Title

The Effects of Identity and Psychological Empowerment on Accommodation Usage and Achievement for College Students with Disabilities

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Publication Date

2015

UNIVERSITY OF CALIFORNIA

Santa Barbara

The Effects of Identity and Psychological Empowerment on Accommodation Usage and Achievement for College Students with Disabilities

A dissertation submitted in partial satisfaction of the
requirements for the degree Doctor of Philosophy
in Education

by

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Acknowledgements and Dedication

This project is first and foremost dedicated to the students who identify with having a disability and to those who were once identified with having a disability. Regardless of the findings in the study, your choices and feelings about your disability are respected. I especially would like to thank the students who chose to participate in this research. Your voices matter, and I will learn to be a better listener to them.

My utmost gratitude goes to the conductors of my education at GGSE: my advisor and committee chair, Dr. Mian Wang, and my two committee members, Drs. George Singer and Michael Gerber. This dissertation is a synthesis and an interpretation of everything I have learned from you and other wise souls over the past several years. Nearly every insight that emerged on the pages of this dissertation can be credited to a lecture point, a reading, a nugget of advice, or a passing mention you gave. Without your guidance, mentorship, and encouragement, I would likely be submitting a ream of blank papers. Additionally, I would like to thank Dr. Hsiu-Zu Ho and the rest of GGSE faculty and staff for their instruction and assistance. I owe the development of my professional identity to you all.

Patrick, we made it to the end. All of those days working in frigid conference rooms and offices paid off. You were my ultimate sounding board—I could always count on you to tell me when an idea fell flat. Ryan, I can sing praises about your statistics expertise all day. Your help with the analyses of this project will not be forgotten. Jane, Ann, Ani, Angela, Erica, and Weiwei, I will always appreciate your support, collegiality, and friendship. You were my family away from family through all these years.

My dear (and actual) family, you have made tremendous sacrifices for my growth as an academic and as a human being. Annie, especially, your sense of humor never failed to lift my spirits in times of trouble and disharmony. I hope I continue to make you all proud. To my "second set of parents" and the Lams, I can finally tell you that I finished, and I hope that is as gratifying to read as it was for me to write. Of course, I am forever grateful to my longtime friends from my two "homes" along the California coast. This graduate school journey took me away from you, but I tell you it was all worth it.

Last but not least, to Kevin, my best friend and most attentive listener, a deep thank you. You helped me sort through the cacophony of unfledged and half-formed thoughts until I finally struck the right note. I share this accomplishment with you.

Yeana W. Lam
Curriculum Vita

Yeana (Wong) Lam is a doctoral student at the Gevirtz Graduate School of Education, University of California, Santa Barbara, in the Special Education, Disability, and Risk Studies emphasis. Her primary academic interests are: (1) identity development, self-determination, and self-advocacy behaviors of students with disabilities; (2) familial, cultural, and gender effects on student behavior and performance; and (3) literacy skills acquisition for students with learning difficulties and disabilities.

EDUCATIONAL BACKGROUND

Ph.D.	University of California, Santa Barbara, December 2015 Emphasis: Special Education, Disability, and Risk Studies
B.A.	University of California at Los Angeles, June 2006 Major: History; Minor: Spanish

PROFESSIONAL EXPERIENCE

Graduate Student Researcher	*Gevirtz Graduate School of Education, University of California, Santa Barbara, CA.* Major tasks included reviewing family involvement literature and conducting data collection/analysis in an interview study about the implementation of person centered planning activities. July 2010 – January 2011, September 2014 – September 2015.
DSPS Tutor	*Disabled Students & Services Program, Santa Barbara City College, CA.* Key responsibilities included providing small-group instruction and tutoring in critical reading and writing strategies to college students with disabilities. September 2012 – May 2015.
Teaching Assistant	*Asian American Studies Department, University of California, Santa Barbara, CA.* Served as teaching assistant for AsAm 5: Introduction to Asian American Literature. Major duties included leading three undergraduate discussion sections and evaluating student performance in essays and examinations. January – March 2015
	Gevirtz Graduate School of Education, University of California, Santa Barbara. CA. Served as teaching assistant for 7 courses: • ED 222A: Introduction to Exceptional Children. Fall 2010, 2012, & 2014 • ED 214C: Linear Models for Data Analysis. Spring 2012 & 2013 • ED 214B: Inferential Statistics. Winter 2013

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Clinic Supervisor	*McEnroe Reading & Language Arts Clinic, University of California, Santa Barbara, CA*. Major responsibilities included: (1) supervising graduate student tutors; (2) providing evidence-based tutorial services to first through sixth grade students with reading and language difficulties; (3) offering feedback to families concerning assessments and in-home strategies to improve reading and language skills; (4) assisting in the innovation of reading instruction strategies; and (5) managing day-to-day operations and administrative duties of the Clinic. June 2011 – December 2014.
Long-Term Substitute Teacher	*Village Glen West School, The Help Group, Los Angeles, CA*. Major responsibilities included: (1) teaching math, science, language arts, and social studies curricula at an accelerated academic program for elementary and middle school students with autism; (2) implementing social skills curricula to address students' needs; (3) participating in all aspects of students' Individualized Education Plan process; and (4) conducting parent conferences and maintaining routine contact with parents to discuss student progress. September 2007 – July 2008
Instructional Aide	*Village Glen West School, The Help Group, Los Angeles, CA*. Major duties included: (1) assisting classroom teacher in a middle and high school program for students with autism; (2) teaching curriculum content in math, social studies, and social skills to small groups; and (3) providing instructional support to individual students as needed. September 2006 – July 2007, September 2008 – July 2009

GRANTS

Wang, M. & **Wong, Y.** (2012). *Applying RTI model to help children and youth with reading disabilities or challenges in the local community*. Funded by the Junior League of Santa Barbara, CA. September 2012 – June 2013. $1,800.

HONORS & AWARDS

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SERVICE

Student Representative	Search Committee for Assistant Professor in Literacy Education, Gevirtz Graduate School of Education, University of California, Santa Barbara, CA. August 2013 – June 2014.
Conference Chair	Doctoral Student Advisory Committee, University of California Special Education, Developmental Disabilities, and Risk Studies (UCSPEDDR). June 2012 – June 2014.
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PUBLICATIONS

Ho, H-Z. & **Lam, Y. W.** (in preparation). Paternal involvement in East Asia: Beyond the breadwinner role? In T. A. Turner-Vorbeck & S. Sheldon (Eds.), *Handbook of family, school, community partnerships in education*. Hoboken, NJ: Wiley.

Ho, H-Z., Tomlinson, H., **Lam, Y. W.**, Herrity, V., & Brown, J. H. (under review). Supporting families of English learners in a school-based family literacy project: Results of a four-year study. *International Journal of Foreign Languages*.

