

AN ABSTRACT OF THE DISSERTATION OF

Jan Ponticelli for the degree of Doctor of Philosophy in Education presented on April 2, 2009.

Title: Students with Disabilities in Community Colleges: The Relationship of Select Demographic and Academic Variables to Transfer

Abstract approved:

Darlene Russ-Eft

The original research detailed in this document recognizes that the majority of students with disabilities between 18-69 years of age will attend a community college. The literature also indicates an exponential increase for better job opportunity and earnings relative to individuals with disabilities who attain higher levels of education. This study examined 12 predictors for transfer from the community college to a four-year institution for students with disabilities. Pre-existing data from the California Community College Chancellor's Office (CCCCO) matched with data from the National Student Clearinghouse, running from the academic year 1995-1996 until 2006-2007, were used. This resulted in a sample of 31,590 students with disabilities. Of the 4741 students with disabilities who transferred to a four-year college during that 12 year time period, the

average number of years for a transfer was 5.83. A logistic regression with all 21 predictors significantly predicted transfer, $\chi^2 (21, N = 26,751) = 4918.46, p < .001$. Variables that were found to have a strong relationship with transfer were also found to be the strongest predictors of transfer: (a) proportion of transfer courses in which enrolled, and (b) proportion of units students completed out of the total number in which students enrolled. Implications for practice and for research are discussed and including the place of self-determination for successful students with disabilities in a postsecondary environment.

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Students with Disabilities in Community Colleges: The Relationship of Select
Demographic and Academic Variables to Transfer

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Major Professor, representing Education

Dean of the College of Education

Dean of the Graduate School

I understand that my dissertation will become part of the permanent collection of Oregon State University libraries. My signature below authorizes release of my dissertation to any reader upon request.

Jan E. Ponticelli, Author

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CHAPTER 1: FOCUS AND SIGNIFICANCE

Almost one in five people has a disability. There are an estimated 51.2-million noninstitutionalized persons living in the United States meeting the legal definition of disability representing 18.1% of the population. Well over half of these individuals (11.5 million) are considered to have a severe disability. Furthermore, 10.7 million individuals are limited by a disability in the kind or amount of major life activity they can perform (Steinmetz, 2004). For example, children 1-5 years of age who have trouble playing with a peer or performing ambulatory activity are considered to have a disability. For persons 5-17 years of age one's ability to attend school may be impaired. Persons 18-69 years of age are generally unable to work or keep house, and people over the age of 70 would be considered to have a limitation if they were either unable or compromised in their ability to care for themselves. Across a lifespan, the condition of disability is germane to human experience (Rehabilitation Act, 1973).

One avenue of major life activity that is attracting increasing numbers of individuals with disabilities across the nation is the pursuit of higher education. The majority of these persons are choosing community colleges for this endeavor (Barnett & Li, 1997; Horn & Berktold, & Bobbitt, 1999; National Center for Educational Statistics, 2000; Quick, Lehmann & Deniston, 2003). Wagner, Newman, Cameto and Levin (2005) reported youth with disabilities out of high school two years attend postsecondary education at less than one half the rate as their peers without disabilities.

A longitudinal study originating in 1988 by the National Center for Educational Statistics (NCES, 1996; 2000) found that, by 1994, students with disabilities (SWD) were

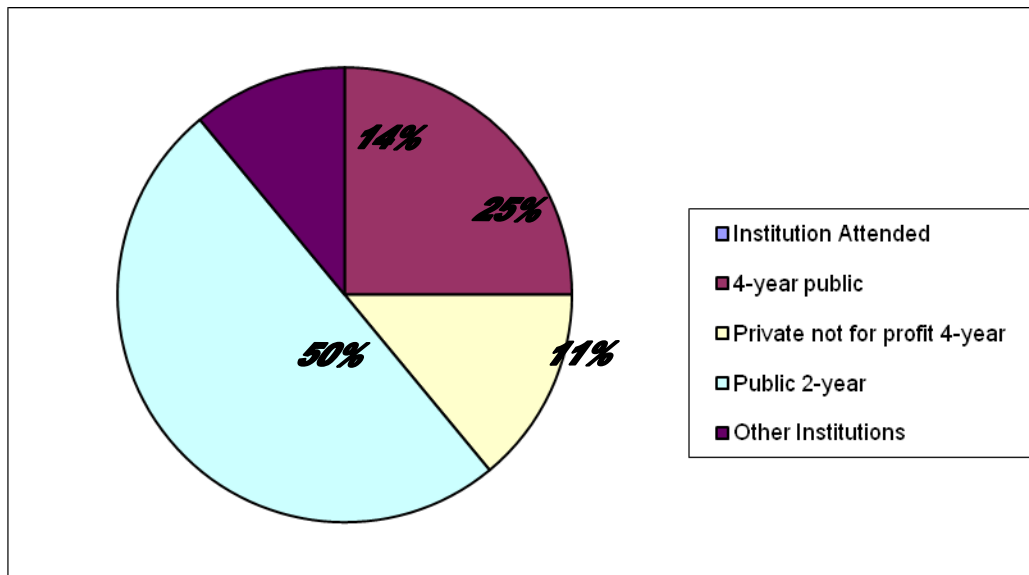


Figure 1. Percentages of SWD attending postsecondary institutions

less likely to enroll in postsecondary education among those who completed high school. Two years after completing high school, 72% of students without disabilities were enrolling in postsecondary education compared to 63% of SWD who were enrolled in some form of postsecondary education. Of those SWD who enrolled, one-half (45%) enrolled in public two-year institutions compared with one-third of students without disabilities. In addition, this study found only 42% of SWD were enrolled in four-year programs whereas 62% of students without disabilities were enrolled (Barnett & Li, 1997; NCES, 1996, 2000).

When students were ranked on how qualified they were for admissions to a four-year program, SWD were much less likely to be even minimally qualified as evidenced by 56% unqualified as compared to 37% unqualified for those without disabilities. When comparing all students who had completed a high school diploma by 1994, it was found

that SWD persisted at a rate of 53% compared to 64% of students without disabilities (NCES, 1996). Furthermore, data compiled by the National Center for Educational Statistics (2000) found SWD fall behind their peers without disabilities in their high school preparation for college, and that a majority of students with disabilities who do enroll in two-year institutions with educational plans to transfer to a four-year institution do not transfer (Barnett & Li, 1997; Horn & Berkold, & Bobbitt 1999; Quick, Lehmann & Deniston, 2003).

Horn, Berkold, and Bobbitt (1999) pointed out that these findings, among others, are particularly disconcerting for all stakeholders concerned with the education of SWD: from their under-preparedness, to the numbers of SWD who drop-out of high school, to those who are unable to complete postsecondary education. The poor academic performance of SWD is a concern in light of research reporting the improved employment status of an individual who has acquired academic skills and competencies beyond the high school level (McNeil, 2000; Stodden & Dowrick, 1999). The National Institute on Disability Rehabilitation Research further confirmed the relationship of education to employment for persons with disabilities, and was captured in the following quote, “However, labor force participation increases much more sharply for people with work disabilities than for those without” (Stoddard, Jans, Ripple, & Kraus, 1998) ¶ 1). McNeil’s (2000) finding of an inverse relationship between persons with disabilities receiving Temporary Assistance to Needy Families (TANF) and educational level of recipients also supported the increased participation of individuals with disabilities in the workplace given higher levels of education.

Given the empirical relationship of education to successful employment for persons with disabilities and the significant role community colleges play in the postsecondary endeavors of the majority of SWD, the focus of my dissertation is to investigate the factors affecting the educational performance of these individuals attending today's community colleges. This topic recognizes the increasing prevalence of SWD attending community colleges and the essential place of postsecondary education for individuals to obtain meaningful employment. The literature points to significant costs associated with the education of individuals with disabilities and the economic impact associated with social security income for those SWD who fail to move into the workforce as adults. These figures are compounded by burgeoning costs associated with injured workers and those persons who may require supplemental and/or dependent support from others (National Council on Disability, 2003).

The research problem to be addressed is to examine the factors that are influencing SWD's academic performance and their too frequent lack of achievement in postsecondary education. A specific factor for initial investigation is the relationship of SWD's practice of self-determined behavior and academic performance. Self-determination as understood by many disability professionals and activists is related to empowerment and the civil rights of individuals with disabilities, particularly as it relates to a person's ability to exercise control or influence over their lives (Wehmeyer, 2004).

Purpose and Research Questions

The Americans with Disabilities Act of 1990 and the Rehabilitation Act of 1973 are the two primary federal laws guaranteeing civil right protections for individuals with

disabilities, and they provide the structure for subsequent state mandates for non-discriminatory practices in all educational institutions (Thomas, 2000). These regulations have far reaching influence into all aspects of instructional and student service venues, making this topic of particular importance to community college practitioners who are charged with ensuring equal access in the provision of quality, educational programming. Leaders must be made aware of student rights, but also how best to retain and contribute to the success of these individuals given the fiscal impact and amount of resources dedicated to compliance and student access (Barnett & Li, 1997, Blett, 2003).

The purpose of my dissertation is to describe the characteristics of self identified students with disabilities attending community colleges and to examine selected variables that may be affecting their performance. It is anticipated this information will contribute to the existing body of knowledge by exploring the relationship of variables that are related conceptually to self-determined behavior of students with disabilities (SWD) attending postsecondary education. The following are the research questions that will be addressed by this study:

- What are the characteristics of students with disabilities attending community colleges? The specific characteristics under review will be financial aid status and disability type. This question will add to the base information that has been collected in other studies investigating SWD attending postsecondary education, with focused data collected from the California Community College Chancellor's Office (CCCCO). The CCCCCO serves the largest postsecondary system of

education in the world. Researching these variables will also serve as the basis for correlating student characteristics and academic performance.

- What is the academic performance of students with disabilities in community colleges? Transfer to a four-year program will be the measure of academic performance to be included in this study. There is a paucity of research regarding specific success measures for SWD attending community colleges with a notable percentage of SWD attaining vocational certificates instead of a college degree. What is measured is important here as the literature speaks to retention with one's class and degree completion as two particularly challenging areas for SWD. In addition, the literature shows that the higher the education status of SWD, the greater their employability.
- What factors relate to higher academic performance for SWD attending community colleges? These data could be useful for community college practitioners working with SWD attending postsecondary education and could potentially help to direct scarce resource allocations. The specific factor of SWD's engagement in behaviors associated with persistence relate conceptually to self-determination practices. These variables will be measured by behavioral indicators including student contacts with disability support centers, other student service support such as matriculation and the Department of Rehabilitation, and enrollment in specialized courses for SWD that are designed to assist them to self-advocate and navigate their postsecondary education. It is predicted that these

self-determined practices will be highly correlated with better academic performance.

Significance of Study

The significance of this study is based on the following reasons: (a) disability is a prevalent condition in this country recognizing recent United States census data indicating that almost one in five Americans has a disability; (b) there is a significant economic impact across several facets of society including educational costs, unemployment, and healthcare; (c) the majority of those individuals identified as disabled between the ages of 18-69 years and, pursuing postsecondary education, will attend a community college; and (d) students with disabilities are less likely to persist and complete a degree or certificate than their peers without disabilities and when they do, it is not at the same rate or level of attainment as their peers without disabilities.

The following section takes an abbreviated look at the factors influencing the significance of this proposal and is arranged into four main categories of perspective. The first subheading examines the prevalence of disability in this country. The second subheading looks at the significant economic impact of disabling conditions on society with respect to education, unemployment, and healthcare. Thirdly, the literature is well documented with studies that recognize the majority of SWD will attend a community college, and fourthly, an acknowledgement of the literature regarding the compromised success rate of SWD endeavoring postsecondary education is presented.

The Prevalence of Disability

This section addresses the significance of this study based on the universality of the condition of disability to all human beings. The organization for this part presents a brief perspective of congenital and acquired disability and how the majority of people who become disabled will experience this condition later in life.

Disability is germane to the human condition (Half the Planet Foundation, 2002; Rehabilitation Act; 1973; Shapiro, 1993). Fifty-years ago such a statement might have been received with a raised eyebrow or two, because the last thing anyone would anticipate, let alone easily accept, is a functional physical limitation of any kind. Yet, if human beings live long enough, disability may become a part of their world as lives are touched by differing physical conditions. In fact, there are hundreds of different disabilities. Some are from birth, others from an accident or normal aging. Some are terminal, some are episodic, such as epilepsy; while others like cancer may even disappear (Shapiro, 1993). Whether the disability arises at birth, in an accident, or with a person's own aging body, for many human beings, disability is normal, and it is only society's architectural and attitudinal barriers that make being disabled more trying than it needs to be. In his book, *No Pity*, author Joseph Shapiro (1993) wrote, "the disability rights movement-the new thinking by disabled people that there is no pity or tragedy in disability, and that it is society's myths, fears, and stereotypes that most make being disabled difficult" (p. 5).

The significance of this study recognizes that disability is germane to the human experience and the majority of people who satisfy the formal definition of disability will come to know the experience of disability later in life.

Disability and Economic Impact

Disabling conditions present significant costs to society across several levels for working-age persons with disabilities. One example, Goodman and Stapleton (2005) estimated state and federal spending on persons with disabilities in 2002 was an estimated \$276 billion dollars. This steep cost recognizes that,

the employment rate for persons with disabilities is about half of the employment rate of working-age people without disabilities, regardless of what national survey is used or how disability is measured. (Stapleton, O'Day, Livermore, & Imparato, 2005, p.1)

In 1997 an aggregate figure of \$179.3 billion was spent for the healthcare costs of individuals with disabilities which was approximately five times higher than the cost for individuals without disabilities (Yelin, Cisternas, & Trupin, 2006).

The highest category of governmental spending on persons with disabilities who are of working-age is by far, social security income (SSI, SSDI). Recent figures identify 87 billion dollars a year. Both SSI and SSDI are associated with Medicare and are estimated to cost \$23,900 for individuals on these rolls (Goodman & Stapleton, 2005; United States Social Security Administration, 2006; Stapleton, O'Day, Livermore, & Imparato, 2005).

Another societal cost that continues to spiral is associated with SWD in postsecondary education. Increasing enrollments of students with disabilities attending postsecondary education have corresponding increasing costs for student support services

to ensure accessibility. For example, the California community college system in 1992 appropriated \$29,253,637 for approximately 52,482 students with disabilities that were allocated according to a predetermined formula to every institution in the state. These dollars provide support for accessibility measures for SWD including specially trained personnel, auxiliary aides, sign language interpreters, and so forth. In 1999, this figure was \$57,370,677, and the subsequent allocation for 2005-2006 was \$91,191,000.

Academic year 2006-2007, California Governor Schwarzenegger has also proposed an additional \$9.6 million to supplement the base allocation provided to Disabled Students Programs and Services for community colleges. These monies were intended to assist colleges to accommodate deaf and hearing-impaired populations requiring specialized services in order to have equitable access to their postsecondary endeavor (California Community Colleges Chancellors Office, 2007; Choy, Horn, Chun, & Farhad, 2000).

Community college practitioners invest enormous amounts of capital and the concerted effort of dedicated personnel (Franzblau & Moore, 2001; Quick, Lehmann & Deniston, 2003). Students who drop out of school before completing their planned program of study are problematic given the large societal investment. Furthermore, the resulting lower economic potential affects those individuals as well as the larger society.

Postsecondary Education, Employment, and Disability

Higher education is positively related to better workforce participation, higher skilled jobs, and the independence of citizenry (Greenspan, 2000; Rendon, 2000; Uhalde, Seltzer, Tate, & Klein-Collins, 2003; Wolf & Copa, 2003). Several agencies and independent researchers have substantiated the fact that postsecondary education is even

more critical for persons with disabilities when it comes to the likelihood of employment and higher wages (McNeil, 2000; Stoddard et al, 1998; Stodden & Dowrick, 1999). Byrom (2001) wrote:

Through work, men contributed to the economic well-being of a nation, set an example for younger generations, and symbolized the most prized aspect of the American character-independence. Without work, men become parasites feeding off the labors of others. (p. 135)

Postsecondary education is witnessing the enrollment of increasing numbers of persons with disabilities, especially into community colleges. It is in continuing education that SWD's may learn the skills for a profession, retrain, or obtain personal educational development. Today more than ever, postsecondary education is a necessary component for assuring individuals better jobs and higher earnings. This is exponentially true for persons with disabilities in order to establish themselves as contributing citizens to society, and to participate in this hugely important and fundamental American right (Longmore & Umnasky, 2001).

SWD Lack of Educational Attainment

There have been numerous legislative acts and policies established over the last 25 years with the specific aim of supporting individuals with disabilities to persist and succeed in education and employment. Nonetheless, the following data are indicative of a failure to provide for equity in the educational realm of possibilities for SWD.

With respect to SWD's performance in postsecondary education recent research, as reported by the National Council on Disability (2003), indicated that SWD face a number of challenges when endeavoring not only secondary education but in a postsecondary setting as well. Barriers are embedded within current educational practices

and policies with respect to access and an environment that supports the ability of SWD to persist and complete a postsecondary degree. The following issues have been identified as problematic for SWD in postsecondary environments:

- Issues in preparation for postsecondary education
- Issues in transition to postsecondary education
- Issues of student progress in postsecondary education
- Full participation in the holistic experience of postsecondary education such as part of student life on campus
- Equal access to academic support for retention and persistence
- Financial aid, cost, and time issues
- Issues of interagency coordination and personnel preparation (National Council on Disability, 2003)

When SWD are unable to fully participate in the opportunities afforded all students pursuing a postsecondary education, the prospects for completing a postsecondary degree are diminished. With this scenario, there is a decreased likelihood of individuals with disabilities finding meaningful and substantive employment as well as an ultimate cost to our nation at large.

Limited Studies of SWD at Community Colleges

A recent review of literature has found there have been limited studies of SWD at the community college level. Quick, Lehmann and Deniston (2003) identify three major types of studies or areas missing from the literature in *The Community College Journal of Research and Practice*. These areas of research are: (a) student support services for

SWD, (b) lack of condition-specific participants in studies, and (c) preponderance of quantitative studies employing survey methods.

The CCCCCO also was supportive of the current study given the paucity of work specific to SWD that had been conducted outside of summative reporting on the status of programming in the state. As educators turn their attention toward student learning outcome measures and with the recognition that successful college completion is key for individuals with disabilities to achieve standards of equality, the time for studying community college SWD is imperative (Goodman & Stapleton, 2005; Half the Planet Foundation, 2002; Stapleton, et al, 2005).

Summary

Nearly one person in five, or approximately 20% of individuals has some form of disability in this country. About one half of this number are between the working ages of 18-64 years. Among those completing high school, SWD are less likely to enroll in postsecondary education than their peers without disabilities. This knowledge is disconcerting given the research that identifies the improved employment status of individuals who have acquired academic skills beyond the high school level. Improved employment status for SWD who have completed a college education increases even more sharply than for those without disability. Given the relationship of postsecondary education to successful employment outcomes and the role of community colleges in the higher education pursuits of the majority of SWD, the focus of my dissertation is to study the academic characteristics associated with this population.

Community colleges have at the core of their mission equal opportunity and access to postsecondary education for all members of society, including students from disenfranchised groups, such as students with disabilities (SWD). Given the substantial research that documents the increase of SWD enrolling in postsecondary education, and namely community colleges, this study presents itself as particularly timely with respect to understanding key relationships affecting the academic performance of SWD.

With respect to significance, nearly one in five Americans has some form of functional limitation. These individuals with disabilities (27%) are much less likely to endeavor postsecondary education compared to their peers without disabilities (68%). If they do decide to pursue postsecondary education, more than half will choose a community college. Also, adults with disabilities are less likely to persevere and complete their educational programming than students without disabilities. In light of these factors and the substantial fiscal impact of service provision for SWD, this study has the potential to enlighten policy and practice for community college leaders today. Another argument for the significance of this study examines loss of earning power as it relates to SWD who do not complete their postsecondary education. Finally, this study has potential to add to a small body of research in the area of disability and postsecondary education at the community college level. It may also contribute to a beginning body of research that examines the concept of self-determined behavior SWD may need to exercise if they are to realize a successful postsecondary experience.

The purpose of this study is to describe the characteristics of self-identified SWD attending community colleges in California and to examine selected variables that may be

affecting their academic achievement. It is anticipated this information will contribute to the existing body of knowledge by exploring variables that are related conceptually to self-determined behavior of SWD attending postsecondary education. Research questions will examine specific characteristics of SWD including financial aid status and disability type. Transfer for SWD to a four-year institution is the dependent variable given the small percentage of persons with disabilities in professional positions and the greater likelihood of substantial employment for persons with disabilities achieving higher levels of education. Factors related to higher academic performance in the form of behavioral indicators related to the construct of self-determination will also be explored.

CHAPTER 2: REVIEW OF LITERATURE

This chapter begins with a description of the literature review process, followed by a section on definitions pertinent to this study. The four sections of literature review that follow will address: (a) the prevalence of disability in this country for persons between the ages of 18-69 years, as well as the economic impact areas of educational costs, healthcare, and unemployment; (b) SWD in postsecondary education, including their lack of educational success as compared to their peers without disabilities; (c) factors related to the educational performance of SWD; and, (d) self-determination as a conceptual construct necessary for the successful navigation of SWD in postsecondary education.

