

ANALYSIS OF THE DISPARITY IN POST-SECONDARY EDUCATIONAL
ATTAINMENT AND EMPLOYMENT BETWEEN INDIVIDUALS WITH
VISUAL IMPAIRMENT AND THE GENERAL POPULATION

By
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ABSTRACT

Data was gathered from disability service professionals in six different states through an on-line survey and follow up interviews to determine if there was a correlation between specific professional practices and the magnitude of the disparity in four-year college graduation and employment rates between individuals with visual impairments and the general population.. The frequency of use of an individual professional practice that addressed technology that could be aligned with the social model disability was associated with reduced disparities in rates of employment and post-secondary graduation, as was an aggregate variable that represented the average frequency of use of professional practices that address concerns related to the attitudes of others; social connections; and access to the environment, print, and technology that could be aligned with the social model of disability. In addition, the professional practice that addressed environmental access concerns that could be aligned with the political model of disability was associated with reduced disparities post-secondary graduation rates and the professional practice that addressed access to print concerns that could be aligned with the social model of disability was associated with reduced disparities in rates of employment. Overall, participants cited personal professional experience as the main source of influence for initiating practices regardless of the model of disability with which each practice could be aligned. At the same time, participant responses suggested that those practices that could be aligned with the medical model were more likely to be known to the participant and originate from personal professional experiences than practices that aligned with the social model and the political model. Although the

relative influence of laws and regulations on specific practice initiation did not reach significance, the results from this study suggested that of the external influences, laws and regulations may have been the most influential in initiating practices that could be aligned with the social model of disability and subsequently associated with positive educational and employment outcomes. The data generated through the interviews reinforced the survey findings and revealed pragmatic perspectives on disability that informed practice, including the use of multiple models of disability at the same time in response to individual situations. In summary, professional practices that focus on creating and advocating for accessible environments, especially related to the use of technology, were shown to be correlated with improved post-secondary outcomes.

CHAPTER 1: INTRODUCTION

Making a successful transition from high school into employment, whether directly or through post-secondary education is important for all students. A successful transition contributes to an individual's mental health, autonomy, social relationships, social capital, and feelings of belonging, self-efficacy and self-worth, whether the student has a visual impairment or not (Malakpa, 1994, 2007; Jahoda, Kemp, Riddell, & Banks, 2007). In 1990, the passage of the Individuals with Disabilities Education Act (IDEA) (20 USC section 1414(D)(1)(A), required that transition planning occur for high school age students with disabilities. In 1992, the Americans with Disabilities Act (ADA) was passed, barring discrimination against people with disabilities in employment and higher education. Since the passage of ADA and IDEA extensive legislation, litigation, ever expanding technology, and thoughtful programming have all been employed in an effort to improve transition outcomes. During the same time period, however, the rates of graduation from four-year colleges and rates of employment for individuals with visual impairments have remained stubbornly and significantly below those of the general population (American Foundation for the Blind, 2010; Cornell University, 2010). In fact, immediately after the passage of IDEA and ADA, the employment rate for individuals with visual impairments was 45.5 % (Leonard, 2002), in 1997 it stood at 41.5% (Leonard, 2002), and in 2009 it was 38.7% (Cornell, 2010). Over the same period the employment rate for the general population was between 76 and 80 percent (Cornell, 2010; Bureau of Labor Statistics, 2012).

The study of disability has been framed in multiple ways (Oliver, 1992) resulting in the emergence of different, sometimes mutually exclusive, but often complementary professional practices to address problems such as employment disparities. The framing of professional practice has been further moderated by the availability of resources, legislative mandates, professional networks, local advocacy, and the influence of the practices of similar organizations (DiMaggio & Powell, 1983). The purpose of this study was to determine how perspectives on disability held by individuals with visual impairments, rehabilitation workers, educators, and employers were related to the post-secondary educational and employment outcomes for individuals with visual impairment and how legislative mandates, resource availability, professional networks, and local advocacy, affected the perspectives held by these stakeholders and moderated post-secondary outcomes. Practitioners will be able to use this information to cultivate effective, balanced approaches to practice, and administrators will be able to use the information to identify organizational processes that support effective practice.

Post-Secondary Education and Employment Status of Persons with Visual Impairment

The rates of unemployment for the general population varied by sector and occupation, for example: unemployment rates in 2009 by sector were: 4.6% for professional positions, 8.9% for administrative support positions, 10.7% for positions in the service industry, 20.8% for positions in construction, and 26.5%, for positions in farming 26.5% (Bureau of Labor Statistics, 2012). Based on a survey of 75 countries,

Wolffe and Spungin (2002) indicated that individuals with visual impairments most often reported they were working in the professional, administrative support, and service sectors. Data from the Bureau of Labor Statistics (2012) showed that participation by sector was similar between those with visual impairments and the general population. Because patterns of employment by sector were broadly similar between individuals with visual impairment and the general population, the significant overall differences in relative participation could not be explained by relative strengths of job markets and differential rates of participation in specific market sectors. In fact, data from the American Community Survey (Cornell, 2010; Erickson, 2012), showed that employment rates for individuals with visual impairments and the general population were strongly correlated across states ($r = 0.626$, $p < .001$) suggesting that local employment conditions affected both those with and without visual impairments in similar ways.

Although both graduation rates from four year colleges and rates of employment for individuals with visual impairments relative to the general population were strongly correlated, substantial difference in relative rates were found from state to state (Cornell, 2010). For example, four-year college completion rates were 1.7 times as high for students in the general population as those with visual impairments in the five states with the highest relative graduation rates for students with visual impairments and 4.3 times as great for five states with the lowest relative graduation rates. In addition, rates of employment were 1.5 times as great for the general population as for those with visual impairments in the five states with the highest relative rates of employment for individuals with visual impairments and 2.5 times as great for five states with the lowest

relative rates of employment (see Figure 1). Although relative rates of participation in post-secondary education were low for individuals with visual impairments when compared with the general population, the relative rate of participation was higher than for those with other disabilities (Miller, 1992) and there was evidence that there has been a steady increase in participation rates since the 1950's when the Supreme Court ruling of *Brown vs. the Board of Education* (1954) was handed down (Cornell, 2010; Kirchner, 1984).

Models of Disability

The kinds of factors that stakeholders have identified as influential in transition success and contribute to the size of the disparities in transition outcomes could be categorized as aligned with different models of disability. When the traditional medical or rehabilitation models of disability were used to frame investigations, the disability was understood as a deficit within the individual (Albrect, Seelman, & Bury, 2001; Anastasiou & Kauffman, 2011, Swain & French 2000), and interventions were deemed successful if the individual with visual impairment developed skills to compensate for the impairment, allowing him or her to function in a manner closer to norms established by and for those in the general population. Following this logic, solutions to disparities between those with visual impairments and the non-disabled population were person-centered and included the creation of specialized programming, instruction, and support to address deficits; the introduction of accommodations and specialized technology; and in some cases conscious or unconscious modification of expectations.

The social model of disability was developed in opposition to the medical model (Anastasiou & Kauffman, 2011; Bolt, 2005; Oliver, 1992; Swain & French, 2000). Individuals using the social model framework for understanding disability held that society disabled individuals through language, values, attitudes, and environmental design (Albrecht et al., 2001; Anastasiou & Kauffman, 2011; Swain & French, 2000). If adherents to the medical model saw a person disabled by impairments, adherents to the social model saw a person with impairment disabled by society (Bolt, 2005; Swain & French, 2000). Programming using the social model of disability was focused on the physical and social environment (Jones, 1996; Oliver, 1992) and deemed successful if environmental barriers were removed, and prejudicial attitudes toward disability were eliminated. Following this logic, solutions to disparities between those with visual impairments and the non-disabled population included educating the non-disabled public about visual impairments and adhering to the principles of universal design for materials and environments (Burgstahler & Cory, 2008).

The social model of disability has been extended to include the rights-based, resistance, advocacy, and emancipatory models (Stone & Priestly, 1996) and critiqued for not giving adequate attention to the personal and physical experience of disability (Dewsbury, Clarke, Randall, Rouncefield, & Sommerville, 2004; Shakespeare & Watson, 2002). For the purposes of this discussion, the term *political model* will be used to refer to the group of models where the disabling condition was that the individual with a disability did not have the voice or genuine level of participation in decision making that individuals without disabilities would have had under the same conditions (Campbell,

2008; Gabel & Peters, 2004; Longmore, 1995; Oliver, 1992; Roman, 2009; Stone & Priestley, 1997). Programming using the models of disability here classified under the political model would be oriented towards social justice, and programming would be deemed successful if those with disabilities had a voice and agency in the decision making processes associated with social and environmental design. Often, meaningful representation and agency for those with disabilities had been included in the social model of disability and the principles of universal design (Darby, 2010; McGuire & Scott, 2006; Scott, Loewen, Funkes, & Kroeger, 2003), but in the political models, agency for those with disabilities became central.

Institutional and Organizational Theories

How a disability is viewed within an organization becomes part of an organization's culture and affects how an individual with a disability has been viewed and consequently the professional practices employed to address post-secondary education and employment outcomes. Higher education, business, and professional organizations are entities that have recognizable cultural norms (Shaw & London, 2001; Tierney, 1991). People who inhabit these organizations are socialized to the culture of the particular organization or profession from the moment they enter; behaviors that align with organizational norms are rewarded and reinforced, and those that do not, are not rewarded and discouraged (Perlow, 1998). Organizations develop their culture and way of doing things through sometimes competing processes. Some of the processes encourage a movement towards homogeneity between similar organizations and within

professions (Delucchi, 1997; DiMaggio & Powell 1983) and others lead to differentiation (Bastedo, 2009; Clark, 1972; Shaw & London, 2001; Tierney, 1991).

DiMaggio and Powell (1983) described three processes which led to homogeneity or isomorphism between similar organizations. These three processes were coercive, mimetic, and normative processes. Coercive processes were generated through regulatory and financial relationships, or the cultural expectations of the society within which the organization operated (DiMaggio & Powell, 1983). In the case of this study, the American with Disabilities Act and Amendments (ADA, 1990 and ADAAA, 2008) (CODI, 2011; DOJ, 2005; DOJ, 2011; DOJ, 2011a; Leuchovius, 2011) and the Individuals with Disabilities Education Act (IDEA) could be considered prominent examples of a potentially coercive processes emanating from and enforced by regulatory agencies through laws and resource allocation. In addition, society has an influential, though still contested anti-discrimination cultural expectation relative to employment and educational opportunity (Boswell, 2002).

The mimetic processes described by DiMaggio and Powell (1983) were the processes by which organizations model themselves voluntarily after similar organizations. Mimetic processes were viewed by DiMaggio and Powell (1983) as particularly important in an uncertain environment, when goals were uncertain and processes for accomplishing goals not well understood.

Finally, normative processes were conceptualized by DiMaggio and Powell (1983) as the result of the “collective struggle of members of an occupation to define the conditions and methods of their work” (p. 152), establishing legitimacy among peers and

within and among organizations. Professional connections through associations such as the Association for Education and Rehabilitation of the Blind and Visually Impaired (AER, 2012) facilitate the establishment and dissemination of sanctioned practices.

Although the idea of isomorphic processes (DiMaggio & Powell, 1983) can be used to explain the tendency for organizations to adapt similar practices and forms, significant variability remains among organizations that serve individuals with visual impairments with regard to the form they take, the practices they employ, and the outcomes achieved (Capella, 2001b). For organizations in general these differences have been shown to be a result of dependency on different constituencies for resources (Capella, 2001b; Tolbert, 1985; Shin, 2010), different local cultural practice conforming to local conditions and interests (Shaw & London, 2001), strong local leadership (Eckel, 2002; Lounsbury, 2001), different core ideologies (Tierney, 1991), and even competing ideologies within an organizations (Weick, 1976; Kezar, 2005). As a result, the theory that DiMaggio and Powell (1983) used to explain isomorphism or similarities between organizations also provided a framework to analyze mechanisms by which organizations take different forms and adapt different practices.

Perspectives of Primary Stakeholders: The Community

The primary actors or stakeholders in the system that had developed around improving post-secondary outcomes for individuals with visual impairments included individuals with visual impairments, educators, employers, and service providers. When researchers asked these stakeholders about barriers or solutions to the disparity in

participation in post-secondary educational and employment opportunities for individuals with visual impairments, responses could be categorized using the medical, social, and political models of disability. For example, a response could be considered related to the medical model if the focus of the response was on the internal characteristics and capacities of the individual with a visual impairment. The response could be considered related to the social model if the focus was on the environment or the attitudes of others, and the political model if the focus was on the equitable participation and normalized engagement of the individual with visual impairments in decision making regarding access and environmental design.

Views of Individuals with Visual Impairments

Researchers have found that individuals with visual impairments felt that certain factors were important to employment and educational outcomes. Some of these factors could be classified as related to the medical model, for example, individual character traits (Wolffe & Spungin, 2002), and individual orientation and mobility skills, technology, and organizational skills (McDonnall & Crudden, 2009; Treif & Feeny, 2003). On the other hand, other factors could be classified as related to the social model, for example equitable workplace policies and the availability of resources (Wolffe & Spungin, 2002); attitudes of employers, fellow employees, and rehabilitation professionals (Crudden, Sansing, & Butler, 2005); and the availability of transportation (Crudden et al., 2005; McBroom, 1997). Finally, some factors identified by individuals with visual impairments could be classified as aligned with the political models of disability, for example having an awareness of rights under ADA (Rumrill, 1999), and

finding avenues through which to advocate for themselves and others with visual impairments (McBroom, 1997; Wolffe & Spungin, 2002).

Views of Rehabilitation Workers and Service Providers

In some studies, rehabilitation workers and service providers were found to believe certain factors related to employment were important and these factors could be classified as associated with the medical model, for example believing that the individual with visual impairment needed good travel skills (Golub, 2003), social skills (Golub, 2003), and basic job skills (Crudden et al., 2005). At the same time rehabilitation workers and service providers also identified certain factors they felt were important related to employment that could be classified as associated with the social model, for example the need for service providers to educate employers both about visual impairment and about methods for reducing potential workplace barriers (Crudden et al., 2005; Young, 1996). Finally, rehabilitation workers and service providers felt certain factors related to employment were important that could be classified as aligned with the political model, including involving clients in the programmatic decision making process (Young, 1996), facilitating connections with blind or low vision mentors (Young, 1996), and providing self-advocacy training and a knowledge of ADA related rights (Rumrill, 1999).

Views of Employers

Employers also identified certain factors related to employability for individuals with visual impairment that could be classified as associated with the medical model. For

example they identified the ability of the employee with a visual impairment to travel to work reliably and independently (Golub, 2003), display a proactive attitude in the interview (Wolffe & Candela, 2002), and be competent in access technologies (Golub, 2006). In addition, some employers identified certain factors related to employability that could be classified as associated with the social model, for example maintaining high expectations (Golub, 2003), cultivating and transmitting core organizational values that frame diversity as an asset (Golub, 2006), taking personal responsibility for an accessible environment and the availability of appropriate tools (Golub, 2006; Wolffe & Candela, 2002). Finally, some employers felt certain factors were important that could be classified as aligned with the political model, for example encouraging the individual with the visual impairment to make his or her own decisions (Golub, 2003); maintaining open ongoing communication with the employee regarding his or her needs (Golub, 2006); and insisting on being held to the same standards as employees without visual impairments (Golub, 2006).

Views of Educators and College Disability Resource Center Professionals

Educators and Disability Resource center (DRC) professionals felt certain factors were important for success in higher education that could be classified as aligned with the medical model, including feeling that students should have good social skills, having a solid knowledge of technology, and having an ability to travel independently (Reed & Curtis, 2011). Educators and DRC professionals also indicated that certain services provided by their respective institutions also could be classified as aligned with the medical model of disability including orientation and mobility (O&M) services,

preregistration opportunities, counseling, support groups, resource rooms, diagnostic testing, housing, alternative testing arrangements, adaptive course work, tutors, adaptive computer equipment, and note takers (McBroom, 1997). There were other factors that educators and DRC workers identified as important that could be classified as aligned with the social model of disability, including making sure that recruitment information for higher education reached students with visual impairments in a timely fashion and was adequate (Reed & Curtis, 2011). DRC workers also indicated that certain services that their respective institutions provided were important. These services could be classified as being aligned with the social model of disability – examples include ensuring that written materials are available in accessible format (McBroom, 1997) and that professors and staff members receive in services related to supporting students with disabilities (McBroom, 1997). No programming or suggestions by educators were found that could be readily classified as aligned with the political model in the studies reviewed.

Views of Academic Researchers

In addition to conducting numerous studies in which the opinions of individuals with visual impairments, educators, employers, and service workers were gathered, researchers also have analyzed information from various national databases including the Rehabilitation Service Administration (RSA) Case Service report RSA-911 data system (Bell, 2010; Capella, 2001; Cavanaugh, Giesen, & Steinman, 2006); Social Security Service Administration (SSA) Office of Program Development and Research Data (Capella-McDonnall, 2008); the Second National Longitudinal Transition Study (NLTS2) (Capella-McDonnall & O'Malley, 2012; Capella-McDonnall, 2011); Cornell

University, School of Industrial and Labor Relation's web site for LSVRSP (Capella-McDonnall, 2005) (EEOC's Office of Information Resources Management, Charge Data System Division (Unger, Rumrill, & Hennessey, 2005).

The data garnered from these sources tended to align most closely, though not exclusively, with the medical model of disability; for example the study by Capella-McDonnall (2005) used the data from Cornell University, School of Industrial and Labor Relation's web site for LSVRSP and identified factors such as completion of an educational degree, previous work experience, seeking help from rehabilitation professionals, and good relationships with rehabilitation providers (Capella-McDonnall, 2005) as important.

Some patterns and common themes were evident even in this small sample of stakeholders' opinions garnered from the literature. First all stakeholder groups focused on a combination of personal skills for the individual with visual impairment and programming to address these personal needs, and concerns regarding barriers in the environment.

Research Questions, Design, and Importance

Successful transition from high school to post-secondary education and/or employment was important for all students including those with visual impairments. Yet individuals with visual impairments graduated at lower rates from college and were employed at substantially lower rates than those without visual impairments. Relative rates of graduation and employment, however, varied substantially from state to state, offering an opportunity to study the different programming between states that have

different outcomes and determine what types of programming approaches were associated with the most equitable post-secondary outcomes.

The study of disability had been framed by two competing paradigms. First was the medical model of disability in which adherents held that the impairment disables the individual, and the second was the social model in which adherents held that environmental design and social attitudes disable the individual (Anastasiou & Kauffman, 2011). In emancipatory paradigms of research (Stone & Priestly, 1996), a third model can be envisioned: a political model in which adherents held that the lack of participation in decision making disables the individual. Yet, to date, researchers have not investigated how using these different approaches to formulate interventions might differentially affect post-secondary educational and employment outcomes for individuals with visual impairments. In addition, researchers also have not investigated how the relative use of the three models of disability has been associated with the availability of resources, legislative mandates, the influence of professional networks, the imitation of the practices of similar organizations, or local advocacy.

Therefore the research questions for this study were:

1. How were the perspectives on disability held by individuals with visual impairments, rehabilitation workers, educators, and employers related to the post-secondary educational and employment outcomes for individuals with visual impairment?
2. How was the application of the three perspectives on disability by stakeholders associated with legislative mandates, the availability of resources, the influence of

professional networks, local advocacy, and the imitation of the practices of individuals in similar situations?

I hope that the answers to these questions will enable administrators and practitioners formulate more effective interventions and better understand how to find pathways for organizational change that support effectively balanced interventions.

Definitions and Terminology

ADA: Americans with Disabilities Act 1992

ADAAA: Americans with Disabilities Act Amendments Act 2008

IDEA: Individuals with Disabilities Education Act 1990, 2004

Local Advocacy: Influence from a single influential individual within an organization

Coercive isomorphism: Institutions, organizations, and professions having the same shape, form, or practices because of social, legislative, legal, or financial pressures

Critical/political theory: Decision making and power is affected by and related to group membership

Disability resource center worker: An individual, often an employee of a post-secondary educational institution, who is involved in ensuring that the educational environment is accessible to the students and employees with disabilities

Educator: An employee of an educational organization whose function is to provide educational services

Employee: An individual who exchanges labor for compensation

Employer: An individual who provides an opportunity for an employee to exchange his or her labor for compensation

Employment: Involvement in an occupation for remuneration

Institutional isomorphism: The state of having the same shape, form, or practices used here in reference to institutions, organizations, and professions

Latent variables: Variables of interest that are represented by a calculated composite of manifest variables (Tabachnick & Fidell, 2007)

Manifest variables: Variables that are measured directly (Tabachnick & Fidell, 2007)

Medical model of disability: An understanding of disability as a problem within the individual with an impairment

Mimetic isomorphism: Institutions, organizations, and professions having the same shape, form, or practices because of imitation of another institution, organization, and profession

Normative isomorphism: Institutions, organizations, and professions having the same shape, form, or practices because of established professional practices

Political model of disability: An understanding of disability whereby the problem is that the individual with an impairment lacks avenues for equitable and authentic participation in decision making. This is a composite designation, used in this project to denote concepts that are put forth in a number of loosely associated approaches to disability research including emancipatory etc.

Post-secondary education: Any education that takes place after graduation from high school or secondary school

Professionally linked community: Stakeholders who will be affected by and involved in the research and who share the common occupational or personal objective of positive post-secondary educational and employment outcomes for individuals with visual impairments

Social model of disability: An understanding of disability as a problem within the environment or in the attitudes of people in society towards individuals with impairments

Stakeholder (in this project): individuals with visual impairments, vision service professional, educators, DRC personnel, and employers

Transition: A period starting in high school in which an individual is concerned about and working towards post high school participation in society

general population: The population of individuals who do not identify as having a disability including the full diversity relative, ethnicity, gender, religion, LGBT identity etc.

Vision research workers: Individuals who conduct research into factors affecting the lives of individuals with visual impairments

Vision service professional: A professional who works with individuals with visual impairments to support the transition process

Visual impairment: An eye condition that reduces an individual's vision below that of the general population

CHAPTER 2: REVIEW OF LITERATURE

Employment Status and Support for Individuals with Visual Impairment

Although the premium that has been placed on employment as a useful marker of transition success has been contested (Halpern, 1993), those with visual impairments have been shown to value employment to the same degree as those without visual impairments (Gillies, Knight, & Baglioni, 1998). This fact raises concern that the rates of graduation from four-year colleges and rates of employment for individuals with visual impairments have remained stubbornly and significantly below those of the general population (Cornell, 2010). Table 1 provides data on comparative educational, employment, and economic status of individuals with visual impairment compared with the general population.

Table 1 Comparison of educational attainment, employment, and economic status of individuals with visual impairment compared with the general population.

Metric	Individuals with visual impairment	General Population
Employment Rate	38.7%	76.8%
Annual Income	\$32,000	\$41,000
High School Incompletion Rate	28.8%	10.9%
High School Graduation Rate	32.1%	26.1%
AA Degree Attainment Rate	27.9%	32.3%
BS Degree Attainment Rate	11.2%	30.8%
Rate of Poverty Rate	29.6%	12.4%
SSI Rate	18.0%	-

Data from Cornell (2010) used

The exact rate of employment for individuals with disabilities, however, has been difficult to determine because of the different methodologies and criteria often used in surveys (Barnow, 2008; Burkhauser, & Stapleton, 2001; Wagner, Newman, Camato, Levine, & Garza, 2006). Periodically new analyses of data have shown a marginal increase in rates of employment (Bell, 2010; McDonnal, 2010) and at other times new analysis has shown a marginal decrease (Burkhauser, Houtenberg, & Wittenville, 2001). Overall, however, the evidence suggested that individuals with visual impairments remain employed at rates stubbornly, consistently, and significantly below their non-disabled peers (AER, 2012; Cornell, 2010). Despite having higher rates of educational attainment (Kirchner, & Smith, 2005; McBroom, 1997), individuals with visual impairments generally had lower rates of employment than individuals with other disabilities, except for those with intellectual disabilities and certain orthopedic impairments (Houtenville, 2003).

Although data has consistently shown that an individual with a visual impairment was less likely to be employed than an individual without a visual impairment (Cornell, 2010), evidence has been conflicting as to whether once an individual was determined to have a visual impairment if then the severity of the visual impairment was associated with differences in the likelihood of employment: some individuals with visual impairments felt that the visual impairment itself was an important determinant of employment success and satisfaction (Crudden, McBroom, & Lynn 1999; Kirchner, Johnson, & Harkins, 1997; Mojon-Azzi, Sousa-Poza, & Mojon, 2010; Robin, 2002; Rumrill, Schuyler, & Longden, 1997) and others found that it was not (Leonard, D'Allura, & Horowitz, 1999; Roy, Dimigen, & Taylor, 1998). The conflicting evidence regarding the impact of the severity of the visual impairment complicated the interpretation of employment statistics further in that it was possible that accurate interpretation depended on what percentage of people with visual impairments identified as having a visual impairment and why they did so. For example, if visual impairment was viewed as such because of difficulties with functional activities including employment, then those with functional difficulties as a result of visual impairment would be identified as having a visual impairment. Those who had a visual impairment but felt they had no difficulty with functional activities related to visual impairment might not be identified as having a visual impairment. Research has shown that people with impairments may not perceive themselves as having a disability (Priestley, Corker, & Watson, 1999; Watson, 2002). For these reasons, visual impairment may not have been a descriptor that was independent of functional difficulties including employment.

This raises questions about the validity of conclusions regarding associations between visual impairment and functional difficulties including employment.

As of 2010, approximately 56.8% of children with visual impairments were participating with their non-disabled peers in educational settings with minimal special education support, as defined by spending at least 80% of the school day in a general education classroom (Smith, Palloway, Patton, & Dowdy, 2012). At the same time 38.7% of adults with visual impairments were employed compared with 76.8 % of non-disabled adults (Cornell, 2010). In other words, if an individual had a visual impairment, he or she was nearly as likely to participate fully in general education classes as a non-disabled school child (0.57:1, 56.7%/100%) as he or she was likely to participate in general competitive employment as an adult (0.50:1, 38.7%/76.8%) . Indeed, participation in inclusive educational settings had been found to be correlated to employment (Leonard et al., 1999). Those students with visual impairments for whom inclusive educational environments were deemed by their educational teams to be the most appropriate were 74% more likely to be competitively employed later in life than those students whose educational teams felt that a self-contained or specialized school was the most appropriate educational environment (Leonard et al., 1999).

Participation in K-12 schooling has been supported by section 504 of the Rehabilitation Act and the Individuals with Disabilities Education Act (IDEA). These two pieces of legislation included provisions related to both civil rights and entitlements. Accommodations whether formulated through a 504 plan or through IDEA were related to civil rights in that accommodations were required so that the student with the disability

would have equal access to the educational environment. The special education and support service provisions of IDEA were entitlements and were used to justify and support professions and institutions around special education services including pull out services and sheltered education in non-inclusive settings. K-12 education has been viewed by American society as a public good and as a result an obligation to provide K-12 education had been taken on by society for the benefit of both society and the individual.

On the other hand, employment, and to an increasing degree post-secondary education (Griswold & Marine, 1996), have been considered primarily a private good (a benefit primarily for the individual receiving the education), and therefore society took on less of an obligation to ensure equitable access to these activities. Still, parallels can be drawn between the K-12 education support system and the system to support adults after secondary school when IDEA no longer applied for them. The ADA was a civil rights law that required the provision of accommodations so that the student with the disability would have equal access to post-secondary education and employment opportunities. On the other hand, similar to other provisions in IDEA, entitlement programs such as Social Security Insurance (SSI) administered through the Social Security Administration were used to justify, legitimize, and support professions and institutions that provide extra and special support for adult life in the community through various other programs including those related to sheltered employment. Advocates have put forth proposals to develop a system that would allow for supported employment in mainstream settings for individuals with disabilities (Apter, 1992; Malakpa, 1994; Reid,

2005; Remington, 2005). Although supported employment in mainstream employment settings has not been a model that has been widely adopted (Apter, 1992; Remington, 2005), in some ways supported employment in mainstream settings mimics certain placements in the general education system. The parallel participation figures between K-12 education and employment suggest underlying social understandings that have resulted in the sudden change in support mechanisms at the transition from K-12 to adult life that more dramatically partition the population between participators and non-participators.

Stakeholder Perspectives

In the effort to identify conditions that influenced employment and post-secondary outcomes for individuals with visual impairments, researchers have analyzed large national data sets for clues as well as conducted studies to capture the perspectives of vocational rehabilitation workers, educators, employers, and individuals with visual impairments. This community of stakeholders is explicitly involved in the transition of individuals with visual impairments from high school to post-secondary education and/or employment. This section contains a summary of the findings of these researchers, categorized based on the stakeholders from which the finding originated and whether particular findings could be classified as associated with medical (person-centered focused), social (environmentally focused), or political (social justice focused) frameworks of understanding disability.

Perspective of Individuals with Visual Impairments

Researchers who conducted studies in which individuals with visual impairments were the informants have identified characteristics of the individuals with visual impairments that the individuals themselves felt were associated with their own employability. A number of the factors identified could be characterized as aligned with medical model perspectives. First of all, the nature and severity of the visual impairment was found to be of concern. Some researchers found that the responses of those with visual impairments suggested that individuals with visual impairments felt that the visual impairment itself was an important determinant of employment success and satisfaction (Crudden et al., 1999; Kirchner, et al., 1997; Mojon-Azzi, et al., 2010; Robin, 2002; Rumrill et al., 1997) and others found that it was not (Leonard, et al., 1999; Roy, et al., 1998). Individuals with visual impairments also felt that personal appearance was important (Hutto, & Hare, 1997; Robin, 2002), as well as health (Robin, 2002).