Lam, Y. W., Wang, M., Singer, G. H. S., & Kim, J. (in press). Advocacy and self-help programs as evidence-based practices for families of children with developmental disabilities. In M. Wang & G. H. S. Singer (Eds.), *Supporting families of children with developmental disabilities: Evidence-based and emerging practices*. New York, NY: Oxford University Press.

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PRESENTATIONS

Singer, G. H. S., Wang, M., & **Lam, Y. W.** (2015, December). *Evidence based practices for supporting families: Review, meta-analysis, and evaluation*. Research panel at 2015 TASH Conference. Portland, OR.

Ho, H-Z., Yeh, K-H., Wu, C-W., **Lam, Y. W.**, Yu, Y., & Kung, H-Y. (2015, April). *Parent involvement and student academic achievement in Taiwan: A latent class model examining mediational effects*. Paper presentation at the American Educational Research Association (AERA) 2015 Annual Meeting, Chicago, IL.

Lam, Y. W., Wang, M., Kim, J., & Singer, G. H. S. (2015, April). *A meta-analysis on the effectiveness of multicomponent family interventions.* Presentation at the Council for Exceptional Children (CEC) 2015 Annual Convention & Expo, San Diego, CA.

Lam, Y. W. (2014, 2015). *Autism Spectrum Disorder*. Invited lecture at undergraduate course Introduction to Psychology at California State University, Channel Islands, CA.

Singer, G. H. S. & **Lam, Y. W.** (2014, September). *What helps? Evidence based practices for parents of children with autism or intellectual disabilities.* Workshop presentation at the 7th Pivotal Response Treatment Autism & Asperger's Conference, Santa Barbara, CA.

Lam, Y. W. & Wang, M. (2014, July). *Advancing postsecondary inclusive practices by examining identity*. Paper presentation at the Braga 2014: Embracing Inclusive Approaches for Children and Youth with Special Needs Conference, Braga, Portugal.

Lam, Y. W. (2012, 2013, 2014, 2015). *Special education*. Invited lecture at undergraduate course Introduction to Child and Adolescent Development at University of California, Santa Barbara, CA.

Tran, C. N., Phommasa, M., **Lam, Y. W.**, & Ho, H-Z. (2013, May). *Reconstructing cultural identity in the academy: Voices of Asian American female graduate students in education*. Round-table presentation at the American Educational Research Association (AERA) 2013 Annual Meeting, San Francisco, CA.

Wang, M., Tang, E., **Wong, Y.**, Chen, W., Can, S., & Bharoocha, A. (2011, June). *Understanding the impact of person-centered thinking practices on individual and family outcomes.* Poster presentation at the 135th Annual Conference of the American Association of Intellectual and Developmental Disabilities (AAIDD), Minneapolis, MN.

Tang, M. C., **Wong, Y.**, Bharoocha, A., Crookston, J., Shen, C., Chen, W., & Wang, M. (2011, May). *A model for the use of person centered planning in IEP meetings.* Presentation at the 13th Annual International Conference on Education, Athens Institute for Education and Research, Athens, Greece.

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Abstract

The Effects of Identity and Psychological Empowerment on Accommodation Usage and Achievement for College Students with Disabilities

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More than ever, students with disabilities are enrolling in higher education, yet despite their growth, they still underperform compared to their nondisabled peers in grades and graduation rates. The Americans with Disabilities Act grants students with disabilities access to special accommodations and services in postsecondary institutions, and there is evidence demonstrating that these supports have positive effects on college outcomes for students who use them. For students to use these provisions, they must identify as having a disability to their college disability services office or other campus entity that administers special supports. Existing research indicates that less than a quarter of students who qualify for accommodations and services use them. A probable reason that students avoid accommodations and services is their reluctance to claim having a disability due to negative perceptions about disability. In the postsecondary research literature, disability identity, which is generally composed of perceptions and understandings about disability and identification with the disability condition, is a hypothesized but rarely explored predictor of accommodation usage when using quantitative methods.

The primary intention of the study was to examine quantitatively the relationship between disability identity and the frequency of accommodation usage, with the inclusion of more conventional predictors (i.e., psychological empowerment, knowledge of accessing supports, and perceived usefulness of accommodations) as part of the process in linking the two variables. To address this research question, the study adopted the theoretical frameworks of social identity theory and social theories of disability in order to explore and attempt to validate the structure of a multifactorial disability identity construct. The study then investigated the connection that accommodation usage might share with disability identity and other predictors. As a secondary research question, this research also sought to uncover the potential relationship among these variables and academic achievement.

Over 500 students from primarily two-year and four-year postsecondary institutions were recruited to respond to an online survey. The sample was then randomly divided such that an exploratory factor analysis could be conducted on the first subsample and a confirmatory factor analysis and structural equation modeling could be performed on the second subsample. Results from the exploratory and confirmatory factor analyses suggested the presence of three disability identity factors: identification, private regard, and public regard. The first structural equation model found that: (a) identification with disability directly and positively predicted the frequency of accommodation usage; (b) private regard indirectly predicted the frequency of usage through the mediators of psychological empowerment, access knowledge, and perceived usefulness of accommodations; (c) public regard influenced psychological empowerment; and (d) private regard also indirectly predicted student cumulative GPA via psychological empowerment.

Some of these patterns were also detected in the structural model for students attending four-year colleges only.

These research findings reveal the significance of disability identity, as well as the process by which different aspects of disability identity affect how often college students access supports in the classroom. Theoretically, the results contribute to the literature by clarifying the dimensions of the disability identity construct. Regarding practical concerns, the findings recommend that disability offices interested in increasing accommodation usage in their registered population should consider ways to enhance students' acceptance of their disability label. Promoting students' positive evaluations of disability may be helpful in increasing accommodation usage and student achievement through reinforcing students' psychological empowerment and knowledge about available resources. Disability offices should also work in conjunction with college administrators to improve the campus climate for students with disabilities, making classroom settings more welcoming for students to disclose their disability status. The present research also highlights the importance of personal disability-related and background characteristics (i.e., disability awareness age, visibility of disability, and parents' education level) in the relationships among disability identity, accommodation usage, and student achievement.

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Chapter I: Introduction

As evidenced by the rising number of students with disabilities in higher education settings (Cooperative Institutional Research Program, 2011a, 2011b; NSF/DSRS, 2003; Wolf, 2001), more and more, students with disabilities are gaining access to higher education. Their ever-growing enrollment is generally a positive development, since higher education has been linked to more positive career outcomes (College Board, 2013; Paulsen, 2001; Sagen, Dallam, & Laverty, 2000). For example, the median family income for families headed by a four-year college graduate is more than twice that of families headed by a high school graduate (College Board, 2013). However, these positive developments belie the critical disparity in achievement between students with disabilities and their nondisabled peers.