Literature Search Process

The journal articles reviewed for this proposal were obtained through searches from educational databases at the Oregon State University online library. Educational Resources Information Center (ERIC), Academic Primer, Dissertation Abstracts, psychology, social science, and medical literature were primary sources of searching. Key terminology included a focus on the following, or a variation thereafter: (a) students with disabilities, (b) postsecondary education, (c) persistence and performance, (d) community college, (e) academic achievement, (f) retention, and (g) academic support services. Studies were not excluded if they were from other educational levels such as the K-12 system or 4-year colleges. Given the small numbers of studies identified to date, articles that focused on students with disability were included in the initial scope of this purview. Other sources of information has come from governmental databases including

the Census Bureau, Social Security administration, and national clearinghouses specific to individuals with disabilities across a lifespan. Date limits were between late 1960 through the present. This was to capture work that focused on the education of individuals with disabilities and the legislation behind it. Parameters for the search began to narrow as the topic for this proposal has become more focused. The studies included in this search have fallen into the following areas:

(a) *Prevalence and economics of disability in the U.S.:* Recent data from the U.S. Census Bureau (Stern, 2003) reported that nearly one in five Americans have some level of disability. This fact coupled with the economic impact of a disabling condition in today's society speaks to the significance of this study. Today, with huge strides in technology and medicine, many individuals are being saved from a premature death and the ranks of persons identified by disability may be expected to grow. Adding to the current number of individuals with major life activity limitations are people whose disabilities range from congenital etiologies, to those disabled from accidents, war, and most commonly, aging. The literature in this section sets the stage for the significance of this study, as disability is a universal condition that is germane to human experience. It also provides needed information to educational leaders who are enrolling more SWD into their institutions than at any other time in history.

(b) *Students with disabilities in postsecondary education:* Literature on the legal definition of disability was reviewed in order to gain insight into the population to be studied. Defining the parameters employed by community colleges when serving students with disabilities is important, because more persons today are labeled as having a

disability for reasons including obesity, mental disorders, and drug addictions, in addition to the more traditional categories of disability. Therefore, this section looks at the definitions and studies that have been conducted specific to students with disabilities participating in postsecondary education, their preparation, participation, and characteristics. These articles are intended to provide the reader with a framework for understanding the most recent status of students with disabilities attending postsecondary education in terms of statistical data on preparation, college choice and entrance, persistence, and achievement. This information is important to begin to acquire insight into some of the mediating variables that may be affecting the performance of SWD such as demographic information. I will also provide information from the literature about the relationship of academic attainment and workforce participation for SWD.

(c) *Factors related to the educational performance of SWD*: This part of the review examines what the literature tells about factors related to the academic performance of SWD. Specific categories of disability are highlighted in a few studies with respect to related topics influencing the participation and success of these groups. Recommendations for future research consideration are also included. These studies provide the backdrop for exploring the variables associated with the educational performance of SWD as a whole, and taken collectively, establish the need for a viable theoretical construct that can be applied to this population of postsecondary students. The literature also identifies a number of barriers that are suggested to affect the academic performance of persons with disabilities endeavoring postsecondary education. The information will also underscore the relationship of academic performance to the

expected variable of self-determined behavior as a needed construct for exploration for SWD within a postsecondary system of learning.

(d) *Self-determination as a conceptual construct*: This section of the literature review examines the meaning of the term self-determination as it relates to persons with disabilities. Articles provide a brief history of the term from its socio-political origins in defining the human capacity to act and the belief that action is the product of the human mind, will, and volition to more recent conceptions. A new literature base (Argan, 1997; Field, Martin, Miller, Ward & Wehmeyer, 1998; Field, Sarver & Shaw, 2003; National Council on Disability, 2003; Quick, Lehmann, & Deniston, 2003; Stodden & Conway, 2003; Stodden & Dowrick, 1999; Trainor, 2007; Ward, 2005; Wehmeyer, 2004; Wehmeyer & Schalock, 2001) recognizes the application of this concept of self-determination to individuals with disabilities. Self-determination by definition refers to purposeful action by an individual and is especially important for SWD in post secondary education, as they must self-advocate for themselves at this level in order to be eligible for support. This behavior is significantly different from the assistance that is automatically provided to SWD during their primary/secondary educational years. When SWD enter postsecondary education the law, which protects them in an educational environment, changes from Individuals with Disabilities Education Act (OSEP, 2001) to The Americans with Disabilities Act, with the latter inclusive of a clause requiring individuals with disabilities to self-advocate. A second compelling reason that self-determined behavior is so important to SWD relates to recent work within the last decade that is indicative of the positive impact this construct has on individuals with disabilities.

Self-determination when exercised by individuals with disabilities can be empowering, as they become more active participants in the quality of their own lives. As self advocates, individuals are provided with options to make choices for their lives instead of being dependent upon others such as caretakers or experts in the field that know what is best for them. This review suggests the need for a study of the type being proposed that systematically infuses practices of self-determination and determines how these efforts might relate to SWD's academic performance. This study's design, and measures for behavioral indicators of self-determination, are drawn from the literature and provide an understanding of the potential need for SWD to exercise self-determination in their pursuit of higher education.

Definitions

Disability - The following definition of disability is taken from PL 105-220, The Workforce Investment Act of 1998, Title IC-Rehabilitation Act Amendments of 1998, Definitions, Section 6:

- (A) In General, Except as provided in subparagraph (B) or (C), the term "individual with a significant disability" means an individual with a disability-
- i. who has a severe physical or mental impairment that seriously limits one or more functional capacities (such as mobility, communications, self-care, self-directions, interpersonal skills, work tolerance, or work skills) in terms of an employment outcome;
 - ii. whose vocational rehabilitation can be expected to require multiple vocational rehabilitation services over an extended period of time; and
 - iii. who has one or more physical or mental disabilities determined on the basis of assessment.

This definition has been chosen mindful of the fact the majority of SWD attending community colleges are adults of working age.

Student with a disability – A student who has been admitted to a community college and is able to meet the institution’s academic and technical standards (i.e., all essential nonacademic admissions criteria) either with or without reasonable accommodation (Thomas, 2000). This definition relates to the meaning of disability above, because state and federal law protects workers with disabilities who are individuals with disabilities and qualified and able to meet the essential functions of a position in the workplace.

Academic accommodation – An adaptation, designed to help a student display knowledge and participate in an academic environment through a program of services designed to equalize and mitigate educational limitations resulting from a disabling condition (Barnett & Li, 1997). Stodden (2001) clearly identified the place and need of academic accommodations in assisting students with disabilities to access postsecondary education and to perform successfully in this environment.

Self-determined – Within the framework of this study, a student displays self-determined behavior when a student exercises purposeful actions that , are identified by specific essential characteristics: (a) the person acts autonomously, (b) the behavior(s) were self-regulated, (c) the person initiated and responded to the event(s) in a psychologically empowered manner, and (d) the person acted in a self-realizing manner (Wehmeyer, 1999, p. 56).

Transfer - The measurement of SWD transferring in a particular year from California Community Colleges to other four-year institutions (Perry, 2006).

Disability: Prevalence and Impact for Adults in the United States

This section is included in order to provide for a more in-depth look at the prevalence of disabling conditions and the far-reaching economic consequences for adults living in the United States in terms of SSI, SSDI, healthcare, and education. This section is intended to set the context for this study as introduced in the case for significance.

Prevalence of Disability

Nearly 20 percent of people in the United States and living in a housing unit have a disability. Almost 10% of these individuals are between the ages of 16-64 years of age.

The U.S. Census Bureau defines disability in the following manner:

People 5 years old and over are considered to have a sensory, mental, or self-care disability if they have one or more of the following: (a) blindness, deafness, or a severe vision or hearing impairment; (b) a substantial limitation in the ability to perform basic physical activities, such as walking, climbing stairs, reaching, lifting, or carrying; (c) difficulty learning, remembering, or concentrating; or (d) difficulty dressing, bathing, or getting around inside the home. (Houtenville, 2006, ¶ 6)

The World Health Organization (WHO, 2001) recognized the interplay of disability, a person's health condition, personal characteristics, the physical environment, and the social environment as factors that make the condition of disability a dynamic process. This definition is known as an International Classification of Functioning Disability and Health (ICF). It is included here with respect to SWD attending postsecondary education, because the aforementioned components of health, personal characteristics, physical, and social environment all factor into the successful navigation of this population through school. This definition also sheds some light on how the prevalence of disability has come to be so encompassing across this country.

When considering SWD between the ages of 18-69, the increasing prevalence of disability may be attributed to several different factors. For example, advances in medical technology have contributed to the ongoing rise of American's with disabilities. Young people with birth complications have been preserved from an early death given technological advances, as have those individuals diagnosed with treatable diseases and from accidental injury. Disability from injury is particularly true with respect to the percentages of soldiers saved when comparing World War I, II, and other wars up to the current Iraqi invasion (Darnay, 2003; Miracle & Moreno, 2006). It is projected that community colleges will see an increase in the number of Iraqi war veterans' identifying themselves as SWD and eligible for benefits in a postsecondary setting (Miracle & Moreno, 2006).

The most common disabling condition for American children is learning disabilities. The country's educational system is serving growing numbers of children with disabilities as evidenced by the sharp increase between 1977 and 2000, which reflects an increase of 53% over this time period (Houtenville, 2006). These figures correlate with the increasing numbers of SWD transitioning into postsecondary education.

The high prevalence of disability in this country may also be attributed to the incidence of aging. In fact, the longer we live the greater is the possibility of disease, accidents, and injuries resulting in disability (Darnay, 2003; Stoddard, et al, 1998; Yelin, Cisternas, & Trupin, 2006).

The relatively frequent occurrence of disabling conditions and their consequences for persons living the United States have significant ramifications with respect to public expenditures and the economic well being of working age people with disabilities. The following section provides a snapshot view of federal and state programs for individuals with disabilities that total well over 200 billion dollars a year as reported in 2002. Given the prevalence of disability in this country, especially with respect to working-age people with disabilities, this study is timely for its relevance to society at large and for the context of community colleges as a viable institution for training and lifelong learning.

Societal Costs of Disability

There are far reaching consequences when persons of working age are inhibited from participating in a competitive job market due to disability. As evidence of this, federal and federal-state spending on persons with disabilities in 2002 was an estimated \$276 billion dollars (Goodman & Stapleton, 2005). This cost may be compounded when one begins to unveil the billions of dollars that are poured into supplemental and dependent support, the loss of wages, and other economic consequences of unemployment due to disability. Specifically, these consequences include bulging Social Security Income ranks, Worker's Compensation, and health care costs. In a chapter from Darnay (2003) it was reported that civilian employment had risen by 71% between 1970 and 2001. The alarming comparative statistic in this report found the number of workers receiving disability benefits during this same time period rose 253%. Injured worker ranks are increasing and, for many working-aged individuals, retraining because of the

consequences of an injury or disability may be accomplished at a community college. Community colleges also provide avenues of rehabilitation for disability, as well as career counseling.

Recent figures identify \$87 billion a year as the estimated cost of working aged individuals receiving Social Security Disability Insurance (SSDI) or Social Security Income (SSI) (Goodman & Stapleton, 2005; Stapleton, O'Day, Livermore, & Imparato, 2005; United States Social Security Administration, 2006) pointed out that despite the fact the Social Security ranks are burgeoning, the poverty rate of individuals with disabilities has not improved. The authors stated several reasons for this situation, one of which resonates with SWD navigating postsecondary education.

Another significant component of the poverty trap is the sheer complexity and poor coordination of support systems for people with disabilities. The many in-kind supports that are available to people with disabilities are administered by a variety of state and federal agencies and private organizations, each with its own rules, many of which are very complex in their own right and take a great deal of time to understand. Each additional program improvement seems to add to, not remove, this complexity. (Stapleton et al, 2005, p. 2)

An example of the complex systems SWD attending postsecondary programs face are the intricate operation of financial aid, worker's compensation, State Department of Rehabilitation funding, private rehabilitation, and other local, state, and federal agencies offering guidance and financial assistance for schooling.

The largest categories of governmental spending for persons with disabilities of working age, by far, are social security income (SSI, SSDI) at 41.9% and health care programs at 54.2%. These programs are connected to each other with Medicare and SSI requirements, as well and Medicaid and SSDI, and the programs are estimated to cost

\$23,900 a year for individuals on these rolls (Goodman & Stapleton, 2005). In 1997, healthcare alone for persons with disabilities was almost five times higher than individuals without disabilities. The aggregate figure totaled \$179.3 billion in medical costs for the year. In addition, persons with disabilities were employed at a significantly lower rate than their peers without disabilities, with the rate of difference at 40%. Lost income for persons with disabilities totaled \$148.9 billion when aggregate earning gaps were examined (Yelin, Cisternas, & Trupin, 2006).

The billions of dollars spent annually for federal and state assistance beg questions of public policy as these regulations appear to hinder individuals with disabilities from evolving into self-sufficiency. A closer look at national spending suggests inconsistencies with the goals of individuals with disabilities to be fiscally independent. Policy makers and advocates of people with disabilities suggest postsecondary education as one viable avenue for individuals to pursue in order to break the cycle of dependence and poverty caused by unemployment (Darnay, 2003). In this case, community colleges may continue to be impacted as more and more persons with disabilities begin looking to these institutions for training, retraining, and lifelong learning.

According to Stodden (2001) 93% of postsecondary institutions provide an office dedicated to the support of SWD. A major function of these units is to provide guidance to SWD who may be contemplating entering the workforce. Many SWD receiving government support harbor reservations about how to exit SSI and enter the workforce for fear they may be subject to a complete loss of benefits. Although there are dedicated

personnel, facilities, resources, and legislation intended to ease the transition of many SWD into higher education and the workforce, there is still a great deal that is unknown in terms of what works.

There is a paucity of research investigating SWD attending postsecondary, with most reports providing normative data in broad categorical context. One area of reporting is the significance of educational attainment and employability for persons with disabilities; that is, the further SWD ascend in postsecondary education, the better are their reported earnings and employability (Darnay, 2003; McNeil, 2000; Stodden, 2001). Therefore, a study that examines the factors relative to SWD transfer to a four year university is both timely and critical given this country's fiscal investments in relation to societal costs of disability, which at present, is on the rise.

Summary

Given the societal costs of healthcare and unemployment for individuals with disabilities, research that enlightens self-sufficiency through education is a welcome endeavor. The literature strongly suggests that poverty levels of persons with disability break-down when educational achievement is attained. As such, community colleges provide an effective environment for training and skill development, and the majority of SWD who pursue postsecondary education will do so in these two-year institutions. The current study investigates the factors related to SWD successful academic achievement in community college settings.

Students with Disabilities in Postsecondary Education

Most research on students with disabilities (SWD) has reported the number of students in postsecondary education and break down these figures into sub-categories of gender, race, disability status, income level, and type of postsecondary institution attended (Horn, Berktold, & Bobbitt, 1999; NCES, 1996, 2000; NCSPES, 2002; NCD, 2000, 2003; Wagner, Newman, Cameto, & Levine, 2005). The data sets for these studies were inconsistent from a numerical standpoint depending on survey techniques and the types of questions posed to students by researchers. Therefore, the following information should be carefully reviewed when examining the frequency of occurrence of disability and subsequent estimates of this population thereafter (HEATH, 2003; Stern, 2003).

Demographics

The most recent data from the *National Postsecondary Student Aid Survey* (NPSA) reported that 1.53 million students or 9.3% of all undergraduates identify as having a disability (NCES, 2000). This survey is conducted nationwide and is intended to discern how students pay for postsecondary education as well as to describe the characteristics of students who enroll into all types of higher education. Included are data from public two and four year institutions as well as private, not-for-profit colleges and universities. NPSA 2000 reported that the percentage of SWD increased over three percentage points from a previous survey conducted in 1996 by the same agency. The National Center for Education Statistics (NCES, 2000) reported noticeable differences in data between these two time periods, especially with the category of learning disabilities. NPSA acknowledged the revised survey questions in 2000 as potentially influencing their

numbers, as well as the expansion of disability categories from 6 to 11. Table 1 represents approximate differences between the two surveys conducted keeping in mind that disability questions differed substantially from previous years. The new categorizations of Attention Deficit Disorder (ADD) and mental illness reportedly had an overall influence of the distribution of other conditions. In addition the report did not include co-occurring disabilities and were not aggregated into the main categories of disability. Numbers of students within each category were likely influenced by the fact that 9% of students with orthopedic conditions, 17% of students with vision impairment, 37% of students with hearing disability, and 63% of students with Attention Deficit Disorder also indicated they had learning disabilities. Because new disability questions focused more on functional limitation, it is thought the 2000 survey was more sensitive to capturing SWD (HEATH Resource Center, 2003; Stern, 2003).

While the differences noted above may have contributed to higher numbers of SWD reporting postsecondary enrollment, it is also important to note the similar outcomes of data by NPSAS in several key areas from earlier studies. These areas include

Table 1

National Postsecondary Student Aid Surveys of 1996 and 2000 Undergraduates Reporting a Disability

Disability	Percentage of 1996 Undergraduates Reporting a Disability	Disability	Percentage of 2000 Undergraduates Reporting a Disability
Learning	29%	Learning or ADD	11.0%
Orthopedic	23%	Orthopedic	19.0%
Other	21%	Other	25.4%
Hearing	16%	Mental Illness	30.3%
Visual	16%	Visual/Hearing	11.9%
Speech	3%	Health	15.1%

the demographics of SWD, enrollment patterns, financial status, and persistence toward a four-year degree (HEATH Resource Center, 2003; Horn, Berktold, & Bobbitt, 1999).

The National Center for Educational Statistics (NCES, 2000) also outlined three similar surveys for compiling a comprehensive report on the status and experiences of SWD in postsecondary settings. The first one was named the National Education Longitudinal Study (NELS) and began tracking SWD who were in the eighth grade in 1988. The SWD were followed through 1994, with the use of surveys sent to students, teachers, parents, and counselors. Data collected included academic qualifiers for persistence and attainment. The second study was undertaken and entitled, Beginning Postsecondary Students Longitudinal Study (BPS, 1989-1990). This longitudinal study compiled factors associated with persistence and attainment of SWD as did the NELLS

research; however, the BPS provided these data on SWD entering postsecondary education as undergraduates. It was different from the NELS data in that the BPS included students from various ages and experiences compared to the former survey (NELS) where the students were all approximately the same age. Research has consistently reported SWD to enter postsecondary education later than their peers without disabilities. A third report included in the NCES overview of SWD in postsecondary education was the Baccalaureate and Beyond Longitudinal study (BBS). This work followed a cohort of SWD who graduated with bachelor's degrees during the 1992-1993 academic years. This study provided for follow-up data on SWD for early employment and access to graduate school. This information is also significant given the timeline difference between SWD and non-disabled students for not only entering postsecondary education but also for completing (Stodden & Dowrick, 1999).

Henderson (1999) reported from a survey conducted on first time freshmen in postsecondary education from a cross section of 469 institutions. These schools included universities, four-year colleges and two-year colleges, both public and private. Students were asked to answer whether or not they had a disability and were given six categories from which to choose. Henderson found results similar to NPSAS, with 154,520 SWD representing 9% of all students polled. This survey only examined full-time, and first time college students in their freshmen year.

The final report that examined people with disabilities and postsecondary education was work compiled by the National Council on Disability (2003). This position paper added a slightly different dimension with the inclusion of information on barriers

SWD face when endeavoring postsecondary education. As an example the paper included a review of personnel preparation for professionals working as faculty, support staff, and administrators. A second feature different from previous work cited above was a highlighted need for interagency collaboration as related to SWD postsecondary success. Table 2 summarizes the major data collected on SWD over the past two decades.

Table 2

Summary of Data on SWD Attending National Postsecondary Institutions

	NPSAS 1996	NPSAS 2000	NELS 1988- 1994	BPS 1989- 1993	BBS 1992- 1993	CIRP 1999	NCD 2003
Disability	x	x	x	x	x	x	x
Demographics	x	x	x			x	x
Enrollment	x	x	x	x		x	x
Activities Affecting Persistence	x	x	x	x		x	x
Financial Aid Status	x	x					
Academics			x	x	x		
Persistence/ Attainment	x	x	x	x		x	
Barriers						x	
Employment				x	x		

Perhaps most striking about the studies examining SWD in postsecondary education at the national level was the manner of data collection. All of them employed surveys, however, question types, categorizations of disability, length of review, and varying postsecondary components under study (e.g. readiness, undergraduate versus graduate, persistence, and employment), all varied. Therefore, caution must be exercised when reviewing the results of these efforts. The studies highlighted here represented more of a reporting approach and did not offer any insights into factors that may have influenced the results reported. Collectively, these reports are consistent across several areas of examination including the following information.

- SWD enrolled in postsecondary educational institutions
- SWD exiting high school and gaining access to postsecondary education
- SWD persistence and degree attainment
- SWD early labor market outcomes and graduate school enrollment
- SWD as compared with non-disabled students

Summary

This section reported the demographics of SWD attending postsecondary education and including data on academic persistence, barriers to achievement and employment. Readers of these findings are left with a fairly consistent picture of SWD in postsecondary education, but little else in the way of explanation for the outcomes reported. There has been limited research conducted on SWD attending postsecondary education and what factors contribute to their academic success at this level (Barnett &

Li, 1997; Dowrick, Anderson, Heyer, & Acosta, 2005; Mellard, 2005; NCD, 2003; Quick, Lehmann & Deniston, 2003; Stodden & Dowrick, 1999).

Factors Related to Educational Performance of SWD

There has been significant legislation enacted over the span of 25 plus years in support of SWD in their secondary, postsecondary, and employment endeavors. Unfortunately, the undertaking of many SWD in these areas has met with limited success (Half the Planet Foundation, 2002; NCD, 2003; Stapleton et al., 2005). With respect to higher education, the literature has reported numerous identifiable factors related to the educational performance of SWD attending postsecondary education. The following section examines some of the influences that are negatively impacting individuals with disabilities in a postsecondary environment and their subsequent lack of success.

