, it is not difficult to explain the non-existence of any significant relationship between the present studies disability classifications and retention or services. The sample studied had a total of 250 participants, 160 of whom were classified as having a learning disability and 90 of whom were classified as having a mental disorder. Perhaps the key in explaining the lack of significant relationship is the makeup of the mental disorder categorization. Specifically, ADHD comprised approximately 68% of the mental disorder group. A review of the literature identifies a strong association between the ADHD and learning disability categories (Cantwell & Baker, 1991; Edwards, 1998; Mayes, Calhoun & Crowell, 2000; Riccio, Gonzalez, & Hynd, 1994; Shaywitz & Shaywitz, 1991). In fact, past research estimates that 70% of all individuals with a learning disability have an ADHD comorbidity (Edwards, 1998; Mayes, Calhoun & Crowell, 2000). The interrelatedness discussed in past research implies the possibility of an etiology.

In an article by Riccio, Gonzalez, & Hynd (1994), two theories are identified in an attempt to discuss the etiological assumption between ADHD and learning disabilities. The first hypothesis is that hyperactivity, disruptiveness and/or inattention are products of perceived inadequacies pertaining to academics. This hypothesis has been supported by previous research (Cantwell & Baker, 1991; Shaywitz & Shaywitz, 1991). Secondly, it is theorized that hyperactivity and self-control problems are precursors to instances of academic underperformance (August & Holmes, 1984). The presence of this etiology and the dominance of the ADHD classification in the mental disorder classification may have skewed the results.

Most of the research in this area uses children as participants. However, in a study conducted by Sparks, Javorsky, and Philips (2005), disability classification (ADHD/LD) was negligible when looking at cognitive ability and academic achievement skills in relation to completing a foreign language course. Again, this supports the assertion that with such coexistence a difference in distribution should be unexpected as the current research demonstrates.
Functional Trends in Successful Credit Hour Completion

A difference between the present study and past research investigating support programs is the manner in which retention is defined. According to Hagedorn (2005), retention is often measured in dichotomous terms (i.e., degree acquisition vs. non-acquisition). However, measuring retention in terms of completion limits opportunities to detect and address problems before students drop out. On the other hand, the present study defined retention as credit hours completed successfully. In the case of the current study, trend lines can be examined and patterns of weakness pinpointed. Adleman’s (2006) study provides an example to the usefulness of this type of measurement, where it was identified that if a student did not successfully complete 20 credit hours in the first calendar year, the student was three times more likely not to graduate.

In the current research, 27.6% reached the threshold of Adleman’s study (2006). Intriguingly, this is close to the graduation rate for students with disabilities (31.2%) in the present study. The identification of such trends can be useful if incorporated into an early alert program. Early alert programs are designed to utilize criteria that suggest a student may be at risk for unsuccessful retention. Predictor variables that have been used in the past include first-year GPA (Lotkowski, Robbins, & Noeth, 2004) and attendance patterns (Hudson, 2006). If a student fails to meet the institutional standard of either GPA or attendance, the individual is notified and further intervention is initiated. Interventions can include meetings with an academic advisor or enrollment in educational seminars. The success of early intervention tactics has been documented in previous literature (Gil, 2007; Hudson, 2006; Lotkowski, Robbins, & Noeth, 2004). It is in this manner that the current research can be of assistance. The monitoring of credit hours completed successfully could be incorporated into existing early alert programs to strengthen the prediction of potential student attrition.

Limitations of the Research

Caution should be used when interpreting the results of the present research as there are significant limitations. Threats to both internal and external validity will be discussed in the following paragraphs.

Internal threats are inherent when data are collected through archival means because the research is only privy to the information already stored in the database. Therefore, it is likely that a student with a disability may have failed to register with disability support services and
therefore, was not included in the study. It also must be noted, that disability classification was
determined by what TCC determined to be as the presenting diagnosis. This may present a
concern as there was no method of determining the level of comorbidity as it relates to learning
disabilities and AD/HD or ADD.