Students with Disabilities in Higher Education

In 2008, students with reported disabilities comprised approximately 11% of all undergraduate students in college (U.S. Government Accountability Office, 2009), which was a five percentage-point increase over the number of those enrolled in postsecondary institutions in 1996 (NSF/DSRS, 2003). Nearly 32% of youths with disabilities enrolled in college in 2005, compared to 14.6% in 1987 (U.S. Department of Education, 2010). Some of this growth can by accounted for by the increase in enrollment of students with learning disabilities (LD) and attention deficit/hyperactivity disorder (AD/HD; Cooperative Institutional Research Program, 2011a, 2011b; Wolf, 2001). By far the largest group of students with reported disabilities enrolled in degree-granting postsecondary institutions is students with LD (31%), followed by those with AD/HD (18%), psychological conditions (e.g., depression, anxiety, post-traumatic stress disorder; 15%), and health impairments

(11%; Raue & Lewis, 2011). The remaining 25% of students with disabilities represent those with mobility impairments, difficulty hearing, difficulty seeing, traumatic brain injury, autism, language impairments, and other disabilities (Raue & Lewis, 2011).

Their growing numbers is not necessarily indicative of their academic success in these institutions. In fact, studies have shown that students with disabilities often lag behind their typical peers. Forty-one percent of students with learning disabilities finish college, compared to 52% of the general student population (Cortiella & Horowitz, 2014). College grade point average (GPA) is another important indicator of academic success, as GPA has been found to be one of the best predictors of academic persistence among college students with disabilities (Mamiseishvili & Koch, 2011), and scholars have found that students with disabilities tend to have lower GPAs than nondisabled students (Heiligenstein, Guenther, Levy, Savino, & Fulwiler, 1999). This last point is also notable as grades may affect career outcomes; research has suggested that employers often consider graduates' past academic achievement (i.e., college GPA), among other factors, when making hiring decisions (Sagen, Dallam, & Laverty, 2000). The difference in academic performance between students with disabilities and their nondisabled peers calls attention to the availability of postsecondary support services, which may ameliorate this disparity.

Historical and Legal Context of Postsecondary Support Services

Under the provision of federal law, many college students with disabilities are eligible for accommodations, services, and supports (Cawthon & Cole, 2010). These laws were designed to safeguard the civil rights of individuals with disabilities and to protect them from discrimination in various spheres of life, including in higher education (Rothstein, 2002). In practice, the supports authorized by these legal mandates may have had positive effects on the college outcomes for students who used them (Alster, 1997; Hudson, 2013; Lewandowski, Cohen, & Lovett, 2013; Runyan, 1991; Newman, Madaus, & Javitz, 2015; Troiano, Liefeld, & Trachtenberg, 2010).

Public Law 94-142, passed in 1975 under the title, the Education for All Handicapped Children Act (EAHCA), was the landmark special education law that provided guidelines and regulations for rights, services, and programs available for qualified children with disabilities in public education. All children whose disability affects their learning are entitled to free, appropriate public education. When EAHCA was renewed in 1990, the title of the law was renamed the Individuals with Disabilities Education Act (IDEA). Aside from the change in title, the renewal in 1990 (and in 1997) also welcomed a number of amendments. One of the major amendments to IDEA was the emphasis on programming for students with disabilities to facilitate their transition from high school to postsecondary life (Rothstein, 2002). The amendments of 1997 especially listed postsecondary education as one of the key post-school outcomes (Mull, Sitlington, & Alper, 2001) and may be a reason for the surge in enrollment for students with disabilities in higher education; one of the cited achievements of IDEA is the increased percentage of college freshmen reporting disabilities (U.S. Department of Education, 2010).

Although IDEA provides accommodations and services, these supports end when students turn 22 years of age or graduate from high school. Students in higher education are conferred the rights provided by Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act (ADA) of 1990. Provisions of Section 504, enacted in 1977, pertaining to postsecondary education specify that federally-funded programs and institutions (whether public or private) make efforts to improve accessibility to campus facilities and to consider applications from students with disabilities (Madaus, 2011). Additionally, it directed institutions to modify requirements that are discriminatory but that do not compromise fundamental course requirements. These programs also must not restrict students' ability to participate fully in the classroom. For instance, if students require lectures to be audio recorded to participate fully in instructional activities, they must be granted such an accommodation. The ADA, enacted in 1990, extended these policies to non-federally funded colleges and universities. Unlike IDEA, which defined disability in terms of educational need, ADA expresses disability to mean a "physical or mental impairment that substantially limits one or more major life activities." The purpose of ADA as a piece of civil rights legislation is to increase access, not necessarily to help students make meaningful educational progress (Lovett, Nelson, & Lindstrom, 2014).

These legal provisions guide decisions about eligibility for disability or educational services. Since the 1990s, the influential Association for Higher Education and Disability (AHEAD) has recommended to disability service administrators that updated formal diagnostic evaluation records be necessary for higher education professionals to make decisions about eligibility for accommodations and services. However, students with disabilities increasingly enter college without updated formal evaluations. Part of the reason is that the 2004 updates to IDEA do not require schools to conduct triennial full evaluations if both the school and the parents find the re-evaluation unnecessary. Instead, schools are increasingly relying on other progress monitoring procedures (e.g., Response-to-Intervention/Instruction, Positive Behavior Support) to determine the presence of a disability (Shaw, Keenan, Madaus, & Banerjee, 2010). The ADA also, in its 2008 amendments, relaxed its stringent interpretation of what qualifies as a disability to enable individuals to obtain protected rights more easily (Shaw et al., 2010). In response to these changing policies, AHEAD's most recent 2012 guidelines suggested that student's self-report about their condition could be the primary source of documentation eligibility, with the secondary source being disability office professionals' impression and conclusions about the student, and only the tertiary source being independent evaluations or diagnostic reports if the first two sources of documentation are deemed insufficient (AHEAD, 2012). The movement away from formal testing to students' own account of their disability experience has invigorated some debate from higher education disability scholars about the credibility of these identification procedures (Lovett et al., 2014; Shaw, 2012).

Regardless of the identification process, one important distinction between the provisions of IDEA and the provisions under Section 504 and ADA is the process for procuring supports. Under IDEA, the onus is on school districts to locate and evaluate children with disabilities and to provide appropriate education and related services. In college, the students themselves must disclose their disability to the disability services office, student resource center, academic affairs office, student affairs office, or other campus entity that administers disability-related supports. Besides simply informing their college of their disability, students may need to further demonstrate evidence of a disability by supplying additional ("tertiary") documentation of a disability. Thus, some students must undergo intake testing, obtain a diagnosis of disability, or show a documented history and experience with disability. Finally, even if students qualify for accommodations and services, they must actualize these supports by requesting the use of accommodations from their instructors for each course.