Lack of Educational Achievement

After 25 years of legislation (Table 3) designed to improve the education and workforce preparation of individuals with disabilities, the results of these efforts are dismal (Barnett & Li, 1997; Goodman & Stapleton, 2005; Horn, Berktold, & Bobbitt, 1999; NCD, 2003; NCES, 1996, 2000; NCSPES, 2000; Quick, Lehmann & Deniston, 2003; Stapleton et.al. 2005; Stodden & Conway, 2003; Stodden & Dowrick, 1999; Wagner, et al, 2005). Despite state and federal legislation assisting SWD in their academic endeavors, national research has indicated that SWD attempting postsecondary education do not successfully complete their educational goals at the same rate as students without disabilities (NCES, 1996; 2000). With respect to preparedness, SWD were much less likely than their peers without disabilities to be minimally qualified for

Table 3

Federal Legislation Mandating Education, Postsecondary Education, and Work Preparation

Legislation	Purpose
Education of All Handicapped Children Act (P.L. 94-142)	Require states to develop/implement policies assuring free appropriate education
Carl Perkins Vocational and Applied Technology Education Act of 1990 (P.L. 101-392)	Provide for equal access in recruitment, enrollment and placement in vocational education
Technology-Related Assistance for Individuals with Disabilities Act of 1988, as amended in 1994 (P.L. 100-407 and P.L. 103-218) (Tech Act)	Provide technology assistance to better integrate persons with disabilities into society
Americans with Disabilities Act of 1990 (P.L. 101-336)	Extend the Rehabilitation Act of 1973, equal access and reasonable accommodation in employment
Individuals with Disabilities Education Act (IDEA) Amendments of 1992 (P.L. 101-476 and 1997 (P.L. 105-17)	Expand coverage of programming from birth to 5 yrs, adds assistive tech, replaces “handicapped” term with “disabled”
Higher Education Act of 1998 (P.L. 105-244) including a new program for Higher Education Access for Students with Disabilities (Part D of Title VII)	Amendment includes a new program for access to higher education for SWD
1998 Rehabilitation Act Amendments (P.L. 105-166)	Affirmative action in employment and non-discrimination because of disability
Ticket to Work and Work Incentives Improvement Act of 1999 (H.R. 1180)	Encourage SSI and SSDI beneficiaries to access vocational services to return to work
Workforce Investment Act (P.L. 105-220)	Consolidate, coordinate and improve employment, training, literacy, and vocational rehabilitation programs

(Szymanski & Parker, 2003; Thomas, 2000)

admission to a four-year college, and they fall behind their counterparts without disabilities with respect to high school academic preparation for postsecondary coursework. Three to five years after high school only 27% of SWD endeavor postsecondary education as compared to 68% of non-disabled students (Stodden & Dowrick, 1999). In their reports on SWD and postsecondary education, NCES (1996, 2000) found SWD to demonstrate characteristics consistent with lower rates of persistence and attainment as well.

Despite this legislation, civil rights advocacy, monumental expenditures of state and federal dollars, advanced technology, and disability rights policy, the nation's children and adults with disabilities are not succeeding in their education and employment endeavors. This ongoing circumstance is a growing national crisis that cries out for system change (Darnay, 2003; Franzblau & Moore, 2001; Half the Planet Foundation, 2002; Horn, Berktold, & Bobbitt, 1999; McNeil, 2000; NCES, 2000; Stodden & Dowrick, 1999; Yelin, Cisternas, & Trupin, 2006). One step in this direction recognizes effective education for SWD must follow quality research for informing decision makers how best to serve and promote SWD in their academic institutions.

While it is widely acknowledged that students who are successful in completing a certificate of training or degree can expect a higher standard of economic living, this relationship becomes even more important to disenfranchised groups such as persons with disabilities (McNeil, 2000; Stodden & Dowrick, 1999). Therefore, students who drop out of school before completing their planned program of study are problematic for the United States as a whole. The poor return of SWD moving into vocational roles given

the enormous investment of capital earmarked for the education of this group has gotten the attention of community college practitioners (Franzblau & Moore, 2001; Quick, Lehmann & Deniston, 2003; Stapleton et al., 2005; Yelin, Cisternas, & Trupin, 2006). The research reviewed within this section provides a small window of insight into educational programming for SWD, however it lacks the substantial research necessary to inform practitioners about what appears to be effective versus ineffective policy and practice given SWD poor educational attainment rates.

Factors Related to Persistence and Educational Attainment

Barnett and Li (1997) conducted a national survey with the American Association for Community Colleges. This effort polled 672 community colleges across the United States, and their findings indicated that close to 80 % of responding institutions had a formal office that served individuals with disabilities. Participating colleges indicated 8% of students reported a disability, and approximately half of these students requested academic accommodations. As previously stated, the *National Postsecondary Student Aid Survey* (NCES, 2000) stated that 9.3% of students in higher education reported having a disability out of the 1.53 million students polled. A little less than half of this population availed themselves of services designed to provide academic accommodations while attending school. This finding could have significant influence on the success of SWD when recognizing the potential link of self-determined behavior to academic success and persistence (Lent, Bron, & Larkin, 1984). Given the change of service provision requirements between secondary and postsecondary education for SWD, it is imperative

for individuals to make a formal request to receive the educational supports to which they are entitled. Stodden, Whelley, Harding, and Chang, (2003) wrote,

Unquestionably, postsecondary students with disabilities are charged with the bulk of the responsibility for initiating, designing and ensuring their own educational accommodations. It is their responsibility to inform school officials of their disability, provide documentation of disability, and propose viable options for meeting the unique accommodation needs specific to their disability. (p. 190)

Many students enrolling in postsecondary education are poor self advocates. This characteristic in addition to those listed below quite likely contributes to the poor outcomes SWD experience in school and work environments:

- Under-preparedness for college level work
- Poor transition from high school to postsecondary requirements
- Financial aid restrictions
- Lack of appropriate accommodations
- Poor self-advocacy and determination
- Staff/faculty /Administrative knowledge of disability and its impact on learning
- Architectural barriers
- Lack of role models/Media stereotypes
- Low expectations of faculty
- Poor personnel preparation
- Fragmentation and inconsistencies of interagency collaboration

(Barnett & Li, 1997; Horn, Berkold, & Bobbitt, 1999; NCD, 2003; NCES, 1996, 2000; Stodden & Dowrick, 1999)

Summary

One of the most consistent factors reported from the literature relative to the persistence and attainment of SWD, was an individual's self-determination while in school. Researchers in the area of postsecondary education and SWD have pointed to the characteristic of self-determination as imperative for academic success. The term is not a new one in the field of special education, though there is little research to substantiate its role with SWD in postsecondary education (Dowrick, Anderson, Heyer, & Acosta, 2005; Field, Sarver, & Shaw, 2003; Stodden & Dowrick, 1999). Stodden and Conway (2003) wrote,

...self-advocacy/self-determination skills, or the ability to understand and express one's need and to make informed decisions based upon those needs, is considered to be one of the most important skills for students with disabilities to have before beginning their postsecondary experience. (p. 25)

Other frequently reported barriers SWD face were under-preparedness for college work, lack of access and appropriate accommodations, and poor interagency collaboration for transition. Surveys conducted with SWD attending postsecondary institutions also note that approximately one half of students disclosing disability actually request support services.

Self-Determination

This section of literature review is included for the background it provides on the characteristic of self-determination. While this attribute will not be measured by this study, it is predicted that SWD that practice behavior that is consistent with the concepts of self-determination will be more likely to transfer than those who do not (Dowrick

et.al., 2005; Field, et al, 1998; Field, Sarver, & Shaw, 2003; Leff, Conley, Phil, Campbell-Orde, & Bradley, 2003; Stodden & Conway, 2003; Wehmeyer & Schalock, 2001). The persistence factors of support service, counseling, and specialized classes are factors that students must pursue under their own volition and not as a requirement of a postsecondary institution. Field, Sarver, and Shaw (2003) wrote:

In virtually every way, success in college requires more diligence, self-control, self-evaluation, decision making, and goal setting. In short, college requires more *self-determination* than is expected in secondary schools. (p. 340)

Field, et al (1998) agreed that self-determination requires a number of skills and personal beliefs that ultimately allow an individual to “engage in goal-oriented, self-regulated, autonomous behavior” (p. 339).

As an educational outcome, Wehmeyer (2004) suggested four essential characteristics for persons who display self-determination. These characteristics include someone who can act autonomously and according to their own preferences as well as act free from undue influence or interference. An example among SWD would be initiating support service at the postsecondary level. SWD must self disclose disability and voice their preferred learning accommodations to disability staff. This self-advocacy is a marked change from the services protocol they would have engaged in secondary environments. Many postsecondary SWD may not be familiar with asking for support or even be aware such a department of support for SWD exists.

The second essential characteristic one must possess is to be able to self-regulate their actions. According to Argan (1997), self-regulation includes behaviors for self-management strategies such as monitoring, instructing, evaluating, and reinforcing one’s

own behavior. This ability is particularly important for SWD to manage their disabling conditions while going to school. Such regulation becomes imperative in light of the compounding factors of homework, the organization and prioritization of time and other adult role requirements.

Wehmeyer's third characteristic relative to self-determined behavior is for a person to initiate and respond to events in a "psychologically empowered" manner (p. 2). This characteristic borrows from the work of Zimmerman (1990) who found three elements to enable an individual to perceive control from which the construct of psychological empowerment emerges. The three components constituting this construct include self-efficacy or cognition, personality or locus of control, and thirdly, motivation. Zimmerman's research found the processes of exercising perceived control in one's life to be a necessity for becoming psychologically empowered. This attribute of psychological empowerment enabled his subjects to accomplish the goals they set for themselves. Dowrick et al (2005) in their interviews with postsecondary SWD found students to point to a need for internal motivation. These students suggested motivation to be essential in order to succeed in college given the fiscal restraints of many institutions and, the consequent understaffing of disability support staff.

The fourth and final characteristic that is essential for self-determination is for a person to act in a self-realizing manner. This attribute refers to an individuals' ability to recognize their strengths and capabilities and to make that knowledge work for them. In many ways this ability is essential to the assignment of appropriate and viable academic accommodations (Field, Sarver, & Shaw, 2003; Stodden & Conway, 2003). As an

example, it is postulated that learning disabilities do not disappear. The way that people with cognitive processing disorders cope with these deficits is to employ compensatory strategies. By employing compensatory strategies, persons with learning disabilities use their strengths in order to adjust for their areas of academic deficit. As an example, someone who is dyslexic may elect to have their textbooks converted to an alternate format such as electronic text in order to listen to their reading assignments as opposed to conventional methods of reading books.

Stodden and Conway (2003) also iterated the idea that individual attributes of self-determined behavior for SWD are important variables within educational and employment environments. The authors continued with the statement: “Factors such as one’s self-belief, level of independent thinking and action, and level of socialization are crucial in accessing supports and attaining personal goals” (p. 28). In the same vein, Dowrick et al. (2005) found that several of the discussions they had with postsecondary SWD “led to statements which affirmed the need for self-reliance” (p. 46).

Self-determined behavior is not a term definitively associated with a disability. According to the American’s with Disabilities Act (West, 1993), disability is defined as a condition that substantially impacts one or more major life activities. The emphasis is on the fact that a person cannot perform certain physical or cognitive functions that a person without a limitation can accomplish without assistance. A report by The National Council on Disability (2003), entitled “People with Disabilities and Postsecondary Education,” includes the following quote,

Other people’s low expectations for people with disabilities are often internalized. A recent research project found that people with disabilities ‘seem to learn at an

early age that they have only two options- to perform a menial job or apply for SSI benefits at age 18 rather than aspiring to higher education or a professional career. (p. 5)

Numerous researchers in the varying fields of disability research have pointed to the fact there are huge psychosocial factors which play into the psyches of persons with disabilities, thus affecting their personal, educational, and vocational aspirations (Dowrick et.al., 2005; Franzblau & Moore, 2001; Goffman, 1963; Half the Planet Foundation, 2002; Longmore & Umansky, 2001; NCD, 2003; Shapiro, 1993; Stodden & Dowrick, 1999; Szymanski & Parker, 2003). A civil rights movement that continues to gain momentum in this country is known as Disability Studies (Longmore & Umansky, 2001). This field of study rejects a medical model of disability for a social-minority model that promulgates disability relative to architectural and attitudinal barriers. Stereotypes in the arts, literature, and media, lack of successful role models among faculty and staff, and low expectations of significant others can create overwhelming psychological barriers for persons with disabilities, carrying over to their academic endeavors (Longmore & Umansky, 2001; Shapiro, 1993, Stodden, 2001). These factors in combination with postsecondary support systems that vary from institution to institution, disability support systems that may or may not be connected programmatically to instruction, and support systems with a general focus on advocacy, information, and remediation do little toward fostering self-reliance and or self-determination (Dowrick et al, 2005; Stodden & Conway, 2003).

Leff et al. (2003) suggests five aspects of self-determination that can be measured:

- Self-regulated, autonomous behavior

- A person's preferences in selected life domain
- A combination of skills, knowledges, and beliefs predisposing goal-directed, self-regulated, and autonomous behavior
- Service and provider behaviors postulated to promote self-determination
- Societal factors that promote self-determination

Consistent with Leff et al., numerous authors have pointed to personality, societal, and experiences with organizations that provide support services as factors contributing to a person's ability to engage in self-determined behavior (Deci, Vallerand, Pelletier, & Ryan, 1991; Field, Sarver, & Shaw, 2003; Leff et al., 2003; Stodden & Conway, 2003; Stodden, et al, 2001; Wehmeyer, 1999).

Summary of Self-Determination Relative to Postsecondary Education

Much of the literature reviewed in this section suggests there is a relationship between SWD level of self-determined behavior and successfully navigating their way through postsecondary academics. The literature also recognizes daunting psychosocial factors that stem from architectural and attitudinal barriers persons with disabilities face and how these conditions may influence SWD pursuing postsecondary education.

Stereotypical images found in the arts, literature, and media, in combination with a lack of successful role models and low expectations of service providers makes the skill of self-determination even more important for SWD. While the purpose of this study is not to measure SWD self-determination, some of the predictor variables chosen for this study are mindful of the characteristics of self-determined behavior and based upon their conceptual similarity to this characteristic. Figure 2 presents a predictive theoretical

framework for SWD attending California community colleges and the variables that may be associated with positive outcomes for transferring to a four-year institution. The variables selected for this study are related to the literature that identifies key demographic, self-determined, and persistence factors suggested to correlate well with academic success for students in a postsecondary environment (Deci, et al., 1999; Field, Sarver, & Shaw, 2003; Leff et.al., 2003; NCES 1996, 2000; Perry, 2006; Stodden & Conway, 2003). Figure 2 depicts the interplay of these factors could so influence this predictive, correlation study.

Conclusion

Disability is a naturally occurring component across a lifespan, and may therefore be considered germane to the human condition (Rehabilitation Act, 1973). As such nearly one in five individuals in the United States can be identified with some form of a disabling condition. This equates to 19.4% of the population or 48.9 million people in the United States. Almost 10% of this number is between 18-64 years of age, and many of these individuals with the potential to work. National statistics tracking SWD attending postsecondary institutions verify the majority of these students will attend a community college for their educational needs. The literature also substantiates these numbers of SWD are increasing. Given these statistics and the record amount of money that is expended each year for SSI, SSDI, health, and educational expenses, a study designed to give more insight into the success of SWD at the postsecondary level is timely. Transferring to a four year institution for SWD becomes even more important in

light of evidence that the likelihood of becoming employed and earning better wages increases more dramatically for persons with disabilities than for those without.

This research also anticipates providing an initial step toward studies that compare the self-reliant/determined behaviors of SWD in postsecondary settings to higher transfer rates into a four-year college. The attribute of self-determination was consistently highlighted in the literature as one of the single most important factors relative to the success of SWD in a postsecondary setting. While there is little research that has measured SWD self-determination and postsecondary success, practitioners from the field of education and disability suggest there may be a conceptual link between the two. This study seeks to be a stepping-stone toward future research in this area.

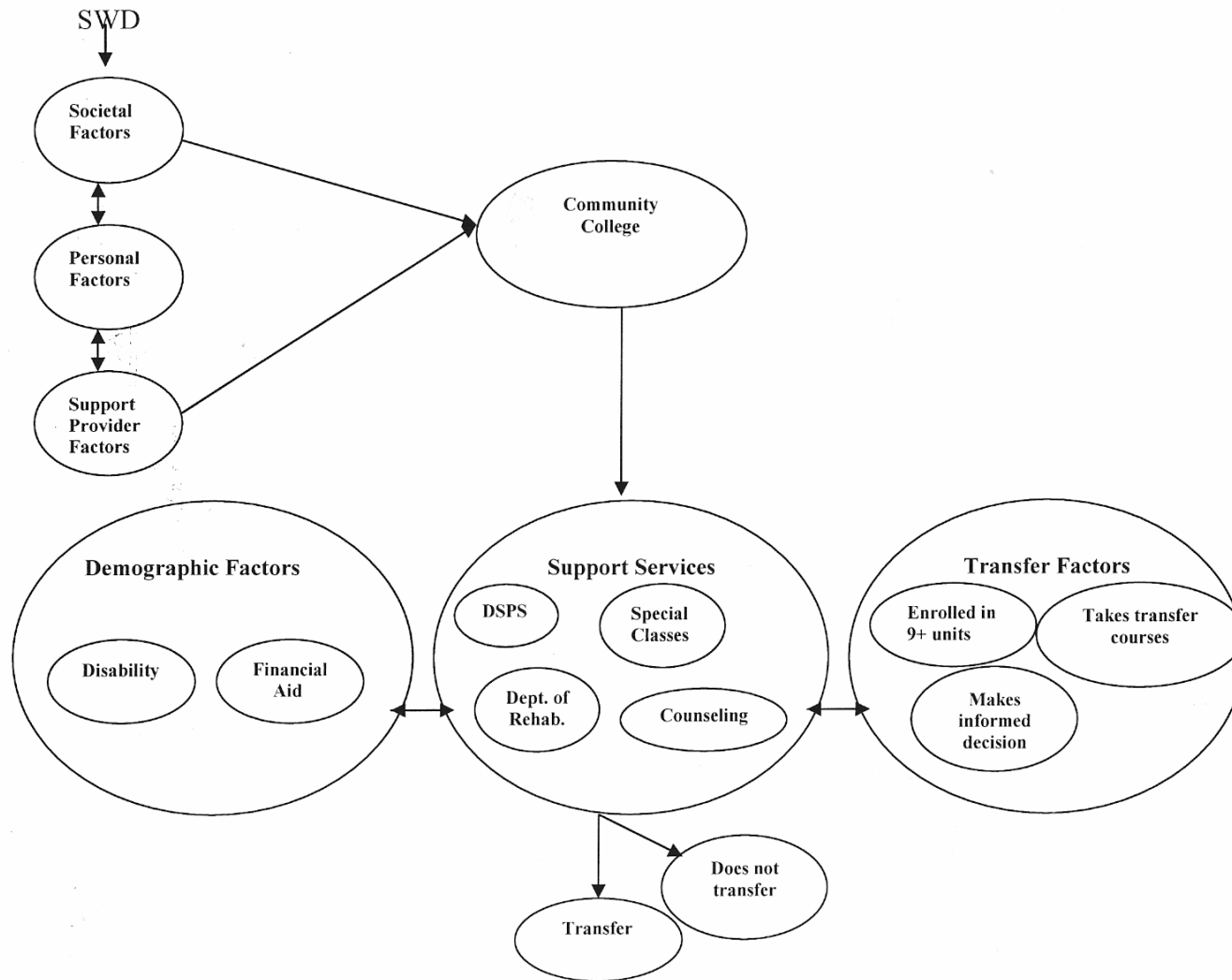


Figure 2. Theoretical framework for community college SWD transferring to a four-year institution

CHAPTER 3: DESIGN

The design of this study stems from a need to identify relationships that exist between factors affecting the academic endeavors of SWD pursuing a postsecondary education and the likelihood of transferring to a four-year college. This section provides a rationale for methodology and the type of method to be used for the research proposed. Also included are a personal bias statement, site selection, data needed, data analysis, and soundness of research practice. Finally, strategies for the protection of human subjects will be presented.

Worldview

This section sets the stage for the chosen worldview of this study by first examining positivism. A general understanding of positivistic research methodology is important to understand before exploring post-positivism which has been chosen for this study. I will also include criteria for truth as related to post-positivism and a rationale for the appropriateness of this methodology as it relates to this research.

Positivism and Post-positivism

According to Neuman, (2003), positivist researchers prefer precise quantitative data and often use experiments, surveys, and statistics. They seek rigorous, exact measures, “objective” research, and they test hypotheses by analyzing numbers from these measures carefully (p.71).

Prior to the 19th century, quantitative researchers, primarily from the physical sciences, embraced methodological assumptions of the positivist tradition. This research was value free, and operated in accordance with strict laws and logical reasoning. The

thinking of positivists was that general laws must be observed and only through experimental manipulation of existing natural laws could researchers gain knowledge. The idea was to strive for complete objectivity by controlling for bias (Denzin & Lincoln, 2000; Neuman, 2003). Smith and Heshusius's work (1986) recognized social scientists' unease with the scientific method for researching human issues. Before the turn of the century, Comte (Neuman, 2003) believed that the scientific method was indeed a viable approach to social science study, and there continued a debate between quantitative and qualitative study beyond World War II. It was not until the 1950's-1960, when post-positivism began to emerge. Early social scientists, Dilthey and Weber (Onwuegbuzie, 2000) postulated that both the subject matter and the interest of the researcher made social reality out of reach for positivistic approach. In post-positive perspective, the researcher acknowledges that there is a reality out there that can be observed; however, scientists make mistakes and are subject to error. When researchers "reduce" people to numbers, there is the risk of losing relevancy to real life circumstances. Researchers can never truly know with absolute certainty what constitutes reality. The post-positivist, while mindful of the impossible endeavor to measure absolute truth, nonetheless, strives to come as close as possible to that truth. Post-positivism postulates several assumptions, including the idea that knowledge is conjectural. The types of questions that are asked in a study, as well as the deterministic considerations of research data collected by scientists will ultimately influence the knowledge that is gained. At the same time, strict criteria for validity and reliability are essential in keeping with conventional protocol, and researchers must carefully examine their results for bias (Phillips & Burbules, 2000).