Next, individual traits related to disposition were also identified by individuals with visual impairments as being important, including being outgoing (Crudden, 2002), having self-confidence (Corn, Muscella, Cannon, & Shepler, 1985; Kirchner, et al., 1997; O'Day, 1999; Salomone & Paige, 1984), having self-esteem (Hagemoser, 1996); having feelings of self-efficacy (Corn et al., 1985; Leonard et al., 1999); having a positive attitude (Salomone & Paige, 1984; Young, 1995); enjoying a challenge (Hutto, & Hare, 1997); accepting responsibility (Hutto & Hare, 1997; Young, 1995); having a low degree of cynicism (Hagemoser, 1996); having a strong work ethic (Crudden et al., 1999; Crudden, 2002); having a willingness to adapt to the sighted world (Young, 1995); being

persistent, motivated and/or determined (Crudden, 2002; Hutto & Hare, 1997; Leonard et al., 1999); and having the ability to make other people feel comfortable around them (Golub, 2003; Young, 1995).

Additionally, researchers found that individuals with visual impairments felt that individual personal skills were important. These included educational attainment (Hagemoser, 1996; Hutto & Hare, 1997; Kirchner, et al., 1997; Leonard et al., 1999); individual orientation and mobility skills (Heiden, 1989; Hutto & Hare, 1997; Leonard et al., 1999; McDonnell & Crudden, 2009; Robin, 2002; Rumrill et al., 1997; Young, 1995); having marketable skills (O'Day, 1999; Robin, 2002); having personal skills related to technology and special equipment (Crudden, 2002; Heiden, 1989; Hutto & Hare, 1997; Kirchner et al., 1997; Leonard et al., 1999; McDonnell & Crudden, 2009; O'Day, 1999; Wolffe, Candela, & Johnson, 2003); having organizational skills (Hutto & Hare, 1997; Rumrill et al., 1997; Shaw, Gold, & Wolffe, 2007); having communication skills (Hutto & Hare, 1997); negotiation skills (Hutto & Hare, 1997); "blindness skills" (Young, 1995); print access skills (Leonard et al., 1999); job seeking skills (Kirchner et al., 1997; O'Day, 1999); daily living skills (Heiden, 1989); and skills from work experience (O'Day, 1999; Robin, 2002).

Finally, the availability of person centered disability related services was found to be important to individuals with visual impairments. Disability related services that were considered important were: the availability of sheltered work options (Crudden, Moore, & Giesen, 1996); financial assistance from vocational rehabilitation for specific additional training and the purchase equipment or education (Crudden et al., 1999;

Wolffe, Roessler, & Schriener, 1992), general help through vocational rehabilitation agencies (Crudden et al., 1999; Gillies et al., 1998; Heiden, 1989; Kirchner et al., 1997; O'Day, 1999; Salomone & Paige, 1984; Wolffe, et al., 2003); help with job-search skills and strategies (Wolffe et al. 1992); the skill of rehabilitation workers (Crudden et al., 1999; Wolffe, et al., 2003); the relationship that the individual with visual impairment had with vocational rehabilitation workers (O'Day, 1999); and social support in general (Papakonstantinou & Papadopoulos, 2009).

Researchers have also found important factors identified by individuals with visual impairments related to participation in higher education that could be categorized as associated with the medical model. Personal skills again were considered important. The skills identified included having assistive technology skills (Emener & Marion-Landais, 1995; Heiden, 1989; Treif & Feeny, 2003); orientation and mobility, literacy, and organization skills (Heiden, 1989; Treif & Feeny, 2003); daily living skills (Heiden, 1989); social skills (Hodges & Keller, 1999) including the ability to put others at ease in social situations (Hodges & Keller, 1999). Personal dispositional characteristics were also considered important by individuals with visual impairments including being resourceful and organized (Hutto & Hare, 1997); taking the initiative for interactions (Hodges & Keller, 1999); having feelings of self-efficacy and internal locus of control (Roy & MacKay, 2002); and the ability to advocate for oneself (Wolffe & Spungin, 2002; O'Day, 1999). Finally establishing a connection with vocational rehabilitation agencies was considered important for post-secondary educational success (McBroom, 1997; Emener, & Marion-Landais, 1995).

Individuals with visual impairments, however, also identified factors related to successful employment that were focused on the educational environment and could be categorized as related to the social model of disability. For example attitudes of others were considered important including the attitudes of employers, fellow employees, as well as rehabilitation professionals (Crudden et al., 1999; Crudden, 2002; Crudden, Sansing, & Butler, 2005; Crudden, et al., 1999; Kirchner et al., 1997; Mojon-Azzi, et al., 2010; O'Day, 1999; Salomone & Paige, 1984; Shaw, et al., 2007). In addition, overt discrimination (Crudden et al., 1999; O'Day, 1999; Robin, 2002; Salomone & Paige, 1984); attitudes of the public (Crudden et al., 1999; Salomone & Paige, 1984; Shaw, et al., 2007); attitudes and encouragement of family members (Beaty 1991; Chien-Huey Chang & Schaller, 2000; Crudden, 2002; Crudden et al., 1999; Heiden, 1989; Hutto, & Hare, 1997; Kirchner et al., 1997; Leonard et al., 1999); and the availability of social networks and support (Cimarolli & Wang, 2006; Crudden et al., 1999; Hutto, & Hare, 1997; Roy et al., 1998) were found to be considered important.

Also related to the social model were opinions related to policies and practices including equitable workplace policies and the availability of resources (Wolffe & Spungin, 2002); tangible support from employers in terms of providing necessary equipment and accommodations (Crudden et al., 1999; O'Day, 1999; Rumrill, Roessler, Battersby-Longden, & Schuyler, 1998; Rumrill et al., 1997; Shaw et al., 2007); flexibility and encouragement of employers (Crudden et al., 1999); practical support from family members with transportation (Crudden et al., 1999); and incentives and disincentives related to SSI benefits (Crudden et al., 1999).

Finally, opinions related to accessibility of the built environment could be categorized as related to the social model of disability including the availability of appropriate technology (Wolffe, et al., 2003; Rumrill et al., 1997); equitable access to print (Crudden, 2002; Crudden et al., 1999; Rumrill et al., 1998; Rumrill et al., 1997); having adequate time to complete assigned tasks (Rumrill, et al., 1997) equitable access to job listing sources (Crudden et al., 1999); the availability of transportation (Crudden et al., 1999; Crudden et al., 2005; O'Day, 1999; Rumrill et al., 1998; Rumrill et al., 1997; Salomone & Paige, 1984); and accessible features in buildings (Rumrill et al., 1998; Rumrill et al., 1997).

Similarly, there were factors that individuals with visual impairments identified related to successful higher education experience that could be associated with the social model, for example accessible reading materials, manageable campus layout, accessible living arrangements (McBroom, 1997); convenient transportation and transportation facilities (McBroom, 1997; Hodges & Keller, 1999); available funds for support outside of employment income (Kirchner, et al., 1997), attitudes of family and friends (Kirchner et al., 1997) availability of up to date equipment and accessible and course materials and learning media in accessible formats (Fichen, Asuncion, Barile, Ferraro, & Wolforth. 2009); accessibility of social activities (Hodges & Keller, 1999); access to informational postings on campus for activities and recreation (Hodges & Keller, 1999). Students with visual impairments have also suggested that overprotection could be a problem (Hutto & Hare, 1997).

Individuals with visual impairments identified employment related factors that had a social justice focus and could be characterized as aligned the political model as well, including lack of legislative support (Wolffe & Spungin, 2002); lack of empowerment (Wolffe & Spungin, 2002); the need for contact with role models; and visually impaired mentors to help them understand how to negotiate the system (Crudden et al., 1999; Salomone & Paige, 1984; Young, 1995); forums for actively providing guidance, feedback, and criticism to those who help them seek jobs (Roy et al., 1998); having an accessibility meeting or committee at work in which they participate (Rumrill et al., 1998); and actively seeking out involvement in discussions about accommodations (Rumrill, 1999).

Similarly, for college success, individuals with visual impairments suggested that students should contact and visit campuses and evaluate the college DRC for the quality of available support before they make their final decisions, find out if other students with visual impairments attended the college they were interested in and talk to them about their experiences, and finally try to determine how many staff members have visual impairments (McBroom, 1997). They also felt it was important to be assertive, be aware of their rights under ADA, and contact future instructors proactively advocating for their needs (McBroom, 1997).

Researchers also included practice recommendations based on information gathered in studies in which individuals with visual impairments were participants. For example Chien-Huey Chang & Schaller et al. (2000) recommended that service workers look for ways to support, include, and train parents and to be a resource for parents so

that parents can provide support for their children. Leonard et al. (1999) recommended mainstream schooling where self-efficacy and technology skills were taught and social support networks were built. O'Day (1999) recommended that there be a major public education effort to help dispel negative attitudes toward individuals with visual impairment, and recommended policy changes to Medicaid allowing recipients to continue to receive financial and permanent medical benefits and eliminate the work disincentives. Another recommendation was to establish lending libraries for computer equipment so clients can have equipment available while waiting for the rehabilitation agency or new employers to purchase what is needed. Finally O'Day (1999) recommended education on ADA and support for accessing job information.

Perspectives of Rehabilitation Workers and Service Providers

Some of the factors related to employment for individuals with visual impairments that researchers identified when rehabilitation workers and service providers were informants could be categorized as associated with the medical model of disability in that informants felt that the personal skills and characteristics of the individual with a visual impairment were in themselves important, and /or it was important to have services that directly assessed and remedied deficits in personal skills and characteristics. For example researchers found that rehabilitation workers and service providers felt that it was important for the individual with visual impairment to have the following personal skills: travel skills (Apter, 1992; Golub, 2003; Kirchner et al., 1997; Malakpa, 1994), social skills (Golub, 2003; Link, 1975, Malakpa, 1994), technology skills (Crudden, et al., 2005); daily living skills (Bowman, 2008; Kirchner et al., 1997; Kirchner, Harkins,

Esposito, Istanbouti, & Chandu, 1994; Link, 1975); interview skills (Buell, 1946; Kirchner et al., 1997); personal appearance maintenance skills (Buell, 1946); and job specific and job readiness skills (Bowman 2008; Buell, 1946; Crudden et al., 2005; Kirchner et al., 1997; Link, 1975; Malakpa, 1994). Researchers also found that rehabilitation workers and service providers felt that it was important for the individual with visual impairment to possess the following personal attributes: self-confidence (Crudden, et al., 2005; Malakpa, 1994); flexibility (Young, 1996), persistence, intelligence, motivation a strong work ethic (Crudden, 2002); and coping skills (Link, 1975). Lastly personal experiences of the individual with visual impairment were also found to be considered important by service providers in that they felt that employment success was also associated with the client's work experience (Buell, 1946; Link, 1975) as well as the continuity of their employment (Kirchner et al., 1994).

Also related to the medical model were opinions related to the client/service provider relationship including having a positive relationship with service workers (Buell, 1946; Malakpa, 1994) who would provide support for both finding the job (Link, 1975; Young, 1996) and keeping the job (Apter, 1992; Link, 1975). In addition, service providers were found to feel that it was important that the services the individual with visual impairment received were of high quality (Crudden et al., 2005), from well-trained specialists (Kirchner et al., 1997; Kirchner et al., 1994; Link, 1975; Malakpa, 1994) with specific skills targeted to different needs such as placement, transition, job retention, and career advancement (Crudden et al., 2005; Kirchner et al., 1997), and that the specialist

be comfortable working with a variety of clients such as students, the unemployed, the employed and medical service providers (Kirchner et al., 1997).

Also, rehabilitation workers felt that services should be based on a proper evaluation of the needs of the individual with the visual impairment (Apter, 1992; Buell, 1946); and be limited to preconceived ideas or stereotypes regarding the type of work a blind person would be suited for (Link, 1975). In addition, as would be expected, rehabilitation workers felt that programs should be adequately funded (Link, 1975) and caseloads should be manageable (Link, 1975). Some rehabilitation workers also advocated for community-based strategies that make use of the idea of competitive employment with special support such as job coaching (Malakpa, 1994; Reid, 2005).

In addition, researchers have reported that rehabilitation workers and service providers identified certain factors related to successful employment that could be categorized as associated with the social model including attitudinal, environmental, and systemic barriers. For example they found that rehabilitation workers identified the attitudes of others (Apter, 1992; Clunk, 1935; Crudden et al., 2005; Link, 1975; Malakpa, 1994), including overprotectiveness (Malakpa, 1994) as influential, as well as the basic knowledge of visual impairment that coworkers and employers (Apter, 1992, Clunk 1935; Crudden, et al., 2005; Kirchner et al., 1997; Kirchner et al., 1994; Link, 1975) and rehabilitation service personnel (Link, 1975; Young, 1996) possessed. Researchers also found that rehabilitation and service providers identified potential barriers related to the design of the physical environment such as transportation (Crudden et al., 2005); the accessibility of printed information for both finding jobs, applying for jobs, and staying

on the job (Crudden et al., 2005); barriers to travel at the workplace itself (Clunk, 1935); and work environments that were designed in such a way as to require special accommodation and specialized technology for access (Apter, 1992).

Researchers also found that rehabilitation workers made the following recommendations for themselves that could be classified as associated with the social model of disability: rehabilitation workers felt that they should maintain high expectations for all (Clunk, 1935; Link, 1975; Young, 1996); cultivate contacts with employers and other support personnel (Young, 1996); proactively evaluate worksites; and consult with employers regarding reducing potential barriers (Apter, 1992, Crudden et al., 2005, Young, 1996) including barriers to information on employment opportunities (Buell, 1946; Crudden et al., 2005; Kirchner et al., 1997).

Researchers also found that rehabilitation workers and service providers identified administrative and systemic barriers to employment for individuals with visual impairment, for example some rehabilitation workers felt that SSI benefit policy created disincentives for employment (Crudden et al., 2005; Link, 1975), some administrative agency configurations created barriers to trans-agency collaboration and communication (Malakpa, 1994) and bureaucratic inefficiencies occasionally were barriers themselves (Crudden et al., 2005; Kirchner et al., 1997; Kirchner et al., 1994). Researchers also found that vocational rehabilitation workers and service providers recommended cultivating community connections (Buell, 1946), cultivating the support of families (Crudden, 2002); building support among agencies (Buell, 1946); developing a system of progressively integrated opportunities available built into employment system

(Remington, 2005); and encouraging school based programs related to employment (Buell, 1946; Kirchner et al., 1997; Link, 1975).

Finally, researchers have reported that vocational rehabilitation workers and service providers identified certain factors related to successful employment that could be categorized as associated with the political models of disability. For example, vocational rehabilitation workers felt that it was important to involve clients in decision making throughout the process of gaining meaningful employment (Young, 1996); facilitate connections with blind or low vision mentors (Kirchner et al., 1997; Young, 1996); develop job clubs where individuals with visual impairments could meet and support each other through experiences they have had (Kirchner et al., 1997); have vocational rehabilitation workers who have visual impairments on staff (Clunk, 1935; Link, 1975; Malakpa, 1994); and provide clients with self-advocacy training and a knowledge of ADA related rights (Crudden et al., 2005; Rumrill, 1999; Malakpa, 1994).

Researchers also provided some recommendations based on the findings of their research into the opinions of rehabilitation workers. The recommendations of researchers included service providers (1) employing community and employer based training strategies and providing more integrative services with more realistic practical side (Bowman 2007); (2) providing ongoing supports such as job coaching in competitive employment settings (Apter, 1992); (3) working to dispel the negative attitudes held by employers; (4) looking for opportunities to educate employers about visual impairments and how visual impairment affects an individual in the work environment (Crudden et al., 2005); (5) informing employers of what an employer's obligations were under ADA

(Crudden et al., 2005); (6) encouraging individuals with visual impairments to volunteer information to potential employers on how they accomplish specific tasks proactively addressing any concerns an employer might imagine related to their ability to function on the job and meet the performance requirements; (7) advocating for addressing transportation needs through changes in public systems and the building of personal skills (Crudden et al., 2005); and finally (8) engaging company technology workers and encouraging individuals with visual impairments to do so as well (Crudden et al., 2005).

Perspectives of Educators and DRC workers

Unlike the volume of research into the perspectives of vocational rehabilitation workers, the volume of research on the views of educators and DRC professionals was found to be sparse. Nonetheless available research showed educators and DRC professionals felt that certain factors were important for the success of individuals with visual impairments in post-secondary educational settings that could be categorized as aligned with the medical model of disability in that they were found to feel personal skills and characteristics of the student were important such as having good social skills, a desire for academic success, a solid knowledge of technology, an ability to travel (Reed & Curtis, 2011), good daily living skills and personal appearance, and an internal locus of control (Williamson, Robertson, & Casey, 2010).

Researchers also found that educators and DRC professionals felt certain disability specific services provided by post-secondary institutions were important, for example O&M services, preregistration opportunities, counseling, support groups,

resource rooms, diagnostic testing, housing, alternative testing arrangements, adaptive course work, tutors, adaptive computer equipment, and note takers (McBroom, 1997).

On the other hand, there were also other factors that educators identified as important that could be categorized as aligned with the social model of disability, including making sure that recruitment information for higher education was adequate, accessible, and timely (Reed & Curtis, 2011). DRC workers also indicated that specific services that their respective institutions provided were important and could be categorized as aligned with the social model of disability, for example ensuring that written materials were in accessible format for all students and that professors and staff members received training related to supporting students with disabilities (McBroom, 1997). In the studies reviewed that involved opinions of educators and DRC workers, no programming or suggestions were found that could be readily categorized as being associated with the political models of disability, however, Antonak (1980) found that college students felt that students with visual impairments were integrated in both school and community better than those with other disabilities.

Vancil (1997), who is blind, described a curriculum for supporting the transition to post-secondary education for students who have visual impairments. Although her perspective could have been included in the section reporting perspectives of those with visual impairments, it was included here because the author's purpose was to advise service providers from the perspective of an educational service provider who happened to be blind. Her perspectives could be almost exclusively classified as being from a perspective based on the medical model of disability. Vancil (1997) made the following

suggestions: that it was important for students with visual impairments to have good daily living skills; organizational skills; print access management skills; orientation and mobility skills; assertiveness and self-advocacy skills related to proactively contacting instructors to arrange for special needs; and finally skill in being able to arrange note takers, readers, and friends to help with both anticipated and unanticipated needs related to having a visual impairment. One recommendation that Vancil (1997) made that could be categorized as related to the social model of disability was that there were both social and support advantages for a student with visual impairment to find housing accommodation that were proximal to other students and campus activities. Although the importance of having students in housing close to other students and campus activities has been found to support persistence in college for all students (Pike, Schroeder, & Berry, 1997), Vancil (1997) noted that it had particular importance for students with visual impairments because of the complexities of travel presented by the built environment.

In their opinion piece, Bina and Barnartt (1997) debated the need for a special college for students with visual impairments that would be similar to Gallaudet University for deaf and hard of hearing students. Although they concluded that a special college for students who had visual impairments was not necessary, they acknowledged that many barriers existed in colleges for individuals with visual impairments, they made recommendations that tended to be framed by social model thinking in that they focused around making the environment more accessible and less on remedies based on building compensatory skills in the students with visual impairment.

Perspectives of Employers/Coworkers

Researchers have also conducted studies in which employers were participants. In these studies employers identified certain factors related to the employability of individuals with visual impairments such as personal skills, characteristics, and disability related support services that could be categorized as associated with the medical model of disability. For example they identified the following skills as being associated with employability: travel skills (Golub, 2003; Kirchner, & Smith, 2005), problem solving skills (Golub, 2006); skills in the use of access technologies (Golub, 2006) including those for accessing print (Kirchner & Smith, 2005; Wolffe, & Candela, 2002); and an understanding of work etiquette (Golub, 2006). Researchers also found that employers believed that the following attitudes and dispositions of the individual with visual impairment contributed to employment success: being flexible (Golub 2003); having a proactive attitude in the interview and as a new hire (Wolffe & Candela, 2002); being motivated (Crudden, 2002); having a professional attitude (Crudden, 2002); having a positive attitude (Golub, 2006); and being hard-working (Golub, 2006). Also, researchers reported that some employers found that having specific knowledge about access technologies and how an employee with a visual impairment used specialized technology was important (Kirchner & Smith, 2005; Wolffe & Candela, 2002). Finally, researchers found that employers considered ongoing support from vocational rehabilitation professionals for both the employee and employer as helpful (Kirchner & Smith, 2005; Wolffe & Candela, 2002).

Researchers also identified employer approaches and attitudes that could be categorized as associated with the social model. For example employers felt that the employee with visual impairments was more likely to be successful that if the employer was able to build in flexibility with time requirements for jobs (Wolffe & Candela, 2002), maintain high expectations for all employees (Golub, 2003), cultivate and transmit core organizational values that frame diversity as an asset (Golub, 2006), take personal responsibility for an accessible environment and the availability of appropriate tools (Golub, 2006; Wolffe & Candela, 2002), and educate other workers as to social interactions in the workplace that were accessible to all (Golub, 2006). Employers also noted that supportive family environments were important for workers with visual impairments (Crudden, 2002); as were supportive coworkers (Wolffe & Candela, 2002).

Finally, researchers found that employers held certain beliefs about factors that contributed to employment for the individual with visual impairment that could be categorized as aligned with the political model of disability as well. For example, researchers found that employers believed that the following contributed to employment success for the individual with visual impairment: encouraging the individual with the visual impairment to make his or her own decisions (Golub, 2003), maintaining open ongoing communication with the employee with the visual impairment regarding his or her needs (Golub, 2006); having the employee with the visual impairment involved in testing new equipment for use in the company prior to purchase by the company (Golub, 2006); and developing mutual accommodation through dialog (Golub, 2006). Employers also felt that it was important for the employee with the visual impairment to actively

embrace the role of ambassador for blindness (Golub, 2006) and insist on being held to the same standards as employees without visual impairments (Golub, 2006). Wolffe and Candela (2002) also noted that there was a difference between problems that employers were anticipating and actual issues that arose and implied that having previous experience with workers and people with visual impairments improved employers understanding, expectations, and ultimately the likelihood of success for the employee with a visual impairment.

Based on their experience conducting research into employer perspective, researchers formulated some recommendations related to different models of disability. Examples of person-centered recommendations using the medical model of disability included helping the individual with visual impairment develop job-seeking skills and coaching the potential employee with visual impairment about taking a proactive stance during interview process regarding their impairment and their abilities, and answering unspoken questions that employers might have related to managing the required work with a visual impairment (Wolffe & Candela, 2002). Researchers also recommended developing focused training programs for rehabilitation workers in job placement (Kirchner & Smith, 2005).

Some of the recommendations made by researchers after investigating the opinions of employers included recommendations that were focused on the physical and social environment of employment and could be categorized as related to the social model of disability, including developing materials that could be used to answer questions and support employers (Kirchner & Smith, 2005) and having vocational

rehabilitation workers coach hiring personnel on accommodations for and appropriate interactions with individuals with visual impairments (Wolffe & Candela, 2002). An example of a recommendation using political models of disability was creating an accessible database of mentors and facilitating connections to mentors with visual impairments (Kirchner & Smith, 2005).

Perspectives of Academic Vision Researchers

Academic analysis of national data sets. Academic vision research workers have conducted numerous studies in which they have gathered the opinions of individuals with visual impairments, educators, employers and service workers as detailed in this review, but in addition they have analysed information from various data bases such as: RSA Case Service report RSA-911 data system (Bell, 2010; Capella, 2001; Cavanaugh et al., 2006); SSA Office of Program Development and Research Data (Capella-McDonnall, 2008); Cornell University, School of Industrial and Labor Relations' web site for LSVRSP (Capella-McDonnall & Crudden, 2009; Capella-McDonnell, 2005); the Second National Longitudinal Transition Study (NLTS2) (Capella-McDonnall & O'Malley, 2012; Capella-McDonnall, 2011; Capella-McDonnall, 2010a); data from Mississippi State University Rehabilitation Research and Training Center on Blindness and Low Vision (Taheri-Araghi & Hendren, 1994); EEOC's Office of Information Resources Management, Charge Data System Division (Unger et al., 2005); National Longitudinal Survey of Youth 1997 (Capella-McDonnall, 2010).

The results of the analysis of these data bases tended to be person centered and therefore aligned most closely with the medical model of disability. For example, the

following personal characteristics of individuals with visual impairments were found to be associated with employment, or job seeking behaviors including seeking out and being involved with vocational rehabilitation: severity of visual impairment (Capella-McDonnall, 2011; Shaw et al., 2007); education and academic competence (Capella-McDonnall & Crudden, 2009; Capella-McDonnell, 2008; Capella-McDonnell, 2005; Capella, 2001; Cavanaugh et al., 2006; Capella-McDonnall, 2010); completion of college credits (Capella-McDonnall, 2010); the presence of additional disabilities (Capella-McDonnall, 2008); self-determination (Capella-McDonnall & Crudden, 2009); locus of control (Capella-McDonnall & Crudden, 2009); personal focus and commitment to getting a job (Capella-McDonnall, 2005); race (Capella-McDonnall, 2010); gender (Taheri-Araghi & Hendren, 1994); and age, in that older individuals were the less likely to find employment (Capella, 2001; Capella-McDonnell, 2008; Taheri-Araghi & Hendren, 1994), but more likely to seek assistance from vocational rehabilitation agencies (Cavanaugh et al., 2006). Degree of self-esteem was not found to be predictive (Capella-McDonnall & Crudden, 2009).

Also related to the medical model of disability researchers found that personal skills such as math and verbal skills (Capella-McDonnall, 2011; Capella-McDonnall, 2010); assistive technology skills (Capella-McDonnall & Crudden, 2009); travel and orientation and mobility skills (Capella-McDonnall, 2011); social skills (Capella-McDonnall, 2011); and personal experiences such as general paid work experience (Capella-McDonnall, 2011; Capella-McDonnall & Crudden, 2009; Capella-McDonnall, 2010; Taheri-Araghi & Hendren, 1994), diverse work experiences and job tenure

duration (Capella-McDonnall, 2011; Capella-McDonnall, 2010; Capella-McDonnall & O'Malley, 2012) were predictive of employment success. Later research has found that only certain types of specific real work experience were predictive of employment (Capella-McDonnall & O'Malley, 2012). Researchers who analyzed these data sets also found that the number of interactions with rehabilitation professionals (Capella-McDonnell, 2005), the quality of relationships with rehabilitation providers (Capella-McDonnell, 2005) and case expenditures (Capella, 2001; Taheri-Araghi & Hendren, 1994) were predictive of employment.

On the other hand, however, some of the results generated by the researchers through analysis of national data sources could be categorized as aligned with the social model of disability in that environmental and attitudinal conditions were found to be associated with rates of employment for individuals with visual impairments. For example having Social Security benefits was associated with fewer job seeking behaviors (Capella-McDonnall, 2011; Capella-McDonnall, 2008); and lower employment (Capella-McDonnall & O'Malley, 2012). Minority status (Cavanaugh et al., 2006; Capella-McDonnall, 2008) was associated with reduced participation in programs designed to facilitate acquiring employment through state and to lesser degree private agencies (Capella-McDonnall, 2008). Parental support and expectations (Capella-McDonnall, 2011; Capella-McDonnall, 2010); social involvement with peers (Capella-McDonnall, 2011); accessibility of job application and testing materials (Unger et al., 2005); and availability of accommodations (Unger et al., 2005) were related to employment success.

The only result that could be categorized as aligned with the political model of disability was that individuals with visual impairments were found to have the second highest proportion of complaints lodged with the Equal Employment Opportunity Commission (EEOC), next to those with physical impairments, and were the most likely of individuals regardless of disability to win suits of discrimination (Unger et al., 2005). However, after their analysis of Cornell University, School of Industrial and Labor Relation's web site for LSV, Capella-McDonnall and Crudden (2009) made a recommendation that was social justice focused and therefore could be categorized as aligned with the political model of disability: giving more power to the client to decide what degrees and what areas of study they want to follow.

Reviews of the literature. Some researchers also reviewed the literature related to employment for those with visual impairments. The interpretations of the literature that they provided could be categorized variously as having a medical model, social model, and occasionally political model orientation. The degree to which individual research groups interpreted the literature as suggesting recommendations using one or more models of disability often depended on the theoretical perspectives, if any, that they used to frame their analysis. Without an explicit theoretical perspective researchers tended to default to a person centered medical model approach.

DeMario, Rex, and Morreau, (1990) conducted a review of the literature and school curricula and developed a list of competencies for school age children with visual impairments that were related to vocational readiness. Though DeMario et al. (1990) did not explicitly identify a theoretical model of disability with which they approached their

project, they took the perspective of educators and focused on building individual knowledge and skills – a person centered perspective. After developing the list of competencies, DeMario et al. (1990) had the list screened by teachers of students with visual impairments and validated by service coordinators, vocational rehabilitation workers, personnel officers in businesses, and individuals with visual impairments. The skill domains that DeMario et al. (1990) identified were daily living skills, social skills, communication skills, orientation and mobility skills, and understanding of different occupations.

DeMario (1992) conducted another review of the literature and again did not explicitly identify a theoretical perspective for the analysis but recommended a decidedly person centered, medical model approach, to addressing employment disparities and interpreted the literature as suggesting that transition planning and training should start at an early age to ensure that students obtain adequate academic and functional skills such as literacy skills, social skills, orientation and mobility skills, and communication skills before graduating and moving into post-secondary education or employment. DeMario (1992) also interpreted the literature to suggest that a general positive attitude, specific work experiences in real contexts, and an emphasis on specific career goal setting were important for improving the chance of post-secondary employment success for students with visual impairments. For post-secondary education success DeMario (1992) identified study skills, computer and technology skills, note taking skills, activities of daily living (ADL) skills, O&M skills, and the ability to order books.