The types of accommodations and services available to students may vary depending on the institution. There are several forms of help: program accommodations, support services, and instructional adjustments (Mull et al., 2001). Program accommodations may include requirement waivers, late course withdrawal, priority registration, more time to complete classes, course substitution, and repeating courses without penalty. Support services provided to students can include Individualized Academic Plan, academic tutoring, disability counseling, learning strategies tutoring, and adaptive technology training. Instructional adjustments may include note-takers, audiobooks, reader or scribe, extended time for test-taking, and assistive technology or devices (Mull et al., 2001). For the present project, the terms “accommodations,” “services,” and “supports” will be used interchangeably to represent the gamut of disability-related resources that this population is eligible to receive from postsecondary institutions.

Current Issues in Postsecondary Support Services

There has been some controversy over the role of supports and services in adult development, as well as the effectiveness of such supports. One major criticism of accommodations and services is that they foster and reinforce an unhealthy dependence on external support. Ohler and Levinson (1996) questioned whether accommodation requests are an indication of student self-advocacy or simply one of student dependency. The authors found that having more accommodations was associated with being less career-ready (e.g., less adept at planning for entering their desired profession). One possible conclusion drawn from these results is that students who use more supports are more passive learners and are less likely to participate in job-skills development activities that enhance their career readiness. Another concern is whether disability-related accommodations and services even benefit students. Studies have shown that many factors besides accommodations could be contributing to the academic success of students with disabilities, factors that include IQ, work ethic and work avoidance habits, and student motivation (Murray & Wren, 2003; Reaser, Prevatt, Petscher, & Proctor, 2007). Mamiseishvili and Koch's (2011) study of students with disabilities found that accommodations were not significantly associated with students persisting to their second year of college after accounting for demographic and in-college characteristics (e.g., on-campus living, full-time enrollment, first-year GPA, attendance). Students with LD who choose to drop out usually do so because of the cost of postsecondary education, rarely citing the lack of services as their reason for leaving school (Cortiella & Horowitz, 2014).

However, other studies have found that accommodations and services are associated with better test scores (Alster, 1997; Lewandowski et al., 2013; Runyan, 1991), better grades (Troiano et al., 2010), and higher graduation rates (Hudson, 2013; Newman et al., 2015; Troiano et al., 2010). These findings suggest that accommodations may not directly relate to short-term persistence, but since grades appear to be associated with both accommodations and persistence, perhaps the relationship between accommodations and short-term persistence is mediated by academic performance. Furthermore, accommodations, especially when pursued early in college, may have a stronger relationship with long-term persistence. In particular, Hudson's (2013) dissertation study indicated that students who disclosed their disability within their first year in college to access supports were significantly more likely to graduate within six years than their peers who disclose after their first year.

A third issue related to accommodations and services is that not all students with disabilities choose to use them, despite the potential benefits of supports in the classroom (Cawthon & Cole, 2010). Only 35% of students with disabilities report their disability to their college, and only 24% of college-going youth access accommodations, modifications, or services (Newman & Madaus, 2014). The literature has offered some reasons. For example, differing eligibility requirements of what counts as a disability and discrepant disability identification procedures between primary/secondary and postsecondary institutions may play a role (Shaw & Dukes, 2013; Shaw, Keenan, Madaus, & Banerjee, 2010). Students who do not have disability documentation that meets college guidelines may choose not to pursue accommodations and other disability-related services. Another reason offered by researchers is that students may not understand the nature of their disability, know how it affects learning, or know how to describe it to others (Sitlington, 2003). They may also lack self-determination skills, such as self-awareness and the feeling of empowerment to act and self-advocate, which may hinder support-seeking behaviors (Eckes & Ochoa, 2005). Furthermore, some students may not have the social and cultural capital necessary for obtaining supports (Trainor, 2008), lacking the knowledge to request disability services and to navigate proper channels to obtain extra resources. Related to these last two points is the amount of transition planning experience the student obtained in secondary school. During transition meetings and other transition planning services, college-bound students often receive information about postsecondary supports. Recent research in this area illustrates a link between student participation in their transition planning meetings and receipt of college accommodations and services (Newman & Madaus, 2015).

Additionally, scholars have discussed the possible effects of disability-related self-perceptions and have mentioned that this area warrants further study (Newman & Madaus, 2014). Previous qualitative research has explored disability identity issues (Low, 1996; Olney & Brockelman, 2003; Olney & Kim, 2001). These issues include choosing to disassociate with their disability status. Cortiella and Horowitz's (2014) report cited that 52% of individuals with learning disabilities did not view themselves as having a disability within two years of leaving high school. After eight years, this figure increased to 69% of adults with LD. The authors commented that "the longer a young adult is out of high school, the less likely they are to consider themselves to have a disability, to disclose the disability and to request assistance and accommodations from their postsecondary school" (p. 30). This disassociation from disability may be especially salient for those with nonapparent disabilities, such as LD or AD/HD, students who can conceal their disability better than those with visible disabilities. Therefore, disability type may play a role in how strongly students identify with having a disability and whether they are willing to disclose their disability to obtain supports.

Statement of the Problem

The role of identity, particularly identification with disability and its associated attitudes, in students' decision to seek support has received some attention in qualitative research with smaller samples of students (Barnard-Brak, Lechtenberger, & Lan, 2010; Olney & Brockelman, 2003). In fact, in a previous exploratory study, the author interviewed 10 traditional college age students with LD and/or AD/HD to discuss their identity issues in relation to disclosure and accessing resources (Lam & Wang, 2014). Students shared a variety of perspectives about their disability status, some perspectives more positive than others. The results of the study suggested that their attitudes and others' attitudes and about disability, as well as the meaning they ascribe to disability, all matter in their decision to seek support. Students who perceived a more positive social climate around disability and who believed disability to be a natural part of human diversity (rather than deviation from normality) were more likely to embrace their disability status and to get the assistance needed to succeed in the classroom. Disability identity may be a potent variable, but it has scarcely been studied as a predictor of accommodation access and of markers of student achievement (e.g., college GPA) in larger-scale research. Hence, the present study was motivated by the dearth of large-scale quantitative research in the disability services and higher education literature about the role of disability identity, and it was formed on the basis of findings from the author's exploratory study and other qualitative research conducted on this topic.

Along with disability identity, many other factors may contribute to students' support-seeking behaviors, yet rarely are these factors analyzed together to quantify the strength of their relation to accommodation usage, all the while accounting for each other's influence. The purpose of the present study was to determine the nature of these relationships. As students' self-perception is an under-researched but hypothesized factor in students' support-seeking behavior, this study also sought to explain how students' attitudes and beliefs about their disability may be connected to these behaviors. In order to do so, part of the focus of this study was to define the disability identity construct. Finally, as the effectiveness of accommodations is still up for debate, the present study also explored the link between accommodations and cumulative academic performance. As such, this quantitative survey study sought to answer five research questions and formed corresponding hypotheses to inquiries that have an evidential base in the literature.