One must also note that this was a sample of convenience. The number of participants
needed to fulfill .05 power requirements was 250. To reach this level, every student who
qualified for the study was utilized. Without a control group, the individuals who were selected
for research also have the potential to have an above-average level of adjustment to their
disability. As discussed previously, adjustment to disability may lead to enhanced help-seeking
behavior.

There was also a lack in power in certain classification cells due to a small sample. The
small number of individuals could reduce the probability of finding differences between groups.
In addition, the present study did not measure level of service usage. A classification of “use”
was made if a student utilized any of the services designated for measure at any time during the 9
semesters that were evaluated. The adoption of a nominal measurement strategy to a continuous
phenomenon produces an uncertainty to the power of effect.

Threats to instrumentation must also be considered. Specifically, an assumption must be
made that all data collected were accurate. Due to the Family Educational Rights and Privacy
Act (FERPA), the primary investigator was not allowed to handle any records pertaining to the
participants. Therefore, a research aide who was privy to the databases was utilized to collect and
randomize all subjects.

Treatment validity is also worthy of note. It is unclear if quality and consistency of
service were maintained throughout the study. The assumption is that guidelines were provided
by disability support services and a relatively constant level of service was offered.

Finally, the research was gathered from a single southeastern community college.
Therefore, one should exhibit prudence when attempting to generalize beyond this geographical
locus, particularly since the sample demographics differed somewhat from national samples.
Each individual state has different qualifications for obtaining diplomas and GEDs, and the bulk
of the current study’s sample was derived from the state of Florida.
Implications for Future Research and Practice

Community colleges face many of the same obstacles to retention as their four-year counterparts. However, community colleges often are left with a substantially lower budget with which to relieve those obstacles (Ryan, 2003). This could be a hindrance to future research with this population.

Results of this study indicate that the mental health of students with disabilities at the community college level is of critical importance. In the instances where significance was demonstrated in the present study, a probable positive effect of mental health services may have been involved. Certainly, this association can be supported by past research contending that mental health services assist in increasing retention (Bishop & Walker, 1990; Turner & Berry, 2000; Wilson et al., 1997) and GPA (Clark et al., 1999; Switzer, et al., 1993) at the university level.

Unfortunately, community college counseling departments are becoming less oriented toward mental health counseling and more oriented toward academic advisement (Coll, 1995; McAuliffe, 1992). In fact, the community college that was included for the current study recently changed the title of its counseling department to Student Success Center. The reasoning behind the change was to clear up misunderstandings by students as to what services are being offered.

A second area of research involves the exploration of support services across a variety of disability classifications. Most of the available research focuses on one specific disability and judges the effectiveness of the services offered. The ability to determine effectiveness across a wide spectrum of disabilities would enable schools to offer an uncomplicated menu of services that could be specialized to the individual. While the benefits are great, the sample needed for such an undertaking would be quite large.

An immense omission from the literature pertains to students with disabilities whose precollege background includes the attainment of a GED. Although students with disabilities are less likely to earn a GED certificate (Marder & D’Amico, 1992), this specialized population should not go unnoticed. The current research suggests there may be significant behavioral differences in help-seeking behavior, possibly due to greater mental health needs. A larger sample using GED recipients would offer valuable knowledge that could be used to help deliver a more focused action plan.
To strengthen the argument pertaining to the effectiveness of support services, other relationships should be explored as it corresponds to service use. Particularly, issues surrounding students satisfaction with services being offered. It would be intuitive to surmise that if a student perceived a service to be of lower quality, effectiveness may be limited. Similarly, if a service is provided in manner that suggests high quality, the student may develop a propensity for utilizing that service, and in turn, obtain better outcomes.

The current research also raises issues about the correlates of help-seeking behavior. However, in the present study, the comparisons could only be drawn between the students who utilized services and those who did not. Questions that need to be further researched include: why did students who used two or more services perform only slightly better or worse than those who used no services at all? What part does adjustment to disability play in help seeking behavior and service efficacy?