For this study my initial thought was to go with a straightforward approach that appeared to be on the surface, consistent with positivism. My thinking was to conduct a quantitative study with data that are collected each year by the California Community College Chancellor's Office. I wanted to see what factors positively related to SWD transferring to four-year colleges and given the extant data I was to use, I figured the research would be "objective and value free." As I learned more about post-positivism I recognized that research is inherently laden with biases, cultural, and environmental influences, and the personal perspective of the researcher. Therefore, the rigidity of positivistic perspective would not fit with the research I proposed.

The following study entailed a predictive, correlation design that investigates variables associated with the academic performance of students with disabilities attending today's community colleges from a post-positivism perspective. The data to be analyzed were self reported by institutions and intended to provide for aggregate data to track students for funding purposes from year to year. A pre-existing database at the California Community College Chancellor's Office (CCCCO) was used to analyze data on academics, transfer factors, and demographics. It is recognized that there are several levels of human variables that come into play with tracking students from 109 community colleges, such as with data input and interpretation, and that these may be subject to error. Another factor acknowledges that this system may not have been originally intended to collect information of this type for a correlation study. Given these factors it appeared to be a more viable decision to use a post-positivist approach for this

study. By doing so, there was an allowance for a more liberal interpretation of the data to be drawn from the relationships explored.

Criteria for Truth

One of the common definitions of positivism is that there are natural laws that govern the physical universe. These laws are logical, strict, and repeatable. Neuman (2003) however pointed out the inevitability that researchers are self-interested and influenced by their cultural perspectives, empirical experiences, and the questions they seek to answer through research. Creswell (2005), mirrored Neuman's opinion by pointing out that the true post-positivist conducts research in the same vein as a positivist; however, they will carefully examine results, refine, and adjust additional studies in the future and encourage the results of a study to be examined by others. Schutt (2006) agreed that researchers must make their work accessible to other scientists to evaluate, and it is only through this submission of work to a "community of researchers" that there is the opportunity to achieve agreement across multiple measures or methods (p. 74). The other tenets of post-positivism according to Schutt included (a) the conduct of objective research without social scientists interjecting what they hope to find, (b) the disclosure and clarification of assumptions by researchers, (c) the examination of current measures of knowledge with some skepticism in order to improve upon the studies that have been conducted to date, and (d) the study of patterns within social science research rather than individual cases.

Post-positivism was the view chosen for this proposal given its close tenets of positivistic perspective and the realization that human nature is unpredictable. This

quantitative study was interested in the relationship of specific human variables to the academic success of SWD attending California community colleges. This research embraced the structure of a positivistic approach, while at the same time is interested in opening the door for other researchers to explore the issues to be brought to light. The theoretical construct of self-determined behavior has its root in the social sciences, and it was this researcher's intention to set the stage for further study in this area as it pertains to SWD attending postsecondary institutions. Post-positivism was born out of the social sciences, given its human subject matter and the difficulty of highly controlled laboratory settings for studying the responses and interactions of people. The inter-subject differences within disabled populations and the limitations of using preexisting data from the California Chancellor's office, combined together with the bias of this researcher's personal and professional experiences, made post-positivism a viable, worldview choice. Secondly, the statistical design of this study carefully detailed every procedure in order to come as close as possible to objective truth, as well as to initiate a course of study for others to validate. Preserving post-positivistic assumptions was critical to the validity and reliability of this research, though the use of pre-existing data may have excluded a certain level of control for these measures.

Personal Bias

In keeping with the post-positivist tradition that no social scientist is capable of observing the world as it really is, this study acknowledges the inherent bias of the researcher. I am an individual with a congenital, orthopedic disability. Professionally, I am employed as the Director of Disabled Students Programs and Services (DSPS) at

Yuba Community College District in northern California. I have held this position for the last seven years and, prior to this role, was an adjunct counselor for several community colleges in DSPS. As a counselor with SWD, I have had the opportunity to work with a variety of conditions within physical, psychological, and learning categories of disability. Another responsibility that has afforded me interesting insight into the learning endeavors of SWD is related to the intelligence testing I have done and continue to do for students with learning disabilities. As both a counselor and Learning Disabilities Specialist, I work with SWD to arrive at educational plans inclusive of academic accommodation and long-term vocational planning.

My work and personal experience have led me to formulate an opinion regarding what variables may be associated with the educational performance of SWD. My own experience growing up with a disability has had a pronounced effect on me, especially, as it relates to self-determination. While they may not have been aware of it, my parents raised me to be resilient and determined. I did not walk until I was 5 years of age, and during this period wore braces and casts after several surgeries. Other children are drawn to things in their environment that are unusual or different. My main means of ambulation when I was young was unconventional, and parents would chastise their children not to stare when their curiosity got the best of them. Other experiences of this nature shaped my developmental years, and as a professional in the field of special education, a self-determined demeanor continues to serve me well. Twice within my professional career I have lost jobs because of a lack of reasonable accommodation; once as an instructor in an area called adapted physical education, and a second position, as a teacher with children

who were deaf. It was self-determined behavior that has pushed me to continue work in an area of education I have always felt I belonged. It is this same attribute that is the impetus behind this endeavor to study the relationship of numerous variables, including behaviors considered to demonstrate self-determination, to the academic performance of SWD. Given this individual framework, and the social phenomenon related to the experience of living with disability, it should be recognized the construction of this study might be so influenced. While perfect objectivity is not an expectation of this work, it is my intention to test inherent biases through a sound review of the literature and a rigorous statistical design.

Methods

Leff et al., (2003) brought to light the importance of quantitative research for assisting organizations to promote self-determination in the following quote: “Most of the professional writing on self-determination has been devoted to position papers, conceptual work, and qualitative descriptions of promising programs (Algozzine et.al., 2001, p.221). So, establishing the values and conceptual basis of self-determination was important. It was also important to use quantitative research and evaluation to get to specific matters reflecting system performance, such as how many persons, make how many choices, in what life domains, and how often these choices result in the actual attainment of goals and preferences (Algozzine et. al., 2001; Scala & Nerney, 2000). Mindful of this line of thinking, the following will explain the type of predictive correlational study to be undertaken.

The data needed for this study were driven by the following research questions:

- Is there a relationship between SWD demographics and whether or not they transfer?
- Is there a relationship between the number of specialized courses taken and transfer?
- Is there a relationship between meeting with support providers and transfer?
- Is there a relationship between SWD who are clients of the California Department of Rehabilitation?
- Is there a relationship between SWD who matriculate and transfer?
- Is there a relationship between total self-determined factors and transfer?
- Is there a relationship between the type and number of disabilities and transfer?
- Is there an interaction among the independent variables?

Creswell (2005) defined two types of correlational research: explanatory and predictive. This correlation study will examine how different sets of data (nominal, interval) on SWD attending California's community colleges are related to the dependent variable of transfer. This dependent variable was chosen because the literature has shown SWD to fare on a more equal basis with their non-disabled peers at the four-year level where they are completing degrees at a similar rate as non-disabled. Secondly, there was a distinct relationship between labor force participation and higher education for SWD, and finally, transfer to a four-year institution was also a good measure of postsecondary persistence and success.

A characteristic that is thought to influence the dependent variable is known as the independent variable (Sirkin, 1999). This proposal included 12 independent variables

because of their prevalence in research examining SWD in postsecondary education, as well as studies that focused on students who persist in postsecondary education (Astin, 1993; Blett, 2003; Ceja, Lang, Moore, & Shulock, 2007; Field, Sarver, & Shaw, 2003; Lent, Bron, & Larkin, 1984; NCES, 1996, 2000; Nora, Barlow, & Crisp, 2005; Tinto, 1993) The independent variables for this study were: (a) amount of financial aid, (b) number of DSPP contacts, (c) proportion of units completed out of those attempted, (d) average number of courses enrolled in each term, (e) proportion of courses from which students withdrew, (f) proportion of courses passed and failed, (g) proportion of basic skills courses in which enrolled, (h) proportion of transferable courses in which students enrolled, (i) proportion of credit, degree applicable courses in which enrolled, (j) proportion of non-credit, non-transferable courses in which enrolled, (k) average number of specialized DSPP courses in which enrolled and, (l) proportion of terms students received counseling advising. Table 4 outlines these variables from the current study.

Table 4

Variables used in the Current Study

Type of Demographic	Variable Name	Definition of Variable	File Used	Variable Used
Transfer Demographics	Transfer Status	Variable indicates whether the student ever transferred to a four-year college or university during the academic years 1995-1996 to 2006-2007. Values 0 = did not transfer (82.9%, $n = 26,189$), 1 = transferred (17.1%, $n = 5,401$)	XFER	TRR_IN_SCHOOL, SB00
	Transfer Time	Variable indicates how long after the initial cohort year the student transferred. Transfer time is reported in years from the initial cohort year. If two or more transfer records are reported for a student, the student's earliest transfer record was used. For example if a student transferred during the 1997-1998 academic year, transfer time would equal 2. The student transfer two years after the initial cohort year. Range = 1- 12; M = 5.83, SD = 2.98, Mode = 4, Median = 5	XFER	MIN_DATE_OF_XFER, SB00
Student Demographics	Disability Type	The primary disability listed for a student. If two or more different primary disabilities were reported for a student the student's first listed disability was used.	SD	SD01 (Primary Disability)

Table 4 (continued)

Variables used in the Current Study

Type of Demographic	Variable Name	Definition of Variable	File Used	Variable Used
Student Services - DSPS	DSPS Contacts	The average number of DSPS service contacts a student received each term enrolled. ^a To calculate the average number of DSPS service contacts, the total number of DSPS service contacts the student received for all of the semesters the student was enrolled was calculated, and that value was divided by the total number of semesters the student was enrolled. For example if a student was enrolled three terms and had 4 contacts the first term, 5 the second term, and 5 the third term, the student would have an average contact value of 4.67. Range = 0-36, M = 3.91, SD = 9.41, Mode = 4, Median = 2.75	SD	SD02 (Primary Disability Service Contacts)
	Department of Rehab Client	This variable indicates whether the student was ever a client of the Department of Rehab during the 12 years under review. A student was classified as a Department of Rehab client if the student was listed as a Department of Rehab client during any term. Values 0 = not a Dept. Rehab Client (82.6%, <i>n</i> = 26,089), 1 = Dept. Rehab Client (17.4%, <i>n</i> = 5,501)	SD	SD05 (Department of Rehab)
	DSPS Courses	This variable indicates whether a student ever enrolled in one or more specialized DSPS courses during the 12 years under review. Values 0 = Student did not enroll in any DSPS courses (92.3%, <i>n</i> = 29,147), 1 = Student enrolled in one or more DSPS courses (7.7%, <i>n</i> = 2,443)	SX & XB	CB01 (Course ID), XB08 (Course DSPS Status)

Table 4 (continued)

Variables used in the Current Study

Type of Demographic	Variable Name	Definition of Variable	File Used	Variable Used
Student Services – Financial Aid	Financial Aid	The average amount of financial aid awarded each term. ^a To calculate the average amount awarded, an aggregate variable was created to represent the sum (or total) amount of financial aid the student received for all of the semesters the student was enrolled, that value was then divided by the total number of semesters the student was enrolled. Range =0-\$5,107.71 M = \$264.15, SD = \$530.75, Median = \$17.89, Mode = 0	FA	SF22 (Amount of Financial Aid Received)
Student Services – Matriculation	Orientation Services	Variable indicates whether the student ever received orientation services during the terms they were enrolled. Students were classified as having received orientation services if they ever received orientation services during any of the terms. Typically orientation services are only provided to new students. Values 0 = Did not receive Orientation Services (45.0%, $n = 14,209$), 1 = Received Orientation Services (55.0%, $n = 17,381$)	SM	SM07 (Orientation Services)

Table 4 (continued)

Variables used in the Current Study

Type of Demographic	Variable Name	Definition of Variable	File Used	Variable Used
	Placement Testing	Variable indicates whether the student ever participated in placement testing during the terms they were enrolled. Students were classified as having participated in placement testing if they ever completed a placement exam during any of the terms they were enrolled. Typically placement testing is provided to new students. Values 0 = Did not participate in Placement Testing (70.3%, $n = 22,222$), 1 = Participated in Placement Testing (29.7%, $n = 9,368$)	SM	SM08 (Assessment Services Placement)
	Follow-up Counseling Services	Proportion of terms a student received educational follow-up counseling services. The proportion of terms a student received educational follow-up counseling services was calculated by summing the number of terms a student received follow-up counseling services and dividing that value by the total number of terms the student was enrolled. A student may receive educational follow-up counseling services during each term that they enroll. Range = 0-1, $M = 0.3$, $SD = 0.40$, Median = 0.23, Mode = 0	SM	SM13 (Follow-Up Services)

Table 4 (continued)

Variables used in the Current Study

Type of Demographic	Variable Name	Definition of Variable	File Used	Variable Used
	Counseling, Advisement Services	<p>Proportion of terms a student received counseling or advisement services.</p> <p>The proportion of terms a student received counseling or advisement services was calculated by summing the number of terms a student received counseling or advisement services and dividing that value by the total number of terms the student was enrolled.</p> <p>A student may receive counseling or advisement services during each term that they enroll.</p> <p>Range = 0-1, M = 0.18, SD = 0.27, Median = 0, Mode = 0</p>	SM	SM12 (Advisement Services)
Student Performance	Number of Courses Enrolled	<p>Average number of courses a student enrolled in each term.^a</p> <p>To calculate the average number of courses a student enrolled in each term, the total number of courses a student enrolled in each term was calculated. The total was then divided by the number of terms the student enrolled.</p> <p>Range = 1-15, M = 2.81, SD = 1.37, Median = 2.66, Mode = 1</p>	SX	CB01 (Course ID)

Table 4 (continued)

Variables used in the Current Study

Type of Demographic	Variable Name	Definition of Variable	File Used	Variable Used
	Units Completed	<p>The proportion of units a student completed out of the total number of units the student attempted.</p> <p>The proportion of units completed was calculated by dividing the total number of units the student completed by the total number of units the student attempted. A student is considered to have completed a course if they remained enrolled in the course until the end of the term. Students that withdraw prior to the end of the term are considered to have “attempted” but not completed the course. If a student remains enrolled in all of the courses in which they enrolled until the end of the term, the proportion of units completed will equal 1.00. If a student withdraws from every course in which they enroll prior to the end of the term the proportion of units completed will equal 0.00.</p> <p>Range = 0-1, M = 0.54, SD = 0.33, Median = 0.60, Mode = 0</p>	SX	SXD3 (Units Attempted), SX03 (Units)
	Proportion courses Passed	<p>Proportion of courses the student passed.</p> <p>The proportion of units a student passed was calculated by dividing the total number of courses the student passed by the total number of courses in which the student enrolled. A student is considered to have passed a course in which they earned an A, B, C, or CR grade in a course.</p> <p>Range = 0-1, M = 0.46, SD = 0.30, Median = 0.49, Mode = 0</p>	SX	SX04 (Grade)

Table 4 (continued)

Variables used in the Current Study

Type of Demographic	Variable Name	Definition of Variable	File Used	Variable Used
	Proportion courses Failed	Proportion of courses the student failed. The proportion of units a student failed was calculated by dividing the total number of courses the student failed by the total number of courses the student enrolled in. A student is considered to have failed a course in which they earned a D, F, or NC grade in a course. Range = 0-1, M = 0.12, SD = 0.16, Median = 0.06, Mode = 0	SX	SX04 (Grade)
	Basic Skills Courses	Proportion of basic skills courses in which student enrolled. The proportion of basic skills courses in which a student enrolled was calculated by dividing the total number of basic skills courses in which the student enrolled by the total number of courses in which the student enrolled. Courses are designated as basic skills in accordance with the Title V guidelines. All courses identified as pre-collegiate or basic skills were classified as basic skills courses in this analysis. Range = 0-1, M = 0.28, SD = 0.30, Median = 0.16, Mode = 0	SX & CB	CB01 (Course ID), CB08 (Basic Skills Status)

Table 4 (continued)

Variables used in the Current Study

Type of Demographic	Variable Name	Definition of Variable	File Used	Variable Used
	Transferable Courses ^b	<p>The proportion of transferable courses in which a student enrolled.</p> <p>The proportion of transferable courses in which a student enrolled was calculated by dividing the number of transferable courses in which the student enrolled by the total number of courses in which the student enrolled. Courses are designated as transferable if they met the CSU or UC articulation standards.</p> <p>Range = 0-1, M = 0.50, SD = 0.32, Median = 0.55, Mode = 0</p>	SX & CB	CB01 (Course ID), CB05 (Transfer Status)
	Credit, Degree-Applicable Courses ^b	<p>The proportion of credit, degree-applicable courses in which student enrolled.</p> <p>The proportion of credit, degree-applicable courses in which a student enrolled was calculated by dividing the number of credit, degree-applicable courses in which the student enrolled by the total number of courses in which the student enrolled. Courses are designated as credit, degree-applicable if the course meets the CSU or UC articulation standards, or if the course meets the college's degree requirements.</p> <p>Range = 0-1, M = 0.62, SD = 0.34, Median = 0.73, Mode = 1</p>	SX & CB	CB01 (Course ID), CB04 (Credit Status)

Table 4 (continued)

Variables used in the Current Study

Type of Demographic	Variable Name	Definition of Variable	File Used	Variable Used
	Non-credit, Non-transferable Courses ^c	The proportion of non-credit, non-transferable courses in which a student enrolled. The proportion of non-credit, non-transferable courses in which a student enrolled was calculated by dividing the number of non-credit, non-transferable courses in which the student enrolled by the total number of courses in which the student enrolled. Range = 0-1, M = 0.19, SD = 0.31, Median = 0.04, Mode = 0	SX & CB	CB01 (Course ID), CB04 (Credit Status)

^aAsterisks refer to the averages calculated instead of the total to control for the length of time a student was enrolled.

^bAll transferable courses are credit, degree-applicable courses, thus the two variables, transferable courses and credit, degree-applicable courses, are not independent.

^cMany basic skills courses are non-credit, non-transferable courses, thus the two variables, basic skills courses and non-credit, non-transferable courses, are not independent.

This study was predictive with the following hypothesis proposed: SWD who have a greater number of self-determined behaviors as evidenced by support services and coursework, as well as those who receive financial aid, and are physically/other disabled will have a greater likelihood of transfer to a four-year college than SWD who have a fewer number of self-determined behaviors, do not receive financial aid, and are disabled in other ways. A cohort of students was chosen over a 12 year period for a representative sample to be examined as one measure of controlling what was expected to be a large data set. The student demographics of financial aid and disability type were chosen given their consistency in the literature relative to SWD in postsecondary education and the relationship of financial status as highly correlated with postsecondary success for all

students with and without disability. Enrollment in specialized course instruction for self- advocacy, psychological empowerment, and social integration are independent variables chosen because of their conceptual similarity to factors identified in the literature as being related to self-determined behavior. Specialized courses offered by DSPS typically are offered in varying categories of academic and student development. As an example, courses have been offered in assistive computer technology, study skills, disability management, and adapted physical education. These courses are designed to empower SWD to develop compensatory strategies for academic, career, and lifelong learning.

Advantages of correlational method. The correlational method allows a researcher to study relationships between a large number of variables if needed. With the correlation method it is possible to measure the strength and direction of relationships. By conducting correlational research it is possible lay the groundwork for future research that is experimental or quasi-experimental, and it can provide results useful for informing professional practice.

Disadvantages of correlational research. This predictive correlational study will not establish cause and effect relationships between variables. It will only show a relationship. Correlations break down complex relationships into simpler components and it should be noted that success in transfer could be achieved by a variety of means outside those being examined.

The operational definitions of the independent and dependent variables for this study follow in Table 5. The dependent variable in this study was whether or not SWD

transfer to a four-year college as determined by correlating specific independent variables drawn from extant data at the CCCCO research department. The dependent variable of transfer was chosen, as it is the most finely tuned area of research for the CCCCO (Perry, 2006), in addition to the literature reporting SWD's ability to compete more equally with their peers without disabilities when enrolled at a four-year institution. Six percent of SWD as well as those students without disabilities,

Table 5

Operational Definitions of the Independent and Dependent Variables

Variable	Description	Code	Dependent/ Independent
Transfer ^a	Transfer	0	Dependent
	Not Transfer	1	
Enrollment with California Department of Rehabilitation ^a	Yes	0	Independent
	No	1	
Disability Type ^a	Deaf	0	Independent
	Blind	1	
	Brain Injury Physical	2	
	Learn Disability	3	
	Other	4	
Financial Aid ^a	Yes	0	Independent
	No	1	
Enrollment Patterns ^a	Units completed	0	Independent
	Enrolled units	1	
	Course Withdrawal	2	
	Passed/Failed Basic Skills	3	
	Transfer courses	4	
	Credit/Non-credit	5	
DSPS Contact ^a	0-2 contacts	0	Independent
	3-4 contacts	1	
	4 plus contacts	2	

Specialized Courses ^b	Number of specialized courses taken	N/A	Independent
Self-Determination ^b	Number of self-determined behaviors	N/A	Independent

^aCategorical

^bContinuous

who start out at public 2-year colleges, attain a bachelor's degree (Horn, Berktold, & Bobbitt 1999). There was also a greater occurrence of competitive employment for persons with disabilities the higher their education. Finally, transfer rate was also a measure that is particularly important given the research that indicates less than one percent of individuals with disabilities hold a professional position (NCD, 2003); this study may help to determine factors important to attaining higher levels of education for SWD.