Question 1. Using existing identity and disability identity measures, what factors define the construct of disability identity?

Disability identity may encompass both universally-designed social group identity dimensions, as well as disability-specific identity dimensions. The present study drew from existing social identity and disability orientation scales and probed the factor structure of the combined indicators of those identity dimensions. Since this is an exploratory endeavor, no hypothesis was formed about this initial research question.

Question 2. What are the effects of the disability identity constructs and psychological empowerment on frequency of accommodation usage? What are the roles of knowledge about accommodations and the perceived usefulness of the accommodations in this relationship?

Scholars have pointed to disability identity and self-determination as possible predictors of accommodation access (Newman & Madaus, 2014). But other factors, such as institutional knowledge about accommodation access (Trainor, 2008) and students' thoughts about the helpfulness of such supports, may also contribute to this outcome or mediate the relationship between the possible predictors and accommodation usage. Therefore, it was hypothesized that disability identity and psychological empowerment, a subconstruct under self-determination (Wehmeyer, 1995; Wehmeyer, Sands, Doll, & Palmer, 1997), mediated by support of others and knowledge of accommodations access, will significantly and positively relate to frequency of accommodation usage.

Question 3. What are the effects of the disability identity constructs and psychological empowerment on academic performance?

Past research has linked better academic performance to self-determination skills (Anctil, Ishikawa, & Scott, 2008) and to psychological empowerment, more specifically (Jameson, 2007). It was hypothesized that psychological empowerment will significantly and positively relate to academic achievement. There is scant evidence in the literature discussing the relationship between disability identity and academic outcomes, so as an exploratory exercise, the predictive contribution of disability identity to achievement was also tested in this study.

Question 4. What is the relationship between frequency of accommodation usage and academic performance?

Accommodation usage has been found to be positively linked to college academic performance, both in terms of grades (Troiano et al., 2010) and degree completion (Newman et al., 2015). Conversely, a one-time measure of students' GPA could reveal a negative relationship, since students with poorer grades are often the ones who seek assistance (Lovett et al., 2014). Still, it was hypothesized that students who sought and used accommodations and services more often would have higher academic achievement compared to those who used supports less frequently.

Question 5. What is the effect of students' personal characteristic control variables (i.e., time of the students' disability awareness, age of the students, parents' education level, visibility of the disability, race/ethnicity, and gender) on the predictors and outcomes?

As the age of disability onset and the overtness of the disability has been noted in the literature to be critical variables affecting individuals' identification with their disability condition (Hahn & Belt, 2004; Olney & Brockelman, 2003), students' age of disability awareness and visibility of the disability was included in the study as control variables. It was hypothesized that students who were aware of their disability at an earlier age and who had more overt conditions would experience a positive effect on predictors and outcomes. The age of the student and parents' level of education may reflect students' institutional knowledge, and so it was hypothesized higher reported ages and higher levels of education for parents would have a positive influence on the predictor and outcome variables. Lastly, race/ethnicity and gender were included as additional covariates, but no hypotheses were generated for these demographic variables.

Significance of Research

Accommodations and other supports are mandated by law to protect students from discriminatory practices and policies based on their disability. Although students are entitled to these services, not all eligible students access them. It may be that students who do not access supports do not require services to achieve their academic potential. However, the literature suggests otherwise. Newman and colleagues (2011) reported that among students who did not request accommodations, 50% in two- and four-year colleges and more than 30% in vocational, technical, and business schools believed that these supports would have been helpful. This finding indicates that a large percentage of students feel they would have benefited from accommodations and that there may be underlying factors hindering students' usage of accommodations and services beyond the perceived ineffectiveness of these supports. Understanding students' reasons for avoiding services and accommodations, even among students who have already enrolled in their campus' disability services program, can help colleges and postsecondary institutions design better programs to reinforce disclosing to instructors and obtaining needed support and resources. One likely reason that students choose not to disclose and request help is their perceptions of their disability. If the definition of disability identity can be refined, such a relationship can be tested. Thus, the theoretical consideration for conducting the present research study was to develop a well-defined construct of disability identity.

Additionally, this study examined whether the student characteristics of disability self-perceptions and psychological empowerment also have an effect on academic achievement. If disability identity and psychological empowerment are found to be viable predictors of achievement, secondary education programs may use this information to identify students at-risk for poor college performance and to develop psychosocial interventions that bolster self-perceptions and self-determined attitudes.

The present study also contributes to the literature by revealing the relationship between accommodation usage and academic performance. The practical significance of finding positive associations between accommodations and achievement is not trivial. If disability services are linked to student achievement, it corroborates findings in the literature suggesting that services aid students with disabilities in achieving their academic potential. Since achievement has been found to be a predictor of college persistence in prior research, and one measure of a college's success is its ability to retain and graduate students, it would be in the college's best interest to provide these sorts of supports. There were also methodological issues that were addressed through this study. Research pertaining to the topic of disability identity is predominantly qualitative in design, and so, few quantitative studies have been conducted to assess the nature of disability identity and its relationship with accommodation requests and academic achievement. This study is among the first to survey over 500 college students across the United States to examine these issues. Through this data collection approach, the present study strove to illuminate the facilitators and barriers to students' access to resources and supports.

Chapter II: Theoretical Framework and Literature Review

This project seeks to understand the predictors and the process by which the predictors influence students' usage of accommodations, and the literature has proposed various factors that affect students' decision to access accommodations and services. Chief among these factors are matters related to identity, or how the individual views oneself in relation to one's disability status. For students to begin to access accommodations and services in postsecondary education settings, they must disclose their disability status to their college. Additionally, students may need to reveal their disability to individual instructors in order to negotiate how accommodations and services are enacted in their courses. Thus, the act of disclosure is not simply managing private information (Braithwaite, 1991; Petronio, Martin, & Littlefield, 1984) but also an act of managing one's identity (Olney & Brockelman, 2003). Students must consider themselves an individual with a disability or at least claim to be one, so they may receive disability-related supports. Self-disclosure has been described as "the process of making the self known to other[s]" (Jourard & Lasakow, 1958, p. 91). Choosing either to disclose or withhold information about the self could be a result of the individual attempting to shape one's perceptions about oneself as well as others' perceptions of oneself (Olney & Brockelman, 2003). For example, Braithwaite's (1991) study on adults with disabilities showed that some adults avoided discussing their disability status because of their desire to be seen as "normal" people with typical interests. Attitudes about beliefs about disability and "normalcy" may be major dimensions in how students with disabilities conceptualize their sense-of-self.