Goertz, van Lierop, Houkes, and Nijhuis (2010) used the World Health Organization's International Classification of Functioning (WHO, 2002), Disability and Health (ICF) model as a theoretical basis for their literature review and quasi meta-analysis. Using the ICF model led Goertz et al. (2010) to attend to factors such as disability, personal characteristics, and environmental factors as variables that affect health, abilities and participation in society. Using this model, Goertz et al. (2010) suggested recommendations aligned with both the person centered, medical model approaches such as indicating that it was important for individuals to develop independent travel skills and be open about their needs and put others at ease; and environmentally centered, social model approaches by identifying stereotypic and deficit thinking of society as a problem and then recommending addressing it by searching for employment situations in which organizational cultures were receptive to diversity and disability. Goertz, et al. (2010) also suggested that employers needed to maintain high expectations and exhibit flexibility.

Halpern (1993) established a theoretical framework in which successful transition was evaluated in three areas: general physical and material wellbeing, meaningful involvement in the full range of adult roles, and a having a personal sense of wellbeing. For Halpern (1993) successful transition included employment because that was a typical and important adult role and contributor to material well-being, but at the same time he considered health, involvement in social and recreational activities, feeling a personal emotional sense of satisfaction and well-being as important markers as well.

Using this broader framework for evaluating transition success, Halpern (1993) reviewed 41 studies that examined post-secondary outcomes for student with disabilities and found that three quarters of the studies addressed financial security, half addressed educational attainment, and about half addressed social networks and personal relationships. He noted that most studies omitted data on personal fulfillment and advocated for research that focused more on broader markers, suggesting a more political model framework in which the individual with visual impairment was more involved in defining the parameters of success. In a finding that supported this approach, DeLaGarza and Erin (1993) found that individuals with visual impairments who were employed were not significantly more satisfied with their lives than those who were unemployed.

Nagle (2001) did not explicitly talk about a theoretical framework in her review of the literature, however, she did put forth recommendations aligned with the medical model of disability based on person centered collaboration between agencies focused on “the remediation of skills and enhancement of valued attributes”(p.731). Her review of the literature focused on vocational assessment, training in compensatory skills, travel, print access, social, grooming, and job seeking skills. Nagle’s (2001) recommendations included recommending policy changes that addressed financial disincentives including those associated with, employer concerns regarding increased insurance liability, increased costs due to the expense of adaptive equipment, and potential impacts to other employees of having to work with a person with a visual impairment. Finally, similarly to Hapern (1993) and moving to a more political empowering model, Nagle (2001)

recommended addressing a wider range of quality of life issues including access to the community and the development of social networks.

Experimental designs by academic researcher. Most of the literature found on the topic of employment and post-secondary education participation for individuals with visual impairment was based on the opinions of informants, or a retroactive analysis of existing data and therefore framed to find associations between employment and participation in post-secondary education and characteristics, dispositions, and skills of the individual with visual impairments; and environmental, attitudinal, social and policy barriers. Only two studies were found that were experimental in nature.

The first was conducted by Rumrill (1999), who used a control and experimental group design to show that providing literature, training and coaching on ADA accommodations and self-advocacy skills resulted in the participants in his study actively requesting meetings with supervisors and discussing and implementing accommodations in the workplace. The second study was conducted by Mitchel and Zampitella-Freese (2003), who investigated the effectiveness of a year round youth program to see what impact the program would have on overall level of functioning and readiness to work. To do this, Mitchel and Zampitella-Freese (2003), evaluated students before and after participating in the program and found that adaptive behavior skills, ADL, and residential living skills improved, but academic and vocational skills did not.

Institutional Isomorphism and Disability

Higher education, business, and professional organizations have been defined as entities with recognizable cultural norms (Shaw & London, 2001; Tierney, 1991).

Perlow (1998) showed that individuals who joined organizations began their socialization to the culture of the organization from the moment they arrived. Behaviors that aligned with organizational norms were rewarded and reinforced and those that did not, were discouraged (Perlow, 1998). For organizations that had individuals with visual impairments as participants or stakeholders, how a disability came to be viewed within the organization or profession would become part of the organizational or professional culture and affect how the individual with a disability or visual impairment was viewed within the organization (Golub, 2006).

Organizations developed their culture and way of doing things through competing processes. Some of the processes encouraged a movement towards homogeneity between organizations (Delucchi, 1997, DiMaggio & Powell 1983) and others led to differentiation (Bastedo, 2009, Clark, 1972; Shaw & London, 2001; Tierney, 1991).

DiMaggio and Powell (1983) described three processes that led to homogeneity or isomorphism between similar organizations: normative, coercive, and mimetic processes.

Normative Processes

Normative processes were described by DiMaggio and Powell (1983) as processes that resulted from “collective struggle of members of an occupation to define the conditions and methods of their work” (p. 152), establishing legitimacy among peers and within organizations. Normative processes that form within organizations originate and are sustained and embodied by the views and practice of stakeholders in the organization (DiMaggio & Powell, 1983). In the field of post-secondary transition for individuals with visual impairments, the stakeholders have been individuals with visual

impairments, vocational rehabilitation workers, educators, employers, disability resource center workers, and academic researchers. It was therefore important to understand the views of these stakeholders in order to understand the practices used by organizations that supported the post-secondary employment and educational aspirations of individuals with visual impairments.

Professional connections through organizations such as the Association for Education and Rehabilitation of the Blind and Visually Impaired (AER), Council for Exceptional Children, and the Association for Higher Education and Disability (AHEAD) and the American Printing House for the Blind (APH) facilitated understanding of the opinions and perspectives of stakeholders and the established and disseminated best practices through conferences publications, and journals such as *The Journal of Visual Impairment and Blindness*, *RE:view*, *Journal of Exceptional Children*, *Rehabilitation Counseling*, and *Journal of Rehabilitation*. *The Journal of Visual Impairment and Blindness*, for one, has had a long history and has evolved along with the profession in the context of changing legislation and societal expectations (Moore, 2006). Although new ideas have been added to the literature on an ongoing basis, many ideas have endured and been reaffirmed over the period extending back at least 50 years. Because of this history, some of the literature discussed in this project included older pieces to show the longevity and deep historical roots of some of the beliefs regarding best practices for supporting positive employment and post-secondary educational outcomes for individuals with visual impairments.

Coercive Processes

DiMaggio and Powell (1983) suggested that the coercive processes of organizational formation were generated by regulation, by entities on which the organizations depended for resources, and by the cultural expectations of the society within which the organization operated. In the case of this study, the prominent examples of regulation through which coercive processes operated were the ADA, ADAAA, and IDEA. Resource allocation was also tied to these regulations likely compounded the effectiveness of the coercive processes originating from these regulations. The coercive process of the entity that controls funding has also been measured in the area of employment support services for individuals with visual impairments. Capella (2001b) showed how different levels of funding led to different vocational rehabilitation programming which in turn had led to different employment outcomes for individuals with visual impairments. Financial support often came with regulations that prescribed how the money was spent and further constrained the options that people in organizations could pursue to meet their functional objectives (Capella, 2001b).

Coercive processes associated with the cultural expectations of society relevant to this study could also be identified. For example, society has had an influential, though contested, anti-discrimination discourse relative to employment and educational opportunity for individuals with disabilities (Boswell, 2002). At the same time, the narrow pursuit of individual economic self-interest and accomplishment had become viewed as a powerful and desirable mechanism for the progress of society as a whole (Ayers, 2005). This neo-liberal ideology had a growing influence on the formation of

policy and institutional behaviors (Anderson, 2009; Ayers, 2005) to the point where the ascendancy and power of those who promoted and benefited from this ideology was rarely contested (Lukes, 1978). The neo-liberal ideology, however, disadvantaged people and groups whose skills were optimally cultivated and most valuable in collaborative environments where interdependence was valued. Longmore (1995) further explained the conflict as follows: those individuals who maintained an ablist (or neo-liberal) perspective of society held that people valued personal freedom based on self-sufficiency, independence, functional separateness, and physical autonomy, whereas individuals with disabilities might have valued personal freedom based on self-determination, interdependence, personal connection, and human community. Golub (2003) noted this dichotomy as well in the context of employment for individuals with visual impairments and critiqued the prevalence of the individualistic perspective in employment situations in which individuals with visual impairments participated. Halpern (1993) has gone as far as to critique the extent to which employment has been used as a marker of success for transition in the first place.

The neo-liberal framework for understanding processes that affect the configuration of organizations has been used to study the changing functions and behaviors of post-secondary institutions as well. Many schools of higher education, including both 2-yr and 4-year institutions, have begun focusing on providing practical employment oriented courses of study and support services that promoted the individual economic goals of students (Deil-Amen & Rosenbaum, 2004; Delucchi, 1997) even as many institutions continued to present a public image to the contrary (Delucchi, 1997).

The views of society as embodied through legislation have also been conflicted. The Supreme Court ruling in *Brown v. Board of Education (1954)* asserted that separate was not equal and initiated a chain of events that led to the passage of numerous pieces of civil rights legislation, including IDEA and ADA. Yet both IDEA and ADA provided a rationale for separate participation between those with disabilities and the general population. IDEA stated that children with disabilities should be educated with non-disabled peers “To the maximum extent appropriate..... ” 20 U.S.C. 1412(a)(5)(B) (NICHIYC, 2010) and the ADA and ADAAA (1990, 2008) protected the right of access to higher education and employment for individuals with disabilities (CODI, 2011) by specifying that institutions “make reasonable accommodation for people with disabilities. . . unless it results in undue hardship” (DOJ, 2005, 2011, 2011b; Essex, 2002; Leuchovius, 2011). Clearly society, as represented by government legislation and court rulings, held that disability was a type of diversity that was different from other types of diversity. The right to access for individuals from diverse ethnic, religious, nationality, or gender groups was not qualified by the phrase “to the maximum extent appropriate” or “unless it causes undue hardship”.

During the civil rights movement of the 1960’s, many marginalized groups solidified their rights through legal and legislative action including the Civil Rights Acts of 1964 and 1968 and the Voting Rights Act of 1965. Yet disability was left out (Baynton, 2001; Black, 2003). In fact, the idea of disability, that marginalized groups were somehow less mentally, emotionally, or physically able had been used as a tool to maintain the subjugation of many minority groups (Baynton, 2001; Black, 2003).

Reacting to this characterization, marginalized groups chose to debunk the characterization by disassociating with disability as a descriptor rather than dismantling the idea that disability in of itself justified marginalization (Baynton, 2001). None the less in 1973, section 504 of the Rehabilitation Act and Education of All Children Acts passed thereby banning discrimination on the basis of disability for organizations that received federal funds. This began to form the legal foundation to support inclusive education in schools.

However, push back began right away, and in 1984, with the ruling in the *Grove City College v Bell case*, the Supreme Court limited the applicability of laws that prohibited discrimination on the basis of race, ethnic origin, sex or disability (FTA, 2011). Legislation followed under the growing belief that regulation constrained the ability of free markets, and hence, the people, from reaching their full potential, and suggested that society's macro goals would be best served by the cultivation and pursuit of individual self-interest following the newly revived neo-liberal perspective (Anderson, 2009; Ayers, 2005). As a result, for the first time, disability and other minority rights communities united to advocate for legislation that would reinstate and extend the rights removed. Subsequently the Fair Housing Act was amended in 1988, and in 1990 the ADA was passed (DREF, 2010).

Employer attitudes towards application of ADA remained ambivalent, however (Hernandez, Keys, & Balcazar, 2000), and the Supreme Court continued to make rulings that restricted the reach ADA and the rights of individuals with disabilities (*ie. Sutton v. United Air Lines, Inc., 527 U.S. 471 (1999), Toyota Motor Manufacturing, Kentucky, Inc.*

v. Williams, 534 U.S. 184 (2002). In response, Congress passed the ADA Amendments Act (ADAAA) in 2008 to reassert the rights of individuals with disabilities and close the loopholes and wording that opened the door for a narrow interpretation of the law and a failure to bring about the intended changes in how society removed disabling environments (Georgetown U., 2010, Rozalski, Katsiyannis, Ryan, Collins, & Stewart, 2010). Yet the language “to the maximum extent appropriate” remained in IDEA and “unless it causes undue hardship” remained in ADA (ADAAA, 2008).

Race, national origin, religion, ethnicity were known as suspect classes in cases of discrimination and required strict scrutiny to determine if a law resulting in discrimination was justified. The law and the resultant discrimination had to be associated with a very compelling state interest and rarely have been found to be justified in the case of race, national origin, religion, and ethnicity. Under similar circumstances, involving individuals with disabilities, sexual orientation, and children of immigrants a rational basis test has been applied. In these cases a rational basis for the discrimination can be supported if the legislation or practice served a legitimate state interest. Clearly a hierarchy in diversity remained relative to the right of protection under the law. Inclusion of people with disabilities remained tempered by terms such as “rational basis”, “legitimate”, “appropriate” and “as possible” and practices could be assumed to be appropriate or not appropriate based on a number of what were seen as legitimate or rational concerns.

The disability rights movement, however, has shown that disability can be viewed in many ways, and the ways in which disability should be viewed was still contested in

the disability rights movement (Campbell, 2008, Dewsbury et al., 2004). Whether disability was viewed as an impairment that disables, or as an environmental or social condition that disables, affected how practitioners and stakeholders determine what the agent of segregation was and what the rational basis for exclusion might be. If the disability was seen as a result of a condition or impairment in an individual's body, as the medical model holds, a rational basis for exclusion easily could be built around a discourse of protecting. If the disability was viewed as a result of design choices for the built or social environment, as the social model holds, the rational basis would be harder to build, and finally if the disability was seen as a result of exclusion from decision making processes, as newer emancipatory, advocacy, or politically based models hold, and a rational basis for exclusion all but disappears.

Mimetic Processes

The mimetic processes described by DiMaggio and Powell (1983) were the processes by which organizations voluntarily modeled themselves on other organizations. Mimetic processes were viewed as particularly important when goals were uncertain and processes for accomplishing goals were not well understood (DiMaggio & Powell, 1983). For example a social service agency might have looked to business for ideas to increase efficiency, because of perceptions that businesses were more efficient and financially savvy than social service organizations.

Despite the long history of researchers, practitioners, individuals with visual impairments, and employers trying to generate solutions; employment disparities between those with visual impairments and the general population remains and the problem must

be viewed still as one with an uncertain solution. Consequently, it could be expected that mimetic processes would continue to affect stakeholders and contribute to the formation of professional practice in the field of visual impairment.

The professions surrounding visual impairment have a long history as part of person-centered professions such as medicine, rehabilitation, and education. This medicine, rehabilitation, and education based narrative in some instances took on the force of a saga (Carke, 1972) or almost mythical characteristics, for example, in Bledsoe's (1999) historical account of orientation and mobility. Based on this, when faced with uncertainty, a tendency may be for practitioners and organizations in the field of visual impairment to mimic clinical fields such as medicine, rehabilitation, and education could be predicted. At the same time, there have been practitioners and advocates in the field of disability who adhered to the social and political models of disability and looked for parallels and guidance from various civil rights movements for models of practice (Bayton, 2001; Jones, 1996; Longmore, 1995; Oliver, 1992).

Similarly businesses that have individuals with visual impairments as employees would look to the practices of other businesses (Essex, 2002). Recent history has shown that business generally speak positively about employing individuals with disability (Essex, 2002), yet also have been resistant to accommodating individuals with disabilities to the point of contesting ADA required accommodations repeatedly in courts (Boswell, 2002; Essex, 2002; Hernandez et al., 2000; Rozalski et al., 2010). In fact, the second highest rates of complaints against employers to the EEOC related to disability come

from individuals with visual impairments and these cases have the highest rate of resolution in favor of the individual with the visual impairment (Unger et al., 2005).

Finally, individuals with visual impairments have been found to value making connections with other individuals with visual impairments who can serve as mentors to help them understand how to negotiate the system (Crudden et al., 1999; Salomone & Paige, 1984; Young, 1995). Mentors can also be looked to for support, information, techniques, guidance and models of behavior that can be followed or mimicked. Consumer organizations for individuals with visual impairments also vary. For example both the National Federation of the Blind (NFB.org) and The American Council for the Blind (ACB.org) have at times mimicked both political advocacy groups and other disability fund raising organizations.

Consequently, the expectation might be that rehabilitation service providers would be expected to mimic academic and medical practices and emphasize person centered medical model solutions. Employers would be expected to look to other businesses for models to approach employees and potential employees with visual impairments, and individuals with visual impairments might look to the approaches taken by mentors or advocacy groups for individuals with other disabilities.

Evidence of Both Isomorphism and Variability

Although the normative, mimetic, and coercive processes might have been important in the determination of the practices of organizations, a great deal of variability remained among organizations (Capella, 2001b). DiMaggio and Powell (1983) described

processes that contributed to organizations becoming more and more alike, but others described processes that tended to create differences between organizations: a dependency on different constituencies for resources (Shin, 2010; Tolbert, 1985), different local cultural practice conforming to local conditions and interests (Shaw & London, 2001), competing ideologies within an organization (Kezar, 2005; Lukes, 1978 ; Weick, 1976); unique leadership approaches (Eckel, 2002; Lounsbury, 2001), differing core ideologies (Tierney, 1991) and founding principles and unique institutional narratives (Clark, 1972).

State legislatures funded programs differently and created state specific legislative guidance on the interpretation of ADA (Capella, 2001b). Employers contested the interpretation of the ADA almost from the moment of its passage (Boswell, 2002), and the different views on disability held in the study of disability continued to be debated (Anastasiou & Kauffman, 2011; Campbell, 2008; Dewsberry et al., 2004; Oliver, 1992; Stone & Prestley, 1996). As a result, despite the national applicability of ADA and ADAAG and the international reach of the professional organizations such as the AER the resulting coercive, mimetic, and normative processes towards isomorphism had not resulted in nationally homogeneous vocational and post-secondary outcomes for individuals with visual impairments (Capella, 2001b; Cornell, 2010),

In 2009, in the five states with the highest relative graduation rates for students with visual impairments, high school non-completion rates were 1.8 times as great for individuals from the general population as for students with visual impairments. For the five states with the lowest relative graduation rates, high school non-completion rates

were 4.8 times as high for students from the general population as for students with visual impairments. Similarly, college completion rates in the five states with the highest relative graduation rates for students with visual impairments were 1.7 times as high for the general population as those with visual impairments and for the five states with the lowest relative graduation rates 4.3 times as great for individuals from the general population as for individuals with visual impairments. Finally, in the five states with the highest relative rates of employment for individuals with visual impairments, rates of employment were 1.5 times as great for the general population as for individuals with visual impairments, and for five states with the lowest relative rates of employment, 2.5 times as great individuals from the general population as for individuals with visual impairments. A comparison of income, rates of employment, graduation, and poverty are provided in Figure 1.

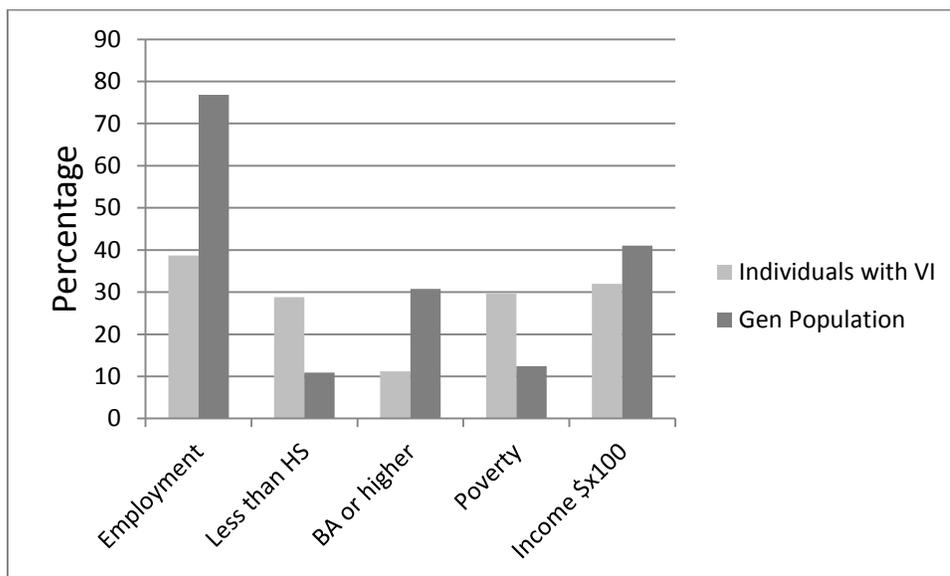


Figure 1 Comparison of rates of educational attainment, employment and economic well-being for individuals with visual impairments and those without disabilities (Cornell,

2010)

In Figure 2, I provided a comparison of the ratios of the rate of participation of the general population to the rate of participation of individuals with visual impairments for employment, bachelor's degree completion, and high school incompleteness (Cornell, 2010). For example, the fraction of individuals without disabilities who are employed was compared to the fraction of individuals with visual impairment who are employed.

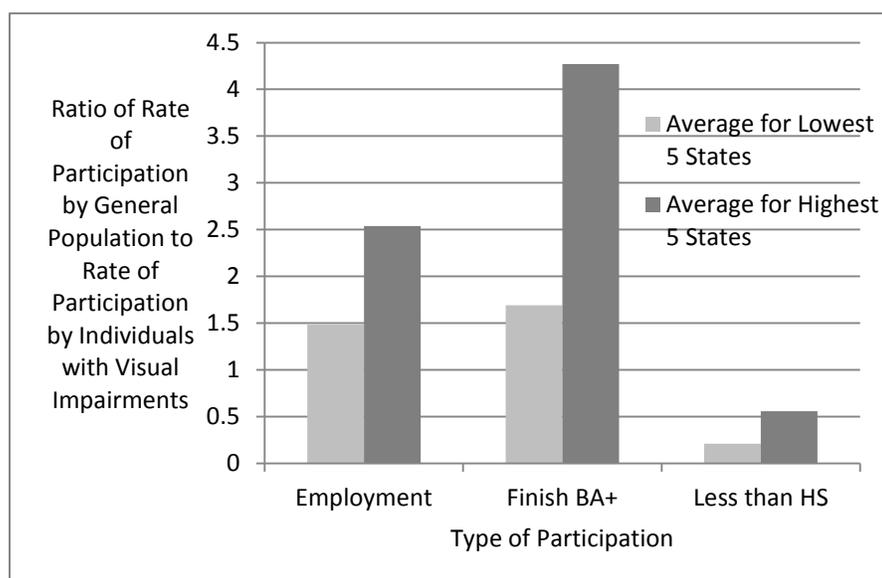


Figure 2 Comparison of the ratios of the rate of participation of the general population to the rate of participation of individuals with visual impairments for employment, bachelor's degree completion, and high school incompleteness (Cornell, 2010).

In addition, although rates of completion of a bachelor's degree or higher were positively correlated with employment for both groups, completion of a bachelor's degree was significantly positively correlated with income for the population (0.317, $p=.022$), but not significantly correlated with income (0.225, $p=0.108$) or with rates of support

from SSI (-0.26, $p=0.375$) for individuals with visual impairments. Nonetheless, there was a significant though not strong correlation between the rate of degree completion and rates of poverty for those with visual impairments (-0.274, $p=.049$). See Table 13 for the results of the correlation analysis of the 2010 Cornell data.

The equivocal advantage of a bachelor's degree for individuals with visual impairments was supported by the review of data from the 21st Annual Report to Congress and the National Longitudinal Transition Study related to youths with visual impairments by Nagel (2001) who found that postsecondary education was not associated with increased employment opportunities. Similarly, using data from the National Longitudinal Survey of Youth 1997, Capella-McDonnall (2010) found that level of education was not as predictive of employment success for individuals with visual impairments as it was for individuals from the general population.

Although an explanation for differences in relative rates of employment could have been that people with visual impairments did not seek work in fields that had higher rates of unemployment than a typical cross-section of jobs (Bureau of Labor Statistics, 2010). This finding was reinforced by the fact that overall employment rates for individuals with visual impairments and the general population were strongly correlated across states (0.626, $p<0.0001$). (Cornell, 2010), supporting the notion that local employment conditions and overall employment by industry affected rates of employment for both those with and without visual impairments in similar ways.

Summary

The rates of post-secondary education and employment for individuals with visual impairments have been consistently and significantly below the rates found for those without disabilities. The literature over the last 50 years has provided insight into the characteristics, behaviors and practices of individuals with visual impairments, employers, vocational rehabilitation workers, and educators that have been associated with positive employment and post-secondary educational outcomes for individuals with visual impairment.

The opinions that stakeholders held regarding the origin of the problem of disparities in participation in employment and post-secondary education between individuals with visual impairments and the general population could be categorized as a medical model or person-centered, a social model or environmentally and attitudinally centered, or a political model empowerment centered. Although there was some variability in opinion among the four groups of stakeholders, there were many factors that were common across the groups. Related to the medical model of disability, each stakeholder group identified travel, technology, social skills, and involvement with vocational rehabilitation as being important as well. Related to the social model of disability, each stakeholder group identified employer attitudes, employer knowledge about visual impairment, high expectations, and support from family and social networks as being associated with employment and educational outcomes. Finally, factors related to the political model were not mentioned by educators and DRC workers, but individuals with visual impairments, employers, and rehabilitation workers fairly consistently

identified mentor support and involvement of the person with the visual impairment in decision making as being associated with positive outcomes. Table 2 contains a more detailed summary.

Table 2 Summary of Opinions regarding important Factors that Contributed to Post-Secondary Educational and Employment for Individuals with Visual Impairments

Model of disability	Medical – Person centered		Social – Environment Centered			Political – Personal Agency Centered
Area of focus	Skills	Services	Attitudes/Knowledge	Environments	Systems	Participation
Rehabilitation workers	Travel Social Technology ADL Job Readiness	Well- funded Well trained Personally tailored programming	Employers Coworkers Rehab workers Knowledge Expectations	Transportation systems Print materials Work space	SSI Benefits Interagency Collaboration Bureaucratic inefficiencies	Mentors Self- Advocacy VI Staff Participation in decision making
Educators	Travel Social Technology ADL Organizational	O&M training Counseling Tutors Alternate testing Note-takers	Training for teachers and staff Role	Accessible information Material in Accessible format	Timely provision of information	
Employers	Travel Social Technology	Support and training from VR personnel.	Flexibility Pro-diversity High expectations Supportive co-workers	Accessible environment Role		Mutual accommodation Employee involvement in selecting technology
Individuals with visual impairment	Vision Travel Social Technology Organization ADL Advocacy Job skills	Good relationship with Voc Rehab Financial support	Family Rehab Workers Public Employers Co-workers	Flexible workplace Print access transportation, Availability of technology Gen info	SSI	Mentors Forums for feedback Participation in accommodations decisions Role

Based on the literature, it appeared as though all stakeholder groups put the least emphasis on factors that could be related to the social justice, political model of disability. Given this, however, employers seemed to put more relative emphasis on ideas that could be categorized as related to the political model of disability than the other stakeholder groups, with DRC and educators placing the least emphasis, followed closely by those academics who had analyzed national data sets and reviewed the literature. Employers tended to emphasize factors related to the person-centered medical model more than the environmentally focused social model, whereas individuals with visual impairments and rehabilitation workers tended to have a more balanced emphasis between the medical model and social model of disability. Finally, academic investigators who did research based on large data sets overwhelmingly emphasized factors related to the person-centered medical model of disability and rarely emphasized factors that could be associated with a social justice oriented political model. The number of different opinions multiplied by the number of studies that found each of the different opinions was summarized in Table 3 along with a percentage of opinions for each stakeholder group that could be categorized as informed by either the medical, social, or political models of disability.

Table 3 The approximate frequency of opinions of stakeholders as documented in the literature and categorized relative to model of disability

Stakeholder	Medical Model Person Centered	Social Model Social Action Centered	Political Model Social Justice Centered	No. of Opinions x No of Studies
Overall prevalence in the literature	61%	31%	8%	408
Rehabilitation workers	51%	40%	10%	101
Educators and DRC workers	91%	9%	0%	34
Employers	54%	24%	21%	33
Analysis of data bases and literature by academic researchers	81%	18%	1%	71
Individuals with visual impairments	54%	38%	8%	169

Despite nationally applicable legislation such as ADA, ADAAA, and IDEA, and the national reach of professional organizations such as AER, The Council of Exceptional Children, and AHEAD, there were substantial differences in relative participation between those with visual impairments and the general population from state to state. This substantial difference in relative participation suggested that there may be differences in organizational practice and perspectives relative to disability from state to state. If a difference is found in practices from state to state that correlated with differences in relative participation, this will present an opportunity to experimentally test theories which inform practice perspectives as well as theories regarding the relative importance of mechanisms of organizational development that may influence practice perspectives.

Based on an examination of the perspectives of the primary stakeholders as revealed in the literature, it appeared as though a combination of the perspectives of the three basic models of disability might have resulted in the best outcomes for individuals with visual impairments. What still remained uncertain was what combination of medical, social, and political approaches was associated with the best outcome in post-secondary education and employment for individuals with visual impairment and how coercive, normative, mimetic, and local advocacy mechanisms work to influence the relative application of these three models of disability.