The independent variables, it is hypothesized, are characteristics that may influence or affect the dependent variable (Creswell, 2005). The independent variables for this study were chosen because of their prevalence in the literature review. Four of these variables are linked conceptually with behavior that is characteristic of a person who demonstrates self determined behavior. These are: (a) registering and working with DSPS, (b) taking specialized coursework designed to assist SWD to navigate through their postsecondary endeavor (psychological empowerment), (c) working with the Department of Rehabilitation, (d) matriculation with counseling departments, and (e) a combination of all variables for SWD to capitalize upon their strengths thus, mirroring the definition of acting in a 'self-realizing' manner (Wehmeyer & Schalock, 2001).

Pre-existing data from the California Community College Chancellor's office was subjected to statistical measures applied over a 12-year period in the initial analyses of students who transferred. Starting in academic year 1995-1996, a student who enrolled for the first time in credit courses was subsequently tracked for every year in terms of his/her enrollment in credit classes. In this manner, a variety of files were joined together by a common key (M. Huffman, Personal communication, October, 2007). The use of pre-existing data was both cost and time efficient and represented the most current data available for SWD attending California community colleges. One of the most important components of choosing the independent variables in Table 4 was whether they represented the proposed relationships under study. A match of the CCCCCO data for transfer is undertaken with the National Student Clearinghouse each year as a measure of accuracy for data shared between the two entities. The CCCCCO has an agreement with the National Student Clearinghouse for data checks two times a year where they send identifiers for students and the Clearinghouse sends them back as confirmed.

Data

This predictive correlation study collected traditional demographic and academic data on SWD in order to compare these independent variables to the dependent variable of transfer. The initial data set was collected over 15 academic years between 1991-1992 and 2005-2006. The initial transfer sample, though, was studied over 12 years of extant data consistent with the literature that says SWD take about twice as long as their non-disabled peers to accomplish their postsecondary goals. The independent variables for this study data were chosen in part based upon recent studies (Cabrera, Burkum & Nasa,

2005; Ceja, et al, 2007; Dowrick et al., 2005; Engstrom & Tinto, 2008; Field, et al, 1998; Field, Sarver, & Shaw, 2003; Leff, et al, 2003; Stodden & Conway, 2003; Wehmeyer & Schalock, 2001) indicating an emerging trend to examine behavioral indicators that focus on the college experience of students attending postsecondary institutions. They are also conceptually linked to self-determined behavior. In both instances (integration/college experience, and self-determination) several authors have found these non-cognitive factors may in fact influence learning and personal development (Andreu, 2002; Astin, 1993; Engstrom & Tinto, 2008; Tinto, 1993).

The population studied in this research was defined as SWD attending California community colleges between 1995-1996 and 2006-2007. Transfer research conducted by the CCCCCO has studied first time freshman cohorts for 6-year intervals, because empirical research identified this period of time as producing 85-90% of student outcomes (Perry, 2006). The literature (NCD, 2003; NCES, 1996; 2000) found that SWD take about twice the amount of time to complete their academic goals then their peers without disabilities so a comparison was made to non-disabled students during this time-period.

In order to derive a transfer sample, students were selected for inclusion in a cohort if they met the following two requirements: (a) the student was not enrolled during the three academic years (1992-1993, 1993-1994, and 1994-1995) prior to the 1995-1996 academic year, and (b) the student provided a valid social security number (which was replaced with a student ID number) as this was necessary for tracking their transfer status. The first filter was chosen in order to come as close as possible to indentifying a

student's initial term of enrollment in college. These two filters resulted in 4741 students who transferred to a four-year institution within 12 years.

Data Collection

In an organization as large as the California Community College System, it is important to include several filter questions about the participants, the tasks or types of activities under study, the setting, and unique causes and consequences that affect them (Cunningham, 1993). The population of students studied was drawn from the CCCCCO only, consequently, the researcher is mindful of the fact results from this study may not be generalized beyond California's community college system.

Data were collected from the CCCCCO in Sacramento, California. It was in the form of preexisting records for SWD between the academic years of 1992-1993 and 2005-2006. The initial data set included limited demographic and academic variables of approximately 11 million SWD attending California community colleges during this 15 year period. Next, only students who transferred to a four year college were identified by using the two filters previously identified as SWD who were not enrolled in the first three years of this longitudinal study and those students who had valid identification numbers. This process significantly reduced the numbers of eligible SWD to a smaller pool for analysis with a total of 31,590. As the purpose of this study was to examine the factors that influence the academic performance or transfer of SWD and, included categorical and continuous data, both descriptive and inferential statistics were employed. Table 6 relates each expanded research question to the statistical tool used.

In order to answer the first four research questions I employed both descriptive and inferential statistics. For each of the independent variables relative to demographics (financial aid and disability type) I used frequency distributions in order to provide for a pictorial description of how the numbers were distributed. I also examined cross-tabulations with the dependent variable and each of the possibilities of independent variables (i.e., enrollment in specialized courses, enrollment in both Department of Rehabilitation and DSPS, etc.) Thirdly, I used chi-square to determine the direction and strength of relationships, if any, between transfer and independent variables. As the chi square statistic can only be used with nominal or ordinal data, it was not appropriate for continuous variables such as the number of specialized courses taken. Logistic regression was therefore necessary (Muijs, 2004; Sirkin, 1999).

Table 6

Statistical Tools for Research Question

Research Question	Statistical Analysis Tool
Is there a relationship between SWD demographics and whether or not they transfer? ^{a,b}	frequency cross-tab chi square
Is there a relationship between the number of specialized courses taken and transfer? ^{a,b}	frequency cross-tab chi square
Is there a relationship between meeting with DSPS for four or more contacts a year and transfer? ^{a,b}	frequency cross-tab chi square
Is there a relationship between SWD who meet with a counselor (matriculate) and transfer? ^{a,b}	frequency cross-tab chi square

Is there a relationship between total self-determined factors and transfer? ^{a,b}	frequency logistic regression
Is there a relationship between the type and number of disabilities (1 or 2) and transfer? ^{a,b}	frequency logistic regression
Is there an interaction between the eight independent variables? ^b	logistic regression

^aDescriptive

^bInferential

Strategies for Soundness of Research

The design for this correlation study provided for external validity. There was no treatment in this type of research, because of the use of a pre-existing database. Students were unaware of their participation and therefore unable to inform other students or manipulate any of the variables. Descriptive and inferential statistics were utilized to summarize data and determine the relationships between variables. One potential threat to external validity was with the use of a pre-existing database which may not have been originally intended to collect data for the purposes of this study (Muijs, 2004). One other threat to the validity of this study was the selection of participants given the unpredictability of SWD motivation, level of intelligence, and other personal characteristics. As extant data were used, there may be confounding variables that cannot be controlled for or measured that could influence my outcomes. Finally the differing approaches to database maintenance per college could factor into the results obtained.

Pre-existing data from the CCCCCO were examined going back 12 years for this longitudinal study of students assigned to groups with a common key. This study's measurement of predictor variables at one point in time and the criterion variable at another point in time (transfer) is characteristic of a prediction design. The examination

taken over intervals of time may also of helped mitigate confounding variables such as age, race, and gender (Andreu, 2002; Sirkin, 1999).

One threat to the reliability of scores is the different protocols employed by institutions for recording matriculation data. Nevertheless, it is anticipated that census data and course enrollment data collection were standardized across the institutions under study. This standardization may be assumed given the uniform protocol for types of data input across several categorical areas (e.g. Disability type, specialized coursework, Dept. of Rehabilitation, etc.).

Finally, this researcher worked within the guidelines for post-positivist, social science study. Schutt (2006) presented several conditions that apply to this type of research: (a) commit to the study without becoming too personally involved; (b) document all procedures and disclose them for the evaluation of others; (c) clarify assumptions after careful consideration; (d) consider current knowledge with “general skepticism” (p.74); and (e) search for irregularities or patterns within the results obtained. As such this researcher conducted the study as accurately as possible.

Human Subjects

Aggregate data from the California Community College Chancellor’s office that is collected every academic year was accessed and used for statistical study. There are 109 community colleges in California with recent population figures of SWD at over 200,000 (Michalowski, 2005). The sample examined was large enough to decrease the possibility of error. Aggregate data for this research was used, ensuring that confidentiality was protected. This process also assured the protection of human subjects

through the acceptance of an application to the Institutional Review Board (IRB) associated with Oregon State University. The design of the study did not present an initial risk to participants, as they were unaware of their participation. No one was identified individually, and all information was kept strictly confidential.

Initial contact was made with the Director of Research and the Vice Chancellor of Technology, Research, and Information Systems for the California Community College Chancellor's office in Sacramento, where the idea for this study was well received. The CCCCCO has its own requirements for meeting the protection of data used for research purposes that was reviewed and approved as well.

Summary

The current study employed a post-positive perspective for its predictive, correlational design. The researcher included a statement on personal bias and strategies for the soundness of the study. The dependent variable of transfer was chosen given its relationship to persistence and success of SWD postsecondary endeavors as well as the distinct relationship higher education has with labor force participation for SWD. Independent variables included were limited demographic and academic data. Pre-existing data from the CCCCCO were examined for a 12-year period between academic years 1995-1996 and 2006-2007. Both descriptive and inferential statistics using t-tests, chi-square and logistic regression were subsequently employed.

CHAPTER 4: RESULTS AND DATA ANALYSIS

The purpose of this study was to gain insight into the relationship between select demographic and academic variables and the transfer of SWD in California community colleges to a four year institution. This chapter provides the results of data analysis conducted from extant information provided by the California Community Colleges Chancellor's Office. Eleven flat files were initially provided containing student course enrollment information, select student service data, and course and program information. Data were provided for students enrolled in the 109 public community colleges across the state.

The following section presents descriptive and inferential analyses related to each of eight research questions which read as follow:

- Is there a relationship between SWD demographics and whether or not they transfer?
- Is there a relationship between the number of specialized courses taken and transfer?
- Is there a relationship between meeting with support providers and transfer?
- Is there a relationship between SWD who are clients of the California Department of Rehabilitation and transfer?
- Is there a relationship between SWD who matriculate and transfer?
- Is there a relationship between total self-determined factors and transfer?
- Is there a relationship between the type and number of disabilities and transfer?
- Is there an interaction among the independent variables?

Sample

In order to address this study's research questions it was necessary to eliminate some files and to sort and re-organize this information into SPSS. Raw data from the CCCCCO contained approximately 11 million records relative to SWD. To create a useable data set, select variables were transformed and the files combined.

A sample of 31,590 students who were enrolled during the 1995-1996 academic year was used in the following analyses. Table 7 is a frequency distribution of the original 31,590 students' by primary disability.

In order to derive a transfer sample, students were selected for inclusion in a cohort if they met the following two requirements: (a) the student was not enrolled during the three academic years (1992-1993, 1993-1994, and 1994-1995) prior to the 1995-1996 academic year, and (b) the student provided a valid social security number (which was replaced with a student ID number) as this was necessary for tracking their transfer status. This sample included SWD who were not enrolled in the previous academic years as an effort to come as close as can be determined for start dates, mindful of the fact the CCCCCO did not provide data for first term of enrollment of students. The final sample used in this study consisted of 4,741 SWD who transferred to a four-year institution within 12 years (see Table 8).

After establishing this sample from the data received from the CCCCCO additional tables were created by merging and or connecting the data in original flat files in line with this study's research questions. Initial statistical analyses consisted of frequency and percentage distribution and independent samples t-tests, on the following independent

Table 7

Frequency Distribution of Students' Primary Disability

Primary Disability	Frequency	Percent	Valid Percent
Missing	2,939	9%	(Removing Missing)
Brain Injury	1,602	5%	6%
Developmental Delay	1,885	6%	7%
Hearing	1,147	4%	4%
Learning Disability	8,305	26%	29%
Mobility	5,395	17%	19%
Other Physical	5,373	17%	19%
Psychological	3,938	13%	14%
Speech	204	.6%	.7%
Vision	802	3%	3%
Total	31,590	100%	100%

variables: (a) average amount of financial aid awarded each term, (b) average number of DSPS contacts each term, (c) proportion of units completed out of those attempted, (d) average number of courses enrolled in each term, (e) proportion of courses from which students withdrew, (f) proportion of courses passed and failed, (g) proportion of basic **skills** courses in which enrolled, (h) proportion of transferable courses in which students enrolled, (i) proportion of credit, degree applicable courses in which enrolled, (j) proportion of non-credit, non-transferable courses in which enrolled, (k) proportion of

terms student received educational follow-up advisement, (l) average number of specialized DSPS courses enrolled in each term, and (m) proportion of terms students received counseling/advising.

Table 8

Frequency Distribution of the Number of Academic Years from 1995-1996 until the Student Transferred

Years	Frequency	Valid Percent
1.00	248	5%
2.00	323	7%
3.00	626	13%
4.00	682	14%
5.00	582	12%
6.00	494	10%
7.00	392	8%
8.00	352	7%
9.00	346	7%
10.00	262	6%
11.00	232	5%
12.00	202	4%
Total	4741	100%

Financial aid. With respect to the average amount of financial aid awarded each semester an independent groups t test compared the mean for students who transferred

(\underline{M} = 311.40, \underline{SD} = 544.09) with that for students who did not transfer (\underline{M} = 254.41, \underline{SD} = 527.45). This test was found to be statistically significant at an alpha level of .05, t (7626.88) = -7.05, $p < .01$ indicating on average, students who transferred received \$57.00 per term more than those students who did not transfer. The strength of the relationship between these two groups as indexed by η^2 , was 0.00646. The 95% confidence interval for the mean was -72.85 to -41.13 (see Table 9).

DSPS contacts. An independent groups t test compared the average number of DSPS contacts each semester for students who transfer (\underline{M} = 3.19, \underline{SD} = 8.42) with that for students who do not transfer (\underline{M} = 4.07, \underline{SD} = 9.60). This test was found to be statistically significant at an alpha level of .05, t (28649) = 5.94, $p < .01$, indicating that students that transferred had on average fewer DSPS contacts each term than students who did not transfer. Although a significant relationship was observed, the actual strength of the relationship between average number of DSPS contacts each semester and transfer as indexed by η^2 , was 0.001, indicating a very weak relationship between DSPS contacts and transfer. The 95% confidence interval for the mean difference was .59 to 1.17. Chapter 5 will explore the limitations and influence of data collection by institutions participating in this analysis that likely impact the finding presented with this variable.

Proportion of units completed. The proportion of units SWD completed out of the number attempted was also examined. An independent groups t test compared the mean proportion of units students completed out of the number attempted for students

who transfer ($\underline{M} = .71$, $\underline{SD} = .23$) with that for students who do not transfer ($\underline{M} = .50$, $\underline{SD} = .34$). This test was found to be statistically significant at an alpha level of .05, $t(11186.74) = -56.96$, $p < .01$, indicating that SWD who transferred completed a greater proportion of units out of the number of units they attempted than SWD who did not transfer. The strength of the relationship between the proportions of units students completed out of the number attempted and transfer, as indexed by η^2 , was 0.26. The 95% confidence interval for the mean difference was -.22 to -.20.

Number of courses each term. An independent groups t test compared the mean number of courses in which students enrolled each term for students who transferred ($\underline{M} = 3.28$, $\underline{SD} = 1.19$) with that for students who did not transfer ($\underline{M} = 2.71$, $\underline{SD} = 1.39$). This test was found to be statistically significant at an alpha level of .05, $t(8715.47) = -31.03$, $p < .01$, indicating that on average students who transferred took .57 more courses each semester than students who did not transfer. The strength of the relationship between courses taken each semester and transfer as indexed by η^2 , was 0.10. The 95% confidence interval for the mean difference was -.61 to -.54.

Proportion of courses from which student withdrew. An independent groups t test compared the proportion of courses withdrawn from by SWD who transferred ($\underline{M} = .14$, $\underline{SD} = .14$) with that for students who did not transfer ($\underline{M} = .17$, $\underline{SD} = .21$). This test was found to be statistically significant at an alpha level of .05, $t(10671.69) = 13.27$, $p < .01$, indicating that SWD who transferred withdrew from fewer courses than students who did not transfer. The strength of the relationship between proportion of courses students

Table 9

Independent Samples t-Test Results

IV	DV Transfer	N	Mean	Std. Dev.	Std. Error Mean	t	df	Sig. (2-tailed)	Lower 95% CI	Upper 95% CI	Eta Squared	% Var. Explained
Financial Aid	No	26189	254.410	527.452	3.259	-7.045	7626.884	<.001	-72.846	-41.132	0.006	0.65%
	Yes	5401	311.399	544.086	7.403							
DSPS Contacts	No	23765	4.066	9.602	.0622	5.939	28649	<.001	.588	1.168	0.001	0.12%
	Yes	4886	3.188	8.421	.120							
Proportion of units completed	No	26189	.503	.340	.002	-56.963	11186.744	<.001	-.219	-.204	0.225	22.48%
	Yes	5401	.714	.225	.003							
Ave. No. of courses each semester	No	26189	2.713	1.393	.009	-31.027	8715.467	<.001	-.607	-.535	0.010	9.95%
	Yes	5401	3.283	1.194	.016							
Proportion of Courses Withdraw	No	26189	.169	.206	.001	13.272	10671.689	<.001	.026	.035	0.016	1.62%
	Yes	5401	.139	.142	.002							
Courses Passed	No	26189	.427	.310	.002	-54.508	10360.424	<.001	-.200	-.187	0.223	22.29%
	Yes	5401	.620	.220	.003							
Courses Failed	No	26189	.126	.173	.001	19.178	11893.199	<.001	.031	.039	0.030	3.00%
	Yes	5401	.091	.109	.001							
Basic Skills Courses	No	26189	.315	.323	.002	68.296	18055.438	<.001	.187	.198	0.205	20.53%
	Yes	5401	.123	.146	.002							
Transfer Courses	No	26189	.464	.327	.002	-75.003	2310.981	<.001	-.260	-.247	0.709	70.88%
	Yes	5401	.717	.199	.003							

Table 9

Independent Samples t-Test Results

IV	DV Transfer	N	Mean	Std. Dev.	Std. Error Mean	t	df	Sig. (2-tailed)	Lower 95% CI	Upper 95% CI	Eta Squared	% Var. Explained																																														
Credit, Degree Applicable Courses	No	26189	.583	.349	.002	-77.030	15798.713	<.001	-.253	-.241	0.273	27.30%																																														
	Yes	5401	.829	.174	.002								Non-Credit, Non-Trans	No	26189	.211	.330	.002	49.812	22178.759	<.001	.128	.138	0.101	10.06%	Yes	5401	.078	.127	.002	Proportion terms for follow-up counseling	No	24167	.350	.395	.003	-14.852	29539	<.001	-.100	.006	0.007	0.74%	Yes	5374	.439	.394	.005	Proportion terms counseling	No	24167	.177	.274	.002	-2.779	8481.918	.005	-.018
Non-Credit, Non-Trans	No	26189	.211	.330	.002	49.812	22178.759	<.001	.128	.138	0.101	10.06%																																														
	Yes	5401	.078	.127	.002								Proportion terms for follow-up counseling	No	24167	.350	.395	.003	-14.852	29539	<.001	-.100	.006	0.007	0.74%	Yes	5374	.439	.394	.005	Proportion terms counseling	No	24167	.177	.274	.002	-2.779	8481.918	.005	-.018	-.003	0.001	0.09%	Yes	5374	.187	.251	.003										
Proportion terms for follow-up counseling	No	24167	.350	.395	.003	-14.852	29539	<.001	-.100	.006	0.007	0.74%																																														
	Yes	5374	.439	.394	.005								Proportion terms counseling	No	24167	.177	.274	.002	-2.779	8481.918	.005	-.018	-.003	0.001	0.09%	Yes	5374	.187	.251	.003																												
Proportion terms counseling	No	24167	.177	.274	.002	-2.779	8481.918	.005	-.018	-.003	0.001	0.09%																																														
	Yes	5374	.187	.251	.003																																																					

withdrew from and transfer as indexed by η^2 , was 0.016. The 95% confidence interval for the mean difference was .03 to .04.

Proportion of courses student passed. The proportion of courses students passed had a relatively strong relationship with transfer with 22.29% variance explained. An independent t test compared the mean proportion of courses students passed for SWD who transferred ($\underline{M} = .62$, $\underline{SD} = .22$) with that for SWD who did not transfer ($\underline{M} = .43$, $\underline{SD} = .31$). This test was found to be statistically significant at an alpha level of .05, $t(10360.42) = -54.51$, $p < .01$, indicating that SWD who transferred passed more of their classes than those who did not transfer which on first glance makes obvious sense. It is not uncommon to find SWD who experience an exacerbation of symptoms as the stress of the semester comes to fruition, usually three-quarters through the term. This occurrence is consistent with the literature that reports a number of barriers to the successful completion and passing of courses experienced by SWD in postsecondary education. The strength of the relationship between the proportion of courses students passed and transfer as indexed by η^2 , was 0.22. The 95% confidence interval for the mean difference was -.20 to -.19.