Besides disability-related identity issues, other factors may also be responsible for influencing decisions about accessing support. Research has singled out self-determination skills and self-efficacy as other important predictors of accommodation usage (Anctil et al., 2008; Newman et al., 2014). Moreover, access to accommodations could also be related to students' exposure to or knowledge about navigating university administrative systems or other service support systems. Therefore, the research questions and analyses in the present study are framed primarily by four theories, models, or concepts: social identity theory, social theories of disability, self-determination, and forms of capital. These theoretical frameworks, and their corresponding empirical research literature related to disability, may be helpful as explanations for mechanisms that drive the use or avoidance of disability-related supports.

Social Identity Theory

Social identity theory has been useful for researchers in explaining the individual's reactions to identifying with or being assigned to a marginalized or low-status group. This theory posits that social identity is a part of an individual's self-concept related to the values and feelings of being a member of a group (Tajfel, 1981). As a member of a particular group, individuals desire to maintain a positive social identity. As not all groups have positive associations, people from marginalized groups may cope with a negatively valued status by employing a number of strategies, including: (a) detaching themselves from that group; (b) judging the unique aspects of their group as less negative; and (c) competing against the dominant group (Abrams & Hogg, 1990; Howard, 2000).

Stigma: considerations of private and public regard. Discussions about a negative or marginalized social identity warrant an initial explanation of the concept of stigma. Goffman (1963) described stigma as the experience of an undesired differentness from others based on certain behaviors or attributes. This differentness may elicit "negative or punitive responses" from others (Susman, 1994, p. 16). Goffman assumed that with an awareness of the public's negative attitude toward the characteristic, individuals with that characteristic may develop a sense of shame. More contemporary stigma theorists have focused on this interaction between the stigmatized and others. For example, Meisenbach (2010) defined stigma as "discursively constructed based on perceptions of both nonstigmatized and stigmatized individuals" (p. 271). A person or a group's stigmatized status is therefore created and reinforced by communication from both the stigmatized and the public's regard of that differentness. Under these definitions, scholars have typically categorized individuals with disabilities as a stigmatized population, since they are associated with people with disabilities, and as a group, they are attributed low-status by the nondisabled public (Beart, 2005; Braithwaite, 1991; Fitch, 2003; Israelite, Ower, & Goldstein, 2002; Kinavey, 2006; Nario-Redmond, Noel, & Fern, 2012). Therefore, to understand the social identity of those with disabilities, we must consider the attitudes of the individual and of nondisabled others.

Studies of self-perceptions often show that people with disabilities internalize and perpetuate negative beliefs about their disability. Finlay and Lyons (1998) asked their adult participants with intellectual disabilities to describe the meaning of disability, and the participants defined it primarily as deficits. They viewed learning difficulties as an inability to act. Participants described the disability as general inability (e.g., "they can't do anything"), as well as inability pertaining to particular tasks ("they can't dress themselves") and physical activities ("they can't talk"). Beyond functional tasks, people with disabilities also worry about negative perceptions in social and academic settings. Among college students, research has found that those with learning disabilities (LD) and attention deficit/hyperactivity disorder (AD/HD) feel most stigmatized about their disability in social relationships with peers (Trammell, 2009). In a study by May and Stone (2010), college students with LD were asked what they think the general public conceives of the disability. Compared to students without LD, students with LD were more likely to believe the general public perceives people with LD as having low intelligence. Students with disabilities have been vulnerable to accepting these misconceptions. Students with LD in the study were also more likely to cite the common stereotype that claiming their disability status is "working the system," purposefully deceiving professionals and the university to receive accommodations (May & Stone, 2010). Low (1996) showed that students with LD thought other students with disabilities were "too dependent, too self-centered, use their disability as crutch or an excuse and/or cheat" (p. 245). These findings support results from Li and Moore's (1998) study, which indicated that individuals with disabilities who believe that people mostly discriminate against and are hostile toward those with disabilities tend to be less accepting of their own condition.

Coping with stigma: detachment or reframing. According to social identity theorists, individuals may seek to minimize the effects of a stigmatized identity by disengagement, such as avoiding situations in which stigma is salient or denying the existence of the stigmatized trait (Miller & Kaiser, 2001; Tajfel, 1981). Therefore, distancing oneself from a disability identity may be a strategy to decrease the impact of negative evaluations of disability. For adults with disabilities, Beart (2005) suggested that many would prefer to disassociate themselves from their disability status to avoid the negative feelings that comes with accepting their disability status. For students, there is evidence in the literature suggesting that they also prefer to distance themselves from their disabled status. Results from Olney and Kim's (2001) qualitative study, for example, stressed that college students often choose to claim normalcy and to "pass for normal," especially if they have disabilities that are not readily apparent to others. McVittie, Goodall, and McKinlay (2008) mentioned that students with disabilities avoided being compared with other people with disabilities. When asked about their own abilities, rather than discussing them, these students would refer to the ability of others in their schools. They actively distanced themselves from others with disabilities as a way to claim to be "normal" (Low, 1996; McVittie et al., 2008). In an interview study with adolescent students who have spina bifida, Kinavey (2006) reported that students framed their identity based on typologies of overcoming disability, objectifying disability, or integrating disability. Students who fell under the first two types have internalized others' negative perceptions of people with disabilities, and so they either wished to overcome the shameful disability stereotypes, or they have come to view their disability as separate from their real self. These students' approach to coping with their disability echoes the findings from other scholars (Beart, 2005; Israelite et al., 2002; Low, 1996; Olney & Kim, 2001; Watson, 2002).

Avoiding self-disclosure of one's disability status to the college or to college instructors may also be viewed as a way to detach oneself from (and thus, to cope with) a stigmatized identity. In decisions about disclosure of disability status to the college and especially to instructors, students must consider the attitude of the receiver of the disclosure surrounding disability, as well as their own attitudes about disability and their comfort in revealing their disability status (Braithwaite, 1991). Individuals with disabilities have discussed avoiding disclosure because they did not want to be perceived as having a "sickness" or being "helpless" and other stereotypical characterizations associated with disability (Braithwaite, 1991). They feared being discredited by peers and instructors who think poorly of those with disabilities (Denhart, 2008; Olney & Brockelman, 2003; Trammell, 2009). Just as college students have expressed fear of disclosure, they have also reported reluctance in asking for help through accommodations and services (Low, 1996). This reluctance may be present because of what these forms of support represent to them. Some have denied accommodations because they believe they do not deserve the benefits of accommodations (Denhart, 2008). Denhart (2008) noted that some students with learning disabilities, for example, were averse to using accommodations because they felt that accommodations were akin to cheating and that using these services would result in less worthy work. These sentiments confirm findings from other studies (Low, 1996; Olney & Brockelman, 2003). Finally, combined with the fact that students are often adjusting to a newfound sense of independence in college, many individuals may reject accommodations in favor of trying to achieve success independently without help (Lynch & Gussel, 1996).