CHAPTER 3 – METHOD

Research Questions

The study of disability has been framed by two competing perspectives, the first being the medical model of disability in which adherents held that it was the impairment that disabled the individual, and the second being the social model in which adherents held that it was environmental design and social attitudes that disabled the individual (Anastasiou & Kauffman, 2011). In emancipatory approaches to research (Stone & Priestly, 1996), a third model could be constructed: a political model in which adherents held that it was the lack of participation in decision making that disabled the individual. Yet to date, there has been little research in how using these different approaches in the formulation of professional practice might have differentially affected post-secondary educational and employment outcomes for individuals with visual impairments. In addition, researchers have not investigated how the relative use of the three models of disability and the associated professional practices were associated with the legislative mandates, professional networks, the practices of similar organizations, or local advocacy and supervisory directives.

In order to address the lack of information on these mechanisms and perspectives that inform professional practice, the research questions for this study were:

1. How were the perspectives on disability held by rehabilitation workers, educators, employers, and individuals with visual impairments related

to the post-secondary educational and employment outcomes for individuals with visual impairment?

2. How was the application of the three perspectives on disability by rehabilitation workers, educators, employers, and individuals with visual impairments associated with the influence of legislative mandates, professional networks, the imitation of the practices of individuals in similar fields, and local advocacy or supervisory directives?

With answers to these questions, administrators and practitioners may not only be able to formulate more effective practices but also make use of organizational formation processes to embed these more effective methods into organizational practice.

Research Design

This project had two phases. In the first phase, quantitative data was gathered using an online survey specifically designed for this study in order to gather information on stakeholder perspectives, practices, and decisions related to improving the employment and post-secondary educational outcomes of individuals with visual impairments and then to connect specific professional, institutional, and regulatory influences to these perspectives, practices, and decisions. The second phase of the project consisted of follow up interviews to develop a more in depth individual level understanding of information provided in the online survey. An additional purpose for

gathering the in depth interview responses was to allow for the discovery and exploration of other complimentary or perhaps competing themes that were not targeted in the online survey.

I used a medical model approach to develop the methods for this project in that I conceptualized the problem as located within the system under study, and the actions of the participants that embody the system were diagnosed through the extraction and analysis of data. A social perspective was also used in that actions outside of the community, such as legislative decisions, and practices outside of the profession were analyzed for their impact on the actions of the community of interest. Finally, a political perspective was included in framing the project methods in that survey and interview questions posed to individuals with visual impairments were phrased in the same terms and with the same implied agency as other participant groups.

During the development of the online survey, draft surveys were tested by six professionals representing each stakeholder group. The questions were then adjusted based on the professionals' input to improve the clarity of the questions and the correct understanding of the questions for participants with different professional perspectives. The survey was also tested for functionality by two professionals who used various screen reading technologies to navigate the survey. The questions for interviews were also adjusted through piloting.

The Community and the Participants

My intention was to have the participants in this study come from the community of stakeholders who are explicitly involved in the transition of individuals with visual

impairments from high school to post-secondary education and/or employment. Green and Mercer (2001) suggested that “community should be interpreted in research projects as all individuals who will be affected by the research, including lay residents of a local area, practitioners, service agencies, and policymakers.” (p. 1926). In adapting this concept, I included five categories of participants who constituted the community in this study: individuals with visual impairments, DRC access consultants or counselors, K-12 teachers of students with visual impairments, and agency rehabilitation specialists, and human resource administrators for employers. Participants in the category of individuals with visual impairments included college students and working adults.

In this project, participants were the primary actors who had embodied the transition system for individuals with visual impairments for decades. Resources, legislative mandates and perceived best practices have been continually changing, but the players have remained the same, and have a history of adjusting to and absorbing changes. The long history of relationships among the participants has informed their practice and position related to relative privilege, identity, role, and stratification; and as a result, barriers to equitable partnerships. Through the acknowledgment of and seeking out of the diversity of knowledge and skills from each subgroup, there was a conscious effort to democratize the production of knowledge (Fisher & Ball, 2005; Leung, Yen, & Minkler, 2004) in this study.

Study sites

Data from the American Community Survey (Cornell, 2010, Erickson 2012) compiled by the Cornell School of Industrial and Labor Relations showed that there was a great deal of state-by-state variation in the relative rates of participation in post-secondary graduation rates and employment between those individuals who had visual impairments and the general population (Cornell, 2010). In the American Community Survey, individuals with visual impairment were defined as persons who indicated that they were blind or had serious difficulty seeing even with glasses (Erickson, 2012). Someone was considered employed if the individual worked as a paid employee, worked in his or her own business or profession, worked on his or her own farm, or worked 15 or more hours as an unpaid worker on a family farm or business; or was ‘with a job’ but not at work during the reference period—that is, he or she had a job but temporarily did not work at that job during the reference period due to illness, bad weather, industrial dispute, vacation or other personal reasons. Institutionalized people as well as those whose only activity was work around the house or unpaid volunteer work are not classified as employed. P 19 (Erickson, 2012).

In the Cornell compilation (2010) the relative rate of employment in North Dakota (ranked first) was 1 to 1.45 compared with a 1 to 2.68 ratio for in the District of Columbia (ranked last). Similarly, for rates of graduation with a bachelor’s degree the relative rate of graduation in Idaho (ranked first) was 1 to 1.45 compared with 1 to 5.00 in Vermont (ranked last). Six states were selected for inclusion in this study: two from the five states that had the smallest disparity, two states that were in the middle five

states, and two states were from the five states with the largest disparity between the rates of both employment and four year post-secondary educational outcomes when those with visual impairments were compared to the general population. Because the states selected had the most distinct contrast in the metrics of interest, their selection for inclusion was likely to provide the most robust opportunity to contrast the practice perspectives and processes of formation of practice for the issue linked community under study. Two states were chosen in each category so that reported results could not be connected to any one jurisdiction or service agency and provide an extra layer to protect confidentiality.

First Phase: The survey

Recruitment of Participants

A combination of purposeful, opportunistic, and snowball sampling (Coyne, 1997, Duckett & Pratt, 2001) was used to identify and contact potential participants for this project. The sampling was purposeful in that participants were selected based on the fact that they worked in the six states of interest. The sampling was opportunistic in that the people surveyed had an existing relationship with specific organizations through which invitations to participate were sent. These organizations were asked to forward a short informational email that included a link to the web based consent and survey to potential participants (See Appendix B). Teachers for students with visual impairments were contacted through schools or agencies who serve students with visual impairments in the given state. Individuals with visual impairments who had graduated or no longer attended high school were contacted through state branches of public and private

agencies for the blind and visually impaired and through the state and national consumer and advocacy organizations that advocate for their needs.

Rehabilitation counselors were contacted through the state public and private agencies that serve individuals with visual impairments identified through the American Foundation for the Blind's directory of services. Disability resource center (DRC) employees were contacted through the DRC's of four year colleges, and finally human resource (HR) personnel were contacted through the human resource departments of large public and private employers and chambers of commerce within the jurisdictions included in this study. The sampling involved snowballing in that participants were given the opportunity to forward the email describing the study to individuals who they thought might be interested in participating.

After taking the survey, participants were invited to provide contact information so that the researcher could contact them later for a follow up in person interview for the second phase of the study. To volunteer for participation in this second phase of the study, respondents clicked on a button that took them to a page where they were asked to read a second consenting form specific for the follow up interview. If they gave consent, they were given the opportunity to provide their contact information. On submission, the electronic survey and contact information form were sent to separate spread sheets so that the responses and information that they provided in their survey would not be connected to contact information.

Survey Design

The first question that the participant was asked was to identify their role in the community: a vocational rehabilitation professional, a DRC professional, employer or human resources professional, a teacher for students with visual impairments, or other; identify the state in which they practices; and indicate whether or not they had a visual impairment. The participant was then taken to the set of prompts specific to the role he or she checked.

The survey was designed to elicit individual participant responses to a sample of specific professional practices related to access concerns that research has indicated that specific stakeholders groups felt were associated with post-secondary educational and employment participation for individuals with visual impairments. The factors that stakeholders identified as important were determine through an analysis of the literature. Table 3 provides a summary of selected factors or access concerns found to be important in the literature. Five access concerns that were identified frequently and by each stakeholder group were selected as the foundation for the survey prompts: transportation, technology, access to print, attitudes of others, and social connections.

Three prompts were formulated for each of the five access concerns for each stakeholder: (1) a practice that could be categorized as aligned with a person centered or a medical model approach, (2) a practice that could be categorized as aligned with an environmentally centered or a social model approach, and finally (3) a practice that could be categorized as aligned as social justice centered or a political model approach. Each participant was presented with 15 prompts, covering five access concerns, each from the

three perspectives. Each participant was asked to respond to each prompt in two ways: (1) provide an estimate of the frequency with which he or she employs the given practice (rarely, occasionally, frequently, or almost always); and then (2) indicate the primary reason that he or she began using the practice (legislative directive, known to be best practice, saw the practice in related professions, supervisor directive, just came up with the idea themselves, or the practice was unknown to them). In addition to the 15 prompts provided, each participant had the opportunity to write in and rate an important practice that he or she employed that had not been asked about in the prepared survey. A sample of the survey that vocational rehabilitation professionals were asked to fill out is provided in Appendix A, Interview questions for rehabilitation professionals are provided in Appendix B. Questions for other participants were essentially the same except for minor wording changes to reflect the institutions for which they worked.

Variables

There were two types of variables employed in this study, manifest variables and latent variables (Tabachnick & Fidell, 2007). The manifest variables were those that could be measured directly or were composites of directly measured variables. The latent variables were those variables whose values could be inferred from the manifest variables through factor analysis (Tabachnick & Fidell, 2007).

Manifest variables.

Dependent variables. The dependent manifest variables in this study were the measures for employment and post-secondary educational participation of individuals with visual impairments relative to the general population. The values for these variables

were already known for 2009 from the Cornell study and were used as the basis for selecting the states and jurisdictions from which data was taken. Specifically the two dependent variables were: (1) the rate of employment for the general population divided by the rate of employment for individuals with visual impairments, and (2) the rate of bachelor's degree attainment for the general population divided by the rate of bachelor's degree attainment for individuals with visual impairments.

Independent variables. There were two sets of manifest independent variables and corresponding composite manifest independent variables (Tabachnick & Fidell, 2007). The independent manifest variables were variables that were measured directly through the survey questions. Each participant was asked to both rate the frequency with which he or she applied a given practice and identify the reason that they began using the given practice.

Frequency of use of practice. Practices that aligned with the five access concerns, identified from the literature as important to all stakeholders, were framed using one of three different approaches to practice or models of disability. The first set of manifest independent variables was the set of measures of the frequency with which participants used 15 particular practices. For these variables, participants were given a choice of four options for reporting the frequency with which they applied a given practice: rarely, occasionally, often, and almost always.

The composite independent variable for frequency of use of a particular model of disability was designed to represent the frequency with which the medical, social, and political models informed the behavior and practice of each stakeholder. A value for this

composite independent manifest variable was determined for each model of disability for each participant. The mean of the five frequency ratings for the each group of five independent variables associated with each model of disability was used as the value for this composite variable. The composite variable for frequency of use for model of disability was used to determine the association between model of disability used to inform the practices surveyed and the dependent variables related to employment and educational outcomes.

Origin of use of practice. The second set of manifest variables was a classification of the origin of or initial reason for the use a particular practice. For these variables, each participant was asked to select his or her reason for using the particular practice from the following six categorical options that corresponded to the four processes of organizational formation (1) legal or legislative mandates or regulation – the coercive process, (2) professional meetings or publications – the normative process, (3) observation the practice of others in similar fields – the mimetic process, (4) supervisory directives local agency practice, (5) personal professional experience, and (6) the practice was not known.

Latent variables.

Latent variables to describe less tangible concepts were constructed: post-secondary success, model of disability, process of organizational practice formation. The degree to which the individual manifest variables loaded onto latent variables was used to determine the validity of these manifest measures as representative of the latent concepts. The latent independent variables, three models of disability, and process of organizational

practice formation were used to embody the concepts of model of disability used to frame practice and processes of organizational formation that inform practice respectively. The validity of the selected manifest measures as determinants the latent concepts was determined by the degree to which the manifest variables were found to load onto the latent variable using factor analysis (Tabachnick & Fidell, 2007). Composite variables were connected to the same manifest variables as the latent variables. The difference between the latent variables and the composite variables was that the composite variables were calculated directly from the manifest variables and the latent variables were described through the strength of the correlations or commonalities between the manifest variables or the ability to load the manifest variables onto a common mathematical construct associated with the theoretic model.

Analysis

The data gathered was analyzed in four ways: a descriptive analysis; a statistical analysis of the strength of the relationships between specific manifest variables; a statistical analysis of the strength of the relationships between various composites of manifest variables; and a confirmation of the existence of the latent variables represented by the manifest variables that made up the composite variables and explore other combinations of manifest variables that might represent latent variables other than those hypothesized.

Frequency of use of practices. Five access concerns were addressed in this study: the attitudes of others towards disability and visual impairment, orientation and mobility, access to printed materials, building and maintaining social connections, and

the use of technology. Each participant was asked to rate the frequency with which he or she used a particular practice to address one of the five access concerns. When a participant gave a response to a question indicating that he or she used the particular practice rarely the response was assigned a value rating of 1, occasionally the response was assigned a value rating of 2, frequently the response was assigned a value rating of 3, and almost always the response was assigned a value rating of 4. The mean value of the frequency with which each respondent indicated that they used the particular practice was calculated by averaging the response ratings that participants gave to each question.

Repeated measures analysis of variance (ANOVA) was used to analyze the differences between the mean frequencies of use reported for each particular practice. In order to assess the significance of the differences in the frequencies with which practices that could be aligned with the three different models of disability and the five different access issues, the means for practices were ranked. The means for practices were then grouped, first by model of disability then by access issue. Then the Wilcoxon rank sum test was used to test differences between the median rankings for each grouping (Green & Salkind, 2008; McDonald, 2009).

The effect of profession and location on the frequency with which particular practices were used were evaluated using ANOVA. The states were also categorized and grouped based the disparity between employment and four year college graduation rates between those with visual impairments and those in general population. States with the highest disparities were assigned to group 3, states that had a median rate of disparity were assigned to group 2, and states with the lowest rate of disparity were assigned to

group 1. Bonferoni post hoc test was used to find the mean difference was significant ($p < 0.05$). The differences in frequencies of application of specific practices between professionals with visual impairment and those without visual impairment were conducted using a t-test.

Factor analysis was used in this study to determine the degree to which the variables designed for the survey represented latent variables: medical model informed practice, social model informed practice, and political model informed practice. Varimax or orthogonal, and a Promax or oblique, rotations were conducted (Brown, 2009; Tabachnick & Fidell, 2007). Cronbach's alpha was calculated for the five aggregates related to access issues, the three hypothesized aggregates related to model of disability, and then aggregates that were extracted by factor analysis.

Multiple analysis of variance (MANOVA) was used to test for the significance of location, profession, and visual impairment on the variables that made up the hypothesized aggregates related to model of disability and access concern and aggregates of variables identified by factor analysis. The MANOVA analysis was followed by ANOVAs, in which the manifest variables that were components of aggregates tested in the MANOVA were averaged and Bonferoni post hoc tests were conducted for factors (location, profession, visual impairment) that were found to be significant.

Influences on practice initiation. Respondents were asked to identify influences that caused them to begin using a certain professional practice from the following options: The different origins of practice were: 1) laws and regulations; 2) professional conferences and publications, or interaction with colleagues; 3) observation rehabilitation

specialists do for clients with other disabilities; 4) directives and ideas promoted by supervisors or agency directors; 5) personal professional experience; or 6) the practice was unknown. Principle Components Analysis with Optimal Scaling (PCAOS) (CAPCA, 1999; DDTS, 2012; Starkweather & Harrington, 2012) was used to determine the underlying structure and Cronbach's alphas and variance accounted for by each factor extracted for origin of practice was calculated. Odds ratios and relative risk analysis (Bewick, Cheek, Ball, 2004) were used to determine the significance of the differences in relative frequencies with which stakeholders indicated that particular sources caused them to begin to use a particular practice.

Bivariate Spearman correlations were conducted between the frequency of the use of particular practices, aggregates of practices, relative rates of employment and bachelor's degree attainment and vocational rehabilitation expense. Also because the amount of time a professional has to spend applying these practices, a professional must make decisions about which practices he or she is going to apply. To understand the effect of the time constraint on the relationship between the frequency of application of individual practices, the ordinal measure of association described for concordant and discordant pairs described by Agresti (2002) was used to analyze the patterns of correlations for between practices to determine if the frequencies with which specific practices were applied were complementary, neutral, or competing. .

Regression analysis was conducted to evaluate the predictive value of frequency of use of particular practices and aggregates of practices for relative rates of employment

and post-secondary degree attainment between those individuals with visual impairment and the general population.

Finally, odds ratios were used to determine if the differences in the frequencies with which participants indicated that they applied a given practice that could be aligned with the one of the models of disability were significantly different between locations with respect to whether those practices were initiated as a result of personal experience or as a result of external influences.

Second Phase: Interviews

Purpose

The purpose of the interview process was to gather in depth information on the experiences of each stakeholder related to improving the employment and educational outcomes of individuals with visual impairments, and how each stakeholder connected specific professional, institutional, and regulatory contexts in which he or she worked to these experiences. Survey questions are listed in the Appendix B.

Participants

A combination of purposeful and opportunistic sampling (Coyne, 1997, Duckett & Pratt, 2001) was used to identify and contact potential participants for this second phase of the project. The sampling was purposeful in that participants were selected based on the fact that they worked in the two states that were found to have the largest difference in both rates of employment and bachelor's degree attainment and in the relative importance of medical, social, and political models informing professional practice as reported through responses provided in the on line survey. The sampling was

opportunistic because the two states from which participants were selected were from two of the six states from which data was already gathered in the on line survey and the interview participants were already participants in the study. Five interviewees were selected from individuals who volunteered to be interviewed after taking the survey.

The interviewer obtained informed consent from each interview participant when the participant filled out the on line survey during the first phase of this project. During the informed consent process for each participant, the interviewer also described the purpose of the interview, the intended use of the information gathered, and the basic type of analysis that would be used on the transcription of the interview (Seidman, 2006). The participant also was told that they will have the opportunity to read the transcript and provide input regarding accuracy, provide further clarification of points they made, or withdraw remove information that they had provided from the transcript. This information was reviewed again with the participant when he or she was contacted for the interview.

Interview Process

Responses to interview questions were obtained through semi-structured one-on-one interviews (Wong, 2004a; Wong, 2004b). The overall structure of each interview was supported by the nine core questions listed in Appendix B but I, the interviewer, also was allowed to ask follow up or clarifying questions in order to encourage the participant to give the most complete response on issues relevant to the purpose of the study (Punch, Creed & Hyde, 2006). The core questions were designed to focus the interview discussion on topics closely related to the on line survey but also encourage the

participant to explore experiences that could potentially contain ideas that were not part of the on line survey.

The first question was designed to help me understand participant's general experience in the organization in which they worked. The two following questions encouraged the participant to discuss a topic of their own choosing related to the successful participation of the individual with visual impairment in work or college. The next six questions encouraged the interviewee to focus on some of the topics that were designed into the on line survey. These topics were based on selected themes that were found to be frequently identified as important in the literature: travel, social interactions, and access to printed materials. If the interviewee had already discussed any of these topics as part of his or her response to earlier questions, the respective question of course was not asked. Finally the participant was asked about the influences that they felt were most important in getting them to initiate practices that they typically use.

The overall interview approach was phenomenological as described by Marshall and Rossman (2006) and (Seidman, 2006), in that the participant was encouraged to reconstruct and describe their experiences related to work and/or college success for individuals with visual impairments. These experiences then were studied in order to understand the regulatory, professional, and institutional influences that have lead participants to develop their personal approach to employment and educational attainment support for individuals with visual impairments.

Although, conducted in one sitting, each interview contained three basic phases, essentially compressing the three interview approach described by Seidman (2006) into

one session. The three interview approach was conducted in one session in order that participants could more readily make conscious connections between their experiences supporting employment and educational attainment for individuals with visual impairment and the influences that encouraged them form their approach. In the first phase of the interview, focused on personal history (Siedman, 2006), each participant was asked to describe the specifics of their job. This included exploring the participants' history as a professional in the field of visual impairment, or as a human resources professional. Although earlier personal experiences including those in childhood may be important and interesting to explore relative to the formation of their beliefs, these factors were beyond the scope of this study in that the focus of this study was on workplace contexts and experiences.

In the second phase of the interview, focused on the details of personal experience (Siedamn, 2006), the participant was asked to discuss his or her current experiences as they reflect his or her personal approach for supporting educational and/or vocational attainment for individuals with visual impairment in general. Following this the interviewee was asked to discuss specific areas that had been found to be important in the literature: travel, access to print, and social interactions. In the third phase, each participant was encouraged to reflect on the origins of the practices he or she felt were most effective and how regulatory, professional, and institutional influences encouraged, sustained, or hindered the given practice. The interview questions were arranged so the second and third phases alternated throughout the interview. This was intended to facilitate the connection between a given practice or approach that the participant

described with the contexts, trainings, people, and/or regulations that influenced the practice. Notes or memos were made by the interviewer during and after the interview to capture and retain relevant impressions and non-verbal communication associated with the session (Marshall & Rossman, 2006).

Data Analysis

Coding. The transcripts were analyzed using a multilayered coding process similar to that employed by Benz, Lindstrom, and Yovanoff (2000) and detailed in Creswell (1998); Ely, (1991); Miles & Huberman, (1994) and Moustakas (1994). The initial themes of interest in the study were the starting point for coding themes and sub-themes. The main themes that were pre-identified for this study were medical, social, and political model thinking and coercive, normative, mimetic, and local advocacy influence. At the same time, an important purpose for gathering the in depth interview responses was to discover and explore other themes that were important for participants when they described and reflected on their experiences in supporting the vocational and educational aspirations of individuals with visual impairments. Themes that they were not able to express through the survey because of the purposefully circumscribed and narrowly focused responses allowed on the initial survey were of particular interest and importance. This information not only helped to understand the relative importance of medical, social, and political model thinking and coercive, normative, mimetic, and local advocacy influence, but also allow a comparison of the importance of these influences and ways of thinking to others that may inform the participants' experiences.

Therefore, after coding with the initial main themes, the transcripts were reviewed and additional themes, or ideas that emerged from the transcripts were added to the code list, and participant responses were coded with these items as appropriate. Examples of additional themes and ideas were: compound models of disability, and the concept that coworkers, clients, or students could be important sources of ideas for practice. Finally responses in each transcript were coded with the relevant information noted in the notes or memos.

The next step was to cluster statements by the identified themes and sub-themes (Creswell 1998). Broadly occurring themes were defined as ones that occurred across 85% of the participants (Benz et al., 2000). Significance of sub themes within each broad theme was determined by its consistency across individuals and across broad theme (Soodak & Erwin 2000).

Inter-observer agreement and member check. Before being coded, transcripts were provided to the respective participants in accessible format. Participants were encouraged to comment on the accuracy of the transcript and make adjustments where they felt the transcript did not reflect what they were trying to express.

The reliability and validity of coding practices has been a concern in qualitative research (Crittenden & Hill, 1971; Mastonati, 2010). In their study of inter- coder reliability and validity using 50 trained coders, Crittenden and Hill (1971) found mean rates of reliability and accuracy in the 70% range (varying between 32%-98%). In order to address this problem, team approaches and processes that negotiate consensus between coders have been proposed (Weston, Gandell, Beauchamp, McAlpine, Wiseman, &

Beauchamp, 2001; Garrison, Cleveland-Innes, Koole, & Kappelman, 2001) and implemented (Soodak & Irwin 2000). Mastonati (2010) approached the validity and reproducibility question by comparing the results that he obtained from two coding sessions conducted with the same transcript four months apart, although he did not report intersession agreement.

To address the concern of coding reliability in the present study, one transcript was randomly selected, identifying information removed, and was coded separately by myself and the other colleague. Agreement between the results obtained by the observers were quantified and reported as percent agreement. This procedure was more fully described in Miles & Huberman (1994) and will be a process similar to one used by Mastonati (2010).

Consensus on meaning was not negotiated, however. Results are reported here with the associated reliability expressed in percent agreement in a manner similar to what has been recommended for single subject studies (Horner, Carr, Halle, McGee, Odom, & Wolery, 2005).

This research was reviewed and approved by the Human Subjects Institutional Review Board at The University of Arizona.

CHAPTER 4 - RESULTS

Online Survey

Data Collection

Invitations to participate in the survey were sent to 502 different organizations between mid-December 2012 and mid-February 2013. Of those, 18 organizations were state organizations that employed teachers for students with visual impairments; 7 were professional organizations for workers in the field of visual impairment, 23 were agencies that employed rehabilitation professionals, 59 were disability resources centers in 4-year colleges, 398 were employers or chambers of commerce in the study states, and 3 were national organizations that advocate for and support employment for individuals with visual impairments. Sixty-eight surveys were returned for a response rate of 13.55%. Of the 68 surveys returned, 57 were completed or provided useable data. The numbers of completed surveys for state and stakeholder group are provided in Table 14 (Appendix C).

Frequencies for the Application of Specific Professional Practices

Comparison of means for frequencies of particular practices. Five access concerns were addressed in this study: the attitudes of others towards disability and visual impairment, orientation and mobility, access to printed materials, building and maintaining social connections, and the use of technology. Each participant was asked to rate the frequency with which he or she used a particular practice to address one of the five access concerns. When a participant gave a response to a question indicating that he or she used the particular practice *rarely* the response was assigned a value rating of 1,

For *occasionally* the response was assigned a value rating of 2, for *frequently* the response was assigned a value rating of 3, and for *almost always* the response was assigned a value rating of 4. The mean value of the frequency with which each respondent indicated that they used the particular practice was calculated by averaging the response ratings that participants gave to each question. The practices are listed in Table 4 in descending order by mean value of the frequency rating with which all the respondents indicated that they used a particular practice.

A repeated measures analysis of variance (ANOVA) (Laird Statistics, 2013) was used to analyze the differences between frequencies of practice. The variables met the general assumptions for this test in that the variables were ordinal and the differences normally distributed, the same participants contributed the same amount of data for each variable, and there were no outliers (Field, 2009). It was found that respondents indicated that the frequency of application of particular professional practices was significant ($F = (6.698, 261.2) = 8.540, P < 0.0005, N = 40$, with a Greenhouse-Geisser correction for sphericity). Table 4 provides a list of practices in descending order based on average frequency of use. Table 15 provides a list of individual professional practices in which significant differences in average frequency were found ($p < 0.05$, with Bonferroni adjustment for multiple tests between all of the practices (Glantz, 2002).

Overall, responses to the survey suggested that professional practices that could be aligned with the medical model of disability were used with the highest frequency and those professional practices aligned with the political model of disability were used with the lowest frequency (Table 4). In order to assess the significance of the differences in the

frequencies with which the five practices that could be aligned with each of the three different models of disability, the means for practices were ranked from 1 to 15 and grouped in two different ways: 1) by model of disability and 2) by access issue addressed by the particular practice addressed. The Wilcoxon rank sum test was used to test differences between the median rankings for each grouping for significance (Green & Salkind, 2008; McDonald, 2009). The median of the average ranking of frequencies for groups of professional practices related to model of disability was significant (Kruskal-Wallis Test: Chi sq = 9.380, df=2, Asymp Sig = 0.009). The median for the average ranking of frequencies for professional practices that could be aligned with the medical model was not significantly different than the median for the average ranking of the frequencies for professional practices that could be aligned with the social model of disability (Wilcoxon W = 19.000, p= 0.076) but was significantly different than the median for the average ranking of the frequencies for professional practices that could be aligned with the political model of disability (Wilcoxon W = 16.000, p= 0.016). When grouped by access concern, the median ranking of frequencies with which professional practices were employed no significant difference was found (Kruskal-Wallis Test: Chi sq = 0.233, df=4, p = 0.994).

Table 4 Reported mean frequency of application of professional practices related to specific access concerns

Model of Disability	Access concern	Mean	Lower CI (95%)	Upper CI (95%)	Rank
Medical	Technology	3.175	2.860	3.490	1
Medical	O&M	2.950	2.581	3.319	2
Medical	Attitudes	2.875	2.512	3.238	3
Medical	Print access	2.850	2.522	3.178	4
Social	Social	2.600	2.286	2.914	5
Social	Print	2.575	2.269	2.881	6
Social	Technology	2.550	2.203	2.897	7
Social	Attitudes	2.500	2.193	2.807	8
Political	Social	2.350	2.030	2.670	9
Medical	Social	2.275	1.959	2.591	10
Social	O&M	2.200	1.900	2.500	11
Political	O&M	2.200	1.918	2.482	12
Political	Technology	2.100	1.786	2.414	13
Political	Print	2.025	1.682	2.368	14
Political	Attitudes	1.725	1.454	1.996	15

1=Never, 2=Occasionally, 3=Often, 4=Almost always

In summary, the analysis above suggested that most practices that could be aligned with the medical model of disability were used with higher frequency than those practices that could be aligned with the political model. This could be related to the fact that the medical model practices were centered on familiar roles for professionals such as training and service provision, whereas the political model practices were more focused on advocacy, negotiation, and facilitation. Medical model practices that addressed technology in particular were used with significantly higher frequency than political model practices that addressed technology. Perhaps this reflected the continual emergence of new technologies that professionals felt compelled to introduce to clients.

At the same time, this finding could suggest a missed opportunity, in that clients and students may have been using emerging technologies for personal and recreational endeavors and these technologies could have been useful if repurposed for vocational or academic environment. If clients and students had had the mechanism for sharing their knowledge of these applications with professionals, an avenue provided in the political model, these technologies could be used to open access on the job or in school.

Effects of state, profession and visual impairment on frequency of practice.