Proportion of courses student failed. An independent groups t test compared the mean proportion of courses students failed for SWD who transferred ($\underline{M} = .09$, $\underline{SD} = .11$) with that for students who did not transfer ($\underline{M} = .13$, $\underline{SD} = .17$). This test was found to be statistically significant at an alpha level of .05, $t(11893.20) = 19.18$, $p < .01$, indicating that SWD who transferred failed fewer courses than students who did not transfer. The strength of the relationship between proportion of courses students failed and transfer as

indexed by η^2 , was 0.03. The 95% confidence interval for the mean difference was .03 to .04.

Proportion of basic skills courses in which student enrolled. The literature attests to SWD across the country as being much less qualified for postsecondary education than their peers without disabilities. An independent groups t test compared the mean proportion of basic skills courses enrolled for SWD who transferred ($M = .12$, $SD = .15$) with that for students who did not transfer ($M = .32$, $SD = .32$). This test was found to be statistically significant at an alpha level of .05, $t(18055.44) = 68.30$, $p < .01$, indicating that students that transferred enrolled in a lower proportion of basic skills classes than students who did not transfer. The strength of this relationship between proportion of basic skills courses and transfer as indexed by η^2 , was 0.21. The 95% confidence interval for the mean difference was .19 to .20. This finding is consistent with national statistics of SWD preparedness for postsecondary work.

Proportion of transferable courses in which student enrolled. It stands to reason that the proportion of transferable courses in which students enrolled would have a strong relationship with transfer. Later discussion explores the ramifications of how disability impacts the educational coursework selection of SWD. An independent groups t test compared the proportion of transferable courses in which students enrolled for students who transferred ($M = .72$, $SD = .20$) with that for students who did not transfer ($M = .46$, $SD = .33$). This test was found to be statistically significant at an alpha level of .05, $t(2310.98) = -75.00$, $p < .01$, indicating that SWD who transferred enrolled in a higher proportion of transferable courses than SWD who did not transfer. The strength of the

relationship between transfer and proportion of transferable courses in which students enrolled as indexed by η^2 , was 0.71. The 95% confidence interval for the mean difference was -.26 to -.25.

Proportion of credit, degree applicable courses in which student enrolled. An independent groups t test compared the mean proportion of credit, degree applicable courses in which students enrolled for SWD who transferred ($M = .83$, $SD = .17$) with that for SWD who did not transfer ($M = .58$, $SD = .35$). This test was found to be statistically significant at an alpha level of .05, $t(15798.71) = -77.03$, $p < .01$, indicating that transfer students took a higher proportion of credit, degree applicable courses than students who did not transfer. The strength of the relationship between transfer and proportion of credit, degree applicable courses in which students enrolled as indexed by η^2 , was 0.27. The 95% confidence interval for the mean difference was -.25 to -.24. This is another area consistent with the literature that discusses the barriers SWD face in postsecondary education as related to course selection.

Proportion of specialized DSPP courses in which student enrolled. Many California community colleges offer specialized courses designed specifically for assisting SWD to navigate their way through a postsecondary environment with such courses as academic strategies, assistive technology, and remediation as examples. A majority of these offerings are non-credit, non-transferable courses. An independent groups t test compared the mean proportion of non-credit, non-transferable courses in which students enrolled for SWD who transferred ($M = .08$, $SD = .13$) with that of SWD who did not transfer ($M = .21$, $SD = .33$). This test was found to be statistically

significant at an alpha level of .05, $t(22178.76) = 49.81$, $p < .01$, indicating transfer SWD took a lower proportion of non-credit, non-transferable courses than SWD who did not transfer. The strength of the relationship between transfer and proportion of non-credit, non-transferable courses as indexed by η^2 , was 0.10. The 95% confidence interval for the mean difference was .13 to .14.

Proportion of terms student received counseling/advisement services. An independent groups t test compared the mean proportion of terms students received counseling/advisement services for SWD who transferred ($M = .19$, $SD = .25$) with that for SWD who did not transfer ($M = .18$, $SD = .27$). This test was found to be statistically significant at an alpha level of .05, $t(8481.92) = -2.78$, $p < .01$, indicating that students who transferred received counseling/advisement services less often than SWD who did not transfer. The strength of the relationship between transfer and proportion of terms students received counseling/advisement services as indexed by η^2 , was .0009. The 95% confidence interval for the mean difference was -.018 to -.003.

Proportion of terms student received educational follow-up services. An independent groups t test compared mean proportion of terms students received educational follow-up counseling services for SWD who transferred ($M = .44$, $SD = .39$) with that for SWD who did not transfer ($M = .35$, $SD = .40$). This test was found to be significantly significant at an alpha level of .05, $t(29539) = -14.85$, $p < .01$, indicating that students who transferred received educational follow-up counseling services less often than SWD who did not transfer. The strength of the relationship between transfer

and proportion of terms students received follow-up counseling services as indexed by η^2 , was .007. The 95% confidence interval for the mean difference was -.100 to .006.

Summary. All of the independent variables tested (see first column of Table 9 for list) were significantly related to transfer. However, as the effect sizes indicated, some factors were more strongly related to transfer than others. For example, the proportion of transferable courses in which a student enrolled explained 71% of the variability in transfer, whereas the average number of DSPS contacts a student had per term enrolled explained 0.12% of the variability in transfer. Independent variables that had a relatively strong relationship to transfer were:

- Proportion of transferable courses in which a student enrolled: 71%
- Proportion of credit, degree applicable courses in which student enrolled: 27%
- Proportion of units completed out of the total number in which student enrolled: 22%
- Proportion of courses students passed: 22%
- Proportion of basic skills courses in which student enrolled: 21%
- Proportion of non-credit, non-transferable courses in which a student enrolled: 10%
- Average number of courses a student enrolled in each term: 10%.

Table 10 gives the relationship of all predictor variables and transfer entailed in this study. The table indicates whether there is a positive or negative relationship between the predictor or independent variable and the criterion, dependent variable. For example,

there was a positive relationship between financial aid and transfer because students who transferred on average received more financial aid.

Table 10

Relationship Between Predictor and Criterion Variables

Predictor Variable	Relationship	Variance Accounted For
Proportion of Transferable Courses Taken	Positive	71%
Proportion Credit/Degree Applicable Courses Taken	Positive	27%
Proportion of Units Completed	Positive	23%
Proportion of Courses Passed	Positive	22%
Proportion of Basic Skills Courses Taken	Negative	21%
Proportion of Non/Credit, Non Transferable Courses Taken	Negative	10%
Average Number of Courses/Semester	Positive	10%
Proportion of Courses Failed	Negative	3%
Proportion of Courses Withdrawn From	Negative	2%
Proportion of Terms Received Follow-up Counseling	Positive	1%
Financial Aid	Positive	1%
DSPS Contacts	Negative	<1%
Proportion of Terms Students Received Counseling	Positive	<1%

Chi Square Test Results

The following results reflect the relationship between nominal-level variables and transfer. The relationship between transfer and the following independent variables were examined using chi-square tests for independence: primary disability type, disability types grouped into physical and cognitive categories, orientation services, placement testing, participation with the California Department of Rehabilitation, and DSPS specialized course enrollment.

Primary disability type: A chi-square test was applied to the relationship between transfer and primary disability type and found to be statistically significant at an alpha level of .05, $\chi^2(8) = 634.32$, $p < .001$. The observed frequencies can be found in Table 11.

As indexed by Cramer's statistic, the strength of the relationship was .15. This reflects primarily the fact that students with learning disabilities transferred at a higher rate (23%) than any of the other nine disabling conditions. This finding is inconsistent with national data which may or may not be relative to the funding California provides for the testing of individuals for learning disabilities. Students who fell into the "other" category transferred at a rate of 19% and include conditions that do not fall cleanly into sensory, cognitive, and physical categories of disability. Examples of disabilities meeting the "other" categorization are persons with AIDS, cancer, diabetes, and scleroderma. Students who were deaf or hard of hearing had the lowest transfer rate at 3% with students who were categorized as brain injured transferring at 9%. Chapter five recognizes the missing relationship of severity of disability to these overall findings.

Table 11 presents the relationship between every primary disability type and transfer.

Table 11

Relationship Between Primary Disability Type and Transfer

Primary Disability	Transfer No		Transfer Yes		Transfer Rate	Total
	Count	Expected Count	Count	Expected Count		
Blind	1451	1328.8	151	273.2	9%	1602
Developmental Delay	1827	1563.5	58	321.5	3%	1885
Hearing Loss	998	951.4	149	195.6	13%	1147
Learning Disabled	6358	6888.7	1947	1416.3	23%	8305
Mobility	4532	4475.0	863	920.0	13%	5395
Physical-Other	4348	4456.7	1025	916.3	19%	5373
Psychological	3399	3266.4	539	671.6	14%	3938
Speech	167	169.2	37	34.8	18%	204
Vision	685	665.2	117	136.8	16%	802
Total	23765	23765.0	4886.0	4886.0		28651

	Value	df	Asymp. Sig. (2-sided)	Cramer's V
Pearson Chi-Square	634.32	8	.000	.15
N of Valid Cases	28651			

Physical versus cognitive disabilities. The relationship between primary disability and transfer was not significant when the nine disability types were dichotomized into physical and cognitive categories. $\chi^2 (1) = 0.19$, $p = .66$. This finding

indicates that an equal number of students with physical and cognitive disabilities transfer to a four year college or university. The transfer rate for students with physical disabilities was 17%, and the transfer rate for students with cognitive disabilities was also 17%. See Table 12.

Table 12

Relationship Between Primary Disability and Transfer with Disability Types Grouped into Physical and Cognitive

Disability	Transfer No		Transfer Yes		Transfer Rate	Total
	Count	Expected Count	Count	Expected Count		
Physical	10563	10549.3	2154	2167.7	17%	12717
Cognitive	13035	13048.7	2695	2681.3	17%	15730
Total	23598	23598.0	4849	4849.0	17%	28447

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Cramer's V
Pearson Chi-Square	.19(b)	1	.66			.003
N of Valid Cases	28447					

Orientation. A chi-square test was applied to the relationship between transfer and orientation services and found to be statistically significant at an alpha level of .05, $\chi^2(1) = 312.47$, $p < .001$. As indexed by Cramer's statistic, the strength of the relationship was .11. This reflects primarily the fact that SWD who transferred were more likely to

have attended orientation (22%) than students who did not transfer (13%). See Table 13.

Table 13

Relationship Between Orientation Services and Transfer

Received Orientation Services	Transfer No		Transfer Yes		Transfer Rate	Total
	Count	Expected Count	Count	Expected Count		
No	9723	9173.0	1486	2036.0	13%	11,209
Yes	12,169	12,719.0	3373	2823.0	22%	15,542
Total	21,892	21,892.0	4859	4859.0	18%	26,751

	Value	df	Asymp. Sig. (2-sided)	Cramer's V
Pearson Chi-Square	312.47	1	.000	.11
N of Valid Cases	26751			

Placement testing. A chi-square test was applied to the relationship between transfer and placement testing and found to be statistically significant at an alpha level of .05, $\chi^2(1) = 224.49$, $p < .001$. As indexed by Cramer's statistic, the strength of the relationship was .09. This reflects primarily the fact that SWD who transferred participated in placement testing more (23%) than students who did not transfer (16%) See Table 14.

Table 14

Relationship Between Placement Testing and Transfer

Participated in Placement Testing	Transfer No		Transfer Yes		Transfer Rate	Total
	Count	Expected Count	Count	Expected Count		
No	15,482	15,043.9	2901	3339.1	16%	18,383
Yes	6410	6848.1	1958	1519.9	23%	8,368
Total	21,892	21,892.0	4859	4859.0	18%	26,751

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Cramer's V
Pearson Chi-Square	224.49(b)	1	.000			.09
N of Valid Cases	26751					

California Department of Rehabilitation. A chi-square test was applied to the relationship between transfer and participation with the California Department of Rehabilitation and found to be statistically significant at an alpha level of .05, $\chi^2(1) = 43.06$, $p < .001$. As indexed by Cramer's statistic, the strength of the relationship was .37. This reflects primarily the fact that students who are the clients of the Department of Rehabilitation are less likely to transfer (14%) than students who are not Department of Rehabilitation clients (18%). See Table 15. This will be discussed further in Chapter Five.

Table 15

Relationship Between Department of Rehabilitation and Transfer

Department of Rehab	Transfer No		Transfer Yes		Transfer Rate	Total
	Count	Expected Count	Count	Expected Count		
No	21,462	21,628.5	4627	4460.5	18%	26,089
Yes	4727	5560.5	774	940.5	14%	5501
Total	26,189	26,189.30	5401	5401.0	100%	31,590

	Value	Df	Sig. (2-sided)	Cramer's V
Pearson Chi-Square	43.06	1	.000	0.37
N of Valid Cases	31590			

Enrollment in specialized DSPTS courses. A chi-square test was applied to the relationship between transfer and enrollment in specialized DSPTS courses, the relationship was found to be statistically significant at an alpha level of .05, $\chi^2 (1) = 68.26$, $p < .001$. As indexed by Cramer's statistic, the strength of the relationship was .05. This reflects primarily the fact that students who enrolled in DSPTS specialized courses were less likely to transfer (5%) than students who were not enrolled in specialized DSPTS courses (8%). See Table 16.

Table 16

Relationship Between DSPS Course Enrollment and Transfer

Department of Rehab	Transfer No		Transfer Yes		Transfer Rate	Total
	Count	Expected Count	Count	Expected Count		
No	24,016	24,163.7	2173	2025.3	8%	26,089
Yes	4727	5560.5	774	940.5	5%	5501
Total	26,189	26,189.30	5401	5401.0	8%	31,590

	Value	df	Asymp. Sig. (2-sided)	Cramer's V
Pearson Chi-Square	68.27	1	.000	.05
N of Valid Cases	31590			

Logistic Regression Results

Logistic regression was conducted on the entire sample of 31,590 in an effort to answer the research question of whether or not there was an interaction among the independent variables. As shown in Table 17, a portion of files (15%) were excluded

Table 17

Logistic Regression Results Unweighted Cases

Selected Cases	Number	Percent
Included in Analysis	26751	85%
Missing Cases	4839	15%
Total	31590	100%

because they had missing values on one or more of the independent variables. This put the number of cases included at 26,751 students.

A logistic regression begins with a null model with no predictors. The goal is to see if adding several predictors would improve the prediction. Table 18 indicates the results of the null model with no predictors. The predicted odds of transferring alone based on the proportion of students was .22; this is without considering any other predictors. In the null model the observed and predicted values are the same because you have no predictors to change the outcome.

Table 18

Results of Null Model

Step 0	Transfer		Percentage Correct	Overall Percentage
	No	Yes		
Observed				
Predicted	21892	4859	100.0	82.0

^aConstant is included in the model.

^bThe cut value is .500

Variables in the Equation

	B	S.E.	Wald	df	Sig.	Exp(B)	
Step 0	Constant	-1.51	.02	9010.15	1	.000	.22

The goal is now to see if adding several predictors will improve these odds with a full model. Table 19 presents these results. Analysis was performed using SPSS where a

test of the full model with all 21 predictors against a null model was statistically reliable, $\chi^2(21, N = 26,751) = 4918.46, p < .001$. indicating that the full model significantly predicts transfer. Examination of the Beta weights and the Wald's statistic revealed that all of the individual predictors were significant except for proportion of terms students received advisement, and the following disability statuses: Mobility, Other, Psychological, and Speech. The variance in transfer accounted for is moderate with Nagelkerke $r^2 = .27$. Prediction success was unimpressive, with an overall percentage of 83% (Table 19). Prediction success was not strong as there was a very small difference between the null model at 82% and 83% after the addition of the 21 variables.

Based on the odds ratios in the current study and shown in Table 20, the variables that were the strongest predictors were: (a) proportion of transfer courses in which student enrolled at 16.4 (odds ratio), and (b) proportion of units student completed out of the total number in which student enrolled at 9.2. Odds ratios general interpretation means that for every one unit of change in the independent variable, the odds that a person will transfer are multiplied by the value listed in the odds ratio. As an example, for the variable *received orientation*, the odds ratio is 1.38. This odds ratio indicates that the odds of a student who received orientation services will transfer are 1.38 times greater than the odds of a student who does not receive orientation services.

Overall, the results of the logistic regression do not add any new information to the results found in the univariate analyses (i.e., the t-test and chi-square results). The variables in the univariate analyses that were found to have a strong relationship with

Table 19

Alternate Model All Predictors

Step 1	Chi-square	df	Sig.
Step	4918.46	21	.000
Block	4918.46	21	.000
Model	4918.46	21	.000

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	20434.44(a)	.17	.27

Classification Table(a)

Observed			Predicted		
			Transfer		Percentage Correct
			0	1	0
Step 1	Transfer	0	21405	487	97.8
		1	3975	884	18.2
		Overall Percentage			83.3

Table 20

Variables in the Equation

			Wald [tests the unique contribution of each predictor]	df	Sig.	Exp(B) [odds ratios]	
	B	S.E.					
Step	PRIMARY_DISABILITY		286.193	8	.000		
1(a)							
	PRIMARY_DISABILITY(1)	-.506	.147	11.853	1	.001	.603
	PRIMARY_DISABILITY(2)	-1.238	.181	46.943	1	.000	.290
	PRIMARY_DISABILITY(3)	-.147	.149	.971	1	.324	.863
	PRIMARY_DISABILITY(4)	.275	.118	5.424	1	.020	1.316
	PRIMARY_DISABILITY(5)	-.404	.121	11.171	1	.001	.668
	PRIMARY_DISABILITY(6)	-.123	.120	1.053	1	.305	.884
	PRIMARY_DISABILITY(7)	-.149	.125	1.426	1	.232	.861
	PRIMARY_DISABILITY(8)	-.043	.233	.034	1	.853	.958
	Financial Aid	.000	.000	65.086	1	.000	1.000
	Disability Contacts	-.009	.003	8.662	1	.003	.991
	Ave. No Courses Enrolled	.325	.015	474.075	1	.000	1.384
	Prop. Units Completed	2.218	.156	202.593	1	.000	9.191
	Prop. Courses Withdrew	-1.013	.182	31.051	1	.000	.363
	Prop. Courses Pass	-1.348	.154	77.057	1	.000	.260
	Prop. Courses Fail	-2.337	.185	158.874	1	.000	.097
	Prop. Courses Basic Skills	-1.317	.150	77.211	1	.000	.268
	Prop. Courses Transfer	2.797	.116	576.958	1	.000	16.400
	Prop. Terms Follow-up	.178	.047	14.558	1	.000	1.195
	Prop. Terms Advisement	.066	.067	.969	1	.325	1.068
	Received Orientation	.323	.040	64.181	1	.000	1.381
	Received Assessment	.274	.039	48.988	1	.000	1.316
	Constant	-4.469	.190	554.385	1	.000	.011

transfer were also found to be the strongest predictors of transfer in the logistic regression model. The only variable which was no longer related to transfer (after removing the effects of the other variables) was Proportion of Terms Student Received Counseling/Advisement. The only unique information added by the logistic regression is the clarification of the specific disabilities types that are related to transfer. These findings may be important with respect to future studies relative to counseling and disability type.

Logistic regression with self-determination variables. Next, logistic regression was run on the four variables predicted to be conceptually related to self-determination. These were (a) affiliation with the California Department of Rehabilitation, (b) enrollment in DSPS specialized coursework, (c) proportion of terms students received counseling/advising services and, (d) average number of DSPS contacts student received each term.

As previously reported in Tables 17, 18, and 19 a test of the full model with all four predictors against a null model was statistically reliable, $\chi^2(4, N = 26,751) = 4918.46$, $p < .001$ indicating that the predictors, as a set, reliably distinguished between students who transfer and students who do not transfer. Although a statistically significant result was found, the change in variance in transfer accounted for is negative and small (from 83.3 to 81.8). The overall prediction of transfer did not change at all after the addition of the four variables (See null model Table 21 and Alternate Model 22). This finding suggests that the four predictors added in Table 22 thought to be conceptually

Table 21

Select Self-Determination Variables Case Summary

Unweighted Cases ^a	Selected Cases		Unselected Cases	Total
	Included in Analysis	Missing Cases		
N	26,751	4839	0	31,590
Percent	84.7%	15.3%	0	100.0%

Null Model

	Observed	Predicted			
		Transfer		Percentage Correct	
		No	Yes	0	
Step 0	Transfer	No	21892	0	100.0
		Yes	4859	0	.0
	Overall Percentage				81.8

^aConstant is included in the model.

Variables in the Equation

	B	S.E.	Wald	df	Sig.	Exp(B)	
Step 0	Constant	-1.51	.02	9010.15	1	.000	.22

Table 22

Alternate Model Self Determination Variables

	Observed		Predicted		
			Transfer		Percentage Correct
			No	Yes	0
Step 1	Transfer	No	21892	0	100.0
		Yes	4859	0	.0
	Overall Percentage				81.8

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1(a)	DEPT_REHAB	-.26	.04	36.92	1	.000	.77
	DSPS Enrollment	-.58	.07	72.20	1	.000	.56
	Prop_Advisement	.21	.06	13.21	1	.000	1.23
	AVE_DSPS contacts	-.02	.004	29.23	1	.000	.98
	Constant	-1.38	.02	3398.27	1	.000	.25

related to self-determined behavior by SWD (participation with the California Department of Rehabilitation, students enrollment in specialized courses, proportion of terms students received counseling/advisement services, and average number of DSPS contacts student received each term) do not contribute to predicting transfer in the logistic regression model. The overall model was significant; all four predictors were related to transfer. However, the overall prediction of transfer did not improve after the addition of the four variables.