Another coping strategy available to individuals seeking to reduce the harm of stigma is by engagement, such as reframing or accepting the stigmatized trait (Miller & Kaiser, 2001). For example, Kinavey (2006) found that one group of adolescents in her study recognized their physical disability as stigmatizing but also as an accepted part of who they are. These students tended to have a more positive view of their condition. Thus, accepting disability was a viable alternative approach for these students to counteract stigma. Nalavany, Carawan, and Rennick (2011) saw that their participants with LD felt successful when appraising their own learning challenges but also when embracing their own strengths. Similarly, in Denhart's (2008) qualitative study, most participants with LD characterized LD as a "healthy cognitive difference," not a disability. This point was also reinforced in Olney and Brockelman's (2003) study findings, which indicated their college student participants perceived their disabilities "as a problem in the environment rather than in themselves" (p. 39) and that the meaning of disability is mutable based on context. Some participants in Olney and Brockelman's work explicitly commented that their condition seemed problematic only because they do not fit the standards that society created and that they disagreed with the negative perceptions of others regarding disability. In fact, many of the participants saw clear benefits in their disability, including having greater awareness of one's own strengths, having the ability to distinguish true friends, and having experiences that have shaped them to be more unique, creative, and resilient people.

Regarding developing identity models specific to disability, scholars have contended that this latter approach of reframing disability ought to be incorporated. Disability identity scholars Mpofu and Harley (2006) proposed that identity models should be based on the assumption that people with disabilities must consider their disabled status as an important aspect to self-definition and to accept and value that identity. Consequently, individuals can develop a positive, resilient disability identity to offset stigma associated with having a disability (Mpofu & Harley, 2006). Nario-Redmond and colleagues (2013) developed a disability identity model informed by social identity theory. Through factor analysis, disability group identity was found to have one underlying factor of five items which incorporated both cognitive and affective components to disability identification. This construct measured how central disability was to participants' sense of self and whether they valued being a member of the disability community. Nario-

Redmond and colleagues argued that people with disabilities cope with societal pressure and stigma by using either individualistic strategies or collective strategies. Individualistic strategies are characterized by detachment from disability and attempts to overcome disability, whereas collective strategies are marked by associating disability with enrichment, by growing disability community pride, and by engaging in social change and political action. The researchers hypothesized that those who highly identified with a disabled status would employ more collective strategies and less individualistic strategies, and their results substantiated these hypotheses.

Taking into account both classic social identity theory and more recent work in this topic, group identity may be measured by several dimensions (Leach et al., 2008). Luhtanen and Crocker's (1992) Collective Self-Esteem Scale had several social identity constructs, including identity, membership, private regard, and public regard. The construct of identity described the importance of the generic group identity to the individual. Membership relates to how worthy individuals feel they are to their group. Private regard refers to the individual's feelings about their group, while public regard is the person's thoughts of how others feel about their group. These factors and items have been incorporated in identity measures for other groups, most notably for African Americans in the Multidimensional Model of Racial Identity (MMRI; Sellers, Rowley, Chavous, Shelton, & Smith, 1997). The Collective Self-Esteem Scale and its individual items have also been used in research with individuals having disabilities (Hahn, 2001; Nario-Redmond et al., 2013), but the applicability of the scale and its components to the population of students with disabilities have yet to be tested and confirmed.

Other influential factors: visibility and age of onset. Research has often mentioned the importance of the visibility of the disability in affecting individual's identification with disability and in affecting their decision to seek college supports. Braithwaite (1991) found that those with overt disabilities sometimes cannot avoid discussing their disability because the visible nature of their disability make them susceptible to questions and comments from others, especially from nondisabled people. However, having a disability that can be readily seen or discerned by others, such as LD, AD/HD, psychological disabilities, or mild developmental disabilities, allow individuals to "pass" as not having a disability and thereby, to deny identification with their disability status. Reports from those with nonapparent disabilities showed that such students strongly endorse minimizing their disability and employ strategies to pass as typical students by concealing their disability and appearing to function as their typical peers do (Olney & Kim, 2001). Those with non-overt disabilities have to contend with others' and their own beliefs about the authenticity of their disability (Olney & Brockelman, 2003). Peers and instructors may not believe that they have a disability and may think that disability is a false excuse for laziness (May & Stone, 2010). All of these factors can impinge on the individual's decision to disclose and access resources. Yet for these students with nonapparent disabilities, disclosure may be all the more important. Pachankis (2007) warned that hiding an identity can be detrimental to one's psychological health. Other scholars have found harmful associated effects with concealing disability status, such as increased anxiety and decreased well-being (Fitzgerald & Paterson, 1995; Zahn, 1973). Disclosure can be a way to relieve the stress of concealment and to allow students to focus on their coursework (Lynch & Gussel, 1996). It has also been associated with a higher quality of life and improved social life (Corrigan et al., 2010; Thompson, 1982).

Another factor is the age of onset or the age at which the person became aware of having a disability. Those who were born with the disability or acquired and learned about its presence earlier in life presumably have had more time to incorporate their disability status into their overall identity and to develop positive feelings about their condition (Hahn, 2001; Hahn & Belt, 2004). Hahn and Belt (2004) reported that those who came to develop or acquire disability earlier in life tended to have a more positive affirmation of disability. They surmised that earlier onset can mean a longer period of identifying and coping with disability. Nario-Redmond et al.'s (2013) results also reflect this conclusion. As such, age of disability awareness should be considered in matters of disability identity and the effect of these matters on behaviors such as accessing accommodations.

Social Theories of Disability

Because social identity theory is a framework that can pertain to different types of groups (e.g., race/ethnicity, gender, religious affiliation, etc.), there are group-specific identity issues that cannot be addressed by this theory alone. One crucial issue is the ideological models inherent in all social identities; in other words, what are the different stances one can hold about participation or membership within a group? For example, the MMRI (Sellers et al., 1997) was developed as a framework for understanding the significance and meaning that individuals attribute to being African American. Corresponding to the factors in the Collective Self-Esteem Scale, the MMRI construct of centrality addresses the significance of being African American to the individual, whereas the private and public regard construct describes how positively the individual feels about the group identity and how positively he or she thinks others feel about the group, respectively. The important contribution of the MMRI is its construct of ideology, which represents the beliefs one holds about the group and conveys the qualitative meaning of group membership specific to the social realities and historical experiences of African Americans. The MMRI contains four ideologies about being African American, including a nationalist philosophy, an oppressed minority philosophy, an assimilationist philosophy, and a humanist philosophy.