Effect of state on practice. Using ANOVA, no significant differences were found between any of the individual states relative to the mean frequency with which respondents indicated that they had used particular practices. The states were also then categorized and grouped based on the disparity between employment and four year college graduation rates between those with visual impairments and those in general population in each respective state. States with the highest disparities were assigned to group 3, states that had a median rate of disparity were assigned to group 2, and states with the lowest rate of disparity were assigned to group 1. Differences in the reported frequency of use of professional practices related to addressing technology issues and that could be aligned with the social model of disability ($F=5.115$, $p=0.010$) and frequency of use of professional practices related to addressing orientation and mobility issues and that could be aligned with the political model of disability ($F=3.418$, $p=0.042$) were significantly different between professionals in the three different groups of states. Table 5 shows how these practices were different related to the three groups of states.

Table 5 Difference in frequency of application of particular practices related to the three groups of states

Model of Disability	Access Issue	Tier (I)	Tier (J)	Mean Diff (I-J)	Sig	Lower 95% CI	Upper 95% CI
Social	Technology	2	3	.947*	.018	.13	1.76
Political	O&M	2	3	.765*	.038	.03	1.50

Note: * Significant at $p < 0.05$ using Bonferroni Post Hoc test

In summary, the frequency with which practices that could be aligned with the social model for the use of technology and the frequency with which practices that could be aligned with the political model for addressing physical access concerns suggested that these two practices made a significant difference in the educational and employment outcomes. For example, information in Table 5 shows that professionals in second tier states had indicated that they used practices to address technology concerns using the social model of disability on average almost one full scale point higher than those reporting from states in the third tier.

Differences in frequency of use of practice between professions. Respondents from different professions reported using 10 out of the 15 specific professional practices listed in the survey with significantly different frequencies. Table 16 (Appendix C) shows 10 practices for which frequency of use were significantly different, and for which five practices frequency of use was not significantly different. Table 6 shows the significant differences in mean frequency of use ratings relative to profession.

Table 6 Significant ($p < 0.05$) mean differences in frequency rating for the use of particular practice between professions

Model of Disability	Access Issue	Occupation (I)	Occupation (J)	Mean Diff (I-J)	Lower 95% CI	Upper 95% CI
Medical	Attitudes	Rehab Prof	Employer	2.196*	.61	3.79
Medical	Attitudes	Rehab Prof	DRC	.984*	.16	1.80
Medical	Attitudes	TVI	Employer	2.667*	.59	4.74
Medical	O&M	Rehab Prof	DRC	1.063*	.11	2.02
Medical	Technology	TVI	Employer	2.000*	.01	3.99
Social	O&M	Employer	DRC	1.680*	.11	3.25
Social	O&M	Employer	Rehab Prof	2.313*	.71	3.91
Social	O&M	Employer	TVI	2.000*	.05	3.95
Social	Print access	DRC	Rehab Prof	.842*	.05	1.64
Social	Print access	TVI	Rehab Prof	1.882*	.30	3.46
Social	Social Connection	Rehab Prof	DRC	.973*	.19	1.76
Social	Social Connection	Rehab Prof	TVI	1.533*	.05	3.02
Social	Technology	DRC	Rehab Prof	1.038*	.20	1.88
Political	O&M	Employer	Rehab Prof	1.375*	.03	2.72
Political	O&M	DRC	Rehab Prof	.966*	.26	1.67
Political	Print access	Rehab Prof	DRC	.909*	.04	1.77

Note: *. Bonferoni post hoc test was used to find the mean difference was significant ($p < 0.05$).

The following professional practices were not found to be significantly different across professions: addressing the access to print in a manner consistent with the medical model of disability, addressing attitudes of others toward people with visual impairment in a manner consistent with both the social and political models of disability, and addressing social connections in a manner consistent with both the political and medical model of disability.

In summary, rehabilitation professionals and teachers for students with visual impairments used certain practices related to the medical model with higher frequency

and the social model less frequently than employers and DRC professionals. This suggested that there might have been a basic underlying understanding of roles that may have been different between these two groups. Rehabilitation professionals and teachers for students with visual impairments may have viewed their roles more as instructors, and employers and DRC professionals may have viewed their roles more as mediators between the institutional environments and employees and/or students. In fact, DRC professionals and employers may have felt they had more ability, and therefore more responsibility, to effect environments and attitudes, and, as a result, felt that it was their role to influence the environment. Consequently, DRC professionals and employers may have felt less of a need to teach employees or students specialized skills and felt they had more latitude to divert some of their attention to changing the environment with which the employees and/or students would be interacting.

Differences in frequency of practice between those professionals with visual impairment and those without visual impairments. Analysis to determine the differences in frequencies of application of specific practices between professionals with visual impairment and those without visual impairment were conducted using a t-test. Professionals with visual impairment were found to apply practices that addressed the attitudes of others towards visual impairment using practices that could be aligned with the medical and political model of disability more frequently than those professionals that did not indicate that they had a visual impairment. Also, as shown in Table 7, professionals with visual impairment indicated that they applied practices designed to address the social connections of individuals with visual impairment using practices that

could be aligned with the political model of disability more frequently than those professionals that did not indicate that they had a visual impairment.

Table 7 Significant ($p < 0.05$) mean differences in frequency for the use of particular practice between those professional who indicated they had a visual impairment and those who indicated they did not have a visual impairment

Model	Access Issue	Prof w higher Freq.	t	df	Sig.	Mean Difference	Lower 95% CI	Upper 95% CI
Medical	Attitudes	VI	2.312	44	.026	.878	.113	1.643
Political	Attitudes	VI	2.028	43	.049	.611	.003	1.219
Political	Social Connection	VI	2.800	42	.008	.940	.262	1.617

Note: *. T-test was used to find the mean difference was significant ($p < 0.05$).

The fact that professionals with visual impairments used medical and political model approaches for addressing access issues related to social connections and the attitudes of others more frequently than professionals without visual impairments suggested that the personal experience of having a visual impairment may have influenced how professionals felt that these issues should be addressed. The practices framed using medical and political models implied greater personal agency and responsibility on the part of the individual with visual impairment and less reliance on the competence and efforts of others. This perhaps suggested a belief, born from experience, that leaving social integration and acceptance of others to others was unproductive.

Factor Analysis

Factor extraction for frequency of practice. Factor analysis was used in this study to determine the degree to which the survey variables represented the following

latent variables: medical model informed practice, social model informed practice, and political model informed practice. Although the 57 observations per variable included in this study are considered low, (Comery & Lee, 1992) (as cited in (Tabachnick and Fidell (2001))). For this data set, the Kaiser-Meyer-Olkin Measure of sampling adequacy was calculated at 0.686 above the suggested 0.60 minimum for this measure (UCLA, 2013). A Bartlett's Test of Sphericity was conducted and the null hypothesis that the correlation matrix was an identity matrix was rejected ($df=105$, $p<0.0005$) (UCLA, 2013). The scree plot for the factor extraction, Figure 3 (Appendix C), shows that after the extraction of three factors a large amount of the variability had been accounted for. An extraction of three components was requested to determine how closely three factors would align with the design latent variables of interest, the medical, social, and political models of disability. The model converged to the 3 components after 6 rotations. The first factor accounted for 34.3% of the variability, the second factor 16.8% of the variability, and the third factor 13.2% of the variability resulting in the three factors accounting for a cumulative viability of 64.3%.

Table 8 shows the components of the three extracted factors and that the first factor was contained practices that could be aligned with the social model of disability. Although the factor analysis resulted in some of the variables with loadings greater than 0.30 on more than one factor, the relatively high loadings of each variable on one single factor supported the existence of an underlying structure to the data (Brown, 2009) that was related to the theoretical models of disability used here to formulate the individual variables. The fact that most variables could be assigned to factors with variables

formulated using the same models of disability provides evidence that a latent construct existed and was represented consistently by the practice variables formulated for the survey.

Practices that addressed social connections using both the political and social models of disability, however, loaded into the factor that otherwise contained practices formulated using the medical model of disability. This suggested that the frequency of application of practices related to addressing social connections followed similar patterns of frequency as practices addressing other access concerns using the medical model.

Both Varimax or orthogonal, and a Promax or oblique, rotations were conducted. Both rotations resulted in three components with the same structure and with the same components in the same factors. Results from the Promax rotation were used to construct the factors because some of the correlations between the factors identified were significant and greater than 0.32 (Brown, 2009; Tabachnick & Fidell, 2007). The first factor accounted for the largest amount of the variance in the frequency of practice, as shown in the scree plot in Figure 3. Four out of the five components in this factor represent the frequency with which participants indicated that they used practices that could be described as aligned with the social model of disability and one of the five components could be related to the political model. The second factor, accounting for the next highest amount of variability contained all five of the practices that could be associated with the medical model, one practice that could be aligned with the social model, and one that could be aligned with the political model. In both the first and second factor, the practices that were used to address social connection did not align with

their respective group based on model of disability with regard to pattern of answers by participants related to frequency of use of the practice. The third factor contained three practices all of which could be described as aligned with the political model of disability.

Table 8 Three principle components extracted for frequency of use of practice (Pattern Matrix)

Model	Access issue	Component 1	Component 2	Component 3
Medical	O&M	-.140	.549	.465
Social	O&M	.771	-.416	.278
Political	Social connections	-.006	.755	-.040
Social	Social connections	-.131	.595	.317
Political	Attitudes	.380	.159	.501
Political	Print access	-.069	-.076	.916
Social	Attitudes	.537	.030	.365
Medical	Social connection	.236	.659	-.090
Medical	Technology	.134	.641	.033
Medical	Print access	.412	.603	-.244
Political	Technology	.084	.076	.852
Social	Technology	.917	.044	.006
Political	O&M	.880	.002	-.053
Medical	Attitudes	-.248	.790	.099
Social	Print access	.819	.188	-.167

Notes:

1. Extraction Method: Principal Component Analysis.
2. Rotation Method: Promax with Kaiser Normalization.
3. Rotation converged in 6 iterations

In summary, almost all practices loaded more highly onto factors based on model of disability than based on access concern. This finding supported the idea that a latent trait existed that was related to model of disability and that this trait informed professional practice more than specific access concerns. At the same time, many practices did not load exclusively on a single factor, but sometimes on more than one

factor. This suggested that though the model of disability may be an organizing concept informing professional practice decisions, professionals may also have been taking a more pragmatic view towards addressing access concerns and adjusting the approach they took in order to incorporate a number of practices, each of which was aligned with a different model of disability. Three out of five of the practices that aligned with the medical model loaded exclusively on one factor. Practices related to the political and social models were more likely to load less exclusively onto one factor, suggesting more flexibility on the part of professionals in applying practices related to the social and political models.

Some factors did contain practices that could be aligned with different models of disability. For example, addressing technology and print, access using the social model, and orientation and mobility using the political model, loaded predominantly on one factor. Interestingly, it will be seen later that these were practices that were also associated with better employment and educational outcomes.

Reliability. In order to obtain an additional measure of cohesiveness for various latent variables of interest and the manifest variables that represented the latent variables, Cronbach's alpha was calculated for five aggregates related to access issues, three aggregates related to model of disability, and three aggregates that were extracted from the data using factor analysis. Cronbach's alphas for the five aggregates constructed from the three manifest variables for practices related to each accessibility issue ranged from 0.493 to 0.692. Cronbach's alphas for the three aggregates constructed from the five manifest variables that represented practices that could be related to each of the three

models of disability ranged from 0.643 to 0.791. Finally, Cronbach's alphas for the three aggregates constructed from the manifest variables identified through factor analysis ranged from 0.747 to 0.866. Table 17 (Appendix C) provides a list of the Cronbach's alpha for each aggregate. These results suggest that frequency of practice was perhaps more driven by model of disability than access need.

In summary, Cronbach's alphas tended to be higher when practices were aggregated by model of disability than when they were aggregated by access concern. This finding further supported the notion that a latent trait related to model of disability organized professional practice, and that model of disability was more influential in regard to driving practice frequency than access concern. At the same time it should be noted that the access concerns that were investigated in this study were all practices that have been emphasized and identified in the literature as important by all stakeholders, and therefore it was expected that of these access concerns, some would not be expected to be significantly favored over others by the stakeholders in this study.

MANOVA Calculations for Component Variables for Aggregates

Multiple analysis of variance (MANOVA) was used to test for significance for the variables that would go into constructing the aggregates. The aggregate variables were constructed by averaging the values of the component variables. Each of the component variables that made up an aggregate were used together as independent variables in a MANOVA. Pillai's trace was used as the test statistic to determine significance because Pillai's trace provides the most protection against Type I errors when sample sizes are relatively small (University of Ottawa, 2013).

Variables associated by model of disability. Tier, occupation, and vision were not found to be significant in predicting the frequency of use of the group of practices that could be aligned with either the medical model of disability or the political model of disability. For the group of practices that could be aligned with the social model of disability tier and visual impairment were not significant but occupation was significant (Pillai's Trace, $F=3.066$, $df=20$, $p<0.0005$).

Variables associated through factor analysis. For extracted factor 2, the practices that included all of those practices that could be aligned with the medical model as well as practices that were designed to address the social connections of people with visual impairments that could be aligned with the social and political models of disability, neither tier nor visual impairment were significant. Occupation, however, was significant for extracted factor 2 (Pillai's Trace, $F=1.810$, $df=28$, $p<0.016$). Rehabilitation professionals and teachers for students with visual impairments tended to apply the practices associated with variables in extracted factor 2 with higher frequency than DRC professionals and employers. Neither tier nor visual impairment were significant for extracted factor 1. Extracted factor 1 included all practices that could be aligned with the social model except the practices that related to making and maintaining social connections but included practices that addressed orientation and mobility needs that could be aligned with the political model. Occupation, however, was significant (Pillai's Trace, $F=2.862$, $df=20$, $p<0.0005$). Employers, DRC professionals, and teachers for students with visual impairments tended apply the practices associated with variables in extracted factor 1 with higher frequency than rehabilitation professionals. For extracted

factor 3, the practices that included practices designed to address print access, technology, and the attitudes of others using the political model of disability neither tier, occupation, nor visual impairment were significant.

Variables associated by access concern. For all of variables that contained practices related to addressing the specific access concerns neither tier nor visual impairment were significant. For the variables that contained practices related to addressing the attitudes of others toward visual impairment, orientation and mobility, building social connections, and technology occupation were significant Table 9 contains the statistics related to the finding of significance for occupation. For the variables that contained practices related to addressing print access needs, however, occupation was not significant.

Table 9 Statistics related to the significance occupation for the variables for practices that relate to specific access concerns

Access concern	F	Df	P	Aggregate Mean Frequency			
				Emp (2)	DSR (22)	Rehab (16)	TVI (2)
Attitudes of others	3.237	12	0.001	2.3	2.1	2.3	3.1
Orientation and mobility	2.981	12	0.001	3.0	2.5	2.3	2.0
Building social connections	2.173	12	0.020	2.3	2.2	2.6	2.5
Technology	2.512	12	0.007	2.5	2.5	2.6	2.8

In summary, the MANOVA analysis reinforced the finding that different professionals apply different practices with different frequencies and there were differences in frequency based both on model of disability and access concern. This finding suggested that respondents from different professions may have viewed access concerns with different levels of interest. For example, the attitudes of others was addressed with the highest frequency by teachers for students with visual impairments; orientation and mobility with highest frequency by employers; social connections highest by rehabilitation professionals and teachers for students with visual impairments; and technology highest by teachers for students with visual impairments. It should be noted, however, that teachers for students with visual impairments and employers responded to the survey in low numbers and may not be a representative sample.

Each practice concern was addressed with nearly equal frequency when

considered across all stakeholder groups, and only on closer inspection could it be seen that practitioners addressed access concerns with different frequencies depending on the stakeholder group to which they belong. This suggested that different stakeholder groups may view different access concerns with different importance, or even feel that certain access concerns are within their purview and others are not.

ANOVA for Aggregate Variables for Tier by Profession

Variables were aggregated by averaging the values for the component variables analyzed using MANOVA. Neither tier nor profession were found to be significant factors when the aggregated variables for all practices related to print access, technology, attitudes, and orientation and mobility respectfully were modeled using ANOVA. In other words, respondents did not report applying practices related to these access issues with different frequencies depending on what tier they worked in or whether they were DRC professionals or rehabilitation professionals. Because there were so few respondents in the category of employer and TVI these professions were not included in the ANOVA calculations.

Also, respondents did not report applying practices related to access issues with different frequencies depending on what tier they worked in. It was found, however, that rehabilitation professionals reported applying practices related to building social connections with higher frequency than DRC professionals ($F=6.901$, $df=1$, $p=0.013$).

Neither tier nor profession was found to be significant factors when the design aggregate variables for all practices related to either the social or political model were modeled using ANOVA. In other words, respondents did not report applying the

practices related to these models of disability with different frequencies depending on what tier they worked in or whether they were a DRC or rehabilitation professional. It was found, however, that rehabilitation professionals reported applying practices related to the medical model of disability with higher frequency than DRC professionals ($F=4.479$, $df=1$, $p=0.042$).

Neither tier nor profession was found to be significant factors when the aggregate constructed by averaging the variables in extracted factor 3 was modeled using ANOVA. It was found, however, that rehabilitation professionals reported applying practices included in the aggregate constructed by averaging the variables in extracted factor 2 ($F=6.109$, $df=1$, $p=0.013$) and extracted factor 1 ($F=5.164$, $df=1$, $p=0.030$) with higher frequency than DRC professionals.

Using t-tests no significant differences were found between the aggregates constructed by averaging the variables in the extracted factors between those professionals who had a visual impairment and those that did not.

Influences for Initiating Professional Practices

Factor extraction for origin of practice. Respondents were asked to identify the influence that caused them to begin using a certain professional practice from the following options: laws and regulations, professional conferences and publications, seeing a practice used in another field, supervisor input, or personal professional experience. Principle Components Analysis with Optimal Scaling (PCAOS) was used (CAPCA, 1999; DDTS, 2012; Starkweather & Harrington, 2012) to determine the underlying structure. The three factors that were extracted initially to determine if

patterns of for the influence that participants identified as important in getting them to initiate a particular practice was similar to the frequency with which they employed the practice. All but two of the practices, the one that addressed technology concerns using the political model and the one that addressed orientation and mobility concerns using the medical model, had the highest respective loadings on one of two factors. As a result, the analysis was rerun to find two factors. The solution converged after 21 rotations. In the two component solution, Table 18 (Appendix C), the patterns of responses regarding the primary influence cited for initiating practices that could be aligned with the political and social models were similar with each other and distinct from the patterns of influence for practices that could be aligned with the medical model. The responses to questions related to where participants got the idea for the specific practice for which they rated their frequency of use followed a different pattern than responses related to frequency of use.

Although influences that were associated with practices aligned with the political and social models loaded onto most highly onto the first component, Figure 11 (Appendix C) shows that the relative loadings between components was different between the political model and both the social and medical models suggesting that influences that caused professionals to begin employing practices that could be aligned with the political model were more distinct or loaded more definitively on the first component than the social model and in fact more distinctly than the medical model practices loaded onto the second component. In other words, although the initiating influences for practices that could be aligned with either the social or medical models loaded onto different

components, the differences in relative loadings were not large. On the other hand, the initiating influences for practices that could be aligned with either the political or medical models loaded onto different components as well, but the differences in relative loadings were comparatively large.

Figure 4 shows that the distribution of influences that participants indicated had caused them to initiate specific practices that could be aligned with the medical or social model of disability loaded about equally on dimension 1 and dimension 2. On the other hand, all practices that could be aligned with the political model and the practice related to addressing attitude and social concerns related to the social model correlated more highly with dimension 1 than dimension 2. Relative ratio analysis suggested that the primary difference between dimension 1 and dimension 2 was that for dimension 1, participants indicated that the practices were unknown to them 2.93 times more frequently than those practices in dimension 2 (95% CI 1.47-5.82). The relative risks of other influences were not significant (Table 10). Cronbach's alpha and variance accounted for by dimension 1 were 0.941 with 0.168 respectively and for dimension 2 0.917 and 0.141 respectively

Table 10 Relative risk of source of influence dimension 2 vs. dimension 1

Influence	Rel. Risk	95% CI	Sig
Coercive	0.968	.630-1.49	Ns
Normative	0.749	.328-1.71	Ns
Mimetic	0.607	.297-1.24	Ns
Supervisor	1.17	.776-1.77	Ns
Self	0.95	.818-1.10	Ns
Unknown	2.93	1.47-5.82	P<0.05

This factor analysis combined with the relative risk analysis showed that practices that could be aligned with the medical model of disability were generally more well-known than those that could be aligned with the political model. Furthermore, the analysis showed that practices that could be aligned with the social model were somewhere between the medical and political models relative to being known to the participants. The two clusters of practices designated with the oval and the rectangle in Figure 11 (Appendix C) suggested that the pattern of relative loadings on the two dimensions was different between the two groups of practices. One group was dominated by practices that could be aligned with the political model and the other by those practices that could be aligned with the medical model. Part of the difference might have been related to the fact that practices that could be aligned with the political model were less well known, and therefore professionals might have been more dependent on external influences such as their supervisor to expose them to practices aligned with the political model. The practice that addressed technology, and especially the practice that addressed social connections using the social model, also loaded more highly on the component that contained all of the practices that could be aligned with the political

model, and suggested that the use of these practices might also have the potential to be expanded through external channels such as supervisory or normative influences.

Over 64% of the time, respondents to the survey indicated that personal professional experiences were the main reason that they began to employ the professional practices described in the survey. The balance of the time respondents indicated that either coercive (11.3%), normative (3.2%), mimetic (4.6%), or supervisory (12.4%) influences were most likely to have led them to begin employing specific professional practices. Respondents had indicated they had not thought of or did not know about a practice 6.4% of the time. ANOVAs conducted for each of the origins of practice found that neither occupation, visual impairment, nor tier were significantly associated with differences in the frequency with which rehabilitation professionals and DRC professionals cited coercive, normative, mimetic, supervisory, or personal professional experiences caused them to initiate specific practices. Visual impairment and tier were significant for the differences in frequency with which rehabilitation professionals and DRC professionals indicated that a specific practice was not known to them. Professionals with visual impairments indicated that practices were not known to them significantly more frequently than professionals without visual impairment ($F=13.677$, $df=1$, $p=0.001$), however this was only the case for those who worked in the states that had the lowest relative disparity between employment and four year post-secondary educational outcomes. The interaction between tier and visual impairments was significant ($F=11;164$, $df= 1$, $p=0.002$). Table 19 (Appendix C) lists the frequency with

which respondents indicated that a particular influence led them to begin employing a particular professional practice.

Figure 3 shows the percentage of responses related to coercive, normative, mimetic, and supervisory influence as well as the percentage of respondents that indicated they did not know of a particular practice. This figure shows that respondents indicated that practices that could be aligned with the political model of disability were unknown to them more frequently than practices that could be aligned with either the social or medical model of disability. Also laws and regulations were cited by respondents as being more influential in getting them to initiate practices aligned with the social model of disability than for influencing them to begin practices that could be aligned with either the medical or political models. Except for personal professional experience, respondents indicated that supervisory input was most influential in getting them to initiate a particular practice except in the case of practices that could be aligned with the social model of disability.

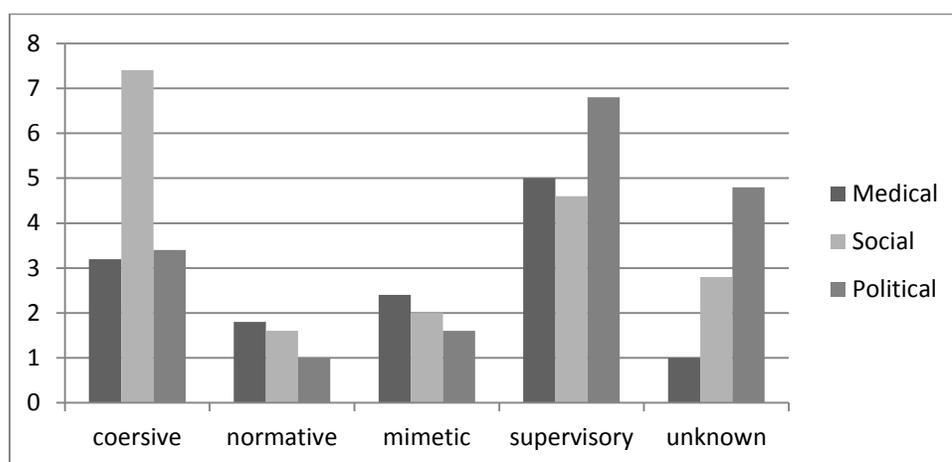


Figure 3 The distributions of influences across the medical, social, and political models of disability

Figure 4 shows the distributions of influences across the different access concerns that practices were designed to address. Respondents indicated that supervisory influences were about equally as likely to be influential in causing them to initiate practices across all access issues investigated through the survey. Practices related to addressing orientation and mobility access concerns were cited frequently for mimetic influences or the influence of individuals outside of the respondents' particular profession. This was consistent with the fact that it was likely that most of the professionals who filled out the survey were not likely to be orientation and mobility specialists; although participants were not asked whether or not they were orientation and mobility specialists. Practices designed to address technology and concerns related to social connections were cited most frequently for normative influences. This suggests that these are areas of concern which have wide interest and were topics of discussion in professional circles. Practices designed to address concerns related to the attitudes of others and social connections were least often cited as being influenced by laws and regulations. These results suggested that, laws and regulations were most likely to influence professionals in practices related to orientation and mobility, print access and technology. Professional organizations and publications were most likely to influence professionals in practices related to social connections and technology, and other professions most likely to influence professionals in practices related to orientation and mobility.

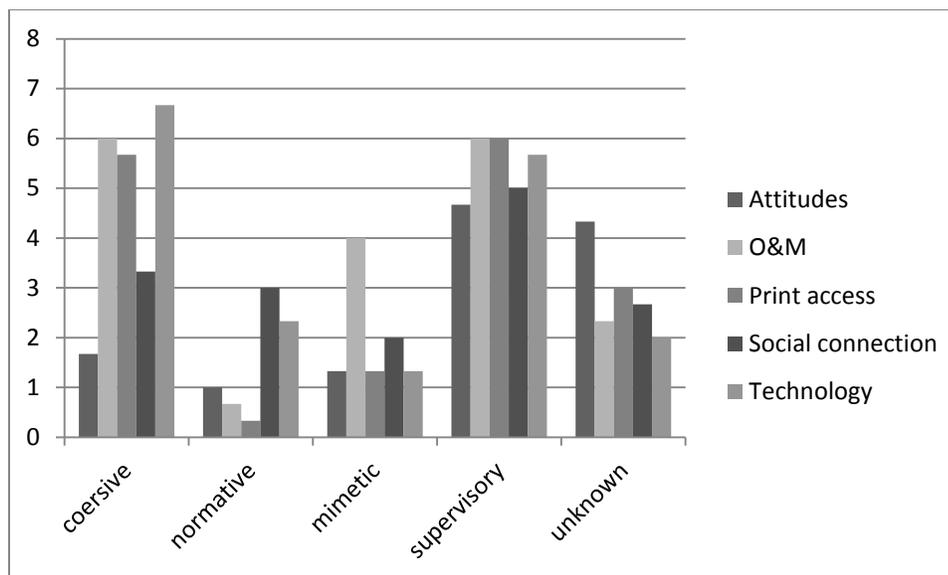


Figure 4 The distributions of influences across the different access concerns that practices were designed to address

When the coercive, normative, mimetic, and supervisory practices were combined into a category called external influences and compared to the influence of personal professional experience, it was found that the frequency with which personal professional experience was cited as influential was highest for practices that could be aligned with the medical model, lower for practices that could be aligned with the social model, and lowest for practices that could be aligned with the political model. External influences replaced personal experience in influencing personal professional practices that could be aligned with the social model and a combination of external influences and lack of knowledge replaced personal experience for practices aligned with the political model. Figure 5 illustrates the differences in source, external or personal professional experience, of influence for initiating professional practices and model of disability.

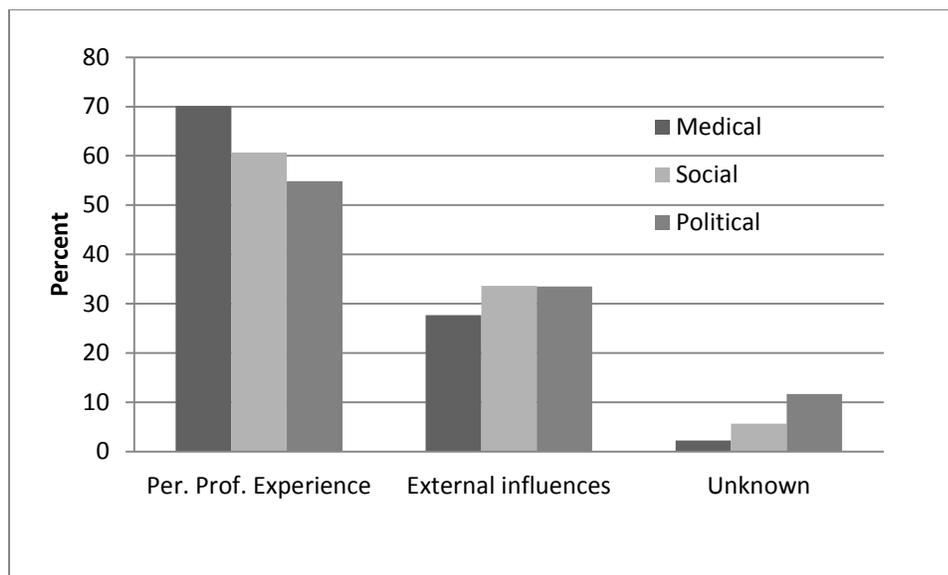


Figure 5 The percent of practices for which either external or personal professional experience influenced the initiating of professional practices

A comparison of the frequencies with which a stakeholder indicated that either personal professional experience or a particular external source was the influence that caused them to begin to use a particular practice that could be associated with either medical, social, or political models of disability was analyzed using relative risk analysis (Bewick et al., 2004). The results of this analysis are provided in Table 11.