Additionally, disability support service directors must also be vigilant in determining strategies that fall outside of their direct service. Disability support service directors must be advocates for their consumers and strive for an improvement in faculty understanding. As discussed previously, any advancement in faculty comfort can have a positive effect on student adjustment and acceptance of a disability. Both concepts are critical if an attempt to increase retention rates among students with disabilities is going to be realistic.

Secondly, directors of disability support services must begin to promote practices that influence mental health, whether they offer psychological services or not. Most community colleges do not offer mental health services or at best offer very limited services. These are certainly never offered through disability support services. Directors and staff must be aware of possible campus supports as well as be willing to suggest off-campus assistance. The goal is to attempt to coordinate a holistic approach to support which includes academic and mental health objectives.

Conclusion

The findings of the present study outlined the impact of support services, age, educational background, and disability classification on retention. The study provides useful information on the predictors of retention and discusses potential deterrents to help-seeking behaviors. Furthermore, a formidable case has been made to investigate mental health issues at the two-year college as it relates to students with disabilities.
APPENDIX A
INSTITUTIONAL REVIEW BOARD (FSU)
RENEWAL NOTIFICATION

Date of Notice: 10/9/2008

To:
Michael Culligan
4407 Bright Dr.
Tallahassee, FL 32303

From: Human Subjects Committee

Re: Renewal of Project Entitled: Disability and Junior College Retention Rates

This is to advise you that your approval for use of human subjects in the above-referenced research project will expire on 12/4/2008. No research involving human subjects may be conducted after that time unless an extension is granted by the Human Subjects Committee.

In order to be granted an extension and continue your research, you must complete and submit the attached Request for Renewal to the Committee by 11/19/2008. If you do not wish to continue your approval for this project, or if your study has been completed and continuation is not necessary, please indicate on the included renewal form.

If no response is received to this notice by 1/8/2009 a formal termination will be issued to you, your major professor and/or department chair (whichever is applicable).

If you have any questions, please do not hesitate to contact Peggy Haire, Assistant to Human Subjects Committee at phaire@mailer.fsu.edu.

: ph
Enclosure
Cc: Deborah Ebener
Department: REHABILITATION STUDIES
Category: Exempt
HSC No. 2007.968-R
APPENDIX B
INSTITUTIONAL REVIEW BOARD (TCC)
November 17, 2008

Mr. Michael Culligan
4407 Bright Drive
Tallahassee, FL 32303

Dear Mr. Culligan,

Tallahassee Community College has reviewed your request for access to educational records for research purposes and has granted you approval based upon the conditions listed below:

1) Due to the confidential nature of the Disability Support Services (DSS) records and based on the fact that you are not acting as a “school official,” no student information/records will be released to you. In order to research the targeted population, you will work directly with Ms. Stephanie Crosby, DSS Coordinator.

2) You will contract and pay an authorized DSS staff member to become your research assistant, as approved by Ms. Crosby, for the following purposes: identify the students for your research, pull the data requested, and code it so that no identifiable information is provided to you.

3) You will finalize any contract/payment logistics directly with Ms. Crosby.

We are looking forward to working with you and assisting you with your research efforts. Please let me know if you have any questions.

Sincerely,

Katherine Nerona-Balog
Director
Enrollment Services and Testing Office
850-201-8918
neronabk@tcc.fl.edu


Morse v. University of Vermont, 973 F.2d 122 (2d Cir. 1992).


BIOGRAPHICAL SKETCH

In the summer of 1997, Michael Culligan obtained a bachelors degree in recreation and leisure, with an emphasis in therapeutic recreation, from East Carolina University. In summer of 1999, he acquired his master’s degree from the department of recreation and leisure services administration at Florida State University. He was admitted in the rehabilitation counseling doctoral program in the summer of 1999.