Summary

The purpose of this section was to provide for the results and data analysis for this study examining the relationship between select demographic and academic variables and the transfer of SWD in California community colleges to a four year institution.

Descriptive and inferential analyses related to each of eight research questions were presented. All of the independent variables tested were significantly related to transfer. However, the effect sizes indicate that some of factors explained more of the variability in transfer than others. The four major findings of this study follows:

1. independent variables that had a relatively strong relationship with transfer were:
 - (a) proportion of transferable courses in which a student enrolled, (b) proportion of credit, degree-applicable courses in which enrolled, (c) proportion of units completed out of total number attempted, and (d) proportion of courses students passed.
2. the variables that were found to have a strong relationship with transfer were also found to be the strongest predictors of transfer: (a) proportion of transfer courses in which enrolled, and (b) proportion of units students completed out of the total number in which students enrolled,
3. while all four student service predictors conceptually (DSPS contacts, participation with the Department of Rehabilitation, proportion of terms seeing a counselor, and taking specialized courses) were related to transfer, the overall prediction of transfer did not improve at all after the addition of the four variables, and

4. SWD; (a) evidenced averages for academic transfer consistent with their non-disabled peers for transfer from California community colleges to four-year institutions, and (b) completed associates degrees at same rate as non-disabled students. This finding is significant as national statistics (NCD, 2003; NCES, 2000) with respect to SWD academic success indicates that students without disabilities were more likely to earn an associate's degrees (18 percent versus 7 percent) than SWD.

CHAPTER 5

The purpose of this study was to examine the relationship of select demographic and academic variables to the transfer of SWD to a four-year institution. The following research questions were addressed through descriptive and inferential statistical analysis:

- Is there a relationship between SWD demographics and whether or not they transfer?
- Is there a relationship between the number of specialized courses taken and transfer?
- Is there a relationship between meeting with support providers and transfer?
- Is there a relationship between SWD who are clients of the California Department of Rehabilitation and transfer?
- Is there a relationship between SWD who matriculate and transfer?
- Is there a relationship between total self-determined factors and transfer?
- Is there a relationship between the type of disability and transfer?
- Is there an interaction among the independent variables?

This chapter will present the findings of the current study and includes limitations of research. Recommendations for future research are presented and findings are corroborated by studies that have examined similar populations and used extant databases. Implications of this study follow that are consistent with major findings from this research. Community college leaders and practitioners are presented with strategies for increasing support for the variables from this study shown to be in relationship with the successful transfer of SWD to a four-year institution.

In order to answer the research questions from this study extant data from the Chancellor's Office Management Information System (COMIS) was utilized. The CCCCCO uses the National Student Clearinghouse (NSC) to identify students that were enrolled outside the California Community College (CCC) system and those who transfer to a four-year institution. A data match was performed between the COMIS and NSC producing 10 flat files containing basic student information with limited demographics, student service and student enrollment information from 1992-1993 through 2006-2007. A cohort of students was developed by choosing SWD who were enrolled during the 1995-1996 academic year and who had not been enrolled three years (1992-1993, 1993-1994, and 1994-1995) prior to the 1995-1996 academic years. The decision was made to select students who were not enrolled three years prior to the 1995-1996 academic years as an attempt to create a cohort of students that primarily contained new community college students. Student performance was followed for 12 academic years where it was found that 5,401 (17.1%) transferred to a four year institution. Descriptive and inferential analyses were performed on this data in order to discern the presence of relationships between select demographic and academic variables of SWD who attended California community colleges. As this was a correlation study, there can be no cause and effect conclusions drawn, however, it is also anticipated that these findings may be influential in experimental or quasi-experimental research in the future. The following sections will discuss the major findings of this research, limitations of the study, recommendations for future study and the implications of research on professional practice.

Findings

All of the independent variables tested were significantly related to transfer. However, the effect sizes indicated that some of the factors explained more of the variability in transfer than others. The research questions and findings are presented in this section:

- Is there a relationship between student demographics and whether or not they transferred?

With respect to SWD demographics, the average student transferred 5.832 years after the 1995-1996 year. The majority of SWD who transferred had learning disabilities (26%), and those SWD who transferred received \$57.00 more financial aid each semester than those students who did not transfer.

- Is there a relationship between the number of specialized courses taken and transfer?

Although a statistically significant result was found regarding the relationship between SWD who took specialized classes and transfer, this variable was not a factor for predicting transfer. There was a much higher or positive relationship between SWD who took a degree applicable to transfer level courses than the SWD who took specialized courses.

- Is there a relationship between meeting with support providers and transfer?

For the purposes of this study support providers referred to DSPS specialists, mainstream counselors, and outside agency providers at the California Department of Rehabilitation. While a positive relationship was found for all

three support provider groups and SWD who transferred, these variables did not impact the prediction of transfer.

- Is there a relationship between SWD who matriculate and transfer?

The matriculation components examined in this study were placement testing, orientation services, and counseling. SWD participated in placement testing more (23%) than students who did not transfer (16%). SWD who transferred were more likely to have attended orientation (22%) than students who did not transfer (13%). Interestingly enough, SWD who transferred received counseling services less often than students who did not transfer.

- Is there a relationship between total self determination factors and transfer?

The self-determination variables thought to represent self-determined behavior were contact with DSPS, seeking advisement through counselors, taking specialized courses, and assistance from the California Department of Rehabilitation. The findings suggest that these four predictors did not contribute to predicting transfer in the logistic regression model. The overall model was significant however; the prediction of transfer did not improve after the addition of the four variables.

- Is there a relationship between the type and number of disabilities and transfer?

Only the primary disability of individuals was examined in this study. Students with learning disabilities transferred at a higher rate (23%) than any of the other nine disabling conditions. When the disability conditions were grouped into

physical and cognitive categories, an equal number of students with physical and cognitive disabilities transferred to a four year college or university.

- Is there an interaction among the independent variables?

Analysis was performed where a test of the full model with all 21 predictors was statistically reliable and indicated the model significantly predicts transfer. All of the individual predictors were significant except for proportion of terms students received advisement, and the following disabilities: Mobility, Other, Psychological, and Speech.

The four major findings of this study follow:

1. independent variables that had a relatively strong relationship with transfer were: (a) proportion of transferable courses in which a student enrolled, (b) proportion of credit, degree-applicable courses in which students enrolled, (c) proportion of units completed out of total number attempted, and (d) proportion of courses students passed.
2. the variables that were found to have a strong relationship with transfer were also found to be the strongest predictors of transfer: (a) proportion of transfer courses in which students enrolled, (b) proportion of units students completed out of the total number students enrolled,
3. while all four student service predictors conceptually related to self-determined choices (DSPS contacts, participation with the Department of Rehabilitation, proportion of terms seeing a counselor, and taking specialized

courses) were related to transfer, the overall prediction of transfer did not improve at all after the addition of the four variables, and

4. SWD; (a) evidenced averages for academic transfer with their non-disabled peers for transfer from California community colleges to four-year institutions, and (b) completed associates degrees at the same rate as non-disabled students. This result is in contrast to national statistics indicating that students without disabilities were more likely to earn an associate's degree (18 percent versus 7 percent) than SWD.

Limitations of Study

While the California Community Colleges Chancellor's Office has been recognized for its openness to allowing researchers outside of the system to access student data on a restricted basis, it has been suggested that the accuracy of data may be compromised in some instances given the differing missions of the 109 community colleges in the state (CCCCO, 2007; W. Hom, personal communication, September, 2007). Varying geographic locations and program offerings also influence what students are taking and the demographic characteristics of students attending community colleges across the state in varying rural, suburban, and metropolitan areas. According to the CCCCCO, Accountability Reporting for the Community Colleges (ARCC) indicates several other factors may influence the reporting of data for this system;

- environmental factors including non-standard prototypes of personnel within reporting departments and access to resources for reporting

- course coding practices and the inputting of matriculation data where program funding is not directly impacted by this record keeping
- enrollment characteristics of students academic goals that run the gamut from personal enrichment to certificate, degree, and transfer. Enrollment patterns are also subject to students varying levels of postsecondary readiness and the degree of informed decision making prior to enrollment.

Extant data used in this study may also have been influenced by exogenous variables relative to DSPS programming. As an example, one limitation from this study recognizes a lack of prototype for DSPS staffing where information on SWD was tracked. Some DSPS units have more learning disability specialists than counselors or limited learning disability specialists with more counselors because the college serves a higher incidence of students who are deaf. Some programs may offer more specialized courses than colleges who offer none at all.

Another area where extant data may have been influenced is the input of data and follow-up by staff with varying levels of expertise and protocol for data based management. Additionally, this study recognizes data that was collected from over 100 DSPS programs in the state, some of which were start-up programs with less access to comprehensive services, auxiliary aides, and employing differing methods and instrumentation for tracking students. There also are student variables that were not controlled for, such as levels of student motivation and attitude, academic preparation, and the demographics of age, ethnicity, and gender of DSPS student participants across the state.

While the support services and courses investigated in the present study did not evidence prediction of transfer, it could mean these variables did not prove relevant as the factors were poor behavioral observations relative to SWD self-determination. Another limiting factor for the support service of working with the California Department of Rehabilitation (DR) recognizes the goal of this agency is to get persons to work and not to necessarily send SWD to school. There are also the limitations of this study with respect to the use of extant data that lacks students' goals and individual characteristics. For example, there were SWD included in this study whose goal was other than a pathway to a four-year college or whose level of disability severity had limiting influence. This is significant to both internal and external factors influencing a person's ability to engage in self-determined behavior (Dowrick et.al., 2005; Field, et. al.,1998; Field, Sarver, & Shaw, 2003; Leff, et. al., 2003; NCD, 2003; Stodden & Conway, 2003; Wehmeyer & Schalock, 2001; Yuen, 2003). Finally, it is important to note that the National Clearinghouse receives data from approximately 92% of this country's college students.

Recommendations for Future Research

The recommendations for future research relate both to the limitations of the current study and the findings of the research relative to SWD. Subsequent research would include demographic information of SWD including how age, ethnicity, gender and severity of disability interact with academic variables. A second recommendation would be to explore how demographic and/or environmental factors interact with academic factors within a single district or region where data tracking is standardized.

Other environmental factors such as temperate climates and terrain might also be studied in areas providing for ease of access and accommodations for SWD. This study was conducted with data from California community colleges only, therefore a similar analysis from another state where support services for SWD is differently structured is recommended. The current study examined enrollment patterns of SWD without controls for college readiness and/or placement into core transfer courses in reading, English, and math. As such, a similar study that controlled for academic readiness for transfer level work could be telling.

Lastly, the findings from this study found the four variables thought to be consistent with a student's self-determination were indeed relevant to transfer yet; they did not contribute to the prediction of transfer. As such, a study whose design included data that examined a student's personality and characteristics in addition to their academic choices may be telling. As an example, one opportunity for collecting this data might be found in the collection of anecdotal information and narrative history of students. DSPS practitioners typically keep track of contacts with students, maintaining files of support services and progress. Individual files are routinely kept on students for documentation of disability and other educational records of service provision and progress. Another avenue in which students voices may be heard is with respect to end of the semester student surveys that are used for evaluation and program reviews. These two examples can be accomplished readily as they are current practices entailed in most DSPS departments though, perhaps without a specific emphasis on the collection of self-determination measures.

Implications and Recommendations

The purpose of this study was to investigate what relationships existed between SWD who transfer to a four-year institution and select demographic and academic variables. The following discussion will focus on the independent variables that had a relatively strong relationship with transfer which were: (a) proportion of transferable courses taken, (b) proportion of credit degree applicable courses in which enrolled, (c) proportion of units completed out of the number attempted, and (d) proportion of courses students passed. Both proportion of transfer courses in which students enrolled and proportion of units students completed out of the total number they enrolled, were also found to be the strongest predictors of transfer.

Implications of Enrollment Patterns

Recent research compiled by the Institute for Higher Education Leadership & Policy (HELP) entitled, *Beyond the Open Door: Increasing Student Success in California Community Colleges* (2007) indicated that enrollment patterns have an impact on the completion rates of students in postsecondary education. The categories of enrollment the HELP study included were full time versus part time status, continuous enrollment without taking off one or more terms, participation in orientation courses, and indications of dropping less than 20% of courses and late registration. Four of these variables are consistent with the findings of this current transfer study on SWD. They include the following factors: average number of courses in which students enrolled each term, proportion of courses completed, proportions of courses passed (with a letter grade of “C” or better), and participation in orientation. In both the HELP study and the current

study students had favorable academic results when they were enrolled in more than a part time status (9 units or more), completed the majority of the units in which they were enrolled, and passed these courses with a “C” or better. A fourth variable from the current study, *received orientation*, showed that the odds of a student who received orientation services transferring are 1.381 greater than the odds of a student who does not transfer.

The five enrollment patterns of the HELP study (which were full time/part time enrollment, continuous enrollment, orientation courses, dropping less than 20% of courses during a semester, and late registration) were relevant to academic success of nondisabled students. These same variables from the current study related to SWD also found positive academic results. This suggests SWD attending California community colleges are competing and performing consistent with their non-disabled peers when practicing the same academic factors contributing to the success of their peers without disabilities. The academic factors of full time course enrollment, completing courses, and passing classes were also corroborated by Cabrera, Burkum, and La Nasa (2005) in their work examining collegiate variables with a correlation to the eventual attainment of a four-year degree. The authors wrote, “Taken as a whole, our results suggest transfer is more likely to be associated with a community college student’s curricular choices and academic success than with any other collegiate experience measured” (pp. 167-168).

Full-time enrollment. Other research on community college students who attended college on a full time basis versus part-time has shown that these students have higher rates of retention, transfer, and degree completion as well (Hoachlander, Sikora, Horn, & Carroll, 2003; Woodlief, Thomas, & Orozco, 2003). While the current study

found SWD who transferred averaged 3.283 courses each term, it should be noted that taking three courses is commonly considered a full time load for these individuals.

Community college practitioners working with SWD should be mindful of the fact this population benefits from full time enrollment as it may relate to more opportunities for interaction with staff, faculty, and service provision. Tinto's original model of student retention as a by-product of engagement (1993) has spawned numerous works by subsequent researchers (Cabrera & Nora, 1994; Hurtado & Carter, 1997; Nora 2002; Nora, Barlow, & Crisp, 2005; Nora & Cabrera, 1996; Pascarella & Terenzini, 2005; Rendon, 1994) focusing on components of student engagement. In order for SWD to enroll in at least three courses each semester they must be engaged and mentored by skilled practitioners knowledgeable about the kind of support necessary for successful full time enrollment.

In Nora's (2004) Student/Institution Engagement Model, the author identified six academic and social experiences thought to impact withdrawal and persistence including formal and informal interactions with faculty, learning communities, social experiences, campus climates, validating experiences, and mentoring. Consistent with this framework for supporting postsecondary enrollments were qualitative studies where SWD pointed to the critical place of mentorship and staff/faculty interaction as they navigated through their educational programming (Field, Sarver, & Shaw, 2003; Stodden, et al, 2005). It has also been pointed out by NCD (2003) that given the responsibilities of SWD under the Rehabilitation Act (1973) and the ADA (West, 1993), students must not only disclose disability but often times spend a fair amount of time on campus advocating for their

academic support needs with instructors. Therefore, SWD who are on campus more often and enrolled at least three-quarter time would benefit from interacting with faculty and support staff employed in student service and instructional environments. Academic advisors cognizant of this fact could direct educational planning and advise SWD consistent with this knowledge.

Course completion. The current study found that SWD who transferred completed a greater proportion of units out of the number of units they attempted than SWD who did not transfer. While all independent variables were related to transfer, effect size indicated course completion had a relatively stronger relationship (22.48%) with transfer. This corroborated research by Adelman (2006) showing the probability of transfer is significantly affected (decreasing by 39%) when students exhibit a high number of course withdrawals and subsequent repeats of classes. This same researcher found that when students drop or have to repeat 20% or more of their coursework the likelihood of degree attainment decreases by half. Research on SWD in postsecondary education (Horn, Berkold, & Bobbitt, 1999; NCD, 2003; NCES, 1996, 2000) has indicated that about one half of first time students drop out from their postsecondary programming and the majority of SWD who hope to transfer, never do. The findings from the present study are consistent with these percentages as a little over half of the sample size (54%) completed the units in which they enrolled each semester. An even lower percentage passed their courses (46%).

The literature (Barnett & Li, 1997; Horn, Berkold, & Bobbitt, 1999; NCD, 2003; NCES, 1996, 2000; NOD & Harris Interactive, 1998; Stodden & Dowrick, 1999)

indicated myriad reasons and challenges specific to SWD that act as barriers to their academic success: under preparedness for postsecondary work, inconsistencies in the level of support services available for SWD from institution to institution, time and cost factors, and lack of self determination to name a few. Potential implications from the present study's finding suggest that matriculation and enrollment patterns are variables positively related to SWD transfer to a four year institution. As such, SWD must receive the kind of support that fosters key decision making relative to matriculation and educational planning. The literature indicates that professionals in postsecondary institutions typically focus their work on insuring SWD have educational access to their courses through the provision of basic accommodations and by advocating for students (NCD, 2003; Stodden & Conway, 2003). Less time is spent on designing curriculum and providing opportunities for students to learn to advocate for themselves and practicing the kind of academic strategies that will enable them to continue and successfully complete their courses when obstacles arise. The present study suggests that more time should be devoted to these issues. Assisting students to stay focused on what works and reminding them of the relationships of course withdrawals and repetition of classes to successful academic outcomes is critical for DSPS practitioners to employ. This awareness of focus in concert with advisement for navigating successful course completions are critical in keeping SWD on transfer pathways in light of the knowledge gained from the current study.

Transferable and degree applicable coursework. Among the variables that were found to have a strong relationship with transfer was the proportion of transfer courses

for which a student enrolled (71%). This finding indicates that SWD who transferred enrolled in a higher proportion of transferable courses than SWD who did not transfer. Secondly, and with a smaller effect size was the proportion of credit, degree applicable courses in which students enrolled (27%) indicating that SWD who transferred enrolled in a higher proportion of credit and degree applicable courses while attending California community colleges. Proportion of transferable courses for which a student enrolled was also found to be one the strongest predictors of transfer.

On the surface these variables make obvious sense when considering the practices of any student aspiring to transfer to a four-year institution and earlier research corroborates this finding. Nora, Barlow, and Crisp (2005) studied student persistence and degree attainment beyond the first year of college and found strong relationships between students' enrollment in core courses and persistence in college. Similar to the current study, students enrolling in general education courses, namely, math, English and history were more likely to graduate within six years of taking these courses.

For SWD, there are barriers related to successful course planning for degree applicable coursework that is well supported by the literature (Aborn 2002; Barnett & Li, 1997; Dowrick, et al, 2005; Dukes & Shaw, 1999; Field, Sarver, & Shaw, 2003; Horn, Berktold, & Bobbitt, 1999; NCD, 2003; Quick, Lehmann, & Deniston, 2003;). Mindful of the fact many SWD begin their postsecondary careers academically underprepared, tenuous academic planning is compounded by students' lack of readiness for college work. The literature also bears witness to further academic planning complexity with the fact SWD have limited experience for appropriate transition services to a postsecondary

environment (Dowrick, Anderson, Heyer, & Acosta, 2005; Field, Sarver, & Shaw, 2003; Horn, Berktold, & Bobbitt, 1999; Mellard, 2005; NCD, 2003). Information such as academic records and testing that may be made available to counselors and other college personnel tasked with helping to place students in appropriate coursework consistent with their goals. Therefore, the state of poor transition services relative to the matriculation process currently limits the ability for SWD to plan for and access transfer and degree applicable courses at the onset of their college careers.

In order for SWD to receive academic advising that is consistent with their goals, researchers have advocated for postsecondary institutions to be staffed by personnel knowledgeable about the unique needs of SWD transitioning to their first year of college (Aborn 2002; Barnett & Li, 1997; Dowrick, et. al., 2005; Field, Sarver, & Shaw, 2003; Yuen, 2003). While the current study identified the relationship of transfer and credit/degree applicable coursework with SWD who transfer, the reality is that most SWD are missing out on the kind of assistance that is designed to help them navigate through postsecondary education in a manner that is both effective and conducive to increasing the likelihood of their success (Barnett & Li, 1997; Dowrick, et al, 2005; Field, Sarver, & Shaw, 2003; Horn, Berktold, & Bobbitt, 1999; NCD, 2003). In order to insure SWD are directed to take transfer level and degree applicable courses, there must be personnel who are trained to provide this kind of advisement. These specially trained individuals are imperative for advising about the importance of placement testing, subsequent support services, and appropriate coursework essential to academic achievement.

As an example NCD (2003) pointed to professionals working with SWD in a postsecondary environment as having been trained in specific areas of expertise such as psychology, special education, and counseling. Many possess skills in their particular discipline or for work with SWD at the secondary level, yet they are ill equipped to assist students with transitioning to and planning for a postsecondary education. This is due in part to the differing legislation governing secondary and postsecondary for SWD (Dukes & Shaw, 1999; Thomas, 2000). Therefore, community colleges who are interested in supporting SWD to navigate successful transfer pathways must insure specifically trained personnel are hired to collaboratively work with students. Without unique help by knowledgeable personnel for placing SWD in appropriate courses, many students will continue to flounder during their early postsecondary years. These students may take unnecessary and unrelated courses while attempting to identify their strengths and areas of deficit. In addition the choosing of inappropriate educational plans may delay the building and establishment of academic confidence for attaining their goals.