Table 11 Relative risk of using a practice either frequently or almost always v. never or occasionally for particular influences

	Medical v. Social (95% CI)	Medical v. Political (95% CI)	Social v. Political (95% CI)
Personal experience	37% (22.9 to 68.7)	78%(36.8 to 232)	ns
External Influences	ns	62.1%(8.5 to 242)	ns
Coercive	ns	Ns	ns
Normative	ns	Ns	ns
Mimetic	ns	Ns	ns
Local advocacy	ns	Ns	ns

Using odds ratios (Bewick et al., 2004), it was found that participants were no more likely to indicate that practices related to the social model were unknown to them than practices related to the medical model. Participants, however, were more likely to indicate that practices related to the political model were more often unknown to them than practices related to the medical model (477% (95% CI = 116% to 1444%, $p < 0.05$) or social (119% (95% CI = 8.5% to 343%, $p < 0.05$).

A sub-analysis of those influences that were combined into the external influences using odds ratios shows the relative importance of the component external influences: coercive, normative, mimetic, and supervisory influences. The results of this analysis are provided in Table 20 (Appendix C). Confidence intervals are only provided for those ratios that were significant ($p < 0.05$).

No significant differences were found in the frequency with which the practices designed to address attitudes toward visual impairment, orientation and mobility, access to print, social connections, and technology that could be aligned with the medical model

of disability were used and the source of knowledge of the practice identified by participants: laws and regulations; professional conferences, professional publications, or observation of colleagues; observation of what they have seen other specialists do for clients with other disabilities; directives and ideas promoted of supervisors; or professional experience.

In summary, participants indicated clearly that they felt that personal professional experience was the major driving force in causing them to begin employing specific practices, regardless of the model of disability that informed their practice or the access issue that they were addressing. At the same time, practices that could be aligned with the medical model were implemented because of personal professional experience more often than those that could be aligned with the social model, and significantly more than those aligned with the political model. In addition, practices that could be aligned with the social and political models of disability were more likely to be unknown to participants. This suggested that there would be an opportunity to increase the frequency with which practices aligned with either the political or social models were employed through the use of external influences such as input from supervisors and professional organizations.

Correlations

Correlations for practice outcomes. Bivariate Spearman correlations were conducted between all variables. The correlations between the frequency of the use of particular practices, aggregates of practices, relative rates of employment and bachelor's

degree attainment and vocational rehabilitation expense per client are listed in Table 21 (Appendix C)

Spearman correlations between practices are shown in Table 22 (Appendix C). The frequency with which practices that could be aligned with the medical model were applied was not significantly correlated with the employment and bachelor's degree attainment of individuals with visual impairment when compared with the general population. The frequency of use of orientation and mobility practices related to the medical model, however, was negatively correlated with the expenditures per client ($r=-0.328$, $p=0.03$). This was the only individual practice or aggregate that was correlated with expenditure per client.

The frequency with which practices that could be aligned with the social model were applied was not significantly correlated with the employment and bachelor's degree attainment of individuals with visual impairment when compared with the general population except for those practices that addressed print access and technology. Practices that addressed print access ($r=-0.303$, $p=0.034$) and technology ($r=-0.396$, $p=0.005$) using the social model were significantly correlated with a lower disparity between the employment for individuals with visual impairment. Practices that addressed technology ($r=-0.398$, $p=0.005$) using the social model were significantly correlated with a lower disparity between bachelor's degree attainment in individuals with visual impairment relative to the general population.

The frequency with which the practices that could be aligned with the political model were applied was not significantly correlated with the employment and bachelor's

degree attainment of individuals with visual impairment when compared with the population except for the frequency with which practice related to orientation and mobility were used. Practices that addressed orientation and mobility ($r=-0.303$, $p=0.043$) using the political model were significantly correlated with a lower disparity between the rate of bachelor's degree attainment in individuals with visual impairment relative to the general population.

The aggregate variables that represented the frequency of use of practices related to specific access concerns regardless model of disability were not significantly correlated with relative educational or employment outcomes or the expenditure per client. The aggregate variables that represented the frequency of use of practices related to both the medical and political model of disability were not significantly correlated with relative educational or employment outcomes or the expenditure per client. On the other hand, both aggregates that represented the frequency of use of practices related to the social model of disability were significantly correlated with relative educational or employment outcomes ($r=-0.354$, $p=0.018$, $r=-0.354$, $p=0.018$).

A significant positive correlation suggested between two practices would suggest that a pair of practices were complementary in a professional's repertory of practices. A significant negative correlation would suggest that practices were used preferentially. In other words, if one practice was used frequently the other would not be used frequently. No significant correlation would suggest that the frequency of use of one practice was not related to the frequency of use of the other. Overall 47 of the 105 possible pairs of practices were correlated. For this analysis, adapting the ordinal measure of association

described for concordant and discordant pairs described by Agresti (2002) was adopted. For all pairs of practices the tendency of the increase in the use of one practice to be related to the frequency of use of another practice was weak $\gamma = -0.105$. In fact the slight negative association suggested that in general the frequent use of one practice was not significantly associated with an increased frequency of use for another practice. Overall, for all pairs of practices compared based on the access issue the tendency of the increase in the use of one practice to be related to the frequency of use of another practice was weak $\gamma = -0.20$. For all pairs of practices compared based on the model of disability, the tendency of the increase in the use of one practice to be related to the frequency of use of another practice was also weak $\gamma = -0.067$. For all pairs of practices compared based on alignment to medical model of disability, the tendency of the increase in the use of one practice to be related to the frequency of use of another practice was relatively strong $\gamma = 0.60$ and suggested that a professional who tended to use one practice that could be aligned with the medical model frequently was likely to use other practices that could be aligned with the medical model frequently. For all pairs of practices compared based on alignment to social model of disability, the tendency of the increase in the use of one practice to be related to the frequency of use of another practice was relatively weak $\gamma = 0.20$ and suggested that a professional who tended to use one practice that could be aligned with the social model frequently was not necessarily more likely to use other practices that could be aligned with the social model frequently. For all pairs of practices compared based on alignment to political model of disability, the tendency of the increase in the use of one practice to be related to the frequency of use of another practice was

relatively strong but negative $\gamma = -0.60$ and suggested that a professional who tended to use one practice that could be aligned with the social model frequently was not less likely to use other practices that could be aligned with the political model frequently.

This analysis suggested that the frequency of use of practices that could be associated with the medical model were related, and that if a professional used one practice related to the medical model with a certain frequency, chances are that he or she would also be using another practice related to the medical model with a similar frequency. The frequencies with which social and political model aligned practices were used were not as closely related as those aligned with the medical model. In other words, this analysis showed that if a professional used one practice related to either the political or social model of disability he or she was not as likely to use another practice related to the political or social model respectively. The analysis showed that medical model practices may be used in groups, and social and political model practices may be used in a more targeted way as needed. This finding adds nuance to the factor analysis that showed that medical, social, and political models may represent latent traits.

Figure 6 shows that as relative outcomes in post-secondary education and employment increased so did the average frequency of application of practices that could be aligned with the social model of disability. I found no linear relationship between employment and educational outcomes and average frequency of the use of practices that could be aligned with either the medical or political model of disability. It should be also noted that the total for the frequencies of all practices together was approximately 14% higher in Tier 1 states.

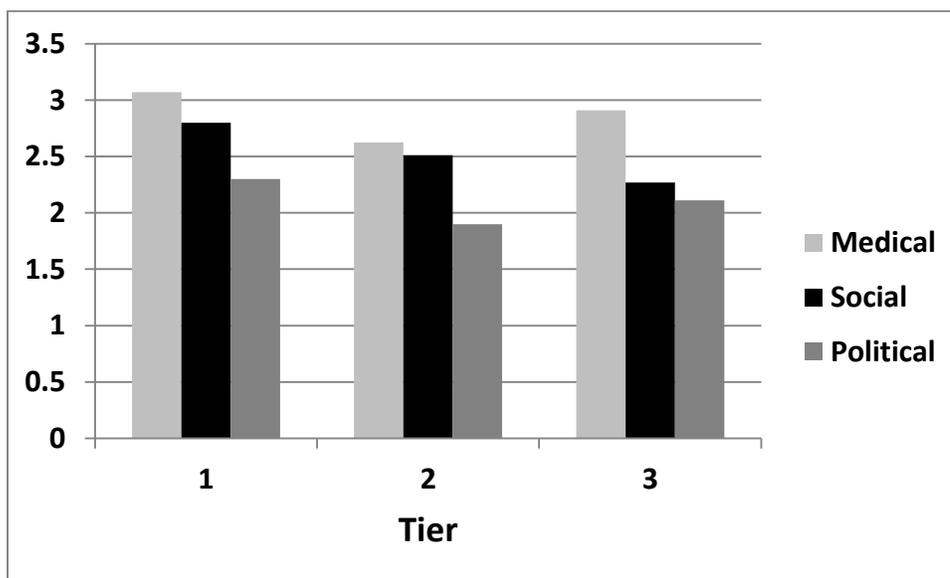


Figure 6 Comparison of the relative outcomes in post-secondary education and employment and the average frequency of application of practices that could be aligned with the social model of disability.

Correlations for influence and practices. The frequency of use of the practices that addressed technology concerns through the use of the medical model (Spearman's $\rho = -0.523$, $p < 0.0005$) and social connection concerns through the political model (Spearman's $\rho = -0.408$, $p = 0.010$) were the only professional practices that were

negatively correlated with outside influences that formed practice. This finding suggested that for the practices that addressed technology concerns through the use of the medical model and social connection concerns through the political model, when the practice was initiated through personal experience the practice was used with more frequency. For all other practices the origin of the practice was not correlated with frequency of use,

Tier was correlated with the origin of the influence for practices related to addressing the attitudes of others (Spearman's $\rho = 0.360$, $p=0.046$), access to print (Spearman's $\rho = 0.435$, $p=0.010$), and technology (Spearman's $\rho = 0.469$, $p=0.002$) that could be aligned with the political model of disability and the practice that addressed access to print (Spearman's $\rho = 0.354$, $p=0.020$) that could be aligned with the medical model of disability. This suggested that an external origin of influence for these practices was associated with positive educational and employment outcomes for individuals with visual impairment.

Regression

The correlation analysis showed that the frequency of use of the practice related to addressing access to print that could be aligned with the social model accounted for 9.2% of the variability associated with relative employment outcomes. The frequency of use of the practice related to addressing technology issues of access that could be aligned with the social model accounted for 15.7% of the variability associated with relative employment. Adding the practice related to addressing access to print that could be aligned with the social model to the model of the practice related to addressing technology issues of access that could be aligned with the social model did not add to the

predictive value of the model as these variables were highly correlated ($r=.800$, $p<0.0005$). These three practices loaded most exclusively on component 1 of the factor analysis as shown in Table 8 suggesting that practitioners used these practices with similar patterns of frequency and together they may form an identifiable view of disability.

The correlation analysis showed the frequency of use of the practice related to addressing technology issues of access that could be aligned with the social model accounted for 15.9% of the variability associated with relative bachelor's degree attainment. The frequency of use of the practice related to orientation and mobility issues of access that could be aligned with the political model accounted for 9.2% of the variability associated with relative bachelor's degree attainment. Adding the practice related to addressing orientation and mobility that could be aligned with the political model to the model the practice related to addressing technology issues of access that could be aligned with the social model added to the predictive value of the model. These two variables together predicted 16.6% of the variability in relative bachelor's degree attainment.

The correlation analysis also showed that the aggregate that included the frequency of use of all of the practices related to the social model accounted for 14.1% of the variability associated with relative employment and 12.4% of the variability in bachelor's degree attainment. The aggregate that included the frequency of use of all of the practices related to the social model except the practice that addressed social connections but included frequency of use of a practice that addressed orientation and

mobility issues from a political model perspective accounted for 12.5% of the variability associated with relative employment and 13.8% of the variability in bachelor's degree attainment. The frequency of responses, for source of influence for initiating practice for those practices found to be significantly correlated with outcomes, are shown in Table 12.

Table 12 Frequency of responses for source of influence for initiating practice for those practices found to be significantly correlated with outcomes

Professional Practice		Source of Influence for Initiation of practice					
Model	Access Concern	Coercive	Mimetic	Normative	Supervisory Personnel	Personal Experience	Unk
Political	O&M	7	0	3	5	26	4
Social	Print	11	1	2	3	30	2
Social	Tech	9	3	2	5	28	2
Social	Aggregate	37	8	10	23	139	13

In summary, the frequency with which the aggregated social model practices were employed was significantly correlated with lower disparities in rates of employment and college graduation. When correlations between employment and college graduation rates and frequencies of use of individual practices were conducted, only the practice that addressed technology concerns using the social model was correlated with lower disparities for both employment and college graduation rates. This suggested that creating accessible environments may be more effective than teaching adaptive skills when it comes to the use of technology, and that the initiation of this practice may be significantly influenced by laws and regulations.

Influence of Practice, Frequency of Practice, Outcomes

The overall relationships between external and internal influences on practice between the three different tiers of states are illustrated in Figures 9, 10, and 11

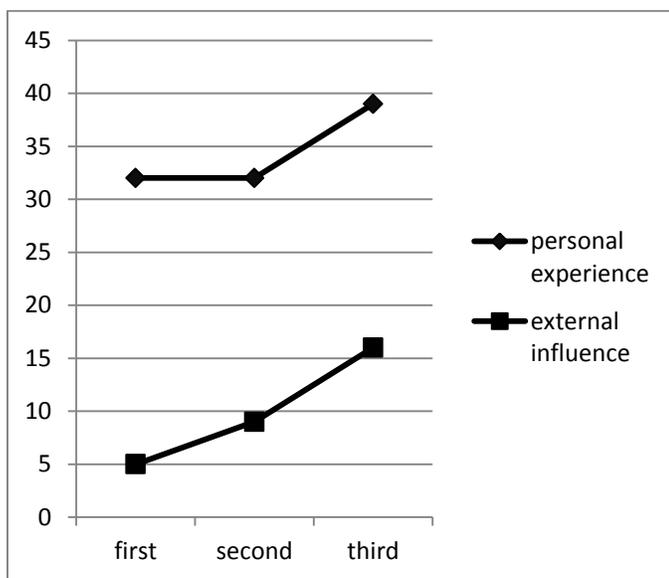


Figure 7 The relationship between the influence of personal experience vs. external influences on practices that could be aligned with the medical model of disability and for which participants indicated they applied frequently or almost always.

Figure 7 illustrates that in states where the disparity between employment and four year college graduation rates between those with visual impairments and the general population was larger, professionals reported using practices related to the medical model frequently or almost always less frequently more frequently than those practitioners who worked in states with lower disparities. This was the case for both professionals who indicated that the practices were initiated as a result of personal professional experiences and those who cited external influences. Using odds ratios, however, the differences in the frequencies with which participants indicated that they applied a given practice that could be aligned with the medical model, either frequently or almost always, were not

significantly different between tiers with respect to whether those practices were initiated as a result of personal experience or as a result of external influences.

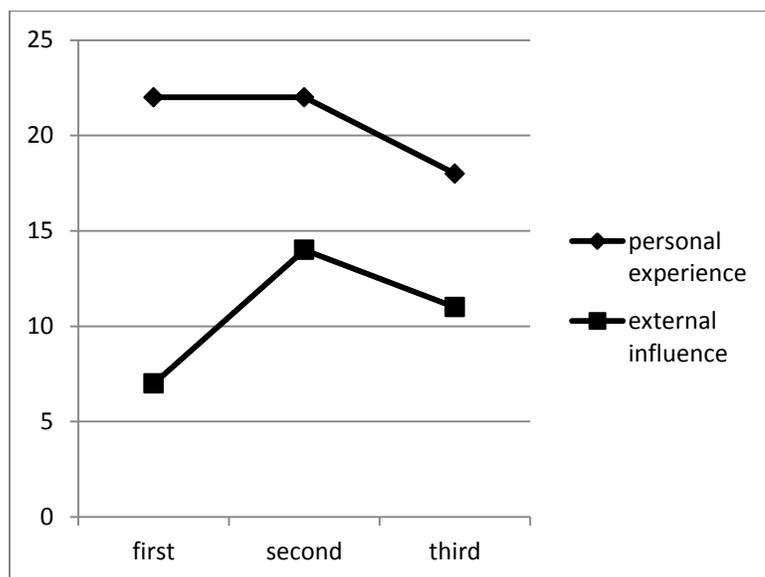


Figure 8 The relationship between the influence of personal experience vs. external influences on practices that could be aligned with the social model of disability and for which participants indicated they applied frequently or almost always.

Figure 8 illustrates that in states where the disparity between employment and four year college graduation rates between those with visual impairments and the general population was larger, professionals reported using practices related to the social model frequently or almost always less frequently than those practitioners who worked in states with lower disparities. This was the case for professionals who indicated that the practices were initiated as a result of personal professional experiences. In the case of those professionals who indicated that the practices were initiated as a result of external influences the picture was more uncertain, because the reported frequency increased between the top and middle tier but then decreased between the middle and lowest tier.

Using odds ratios, the differences in the frequencies with which participants indicated that they applied a given practice that could be aligned with the social model, either frequently or almost always, were not significantly different between tiers with respect to whether those practices were initiated as a result of personal experience or as a result of external influences.

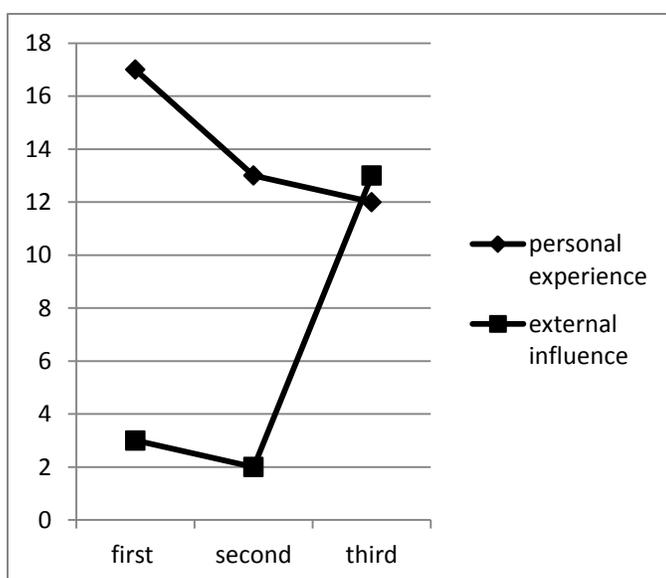


Figure 9 The relationship between the influence of personal experience vs. external influences on practices that could be aligned with the political model of disability and for which participants indicated they applied frequently or almost always.

Figure 9 illustrates that in states where the disparity between employment and four year college graduation rates between those with visual impairments and the general population was larger, professionals reported using practices related to the political model frequently or almost always less frequently than those practitioners who worked in states with lower disparities. This was the case for professionals who indicated that the

practices were initiated as a result of personal professional experiences. In the case of those professionals who indicated that the practices were initiated as a result of external influences the picture was more uncertain, because the reported frequency decrease between the top and middle tier but then decreased dramatically between the middle and lowest tier.

Using odds ratios, the differences in the frequencies with which participants indicated that they applied a given practice that could be aligned with the political model, either frequently or almost always, were significantly different between tiers with respect to whether those practices were initiated as a result of personal experience or as a result of external influences. For practices that could be aligned with the political model of disability and reported as being applied either frequently or almost always, the likelihood of a practitioner indicating that they began using the practice as a result of external influences was 6.13 times greater for third than first tier states (95% CI (1.43 to 26.3) and 7.04 times greater for third than second tier states (95% CI (1.31 to 38.5).

No significant differences were found between the frequency of internal and external for those practices aligned with a particular model of disability that respondents indicated that they employed either frequently or almost always.

In summary, the relative importance of external influences versus personal professional experience in causing a particular practice to be initiated was independent of outcomes for practices that could be aligned with the medical and social models of disability. However, for practices that were aligned with the political model, external influences were significantly more important relative to personal professional experience

when disparities in outcomes were highest. In fact, professionals identified external influences as being as important as personal professional experiences in causing them to initiate practices related to the political model, and advocated for the participation of individuals with visual impairments in decision making. This suggested that where disparities were highest, external influences were influential in advocating for more client and student participation in the processes that involved them.

Summary Table

A summary of some of the results is provided in Table 23 (Appendix C). For each professional practice Table 23 includes an access concern addressed by the practice, the model of disability to which the practice could be aligned, the mean frequency of application of each of the specific professional practices, and the correlation the reported frequency of application for the practice had with the ratio of employment and bachelor's degree attainment of the general population and those with visual impairments, and degree of external influence in practice initiation.

Interviews and Open Ended Survey Responses

Participants

Of the 68 individuals who returned surveys, 14 volunteered to be interviewed. Of those who volunteered to be interviewed, seven met the selection criteria. Of the seven who met the selection criteria, I was able to contact and interview five. Participants were selected from the two tiers of states that had the greatest difference in the disparity in employment and education outcomes between individuals with visual impairments and

individuals from the general population. Within these two tiers, I was only able to contact and interview those who were DRC professionals and rehabilitation professionals. Based on results from the survey, however, these professions appeared to have significant differences with regard to the approach they took to addressing specific access concerns. As a result, the five participants selected for the interviews represented professionals working in regions that were the most different in terms of educational and employment outcomes and professions that were found to be significantly different with respect to the frequency of application of specific practices designed to address access concerns that could be aligned with either the medical or social model of disability.

Survey participants were given the opportunity to write in any comments that they thought were relevant to the survey and the survey topic as a last question at the end of the survey. Twelve participants in the survey chose to do so. Five of the comments related to the nature of the questions in the survey and will be discussed in the limitations section. The remaining were comments that described additional information on the sources of influence for the practices described in the survey or further clarified the professional role of the participant.

Data Analysis

The transcripts were analyzed using a multilayered coding process similar to that employed by Benz et al. (2000) and detailed in Creswell (1998); Ely, (1991); Miles and Huberman, (1994); and Moustakas (1994). The initial themes of interest in the study were medical, social, and political model framing of professional practices and the influences of coercive, normative, and mimetic forces; and the influence of supervisors

and personal professional experiences on the initiation of specific practices. The existence and relative importance of these themes was reinforced by the responses given by the interview participants. Because interview participants were drawn from survey participants, the focus of the data analysis for the transcripts was to gain a more in-depth understanding of the perspectives of the participants on the established themes and potentially identify important additional themes related to models of disability; specific areas of access concern; and origins of ideas practices employed that were not the focus of the survey.

Relative Importance of Access Issues

During the interviews, the first questions asked were general open ended questions asking the participants to describe their jobs and then what practices that they employed that they felt were most effective for supporting individuals with visual impairments. The responses provided insight into what each participant felt their role was as a professional and what areas of access were most important to address in that role.

Rehabilitation professionals tended to describe their job responsibilities more narrowly than DRC professionals, focusing on teaching or building skills in individual clients. Technology was identified by two of the rehabilitation professionals as the most important access issue and the attitude of the client the most important access issue by the other. It should be noted however that all of the rehabilitation professionals identified technology as an important access issue at some point in each of their interviews. Many also talked about focusing on learning about, acquiring, and instructing clients in the use of technology. Examples from each of the rehabilitation professionals interviewed

regarding what they saw his or her role as and what they saw as the most important access issue follow.

I teach job readiness, job skills college prep, but I also teach advanced communications. So I teach [screen magnification software] and keyboard commands to access the computer. Well, [it is] difficult, but I like it. One thing is keeping up with technology. The other thing is coming up with the individualized lessons. We really try to do individualized things.

We try to get people employed, or we help somebody maintain a job. We work strictly with people with visual impairments. . .I still try to encourage clients no matter what. . . . A lot of times we hinder ourselves because of fears. And.... We[‘ve got to get it] into the mind set of people to get out there to try things.

I am an employment specialist. I also work with the vocational rehabilitation program to find people jobs and get contract work so that the clients have work to do and can earn money. Assistive technology [is most important]. We work with the vocational rehabilitation, which will help buy things that people will need.

DRC professionals, on the other hand, described their jobs as involving multiple responsibilities yet also identified addressing access to print and technology as the most important way to support individuals with visual impairments in their institutions. DRC

professionals seemed to feel that addressing student skills was important but also felt it was important to implement institutional practices that designed in accessibility

I direct the entire program, supervise staff . . . and I also have my own caseload, I direct one on one intakes and provide service for students, and of course I sit on a variety of committees, both state wide and campus wide, and the budget, policies procedures, those kinds of things. [The most important access issue] To ensure that they get the materials in the manner in which it best suits them. And so I think really making sure that the students have access to are in a format that best suits that particular student.

Similarly another DRC professional described responsibilities as follows:

I take care of the budget I supervise a couple of employees that help with test taking and I also speak one on one with students and either approve or reject . . . I fill out their 504 plans with them. I speak with their teachers about their accommodations. And I handle any problems that might occur between teacher . . . [The most important access issue] Well they have the right programs. They have things like [screen reading software], if need be, although I find less of it, because of the e-books. They have to have enlarged print. But as I say we are more and more on line and doing that and with their programs its actually taken

more of a burden off me for enlarging paper tests because we have very few paper tests.

Models of Disability

During the respective interviews for each of the professionals, at one point or another, the participant would describe at least one practice that could be aligned with either the medical, social, or political models of disability. This reinforced the survey results that most practices were known and employed by each participant and reinforced the aggregated findings reported in the literature that also suggested multiple approaches to a single access issue. Also consistent with the survey results, rehabilitation professionals tended to describe practices that could be aligned with the medical model more frequently than DRC professionals. Overall practices that could be aligned with the political model were described the least frequently by both groups.

Medical model. Practices that could be aligned with the medical model of disability tended to be focused on compensating for or correcting discrepancies between the skills the individual with visual impairment had and those needed to perform on a job or in college. Frequently, when discussing practices that could be aligned with the medical model, participants framed their role as a broker or facilitator of services: For example, a rehabilitation professional described arranging for a medical transportation company to transport a client that lived in an area with little public transportation others described the acquisition of specialized or prescribed equipment or coordinating services with medical providers or other specialists such as orientation and mobility specialists and low vision specialists. One rehabilitation professional described writing letters and

even going door to door to potential employers to facilitate communication between the client and employers. DRC professionals described arranging for mobility instructors, approving and documenting the provision of services, collaborating with other departments on campus to provide a support system for students, and speaking with instructors about accommodations. In one of the responses to the open ended question at the end of the survey a participant discussed the importance of identifying and integrating different resources to support students.

As an educator, it is important to use other resources available to assist in many of these supports. With the demands on students, it can be difficult to integrate every aspect of support in the educational setting. It is a challenge, but can be done.

On the other hand sometimes participants framed their role as teachers. For example one rehabilitation professional said,

I teach job readiness, job skills, college prep, but I also teach advanced communications so I teach [screen reading software] and keyboard commands to access the computer. I just really like working one on one coming up with the individualized lessons. we'll do mock interviews, and we do a special one week training class where at the end they have their whole resume together all their application information and accommodation information and we do mock interviews and make sure that they have their clothes together. That's a

really good class. . . We teach the different scanning software the new technology and about the handheld devices and Duxbury and Open book.

Another provided the following response to the open ended question at the end of the survey: “my role is adult education coordinator”.

Interviewees also saw themselves as evaluators, getting to know each client and the specific training and equipment that the particular client needed. Finally professionals sometimes viewed themselves as cheerleaders saying things like: “We work on getting them first of all to be confident . . .[building] confidence in what you can do” or “We got into the mind set of people to get out there to try things. . . I think that’s more of an internal thing with the client . . . they’ve kind of got to do that themselves.” Although the professionals assumed the different roles described above within their profession, when they described these roles, the focus often, but not always, appeared to be on addressing deficits or problems that they as professionals determined were located within the individual and therefore they described practices that could be aligned with the medical model of disability.

Social model. When the professionals described approaching their work with practices that could be aligned with the social model of disability, the professionals focused on addressing needs generated by physical and attitudinal barriers in the environment. When the interviewees discussed their efforts to address environmental barriers their responses could be categorized as framed by two different approaches. The first approach was one of avoidance. Using this approach the professional would describe avoiding rather than confronting situations that had barriers. In these cases, professionals

interviewed would describe trying to identify the most barrier free environments and then to focus their attention on getting the individual they were working with to concentrate their employment or academic efforts on environments they viewed as the most supportive in that they that had the fewest barriers. For example one rehabilitation professionals said “Before we even start the job practice, we have to take a look at where the client lives and what transportation they have”. Another said, “[It’s] a great place for people with visual impairments to live because of the public transportation system” A DRC professional said, “But for the most part if we have somebody with a sight impairment we try to keep them on one campus, we have good signage and you know being so close in one area really there isn’t very far to walk.” Another said, “I have one very sight impaired [student] taking all on line classes. Some of our degrees can be gotten totally on line. And they [individuals with visual impairment] seem to favor that”.

The second approach that was described by interview participants was one of trying to eliminate the barriers found related to attitudes or the physical environment. Those who were interviewed mentioned this second approach less frequently but this approach was nonetheless employed when the professional felt there was an opportunity or power of jurisdiction to do so. In this second approach the professional would describe confronting the barrier and trying to change environments or attitudes that created barriers.

Statements made by participants that illustrated this theme included “I think we do a [very good] job with making sure things are accessible and if it’s not, we are going to work on getting it done” and “ he would need a phone that has the larger key pad on

that because he can't see the numbers on the phone"[otherwise]. A DRC professional stated the following:

[We work] to ensure that materials and the information that they have access to are in a format that best suits that particular student, based upon that student's needs, the class materials and how their presented. coming up with ways to make sure that things were accessible. We have numerous work stations across the campus that allow scanning ability. You know I really believe in providing students the greatest sense of autonomy possible. They can access those materials themselves. Not have it just isolated here in our center but have those that access at various places across the campus, so that it is convenient for them. And I think if any student can go to the library at 11 o'clock at night then the student who needs their materials despite disability then they should be able to do that as well. So it's a real systemic approach to providing accommodations. We do a lot of server based software so they can access it from a variety of different places across campus and we've been very pleased with the results. But again, I have been in this field for [many] years and so it has evolved that way from running like a separate little high tech center where students just have to go to a lab in disability services; to implementing that across campus.

In response to the open ended question at the end of the survey a rehabilitation professional described focus of his or her work as follows - combining in one statement a

description of both medical and social model practices related to addressing access concerns related to technology:

I work with employers to test their pc software to ensure it's compatible with speech software, plus our agency will periodically purchase software and assistive technology equipment for college students to help them with their studies

Finally, in one case, the interviewee described a combination of approaches where they would try to eliminate or work around the barrier but eventually resigned themselves to just avoiding the situation. [We] “got to the smaller rural [employer], they were still very handwriting dependent, so we couldn't get that to work so that's still a sometimes a brick wall we can't take down.”

Political model. Practices that could be aligned with the political model, that is, practices in which the active involvement of individuals with visual impairment in the design of accessible environments, were described with the least frequency during the interviews. There were instances, however, in which interviewees described the value and importance of having individuals with visual impairment advocating for and being part of the conversation when developing environments and practices to address their needs and others with similar needs. For example one interviewee said “We many vision impaired people working here ,,,,,, so when you have someone who actually has a visual impairment that makes a world of difference” A DRC professional said. “ I really relied on the students to assist me, students educating me”.

Professionals who had visual impairments also described the importance that they felt their personal knowledge of visual impairment had on helping them understand and address the needs of others with visual impairments. For example:

“ I have a visual impairment and [a family member] is a person who [has a visual impairment]. The whole vision part is nothing to me. So I can take it with stride. So I just work with the person, and that helps a lot. . . . I’m on a couple of internet groups l. . . . for blind computer users so when I get stuck I have somewhere I can go to;;; And a lot of our staff is visually impaired as well.’

One DRC professional described connecting two students with visual impairments and then helping them get involved with other non-disabled students in their major as a way of building social connections, non-disabled peer support, and communication “I think making sure that they are connected. . . and so we connected those two students and then we connected other students that in social work given the nature of the population that is drawn to that particular program to kind of be peer mentors”

Other possible models of disability. Finally there was an approach that emerged that did not fit well into any of the three models described in this study. This approach, in fact, appeared to take and combine elements of all three models of disability. The following statement embodies this fourth perspective:

. . . being able to explain what you need. . . . and educate; being able to talk about it; being able to teach a guide, so that it's not a weird thing, helps a lot. Being able to be straight forward with everybody: your family, your friends, that are part of your daily life. The confidence and the knowledge. That helps a lot

In this case, the visual impairment itself was acknowledged as a barrier (medical model), as were the attitudes of others (social model), and the solution was seen to be the creation of a dialogue between the individual with visual impairment and those without visual impairments who define the environment (political model). The responsibility for creating and guiding this dialogue or even the opportunity for this dialogue is placed however on the individual with the visual impairment (medical model).

Origins of Practice Methods

Through the interviews all forces of isomorphism discussed by DiMaggio and Powell (1983) were evident: coercive influences, professional organization publications and conferences, vendor presentations, and observations of colleagues and other professionals were mentioned as influential. A DRC professional's response summed up the array of influences that she found were influential for her in forming her practices:

Well , of course we are a compliance based program so a lot of regulations have to play a part, in what we do, but I don't think, I don't like to think that that's the motivation for what we do I like to think that that's just part of the job that's a given. But think certainly my professional organizations that I belong to

something like that so you know I have colleagues that I can consult with. And I frequently do, and list-serves that I belong to that I contribute to that I can also post inquiries. So having that collegial network is essential because every time you think you've seen it all, something new comes through the door: because someone else may have encountered that same situation- instead of reinventing the wheel

And another DRC professional said:

I read the laws. I belong to several organizations. I've networked with a lot of people. Taken classes where I can and just kind of kept up with it from day one, watching the courts, I very good in research. I am very good at researching or finding people to do that so it's more accumulation over the years of experience. I do a lot of reading internet searching, I look at the laws, I've read all the laws pertinent. I will go on the government sites. I will look at professional organizations, I will read literature there, I will look at court cases and see what they are doing. I am in contact with a lot of professional organizations for deaf and hard of hearing, sight impaired, developmental disabilities, many of those are my friends. So I have quite a background to draw from when I need something.

Supervisory personnel were also mentioned as influential by some, but supervisory personnel were influential mainly to the degree with which they did not

interfere with the judgment and experience of the professional and supported the efforts of the professional. For a DRC professional put it this way:

..... I have great support..... I've been given just about free hand to do what I want. Which is unusual but then I've have earned their trust over the years. I totally set up my own department.

As was found through analyzing the responses to the survey, personal professional experience was most often mentioned directly or implied by the interviewees in one way or another as the most influential. At the same time, for many of the participants, personal professional experience seemed to include personal experiences both professional and personal, the experiences they had working with and collaborating with coworkers, and research they did on their own through internet resources. For example, one rehabilitation professional stated that she learned about most effective practices through-

Basically trial and error. I have a personal visual impairment.... And a lot of them come from life experiences and has a lot to do with it. ... just trial and error, research, figuring it out as I go. I'm on a couple of internet groups for blind computer users so when I get stuck I have somewhere I can go to: And a lot of our staff is visually impaired as well. So you get a lot that way. So I go just next door. ... My [colleague]teaches [assistive software]. We collaborate all the time. She's a great resource as well.

And another rehabilitation professional said:

Well my [family member is] legally blind. . . . Some of those I picked up and am familiar with because of that. . . Just working with my [family member] and things because anything that's printed she needs to have enlarged. I have used the internet and probably the clients.

And a DRC professional said: "I learned a lot of it hands on training myself Buying the translation software, buying the embosser, those types of things,"

An influence that did not clearly fall into the predetermined categories established for the survey was described by one DRC professional as follows:

I am grateful for but I really relied on the students to assist me with that you know they were very bright, very capable, young individuals who knew what they needed and so if I have an expert that's right across the desk from me, that's who I'm going to go to. So it was a very team effort. In terms of students educating me and I educating the student as to what resources we had available and coming up with ways to make sure that things were accessible. To be honest with you it's made just logistical sense.

The force of influence described here relates to personal experience but also clearly originates with clients or students. This appeared to be an area of influence that could be aligned closely with the political model in that it suggested a partnership between the professional and the client with a blurring or even an inverting of historical relationships of power and control that was implied in the forces of influence included in the survey. This force of influence was also suggested in a response from a rehabilitation professional when she was asked what influenced practices she chose to use to help individuals with visual impairments make and maintain social connections. She described connections her organization maintained with consumer organizations and connecting themselves and client to these organizations:

We definitely connect our clients with the local consumer organizations. That's a big part. They hold some of their meetings here. So we stay in very close contact with that. Community sources have a lot: like churches and neighborhood organizations because we get pretty close to those here. It's mainly just getting out, and seeing what's out there. So we go to all the events that have to do with consumer organizations.

Environmental and Attitudinal Barriers

Participants in the interviews identified both environmental and attitudinal barriers. In general environmental barriers were viewed as something to overcome or avoid and attitudinal barriers something that needed to be changed. Environmental

barriers that participants talked about were mostly related to orientation and mobility such as public transportation and finding viable community transportation options, campus layouts, and the availability of sidewalks. Other environmental barriers included the design of equipment such as telephones, the format of documents, and the availability of technology. With the exception of technology, participants discussed addressing these barriers in terms of either building client skills or avoiding the situations where there were environmental barriers entirely.

When participants began talking about barriers that were associated with the attitudes of others, they expressed a great deal more frustration and viewed attitudinal barriers as a problem that resided clearly within society and was entirely separate from the individual with a disability. Some of the participants addressed this issue by reaching out and trying to change attitudes, some found they had addressed it by creating groups in which individuals with visual impairment and others could work together as peers towards common goals. A DRC professional put it this way:

You know I can give you an example this semester we had ... students w[ith visual impairments] and we connected those ...students and then we connected [them with]other students in [the same program].....[to] be peer mentors and its turned into more of a friendship than actually the mentor portion now. So I think they have common goals, and they have common aspirations, and they have a network of support with their peers so that's worked out very well.

At the end of one interview, after the prepared questions were answered, the participant began describing the effects of the rural environment on services in a way that suggested that the climate in which this professional worked was very influential in the practices employed and deemed appropriate and potentially fruitful. This practitioner expressed an eagerness to address environmental and attitudinal barriers in a way entirely consistent with the social model of disability but felt that arming her clients with the skills and technology they needed was likely the only approach that would be productive in the environment where the individuals with visual impairment was likely to have to operate. This response suggested an additional force of influence beyond those choices that were provided in the survey. This force perhaps could be environmental attitudinal climate.

There were no access concerns that were mentioned by the participants in the interviews that were not also covered in the survey. This result was a little surprising in that a number of additional access concerns were mentioned by DRC and rehabilitation professionals as reported in the literature.

Inter-observer Agreement and Member Checks

Before being coded, transcripts were offered to the respective participants in accessible format as requested. Participants were encouraged to comment on the accuracy of the transcript and make adjustments where they felt the transcript did not reflect what they were trying to express.

To address the concern of coding reliability in the present study, a transcript was randomly selected and coded separately by me and another colleague. Agreement

between of the results obtained by these two separate observers were quantified and reported as percent agreement. This procedure was more fully described in Miles & Huberman (1994) and will be a process similar to one used by Mastonati (2010). In order to reduce bias and increase external reliability, there was no communication about coding approaches between myself and the colleague except that provided in the methods section. Consensus on meaning was not negotiated. Results are reported here with the associated reliability expressed in percent agreement in a manner similar to what has been recommended for single subject studies (Horner et al., 2005). Generally, inter-observer agreement for identifying the model of disability that seemed to be informing statements by the interviewee was approximately 85%: 11 out of 13 statements that were classified. In 23% (3 of 13) of statements, multiple models were identified. In the case where multiple models were identified the secondary model was coded differently between observers. Inter-observer agreement for origins of practice formation was almost 86% (6 out of 7) for those statements that were rated by both observers. For two of the statements one observer identified a secondary influence when the other observer only identified a single influence. One statement was identified as suggesting an influence for the origin of practice by each observer that was not identified by the other.

CHAPTER 5 - DISCUSSION

Answers to the Research Questions

The responses of the 57 survey participants and 5 follow up interviews provided the basis for the answers given in this section to the research questions posed in this study. The proposed answers should be viewed as tentative because of the study limitations that will be discussed at the end of this chapter.

The first research question for this study was: How were the perspectives on disability held by individuals with visual impairments, rehabilitation workers, educators, and employers related to the post-secondary educational and employment outcomes for individuals with visual impairment? The results of this study suggested where professionals, in addressing access needs, applied practices that can be aligned with the social model of disability, the disparity between individuals with visual impairments and the general population in rates of employment and post-secondary degree attainment, while still high, was lower than when practices were more consistent with the medical model. Practices that were associated with the higher rates of relative employment were those that addressed technology and print access using techniques that could be aligned with the social model of disability. The practices that were found to be associated with the higher rates of relative bachelor's degree attainment were the practice that could be aligned with the social model of disability and addressed technology concerns, and the practice that could be aligned with the political model of disability and addressed orientation and mobility access concerns.

Other studies that have quantitatively linked practices to outcomes also suggested that technology (Capella-McDonnall & Crudden, 2009; Leonard, 1999) access to print materials (Goertz et al., 2010; Leonard, 1999; Unger et al., 2005), and orientation and mobility skills (Capella-McDonnall, 2011; Goertz, et al., 2010; Leonard, 1999) were associated with positive employment and/or educational outcomes. Though Unger et al. (2005) used a social model perspective in their review, the method of addressing access concerns through specific practices related to specific models of disability was not established in this study or any of others that I found.

The only practice that was associated with higher expenditures per client was the practice that was aligned with the medical model of disability and addressed mobility concerns. The practice that addressed orientation and mobility issues using the medical model, however, was not positively correlated with an increase in the relative employment or bachelor's degree attainment for individuals with visual impairments.

The second research question was: How was the application of the three perspectives (medical, social, and political models of disability) by stakeholders associated with legislative mandates, the influence of professional networks, local advocacy, and the imitation of the practices of individuals in similar situations? Using principle components analysis with optimal scaling, I found that the patterns of influence for practice initiation were similar for practices that could be aligned with the political and social models of disability. The pattern of influence for the initiation of practices that could be aligned with the medical model of disability was different than for practices that could be aligned with the political and social models of disability. In general, when

professionals indicated that they had used practices that could be aligned with either the political or social models of disability they were more likely to indicate that some form of outside influence was the source for them to learn about the practice than when they applied a practice aligned with the medical model. Of the outside influences, laws and regulations, and supervisory influences were identified as more influential than the interaction with other professionals or professional organizations, especially for practices that addressed print access and technology access concerns.

The answers to the two research questions suggested that when practitioners applied interventions that could be aligned with the social model of disability, the interventions were more effective in reducing the disparity in employment and degree attainment between individuals with visual impairments and the general population. Because professionals indicated that the primary instigator for all professional practices was personal professional experience, regardless of how practices could be aligned with model of disability, it appeared that influencing the initiation of specific practices of professionals through outside influences might be difficult. At the same time, it was clear that outside influences were more important in causing professionals to initiate practices aligned with the social model of disability. And practices that could be aligned with the social model of disability were associated with increased parity between those with visual impairments and those without visual impairments with respect to employment and educational participation.

Of the outside influences investigated, it appeared as though laws and regulations were cited most frequently as the most influential with regard to the practices that

addressed technology using the social model. As a result, policies and regulations that require solutions related to the social model, and making these policies and regulations known, may be important in ultimately encouraging practices aligned with the social model and improved post-secondary educational and employment outcomes for individuals with visual impairments.

Patterns of Professional Practice

Frequencies for the Application of Specific Professional Practices

Five access concerns were addressed in this study: 1) the attitudes of others towards disability and visual impairment, 2) orientation and mobility, 3) access to printed materials, 4) building and maintaining social connections, and 5) the use of technology. The finding that respondents to the survey applied professional practices that could be aligned with the medical model of disability more frequently than practices that could be aligned with either the social or political model of disability was roughly consistent with what was found in studies reported in the literature as detailed in Table 3. Table 3 showed that 61% of practices reported in the literature could be aligned with the medical model, 31% aligned with the social model, and 8% with the political model. The respondents to the survey in this study indicated that the frequency with which they applied practices was more evenly distributed across models of disability than found in the literature. At the same time, it was found that respondents to the survey said that when it came to addressing access needs related to social relationships and skills, respondents applied the practices that could be aligned with the social and political models of disability more frequently by respondents than the practice that could be

aligned with the medical model. All of the individuals who were interviewed talked, at least to some extent, about the attitudes of others as being a barrier, and indeed indicated frustration with these attitudes and perceived that the problem resided within those in the general population and not within the individual with visual impairment. Yet at the same time respondents indicated that they used the practice that could be aligned with the medical model when addressing the attitudes of others. In this practice the individuals with visual impairment essentially were given skills and encouragement so they are not discouraged by the attitudes of others.

Participants were found to have indicated that they used the practice that could be aligned with the political model for addressing access through technology less frequently than practices that could be aligned with the social and medical models. This suggested that professionals were using their knowledge and experience to guide the focus of their efforts to improve access through technology, and that they were less frequently bringing clients into the discussion. This conflicted to some degree with the opinions of the professionals who were interviewed for this study. In fact the interviewees indicated that they had found the knowledge that they had gained about technology through their clients or individuals with visual impairments was extremely valuable. This finding combined with the fact that the practice that addressed technology that was aligned with the social model was predictive of positive outcomes suggested that bringing individuals with visual impairments into the discussion regarding appropriate technologies for the work place and classroom may strengthen the effectiveness of the practice of addressing technologies through the social model.

Effects of profession and visual impairment on frequency with which specific practices were used. Generally rehabilitation professionals and teachers for students with visual impairments tended to apply practices that could be aligned with the medical model of disability with higher frequency than employers and DRC professionals. Conversely, rehabilitation professionals and teachers for students with visual impairments tended to apply practices that could be aligned with the social model of disability with lower frequency than employers and DRC professionals. Teachers for students with visual impairments of course view their role as being teachers, and it was found through the interviews, that the rehabilitation professionals often viewed their role as instructional as well. Instruction is, by definition, focused on improving the skills of individual students and was therefore inherently more aligned with medical model thinking. On the other hand, it could be argued that the role of employers and human resource professionals, and DRC professionals was to develop and maintain a system of people, facilities, and processes that optimizes the ability of the system to carry out its mission. Therefore, the focus of employers and DRC professionals would be more on both the individual and the system in which that individual must function, and suggested that aligning practices with a social model of disability would resonate with the role expectations of employers and DRC professionals. These findings contradicted that which was found in the literature and summarized in Table 3. The roles and responsibilities described by DRC professionals during their interviews were more broad and varied than the roles described by rehabilitation professionals, which suggests that

there are more options for interventions by DRC professionals on behalf of individuals with visual impairments.

The one exception to this was practices that addressed access concerns related to social connections. In this case, rehabilitation professionals applied the practice related to addressing concerns related to social connections that were aligned with the social model with a higher frequency than teachers for students with visual impairment and DRC professionals. This suggested that rehabilitation professionals saw it as their role and were more frequently attempting to contact and communicate with individuals, organizations, or family members in an effort to advocate for and support social connections and integration in the community or at work or school. This view of the rehabilitation professional's role was reinforced during the interviews. Employers, teachers for students with visual impairments, and DRC professionals that responded to the survey may not have seen it as their role to help individuals with visual impairments make social connections within organizations. During the interviews, however, DRC professionals indicated recognition of the importance of social connections and described practices that facilitated these connections.

In general professionals with visual impairments were found to apply practices that addressed the various access concerns with the same frequency as those without visual impairments. The exceptions were practices that addressed the attitudes of others toward people with visual impairments and practices that addressed social connections. In both these cases professionals with visual impairments indicated that they used the practice that could be aligned with the political model of disability more frequently than

professionals without visual impairments. The finding that they used practices that could be aligned with the political model more frequently suggested that professionals with visual impairments felt it was important that individuals with visual impairments be involved in developing approaches to address these concerns in institutions and the community more than professionals without visual impairments. Perhaps professionals with visual impairments felt that practices developed to address attitudinal concerns would be less effective without the input from individuals with visual impairments. Another interesting result was that professionals with visual impairments reported applying the practice for addressing the attitudes of others using the medical model more frequently than professionals without visual impairments. This practice essentially was designed to suggest that the individual with visual impairments learn to deal with negative attitudes that may exist by ignoring or overcoming them. The professionals that were interviewed for this study who indicated that they had a visual impairment themselves reinforced these ideas by expressing frustration with the attitudes of others toward individuals with visual impairments and projecting a sense of isolation and resignation and, as result placed a premium on self-reliance.

Factor extraction and reliability for frequency of practice. Factor analysis was used in this study to determine the degree with which the variables designed for the survey represented latent variables: medical model informed practice, social model informed practice, and political model informed practice. Generally practices aligned with a particular model of disability had the highest loadings onto factors which contained the other practices formulated to align with the same model of disability. This

suggested both that the practices as described in the survey were formulated consistently with regard to model of disability and that the relative frequencies with which professionals applied practices were dependent on the view they held regarding disability for the purpose of addressing access issues. Overall practices that aligned with the social model loaded most strongly on the first factor extracted and the first factor extracted accounted for 34.3% percent of the variability in the frequency with which all practices were used.

The frequency with which practices that addressed social connections was used was not found to be dependent on model of disability and did not follow a similar pattern as practices that address other access concerns using similar models of disability. In fact, practices that addressed social connections using both the political and social models of disability loaded into the factor that otherwise contained practices formulated using the medical model of disability. This suggested that the frequency of application of practices related to addressing social connections followed similar patterns of frequency as practices addressing other access concerns using the medical model. Because social connections inherently involve the participation of both the skills (medical model) and wishes (social model) of individuals with visual impairments and the wishes and interests of another (social model), professionals may have felt that it was necessary to apply practices that address each of these perspectives and areas of need in a coordinated way, and therefore applied practices in an accordingly balanced manner with regard to frequency. The responses during the interviews suggested that

professionals approached issues related to social connections with flexibility, and their approach was calibrated based on individual situations.

The frequency with which the practice that addressed orientation and mobility concerns using the political model aligned with the frequency of practices that addressed access concerns using the social model. The pattern of the factor loading for frequency of application for the practice that addressed orientation and mobility concerns that could be aligned with the political model of disability was similar to the loading for the frequency of use of the practice that addressed technology access concerns that could be aligned with the social model of disability. The similar pattern suggested that the frequencies with which these two practices were applied followed similar patterns among professionals. In other words, professionals who reported frequently advocating for the institution of accessible technology also tended to frequently seek to include individuals with visual impairments in discussions around designing accessible and useable physical environments.

Patterns of Employment and Educational Outcomes

There were only a few practices that were identified as being significantly correlated with a lower disparity between employment and bachelor's degree attainment for individuals with visual impairments relative to the population. These practices included the practice that addressed print access using the social model, technology access using the social model and practices addressing orientation and mobility or environmental access concerns using the political model of disability. In addition both aggregates that represented the frequency of use of practices related to the social model

of disability accounted for approximately 14% of the variability in relative educational and employment outcomes, and none of these practices were associated with an increase in expenditure per client. All of the professionals interviewed identified technology as an important factor contributing to the successful participation in employment and educational opportunities. They discussed the importance of the individual with visual impairment being able to use technology, but also appreciated the powerful positive effect of having the right technology available in the environment.

Because of the interconnectedness of college and employment, all stakeholders were grouped together to analyze the correlations between frequency of practices and educational and employment outcomes. Rates of employment are closely correlated with educational attainment both nationally (Bureau of Labor Statistics, 2013), and for the states selected for this study (Cornell, 2010). Also, the growing connection between colleges and business can have a strong influence on the practices of both. This has been shown to be most apparent when professionals in colleges view their role as preparing students for work (Deil-Amen & Rosenbaum, 2004; Shaw & London, 2001), but also can be the case when the connection between employment and college is not explicitly acknowledged by the institution (Delucchi, 1997).

At the level of the individual, people go from school to work, and work to school, and often work and go to school at the same time. Experiences, expectations, and skills generated in one setting, college or school for example, transfer to the next, employment, and visa-versa. In fact, teachers for students with visual impairments, and rehabilitation,

and college disability resource professionals may work with the same individual simultaneously.

Analysis of the interview and survey data from this study, however, suggested that there might have been distinct differences in the nature of the practices between professions. In the interviews, rehabilitation professionals discussed their work in the context of finding people employment, and DRC professionals discussed their work in terms of access to college. In addition, analysis of the data from this study showed that rehabilitation professionals used practices aligned with the medical model with higher frequency than DRC professionals, and DRC professionals used social model aligned practices with higher frequency than rehabilitation professionals. In fact, because of this, and the association between social model practices and higher relative educational and employment outcomes for individuals with visual impairment, data could be analyzed in such a way as to show that the work of DRC professionals was more predictive of employment and educational attainment than that of rehabilitation professionals. However, this type of analysis and conclusion would disregard the interactions and collaborative and complimentary roles that the various stakeholders may be playing, and lead to erroneous conclusions.

Although it is beyond the scope of this study, the results of this preliminary line of inquiry suggested that further exploration of the interlocking roles and responsibilities of stakeholders would be valuable. Further research should be undertaken to gain a better understanding of how the practices of one group of stakeholders mediates or moderates the impact of practices of other stakeholder groups. For example, do rehabilitation

professionals take the critical responsibility of acquiring specialized equipment and providing training for the individual with visual impairment (medical model), thus freeing DRC professionals from the need of providing this service and allowing them to focus more on environmental access and access to materials (social model)? Or do the DRC professionals try to create seamless access to an education (social model), that then allows the rehabilitation professional to focus on a few compensatory skills (medical model) that allow the student to use his or her newly acquired education successfully for gaining and maintaining employment? Clearly further theoretical work needs to be done before trying to partition the impact or influence of the practices of specific professions on post-secondary outcomes.

Origins of Influence on Professional Practice

Nearly 65% of the time, respondents indicated that they initiated a professional practice because of personal professional experience, while only 3.4% indicated that professional conferences and publications caused them to initiate given practices. During the interviews, participants often described the learning that took place through interactions with other professionals as being part of their personal professional experience. If a professional learned a practice as a result of an interaction with a peer, he or she might have considered this learning to be part of his or her personal professional experience, when in fact, this type of personal professional experience has many features of normative processes in that the professional initiated a practice as a result of interactions with others in their profession. Through this informal collaborative process the professional forms his or her practice methods, and at the same time affects

the practice of others. As time goes on, practices that are deemed effective are retained, and those that do not work disappear. This type of professional practice formation is not a result of purely personal experience because of the interactions with others, but it also is not necessarily normative or mimetic, in the sense that DiMaggio and Powell (1983) discuss it. There is a mutual learning that is taking place, and practices evolve through an iterative, collaborative process combining characteristics of normative (for interactions between professionals in the same field), mimetic (for interactions between professionals in different fields), and personal professional experience. This finding suggested that research designed to have an action or community-based component may be effective in introducing new practices or modifying current practices.

Furthermore it would be useful to conduct research that explored the differential impact of coercive, normative, and mimetic influences on individuals in the different stakeholder groups as a whole. It would also be helpful to look at how personal professional experiences interact with these forces of isomorphism to create and define the interlocking professional roles and responsibilities assumed by the different stakeholder groups. In this way, the influence of the mechanism by which forces of isomorphism that were identified by DiMaggio and Powell (1983) and personal professional experience generated through local day to day interactions with peers and clients influence institutions as a whole may be elucidated.

In general, the analysis of the sources of influence suggested that the pattern of influence for practices that could be aligned with the medical model were different than those associated with the social and political models of disability. Participant responses

suggested that those practices that could be aligned with the medical model were more likely to be known and originate from personal professional experiences than practices that aligned with the social model and particularly, the political model. The finding that specific and aggregated practices that were associated with the social model of disability were associated with positive educational and employment outcomes and that the institution of these practices was associated more with influences beyond personal professional experiences suggested that outside influences may be important in improving outcomes for individuals with visual impairments. Although the influence of laws and regulations did not reach significance, the results from this study suggested that of the external influences, laws and regulations may have been the most influential in initiating practices of that could be aligned with the social model of disability and subsequently associated with positive educational and employment outcomes.

The data generated through the interviews reinforced the survey findings and added nuance and depth to understanding the results from the survey. At the same time, some of the answers provided during the interviews revealed perspectives on disability that informed practice that were not captured by the survey. For example, a model of disability that was not included in the survey, but began to emerge from the analysis of the interview responses was a model that acknowledged and considered barriers related to client characteristics, negative attitudes of others, poorly designed environmental features, and alienation from decision making together. This framework could be viewed as a balanced model. The balanced model in effect would be a model that developed solutions based on a holistic and pragmatic view of where barriers exist and where power

and responsibility lie. A model that contained some of these ideas was discussed by Dewsberry et al. (2004) in what they called the “Anti-social model.” In fact, the analysis of the survey data suggested that this balanced model may have been more prevalent than individual models. For example, in response to personal professional experiences, most practitioners indicated that they employed practices that could be aligned with all three models with similar frequencies. The balance of practices aligned with all three models within this approach may have depended on individual situations as much if not more than on an individual professional’s personal perspective on disability. The balance between these models may more accurately predict outcomes than the influence or prevalence of any one or set of practices aligned to any one model of disability. The idea that a mixed or balanced model may exist and be positively associated with employment and educational outcomes was reinforced by the factor analysis that showed that practices that could be aligned with different models of disability landed onto the same factor, and that the factor represented by these varied practices was correlated with positive outcomes as well.

Another finding uncovered through analysis of the interview data was related to the origins of influence that professionals identified as causing them to initiate particular practices. The force of influence that was described in the interviews but was not included in the survey, was the influence of clients or students. Although respondents may have included this under the influence of personal experience, the influence of clients and students for initiating practice should, in light of political model thinking, probably be a category of influence in of itself. Acknowledging clients as a source of

influence for practice formation suggests a partnership between the professional and the client, and a blurring or even an inverting of historical relationships of power and control which is, in fact, an important theoretical component of the political model of disability. Including this source of influence along with the others adds an avenue of influence for individuals, consumers, and advocacy groups comparable to professional organizations, laws and regulations, and organizational supervision.

In summary, a key finding of this research is that addressing technology access concerns by advocating for more accessible technologies for use in the workplace and in college may be associated with greater participation in employment and higher education for individuals with visual impairments. Having practitioners focus additional energies on the creation and promotion of accessible environments may be more effective than expending time on teaching individuals with visual impairments more adaptive skills.