Implications of Enrollment Patterns Summary

The findings of the current study have been corroborated by higher education researchers studying the implications of enrollment patterns and successful postsecondary participation. The factors relative to SWD transferring to a four year college in the present study were full time enrollment, course completion, and taking transferable and degree applicable coursework. As such, it would behoove colleges who are interested in the postsecondary success of their SWD to employ personnel who are knowledgeable

about the unique academic advisement needs of these students in order to ensure appropriate enrollment patterns are consistent with an educational goal to transfer.

Implications for Student Support Providers

There are vast differences between postsecondary education that is governed by the Individuals with Disabilities Education Act (1990) and the expectations and legal protections covering them at the secondary level (Field, Sarver, & Shaw, 2003; Thomas, 2000). The resulting differences between the two levels of education require trained personnel who are knowledgeable about academic course accommodations versus modifications made in high school, responsibilities for securing supports while in college, and responsibility for self-advocacy by SWD attending college. In addition, many professionals at the postsecondary level have content knowledge in their disciplines but little to no training in teaching adults with disabilities inclusive of methods and strategies for diverse learning needs. Stodden et.al. (2001) pointed to the critical need for professionals working with SWD to have an understanding of the student's individual attributes and the variables that affect them in a postsecondary environment. Translated further, knowledge about SWD learning needs will influence the type of support service provided and subsequent successful taking and passing of transfer level coursework. The high correlation of SWD successfully completing transfer level courses and their eventual transfer may be related to the knowledge and skills of professionals facilitating this process.

This study found significant relationships between transfer and support services provided for SWD attending California community colleges. The literature further

substantiated a need for trained personnel to provide ongoing assistance for SWD pursuing postsecondary goals in order to promote the persistence of students beyond their first year of college (Aborn 2002; Dowrick et.al, 2005; NCD, 2003). This need for trained personnel is consistent with recognizing that over half of SWD will drop out of college in their first year (HEATH Resource Center, 2003; Henderson, 1999; NCD, 2003; NCES, 2000). Support services entailed in this study include counseling/advisement, the provision of auxiliary aides and accommodations found through contact with DSPS, specialized coursework, and financial aid. All were found to have a relationship to transfer, though none of them were found to be a good predictor of transfer in the present study. Whereas community college counselors are trained to provide academic, career, and some personal counseling, most are not versed in the complex nature of disabling conditions and how they influence learning, career choices, and “one’s self-belief, level of independent thinking and action, and level of socialization” (Stodden et al, 2001, p. 190).

The NCD (2003) corroborated this fact with the following;

The understaffed conditions that exist in many academic institutions undermine the provision of appropriate support to people with disabilities. Educational supports and services are rarely individualized according to a student’s needs, and more often supports are offered as a menu of programs, associated with disability type, rather than being student specific (Retention and Persistence section, ¶ 5)

Therefore, given the relationship of support services to SWD transfer to a four-year college as evidenced in this study and the corroborated recommendations of researchers in the field of disability, the following implication seems appropriate.

Community college practitioners must insure their faculty and staff serving SWD are appropriately trained for assisting SWD to navigate their postsecondary endeavors (Dukes & Shaw, 1999). Not only is personnel preparation an important component for leaders to provide among their professional ranks but also for their paraprofessionals working in other support capacities such as financial aid.

Research has consistently found that financial aid must be considered when evaluating factors influencing postsecondary educational pursuits by both students with and without disability (Andreu, 2002; Cabrera, Burkum & LaNasa, 2005; NCD, 2003, NCES 1996, 2000; Tinto, 1993). The factors relative to financial aid include cost and time factors, Social Security implications and restrictions, issues concerning eligibility for and retention of federal aid, and financial aid and the Higher Education Act (NCD, 2003).

The current study also found that SWD who transferred received on average, \$57.00 per term more than those students who did not transfer. It is important here to note that the average Pell grant is approximately \$1500.00 a semester with the majority of students receiving a Board of Governor's grant for tuition. The state of California has the lowest costs per unit in the country (Zumeta & Frankle, 2007). As an example academic year 2008-2009 will see an increase from \$18.00 dollars a unit to \$20.00 a unit in 2009-2010. As such, both professionals and paraprofessionals working in California's community colleges must partner with DSPS in order to increase the likelihood of increasing access to correct information regarding financial aid. Such a partnership would

provide the assistance needed to maneuver the compilation and completion of forms necessary to pursue needed monetary supplements.

The present study reinforced the reciprocal relationship between course enrollment and financial aid provided through state and federal programs as both are factors related to SWD transferring to a four-year college. For example, one of the most common forms of financial aid for community college students is the Pell grant (Pekow, 2006). With this financial support students are awarded a final amount of aid dependent upon the number of units for which they enroll. Thereafter, it is not uncommon for students to enroll in classes that are not specific toward their academic goal, choosing instead to enroll in easier or more accessible courses sufficient in number to ensure the highest amount of financial assistance possible. Without a coordinated effort between service providers with a general understanding of how financial aid works for SWD in connection with other forms of monetary support, many SWD experience a great deal of frustration and/or missed opportunity in this area (HEATH, 2003; NCD, 2003). It is therefore imperative for community college practitioners not only to be mindful of factors related to successful academic planning and outcomes but also to understand which departments and agencies best assist SWD to obtain financial aid when needed. Such trained professionals and paraprofessionals can enlighten SWD with respect to eligibility requirements. They can also assist SWD to avoid circumstances and actions with the potential to thwart efforts commensurate with obtaining appropriate and effective fiscal support (NCD, 2003; Stapleton et. al., 2005). For example SWD often have fears around

losing SSI or Department of Rehabilitation support as these agencies may count financial aid against existing allocations under their regulations.

Conceptual Variables of Self-Determination

A direct logistic regression analysis was performed on transfer as outcome and four predictors chosen by this researcher as they may have represented self-determined measures engaged in by SWD. The four predictors were: participation with the California Department of Rehabilitation, students' enrollment in specialized courses, proportion of terms students received counseling/advisement services, and average number of DSPS contacts students received each term. The current study theoretically predicted transfer to be influenced by these variables. Although a statistically significant result was found, the variance in transfer accounted for was small, and the overall prediction of transfer did not change at all after the addition of the four variables. Even so, the consistent findings of this study's literature review on the topic of self-determination and postsecondary education for SWD merits discussion (Dowrick et.al., 2005; Field, Martin, Miller, Ward, & Wehmeyer, 1998; Field, Sarver, & Shaw, 2003; Leff, et al, 2003; NCD, 2003; Stodden & Conway, 2003; Stodden, et al, 2005; Wehmeyer & Schalock, 2001; Yuen, 2003) and leaves room for further speculation and research regarding the measurement of self-determined behavior and its role in the successful academic pursuits of SWD at the postsecondary level.

Self-determination and postsecondary education. While efforts have been made to incorporate the teaching and evaluation of self-determination skills to SWD in secondary settings, research indicates SWD are coming into postsecondary education

with a significant lack of this skill (Izzo & Lamb, 2002). This fact, in combination with postsecondary support systems that vary from institution to institution, support services that may or may not be connected programmatically to instruction, and support generally focused on advocacy, information, and remediation have done little to foster the needed self-reliance, and or self-determination of SWD (Dowrick et al, 2005; Stodden & Conway, 2003). Yet, the literature consistently has pointed to the critical place of self determined behavior for successful SWD pursuing a postsecondary goal. Wehmeyer (1999) described four essential characteristics of self-determined behavior, (a) behavioral autonomy, (b) self-regulated behavior, (c) psychological empowerment and, (d) self realization. The variables from this research included behaviors theoretically related to self-determination skills requiring varying degrees of the above components in order for SWD to obtain support from counselors, contacting DSPS for assistance with academic accommodations, making choices for support outside of the college with the California Department of Rehabilitation, and engaging in the practice of self-regulation and advocacy by enrolling in courses specifically designed to assist SWD during the course of their postsecondary study.

The first two variables listed (seeking counseling and DSPS support) required students to disclose their disabilities as well as to exercise their volition for self regulation of educational progress. Argan (1997) corroborated the self regulatory strategies of goal-setting, attainment, problem solving, and decision making (pp.373) consistent with behavioral autonomy and self-regulation. The third and fourth variables (psychological empowerment and self-realization) were evidenced by SWD who were served by the

California Department of Rehabilitation and enrolled in specialized coursework while in college. Individuals seek the Department of Rehabilitation's assistance in order to discover and exercise their strengths in the pursuit of eventual employment. Additionally the present study looked at the number of specialized courses SWD took in order to improve their self advocacy and to develop strategies for academic work. Adapted physical education is one example of specialized coursework where SWD can exercise self-regulation by improving their fitness levels. Gaining strength and physical fitness may subsequently be related to the self-determination concepts of empowerment and using one's strengths in activities of daily living quite necessary for self realization.

Support provider variables for the present study were chosen based on the literature descriptive of colleges fostering self-determination in students. These postsecondary institutions reported college environments promulgating self-determined behavior by SWD included instruction for the attainment of 'knowledge, skills and beliefs (Field, Sarver, & Shaw, 2003, p. 343). The literature (Dowrick, et al, 2005; Field, et. al.,1998; Field, Sarver, & Shaw, 2003; NCD, 2003; Stodden & Conway, 2003; Wehmeyer & Schalock, 2001; Trainor, 2007; Yuen, 2003) further suggested dimensions important for postsecondary institutions: providing opportunities for students to make choices, providing an inclusive atmosphere with role models, and providing student accommodations and support. All of these were also consistent with fostering self determination among SWD.

Given the emphasis in the literature that indicates most SWD struggle to attain control over their lives by initiating action toward educational planning and decision

making, (Dowrick et.al., 2005; Field et.al.,1998; Field, Sarver, & Shaw, 2003; Izzo & Lamb, 2002; Stodden & Conway, 2003; Stodden et. al., 2005; Wehmeyer & Schalock, 2001; Yuen, 2003) it is prudent for community college leaders to further investigate opportunities to study a self-determination construct. DSPTS practitioners who are interested in the success of SWD must consider not only research to measure this concept but also approaches to design programming for the fostering of self-determination.

Implications Regarding Institutional/Environmental-Student Congruency

This study found a relationship between SWD who sought support services and thereafter making specific decisions with respect to their academic enrollments. Ultimately, SWD were the determiners of which classes to take, how many to take, and whether or not to stick with classes to successful completion. In order to provide an environment that is congruent with academic achievement for SWD, colleges must provide the human infrastructure and organizational learning to support this goal. Professionals working with SWD in postsecondary education will need to move toward the development of helping relationships with learners when assisting them to exercise agency over their lives. Institutions must become student-centered in their approaches to teaching and student services. There must be a commitment by colleges to educate administrators about state and federal laws guaranteeing access and non-discrimination for SWD. Such an effort to ensure administration is mindful of SWD access issues is essential; from architectural barriers to policy and procedures for academics and student services (Aborn, 2002). In addition to this commitment, there must be a concerted effort

to improve access information and subsequent dissemination of the high expectations a college holds for their students.

This study provides baseline data for what factors are related to the successful transfer of SWD to a four-year university with strong overtones of the personal responsibility that must be taken by SWD in terms of advocacy and persistence. As such, a college that fosters self-determined practices by its students must not only voice high expectations, but also provide an environment that is congruent with these expectations (Engstrom & Tinto, 2008).

Other avenues for promoting transformational programming for SWD call upon leaders to include disability studies in their diversity work on campus. Critical reflection and belief systems of students are subject to change when they are exposed to consciousness raising, social action, debate, and dialog (Franzblau & Moore, 2001; Longmore & Umansky, 2001; Yuen, 2003).

Figure 3 presents a theoretical construct of postsecondary success that outlines college, support providers, and SWD input to the development of self-determination and ultimately, the postsecondary success necessary to transfer. The visual construct includes the variables from the current research with respect to support services, components of self-determination needed by SWD, and implications from this study specific to community colleges providing an environment that empowers students to be successful. All three components were also well substantiated in the literature.

Given the fiscal restrictions of most postsecondary institutions serving SWD, it will take thoughtful and purposeful planning to achieve an innovative and transformational approach. Yuen (2003) recognized this idea in the following quote;

Given the reality of limited resources and the increasing demand for services, it is more important that students with disabilities increase their power on a campus by enhancing personal control, initiative, self-advocacy and self determination (p.6)

While challenging in concept, there are incentives built into the California community colleges that reward them for base funding and practices relative to innovative planning and curriculum that will be explored in the next section of this chapter.

Current Findings Compared with National Data

One of the major findings of the present study was the interesting contrast of the extant data analyzed and the reporting of SWD in postsecondary education on a national level. For example, the NCD (2003) reported that SWD are less likely to persist and complete their postsecondary goals than students without disabilities. Those SWD who did persist on average took twice as long as their peers without disabilities. The last national compilation of postsecondary outcomes for SWD was conducted by the National Center for Educational Statistics (NCES) in 2000. The report detailed a comprehensive profile of SWD preparation, participation, and outcomes for postsecondary education. The current study found two areas that differed from those results reported in the National findings: SWD: (a) evidenced averages for academic transfer two years earlier than their non-disabled peers for transfer from California community colleges to four-year institutions, and (b) completed associates degrees at the same rate as non-disabled students. In contrast, national statistics showed students without disabilities were more

likely to earn an associate's degree (18% versus 7%). More recent statistics from Cornell University identify 52 million people in the United States report a disability. Of this number, 6,219,000 persons with disabilities report some college and or associate degrees have been earned. The state of California comprise 11% of the 6, 219,000 who have some college or an associates degree compared with the next closest state of Texas at 8% and New York in the third position at 5%. (Houtenville, Erickson, & Lee, 2007).

When analyzing the favorable academic outcomes of this study with respect to average time for transfer and the numbers of associate degrees that were awarded, a couple factors are worth mentioning. Most postsecondary institutions serving students with disabilities do not provide per capita funding for services (Mellard, 2005; Mellard & Lancaster, 2003). As more and more SWD are entering postsecondary education, resources for staff and support are stretched thin. The state of California is an exception to this trend as direct services for SWD are reimbursed each year (CCCCO, 2001). As an example, Mellard (2005) recognized the consistency across the state for learning disabilities testing and services where an eligibility model has been established. The author wrote,

Thus, the colleges have a financial incentive for having students meet their eligibility model. A benefit of this system is that it is recognized within the state's university system. Students who are judged eligible for services in community colleges are eligible when they transfer to a 4-year program to continue work toward a degree. This reciprocity is valuable to ensure a smooth transition between institutions (p. 8)

A recent email from Federal Office of Civil Rights attorney, Paul Grossman affirmed the notion of California's innovative and comprehensive approach to services for SWD in postsecondary education. He wrote, "I have always maintained that

California has an effective method of serving SWD in their community college system” (P. Grossman, personal communication, March, 2008). Further speculation recognizes the state’s leadership in providing for other support services not routinely found in every postsecondary system serving SWD across the country. Some of these factors include funding for alternate formats which is the conversion of text for persons who are blind, deaf, or learning disabled, and separate funding for the provision of services for deaf and hard of hearing students for interpreters, captioners, and other auxiliary aids (CCCCO, 2001).

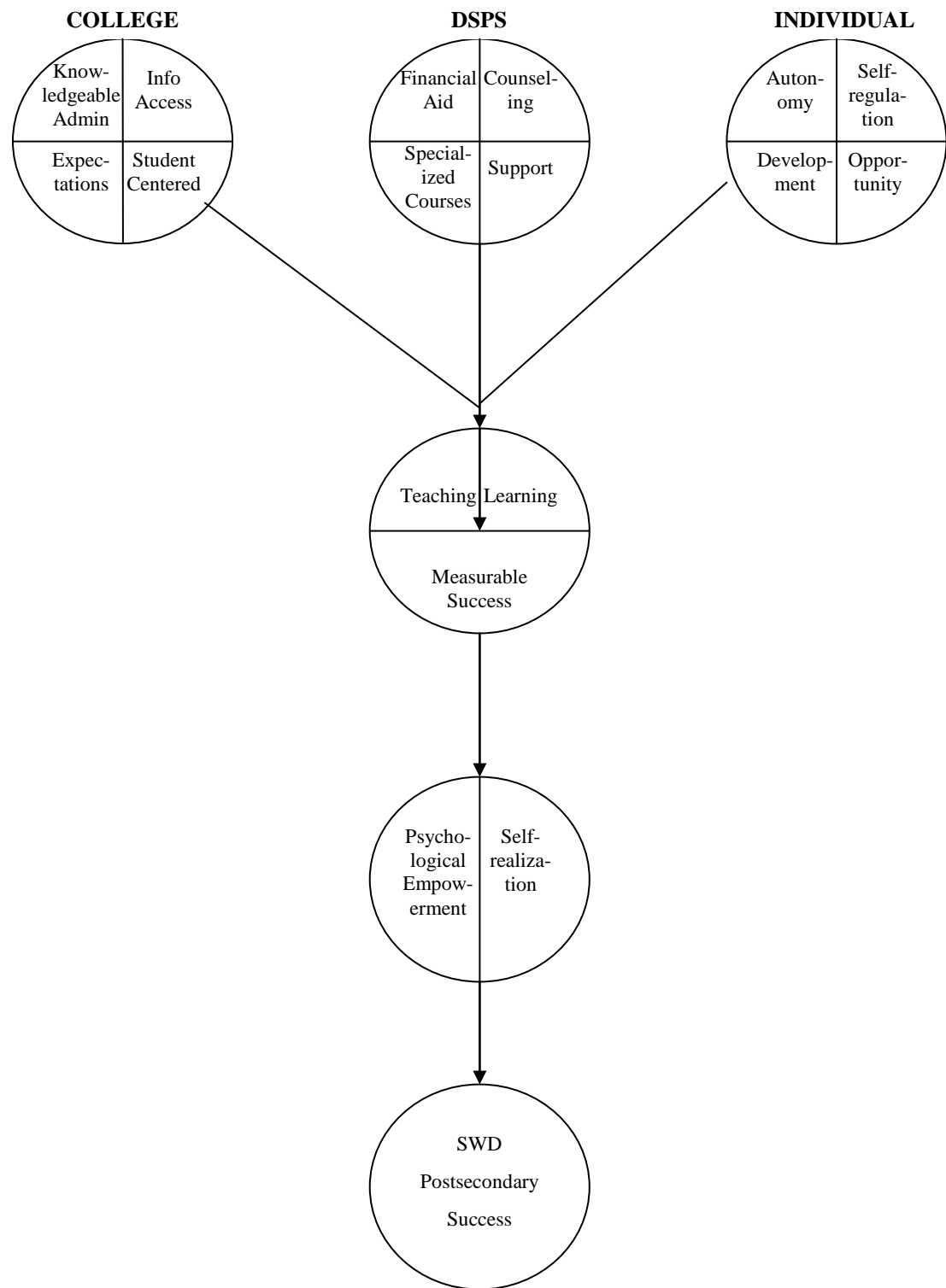


Figure 3. Theoretical Construct of SWD Postsecondary Success

Conclusion

The findings of this study provide some insight into variables related to the transfer of SWD to a four-year institution. The subsequent strategies entailed in this chapter may better inform community college leaders and practitioners with programming suggestions for the development of policy statements and practices that potentially yield an increase in the numbers of successful SWD attending two-year institutions. Findings suggest that simply providing access for SWD in postsecondary education may not be enough if practitioners are to foster environments that support students to succeed. Indeed, trained professionals well versed in the unique circumstances and abilities of SWD are imperative for students successful, transformational, postsecondary education. Knowledgeable practitioners are needed to provide for appropriate counseling and advisement relative to appropriate course enrollments and viable support systems. The current correlational study found most of the independent variables to be positively related to transfer. Based on the odds ratios, the variables that were the strongest predictors were: (a) proportions of transfer courses in which students enrolled, and (b) proportion of units students completed out of the total number in which they enrolled.

The results of the logistic regression do not really present anything new. The variables that were found to have a strong relationship with transfer were also found to be the strongest predictors of transfer in the logistic regression model. The only variable which was no longer related to transfer (after removing the effects of the other variables) was proportion of terms students received counseling/advisement. The major finding with

respect to relationships between course enrollment patterns, support service provision, and SWD attending California community colleges as compared with National data on this population invites speculation for leaders working with SWD at a postsecondary two-year level. Institutions must hire specifically trained practitioners, who are knowledgeable about the assessment and placement of SWD into appropriate courses, and work to coordinate efforts of all support service providers. Beyond the first year of postsecondary work SWD must be supported by specifically trained professionals knowledgeable about the unique, often byzantine intricacies of financial aid governance as it relates to SWD fiscal support. These efforts must be coordinated across all student service supports and instructional realms where orientations and other specialized course work are offered.

Practices that incorporate self determination and opportunities for SWD to self-regulate their academic endeavors hold potential for the resultant power of transformational change. Transformative change that stems from the teaching and learning process provided by DSPS professionals may be the defining pinnacle of their successful work with SWD. Dowrick et al (2005) aptly wrote; “Discussions revealed that disability support providers frequently give students a valuable human connection to the institution’s services” (p. 43).

The results of this study also cast California’s community college DSPS offices in a favorable light with respect to the institutionalization of services, innovation in base funding and successful student outcomes. Disability practitioners are beginning to recognize California’s community college approach to serving SWD in a postsecondary

environment as evidenced in the literature, and the positive results of this study. Not only is the California Community College system the largest provider of post-secondary education in the world, DSPS is taking its rightful place as a leader and model for the transformational education of students with disabilities.

It is hoped that this study has accomplished a catalytic platform for future research in connection with SWD strategic postsecondary practices and continued academic prowess. As such, research is the imperative connection needed for social justice and change where SWD begin to not only assume agency over their educational goals but succeed in today's increasingly complex and global society.

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