Policy, laws and regulations may be an effective way to encourage professionals to begin instituting these practices for addressing technology access concerns. Although the data gathered in this study was too low and sparse to conduct a valid path analysis or structural equation model, the results from the study did imply a possible path to reducing the disparity between the employment and post-secondary educational outcomes of individuals with visual impairments and the general population. Of the outside influences investigated in this study, laws and regulations appeared to me the most influential in causing professionals to implement practices that could be aligned with the social model of disability and the frequency with which professionals used practices that

could be aligned with the social model of disability were positively correlated with positive outcomes.

Limitations

This study had some limitations and, as a result, any conclusions should be viewed with these limitations in mind, and as an opportunity to refine these results with further research. First of all, the number of participants in the survey was low and the number of participants from each stakeholder group was not balanced. Participants were recruited from a diverse but limited number of jurisdictions. Additionally, because all of the participants were volunteers and some recruited through snowball sampling, the individuals who did participate should not be considered a random sample and representative of all professionals and stakeholders in any given state or across all of the 50 states in the country..

Another limitation was that the employment and degree attainment rates were before the study was conducted. The employment and degree attainment rates could have changed in the time between the time when the employment and educational attainment data was collected and the time when the survey and interviews were conducted, however, less likely that the relative rates of employment between the jurisdictions in this study would have changed significantly.

Also, there were a few limitations associated with using the 4-year college graduation rates and employment for measures of post-secondary success. First of all it privileges these outcomes over less measurable but maybe equally important outcomes

such as independent living or general community participation. In addition, people are mobile and may not live in the same area in which they went to college.

In addition, the survey was designed around three models of disability and five access concerns. Although the models of disability were selected because of their prevalence in the literature, other frameworks for approaching access concerns and developing professional practices may have existed, as was discovered through the interview process. Similarly, as discussed in the literature review, professionals have identified many more access concerns than those that were explored in the survey and offered the opportunity to research a broader array of access concerns and perhaps access concerns that might be important but less well known.

Finally, the focus of the survey was on trying to tease out external influences that formed professional practice when in fact it appeared that personal experiences were dominant. As a result, the survey may not have provided the opportunity for participants to accurately express the experiences that influenced the formation of their professional practice in an appropriately nuanced manner. Though the data provided by participants who were interviewed helped fill in these gaps.

These limitations, however, suggest areas for future research. Further research should try to include more participants and continue to try to get greater participation from employers in particular and cover a wider geographical area. Also, further research should be conducted to understand what professionals mean when they indicate that they initiated professional practices as a result of personal professional experiences. What are the types of experience that are the most influential and how do interactions with other

professionals and clients on the job influence the formation of practices? The fact that personal professional experiences were found to be so important in the formation of practice suggests an important feedback loop where professionals monitor the results they achieve with clients and adjust their practice accordingly. Understanding the mechanisms through which this happens and what framework professionals use in the evaluation of their effectiveness could be most valuable in understanding how professional practice forms and can be changed, and new practices can be introduced into or better yet perhaps become an integral part of personal professional experience and part of an formative evaluation feedback loop.

Proposed Structural Equation Model

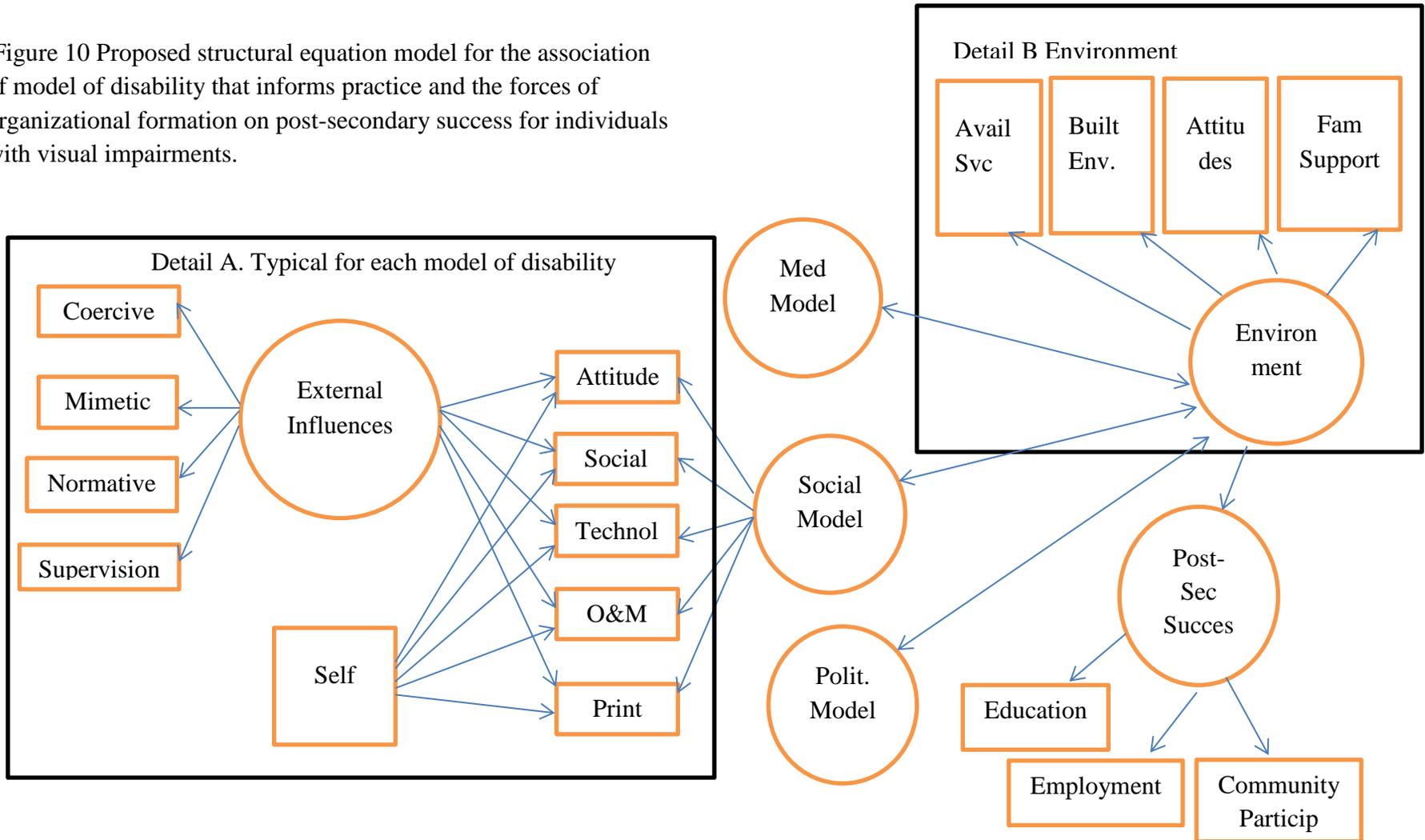
Although the data set from this study was far too small to test a structural equation model, the results suggested the form that a model could take. Creating this model helps with understanding how the different components of this study worked together and what parts of the model were discovered as a result of the study. The model also offers a framework for testing the results found in a similar study if it were to take place in a larger context. More importantly, the model could also be a valuable tool to begin a community-based participatory research project, and facilitate the identification of important participants and critique the underlying structure of the relationship between professionals, society, and the individuals around whose needs these structures have developed. Figure 10 shows the proposed model. Detail A shows the part of the proposed structural equation model that is associated with the latent variable for the social model of disability. The latent variables for the medical and political model of

disability would be the same as for the social model; only the manifest variables would be associated with the respective medical and political models. Detail B shows a set of influences that might be associated with, and important to include in the model, but which were not measured in this study. These influences were those that relate to the environment, including the accessibility of the built environment, existing attitudes towards visual impairment in the local community, and the availability of services in the local community. The existence of environmental factors as an influence was an important result that emerged from the interviews. It was clear from the interviews that the practices of professionals were influenced by the nature of the attitudes and built environment in which they practiced. Inherently inaccessible environments were recognized when they existed. Professionals responded to these inaccessible environments in different ways, confronting them in order to change them (social model), or resigning themselves to their existence and building up client skills to overcome them (medical model). In this way it appeared as though the environment moderated model use. Also, the latent variables represented by models of disability may be used simultaneously by individual professionals, but may be differentially effective depending on environmental factors. For example, if the built environment was inherently accessible, practices that were aligned with the social model might not be as effective for improving outcomes as these practices would be if the built environment was inherently inaccessible.

The aspirations of one individual may be different than those of another. So it also should be noted that four-year college graduation rates and employment may not be the

only important measures of post-secondary success. Certainly community participation, self-determination, family participation, and overall feelings of well-being should also be measures incorporated into the model. Success in one area may compensate for lack of success in another, and success may be measured as the sum of a number of factors that could be traded off to maximize total success for an individual. An individual may view employment alone as success and get little satisfaction from education, or may get little satisfaction from either education or employment but find real value in community participation. These tradeoffs made by the individual with visual impairment would also impact on how correlated a particular model or even a particular practice is to overall post-secondary outcome and deserve future investigation.

Figure 10 Proposed structural equation model for the association of model of disability that informs practice and the forces of organizational formation on post-secondary success for individuals with visual impairments.



Finally, researchers in the field of public health in general (Cashman, Adeky, Allen, Corburn, Israel, Montano, Rafelito, Rhodes, Swanston, Wallerstein, & Eng, 2008; Minkler, 2005) and disability in particular (Stone & Priestley, 1996) have found important links between stakeholder participation and the utility and validity of studies. Having been, at one time or another, an orientation and mobility specialist, a teacher for students with visual impairments, a habilitation specialist, and a DRC professional, I did not feel like an outsider relative to the participants who so generously provided me with the data that was the backbone of this research. Yet maybe also it is for this reason that I felt the absence of my peers' input in the phases in which I did not formulate a way to facilitate their participation, and therefore I am all the more grateful for the selfless generosity with which they participated in the provision of data. Thus an area of future research could take advantage of the finding that personal professional experience was so important in forming the respondents professional practice and more actively seek to include participant in future studies in formulating the research questions and interpreting and determining the implications and applications of the results.

In summary, the implications of this research were that: 1) creating accessible environments may be more effective than teaching adaptive skills for improving post-secondary outcomes related to post-secondary education and employment; 2) research with a community-based action research component may be the most influential for changing professional practice; 3) the balance between models may more accurately predict outcomes than the influence or prevalence of any one or set of practices aligned to any one model of disability; 4) the application of practices that focused on creating

accessible environments may be most driven by laws and regulations outside of personal experience; and finally 5) further research is necessary.

APPENDIX A-SURVEY QUESTIONS

1. Are you 18 years old or older? y/n

If the respondent indicates that they are under the age of 18 in question 1, they will be taken directly to the end of the survey where the following message will appear:

2. Consent

3. Pick the description that most closely or that best describes your occupation.

(Employer/Human resource professional, College Disability Resource Center Professional, Rehabilitation professional, Teacher for students with visual impairments (K-12), Other)

4. Requires response to continue: In which of the states listed below are you currently working (pick one)? (Names of 6 states selected for study listed)

5. Do you consider yourself to be a person with a visual impairment? Y/n

Before answering the appropriate set of questions below the respondent will be shown the following statement:

There are 15 core questions in this survey.

For each of the 15 questions there is an associated follow up question.

The core question will ask you about the frequency with which you implement a particular approach to establishing and maintaining accessible employment or higher education environments for individuals with visual impairments. The follow up will ask where you think the idea for the approach came from.

Thank you for your participation.

Questions

Example for those respondents who indicated that they were rehabilitation professionals.

1. I make sure that clients get training so that they are proficient in using specialized access/assistive technology.
2. I do outreach to employers and colleges to ensure that they put printed materials in formats that can be accessed using typically available technology.
3. I teach my clients to develop the ability to overcome and ignore negative attitudes that they may encounter in school and in the workplace.
4. At our agency we use an advisory group of consumers to provide guidance on ensuring the most effective approach to the use of technology.
5. I do outreach to employers and colleges to ensure that they purchase and use technology that is accessible to all regardless of ability or disability.
6. I role play social and workplace scenarios to help clients develop the interpersonal skills they need to succeed in the workplace and community.
7. I make sure that clients get training so that they are proficient in orientation and mobility skills, or have access to special transportation services.
8. At our agency we use an advisory group of consumers that provides us with guidance on effective approaches to help clients access print on the job or at school.

9. I do outreach to employers and post-secondary educational institutions to help change any negative attitudes that may exist towards people with disabilities including visual impairment.
10. I meet with employed individuals with visual impairments to get feedback on efforts to change any negative attitudes regarding people with visual impairments, in the business community and on college campuses.
11. I do outreach to employers and colleges to ensure that the design of buildings and workspaces are physically accessible and comfortable to travel through for the traveler with visual impairments.
12. I do outreach to help employers and educational organizations set up mechanisms for individuals with disabilities to provide feedback on environmental barriers and ADA compliance.
13. I encourage clients to look for existing social networks that provide opportunities for them to have social interactions outside of formal work and school settings.
14. I look for opportunities for clients to develop social networks in areas that are of interest to them, and to which they bring unique and valued talents.
15. I make sure that clients get training so that they are proficient in accessing printed content regardless of the format in which it is presented.

Response options for rehabilitation professional

(Never, occasionally, often, almost always)

After each of the above questions posed to rehabilitation professionals the following follow up question will be asked:

And what is the main reason that you did or did not begin to employ this practice?

(Because of laws and regulations; Because of what I have heard at professional conferences, read in professional publications, or seen colleagues do; Because of what I have seen rehabilitation specialists do for clients with other disabilities; Because of the directives and ideas promoted by my supervisor or the agency director; Because of my own professional experience; Because I have not thought of it.)

APPENDIX B – INTERVIEW QUESTIONS

Interview Questions - Rehabilitation Professional (example)

(Note: These questions are not grouped by model of disability. The interviewee was encouraged to frame practices in terms that they were most familiar with and offer the potential for new models or combinations of models to emerge)

1. Please, if you would, start off by describing the agency where you work and your current responsibilities?
 - a. Is it a private or public organization?
 - b. How long have you worked there?
 - c. Can you describe a little bit what you do on the job for me?
 - d. What are some of the most interesting things about your job?
 - e. What are some of the most difficult things about your job?
2. What are some of the things that you do that you feel are most effective so that individuals with visual impairments are successful on the job or in college?
 - a. Can you give me a specific example for one of your clients?
3. How did you learn about or what caused you to begin using these practices?
 - a. Can you give me a specific example for one of your clients?
4. What are some of the things that you do that you feel are most effective so that individuals with visual impairments can access printed materials on the job or in college?
 - a. Can you give me a specific example for one of your clients?
5. How did you learn about or what caused you to begin using these practices?

6. What are some of the things that you do that you feel are most effective so that individuals with visual impairments are successful travelers on the job or in college?
 - a. Can you give me a specific example for one of your clients?
7. How did you learn about or what caused you to begin using these practices?
8. What are some of the things that you do that you feel are most effective so that individuals with visual impairments are successful in their interpersonal relationships on the job or in college?
 - a. Can you give me a specific example for one of your clients?
9. How did you learn about or what caused you to begin using these practices?
10. What do you feel are the main things that influence your approach to your profession? (Laws and regulations, professional organizations or contacts, other organizations or professions, local leadership)

APPENDIX C – TABLES AND FIGURES

Tables

Table 13 Correlations between variables in the outcomes data set (Cornell 2010)

	GenEmp	ViInc	GenInc	ViHS	GenHS	ViBS	GenBS	ViPov	GenPov
ViEmp	.626**	.276*	.118	-.298*	-.201	.366**	.034	-.682**	-.540**
	.000	.048	.404	.032	.154	.008	.812	.000	.000
GenEm		.449**	.390**	.144	-.094	.108	.317*	-.545**	-.838**
p		.001	.004	.307	.507	.444	.022	.000	.000
ViInc			.502**	.178	-.182	.225	.409**	-.228	-.502**
			.000	.206	.195	.108	.003	.103	.000
GenInc				-.023	-.472**	.429**	.796**	-.195	-.646**
				.871	.000	.002	.000	.167	.000
ViHS					.527**	-.364**	-.058	-.017	-.091
					.000	.008	.684	.904	.519
GenHS						-.523**	-.619**	.151	.167
						.000	.000	.286	.235
ViBS							.501**	-.274*	-.245
							.000	.049	.080
GenBS								.023	-.341*
								.872	.013
ViPov									.685**
									.000

* <0.05

** p<0.01

***p<0.001

Table 14 Number of completed surveys by state and stakeholder group

	State						Totals
	1	2	3	4	5	6	
Employer	3	2	0	0	1	0	6
DRC Prof.	9	0	5	1	2	3	28
Rehab Prof.l	1	8	9	3	5	1	19
TVI	0	0	0	3	0	0	3
Other	0	0	0	1	0	0	1
Totals	13	10	14	8	8	4	57

Table 15 Individual professional practices in which significant differences in average frequency were found (p<0.05)

Professional practice vs. professional practice	
Medical model for print access	-Political model for O&M and attitudes of others
Medical model for technology	-Political model for O&M, technology, print access, and attitudes of others. -Social model for O&M -Medical model for social interactions
Medical model for O&M	-Political model for print access, attitudes of others, and technology
Political model for technology	-Medical model for attitudes of others, print access, O&M, and technology. -Social model for print access, technology, attitudes of others, social interactions

Table 16 The significance of frequency of use of particular practice relative to profession

Professional Practice	Variance	SS	Df	Sig.
Medical – Attitudes of others	Between Groups	20.443	3	.000
	Within Groups	34.357	41	
Medical – O&M	Between Groups	11.024	3	.028
	Within Groups	42.604	39	
Medical – Print Access	Between Groups	1.259	3	.778
	Within Groups	45.922	40	
Medical – Technology	Between Groups	7.841	3	.027
	Within Groups	34.075	44	
Medical – Social Connection	Between Groups	5.508	3	.176
	Within Groups	45.811	43	
Social – Attitudes of others	Between Groups	4.167	3	.223
	Within Groups	36.470	40	
Social – O&M	Between Groups	11.057	3	.001
	Within Groups	24.877	42	
Social – Print Access	Between Groups	12.754	3	.004
	Within Groups	36.725	44	
Social – Social Connection	Between Groups	11.355	3	.004
	Within Groups	26.930	38	
Social- Technology	Between Groups	14.541	3	.004
	Within Groups	40.938	44	
Political – Attitudes of others	Between Groups	3.789	3	.090
	Within Groups	21.756	40	
Political – O&M	Between Groups	11.424	3	.001
	Within Groups	23.735	40	
Political – Print Access	Between Groups	10.992	3	.013
	Within Groups	35.985	40	
Political – Social Connection	Between Groups	1.237	3	.741
	Within Groups	38.530	39	
Political – Technology	Between Groups	7.887	3	.041
	Within Groups	33.973	39	

Table 17 Cronbach's alpha for aggregate variables

Aggregate	Cronbach's alpha	N
Medical model: attitudes, O&M, print access, social connection, technology	0.791	5
Social model: attitudes, O&M, print access, social connection, technology	0.708	5
Political model: attitudes, O&M, print access, social connection, technology	0.643	5
Technology: medical, social, political models	0.493	3
Print access: medical, social, political models	0.331	3
Attitudes: medical, social, political models	0.558	3
O&M: medical, social, political models	0.483	3
Social connection: medical, social, political models	0.692	3
Extracted Factor 1: Social model: attitudes, O&M, print access, technology. Political model O&M	0.866	5
Extracted Factor 2: Medical model: attitudes, O&M, print access, technology. Medical, social and political model: social connection	0.816	7
Extracted Factor 3: Political model: attitudes, print access, technology	0.747	3

Table 18 Two components extracted for origin of influence for practice initiation

Model of disability	Access concern	Comp 1	Comp 2
Social	Print access	.663	.886
Medical	Attitudes of others	.434	.455
Political	O&M	.961	.344
Social	Technology	.941	.869
Political	Technology	.342	.137
Medical	Print access	.620	.680
Medical	Technology	.518	1.050
Medical	Social connections	.602	.845
Social	Attitudes of others	.731	.319
Political	Print access	.371	.085
Political	Attitudes of others	.507	.123
Social	Social connections	.396	.139
Political	Social connections	.468	.115
Social	O&M	.481	.672
Medical	O&M	.194	.204

Table 19 Frequency with which respondents indicated that a particular influence led them to begin employing a particular professional practice

Access Issue		Coercive	Normative	Mimic	Supervisory	Personal experience	Unknown
Model							
Medical	Attitudes	2	2	1	4	34	1
	O&M	2	0	5	6	27	0
Social	Print access	5	0	2	4	32	1
	Social connection	3	6	2	4	31	2
	Technology	4	1	2	7	33	1
	Attitudes	3	0	0	4	35	3
	O&M	9	2	4	7	20	3
Political	Print access	11	1	2	3	30	2
	Social connection	5	2	2	4	26	4
	Technology	9	3	2	5	28	2
	Attitudes	0	1	3	6	21	9
	O&M	7	0	3	5	26	4
	Print access	1	0	0	11	17	6
	Social connection	2	1	2	7	27	2
	Technology	7	3	0	5	24	3
Average	Overall	4.66	1.47	2	5.47	27.4	2.87
	Medical	3.2	1.8	2.4	5	31.4	1
	Social	7.4	1.6	2	4.6	27.8	2.8
	Political	3.2	1	1.6	6.8	23	4.8
	Attitudes	1.67	1	1.33	4.67	30	4.33
	O&M	6	0.667	4	6	24.3	2.33
	Print access	5.67	0.333	1.33	6	26.3	3
	Social connection	3.33	3	2	5	28	2.67
	Technology	6.67	2.33	1.33	5.67	28.3	2

Notes: *And what is the main reason that you began to employ this practice?*

1. Laws: Because of laws and regulations;
2. Prof: Because of what I have heard at professional conferences, read in professional publications, or seen colleagues do;
3. Mimic: Because of what I have seen rehabilitation specialists do for clients with other disabilities;
4. Advocacy: Because of the directives and ideas promoted by my supervisor or the agency director;
5. Self: Because of my own professional experience;
6. Unknown: Because I have not thought of it.

Table 20 Odds ratios for comparisons between models of disability and avenue of influence for the initiation of professional practices related to models of disability.

Comparison	Medical v. Social	Medical v. Political	Social v. Political
Personal Professional Experience v. External Sources	1.402	1.546* (1.016-2.352)	1.102
Personal Professional Experience v. Supervisory	1.039	1.890* (1.068-3.342)	1.818* (1.014-3.262)
All influences v. Unknown	2.636	5.77* (2.16 - 15.44)	2.19* (1.085-4.426)
Personal Professional Experience v. Normative	0.878	0.772	0.879
Personal Professional Experience v Coercive	2.612* (1.39-4.901)	1.91	0.731
Personal Professional Experience v Mimetic	0.517	0.772	0.984
Coercive v Mimetic	0.36	0.485	1.35
Coercive v Normative	0.586	0.404	1.202
Coercive v supervisory	.398* (.176-.899)	0.989	2.486* (1.178-5.249)
Normative v Mimetic	1.07	1.2	1.12
Normative v supervisory	1.18	2.448	2.07

Note: * Significant ($p < 0.05$) Confidence intervals are provided for those ratios that were significant ($p < 0.05$).

Table 21 Bivariate correlations

		Employment ratio	Bachelor's attainment ratio	Expenditure per client
Employment	Gen pop/ VI	1	.969**	-.406**
	Gen pop/ VI	.969**	1	-.611**
	Expenditure per client	-.406**	-.611**	1
Medical model	Attitudes of others	.034	.048	-.076
	O&M	.204	.263	-.328*
	Print access	-.103	-.125	.173
	Social connections	-.176	-.157	-.017
	Technology	-.069	-.035	-.047
Social model	Attitudes of others	-.177	-.167	.044
	O&M	-.134	-.128	.021
	Print access	-.303*	-.318*	.208
	Social connections	-.019	-.042	.073
	Technology	-.396**	-.398**	.211
Political model	Attitudes of others	-.133	-.096	-.107
	O&M	-.266	-.303*	.275
	Print access	.132	.140	-.134
	Social connections	-.239	-.268	.168
	Technology	.183	.202	-.159
Aggregates	Attitudes of others	-.174	-.149	-.037
	O&M	-.078	-.063	-.030
	Print access	-.133	-.150	.123
	Social connections	-.230	-.257	.156
	Technology	-.147	-.119	-.004
	Medical model	-.047	-.018	-.078
	Social model	-.354*	-.375*	.228
	Political model	-.085	-.081	.000
	Factor 1 Social model	-.354*	-.372*	.230
	Factor 2 Medical model	-.099	-.090	.003
	Factor 3 Social model	.086	.117	-.178

Table 22 Pairwise Spearman correlations between frequencies of individual practices

	ma	sa	pa	mo	so	po	mr	sr	pr	ms	Ss	ps	mt	st
ma	1.00													
sa	.348*	1.00												
pa	.239	.418**	1.00											
mo	.611**	.238	.468**	1.00										
so	-.176	.455**	.458**	.105	1.000									
po	-.119	.393**	.286	.065	.588**	1.000								
mr	.257	.105	.328*	.315*	.139	.552**	1.000							
sr	.227	.451**	.294*	.033	.433**	.635**	.522**	1.000						
pr	-.047	.105	.207	.160	.055	.054	.025	.001	1.000					
ms	.466**	.325*	.426**	.404**	.255	.287	.492**	.503**	-.046	1.000				
ss	.277	.120	.332*	.348*	-.119	.106	.302*	.023	.292	.201	1.000			
ps	.348*	.073	.322*	.237	-.034	.140	.474**	.272	.142	.551**	.495**	1.000		
mt	.532**	.126	.174	.374*	-.093	.199	.490**	.379**	.098	.260	.454**	.250	1.000	
st	.032	.428**	.377*	.053	.461**	.794**	.561**	.796**	.112	.374**	.162	.260	.282*	1.000
pt	.140	.321*	.296	.388*	.196	.204	.113	.209	.761**	.143	.392*	.166	.195	.242

Key:

First letter: Model of disability alignment: M = medical, S-social, P=political

Second letter: Access concern addressed: A=Attitudes of others, O=O&M/environmental access, R=Print access, S=Social connections, T= Technology

*p<0.05, **p<0.01, ***p,0.001

Table 23 Correlations between reported mean frequency of professional practices and the ratio of outcomes and degree of external influence in practice initiation

Model of Disability	Access concern	Mean freq.	Relative rate of employment	Relative rate of Bachelor's degree attainment	Degree of External influence on initiating a professional practice
Medical	Technology	3.175	-.069	-.035	-.532**
Medical	O&M	2.950	.204	.263	-.142
Medical	Attitudes	2.875	-.034	.048	-.279
Medical	Print access	2.850	-.103	-.125	.083
Social	Social	2.600	-.019	-.042	-.244
Social	Print	2.575	-.303*	-.318*	.164
Social	Technology	2.550	-.396*	-.398*	.085
Social	Attitudes	2.500	-.177	-.167	-.182
Political	Social	2.350	-.239	-.268	-.408**
Medical	Social	2.275	-.176	-.157	.079
Social	O&M	2.200	-.134	-.128	.280
Political	O&M	2.200	-.266	-.303*	-.168
Political	Technology	2.100	.183	.202	.191
Political	Print	2.025	.132	.140	.131
Political	Attitudes	1.725	-.133	-.096	-.017

Figures

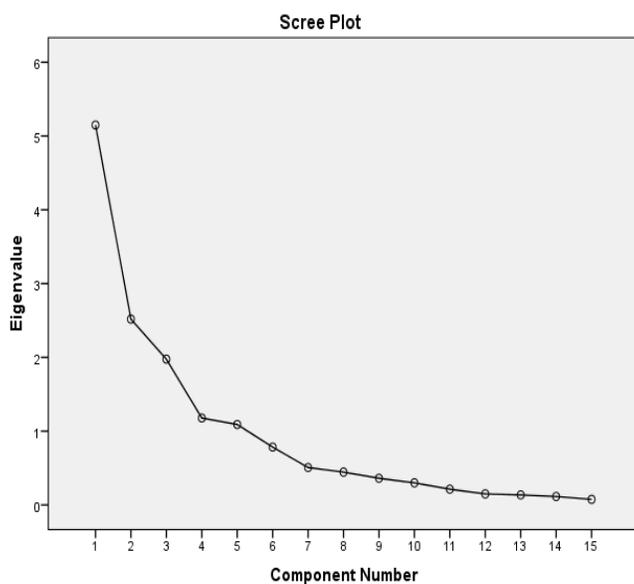


Figure 11 Scree plot for factor extraction (Graph from cut from SPSS).

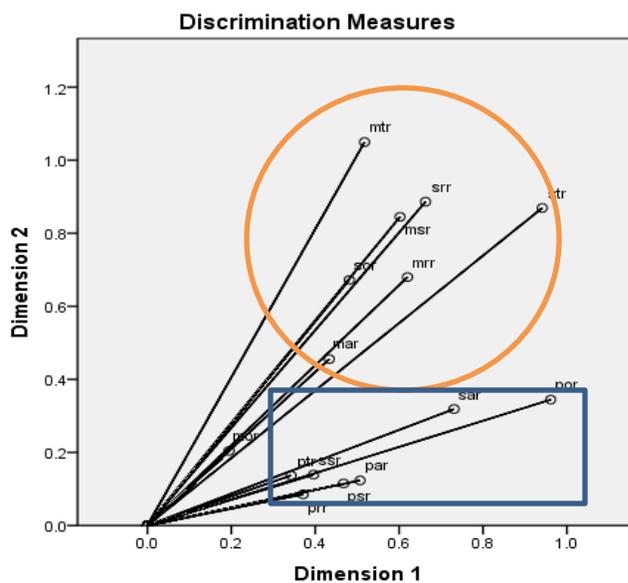


Figure 12 Relative loadings on two factors of the various professional practices described in the survey. (Graph cut from SPSS)

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