If one can imagine that the public and private regard factors of social identity theory relate to the affective evaluations of a group identity, then ideology factors of the MMRI can correspond to the cognitive viewpoints of being a member of the group. Sellers and colleagues conjectured that combinations of these dimensions of identity might influence the behavior and outcomes of African Americans. Their hypotheses were tested in subsequent studies that examined the relationship between dimensions of racial identity and academic achievement (Sellers, Chavous, & Cooke, 1998), academic persistence, academic identification, and school behavior problems (Sellers, Chavous, & Cooke, 1998; Smalls, White, Chavous, & Sellers, 2007). The dimensions of ideology, along with the other social identity factors, can perhaps be adapted to disability identity in determining whether college students with disabilities disclose and seek support.

Binary models of disability. Most disability scholars will agree that there are two dominant models in defining the disability experience. The medical model posits that disability is an impairment located within the body and/or mind of the individual, and thus, disability should be described in biological and psychological terms (Gilson & Depoy, 2004). In this model, physical traits, learning failure, or deviations from typical behavior are emphasized (Dudley-Marling, 2004; Gilson & Depoy, 2000; Oliver, 1996) and suggest a manifestation of the individual's inherent deficits (Dudley-Marling, 2004). This understanding of disability originated in the medical and psychological disciplines but is just as prevalent in the field of special education (Meekosha & Shuttleworth, 2009), where disability is situated within discussions about interventions and rehabilitation and framed by behavioral theories (Gabel & Peters, 2004). In fact, the language in the American with Disabilities Act (ADA), the legislation designed to protect the civil rights of college students with disabilities, reflects the medical model by defining disability as "a physical or mental impairment that substantially limits one or more major life activities." In this understanding of disability, the impairment is viewed as the personal problem or responsibility of the individual, and therefore, this model is also sometimes referred to as the personal model of disability (Swain & French, 2000).

In response to the personal/medical perspective of disability, a competing model emerged. Starting in the 1970s, social science scholars, such as Irving Kenneth Zola (1972), cautioned about the encroachment of medicine into all aspects of daily living and the danger in reducing almost all human behaviors into categories of "health" and "illness." Zola (1972) expressed that "by locating the source and the treatment of problems in an individual, other levels of intervention are effectively closed" (p. 500). His contemporaries in the disability rights movement were examining an alternative outlook on disability. In this model, the onus of disablement is placed on societal institutions and the environment, rather than on the individual (Gabel, 2009; Gilson & Depoy, 2000; Oliver, 1996). The social model of disability was first articulated by the Union of Physically Impaired Against Segregation (UPIAS) in the United Kingdom in the 1970s, and such an interpretation of disability was adopted by disability rights activists in other parts of the world thereafter (Gabel, 2009). In their *Fundamental Principles of Disability*, the UPIAS (1974) argued that "it is society which disabled physically impaired people" (p. 3); it is the social arrangements and physical barriers that restrict the autonomy and participation of people with disabilities in society. Based on the social model, activists and disability scholars called for measures against segregation and oppression, demanding for the removal of physical barriers and for the protection against discriminatory practices (Rembis, 2010). As such, the social reinterpretation of disability has been credited with empowering disability groups and their allies to make political and social changes over the past few decades (Meekosha & Shuttleworth, 2009).

These two definitional models of disability are often reflected as important themes in disability identity research. For instance, there is evidence showing that while some college students define their condition using a medical model perspective, others adopt a social model viewpoint. In Griffin and Pollak's (2009) qualitative investigation on British students with LD, AD/HD, and autism in higher education, close to half of their interviewees framed their disability as a medical condition characterized by deficits. Yet other students communicated a view of LD, AD/HD, and autism characterized by human difference. While the latter group of students sometimes did mention processing difficulties, they more often spoke generously about the strengths of their condition or how they have adapted to their disability. More than a third of Griffin and Pollak's participants originally held a medical model viewpoint but changed their perception of their disability to adopt a social model perspective, occasionally due to the influence of participation in disability support groups.

Measuring binary models of disability. Scholars have devised ways to evaluate disability identity dimensions and to attempt to assess their association with behavior, such as social action for disability rights. The growing emphasis on the social model definition of disability has been reflected in one of the very few theoretical models of disability identity. According to Darling and Heckert (2010), the *orientation* toward disability consists of the dimensions of *identity*, *model*, and *role*. This construct of disability *identity* is based on the idea that identity includes both the strength of self-identification with disability and the evaluation of that disability (pride versus stigma/shame). The construct of *model* expresses the association with either the belief that disability is a personal trait/problem (i.e., consistent with the personal/medical model) or the belief that disability is a problem within society (i.e., social model). Using factor analysis, they were able to differentiate four factors representing the two constructs: disability pride, exclusion/dissatisfaction, social model, and personal/medical model. These four factors may result in behavioral roles that tend toward certain *role* behaviors, such as disability activism or passivity. Darling and Heckert found that those who espoused social model beliefs were more likely to have higher levels of activism, while those with lower levels of disability pride tended to have lower levels of activism or no activism.

The visibility of the disability may again play an influential role in how disability perspectives affect action. One interesting result of Darling and Heckert's (2010) study is that those with mobility disabilities were more likely to subscribe to the social model and to engage in an activist role. Those with mobility disabilities likely have had a more difficult time concealing their disability status and therefore have had more incentive to engage with their disability identity and to participate in disability activism. Contrastingly, people with less visible disabilities might be more likely to try to pass as normal and to adopt personal/medical model views of disability (Darling, 2003). Research regarding the influence of identity in students' support-seeking behaviors ought to take into account the overtness of the disability.

Although one may argue that the disability models are cognitive interpretations of the meaning of disability, one cannot ignore that there are affective qualities inherent in these definitional models. A major reason disability scholars rejected the personal/medical model is its negative associations (Swain & French, 2000). Griffin and Pollak's (2009) participants who upheld personal/medical model attitudes would speak of "suffering" from their impairment. Swain and French cited diabetes research in which the survey instrument employed tragedy-laden words ("fear," "worry") and items ("do you even for a moment wish that you were dead?"). Embracing the social model can be viewed as a movement away from dealing with disability as a personal tragedy into adopting a more positive life-affirming identity (Swain & French, 2000). Then logically, when one considers measuring disability identity, it may be difficult to separate these definitional models from factors that measure affective evaluations of disability. This was certainly the case for Sellers and colleagues' MMRI model, in which the regard subscales were not found to be statistically distinguishable from the ideology subscales (Sellers et al., 1997, 1998). Such a question has not been addressed in the research of disability identity and therefore warrants further examination.

Another theoretical issue in setting up binary understandings of disability is that the opposition between personal/medical model and the social model may not be accurate or productive. Although scholars and activists consider the social model to be a more positive perspective on disability, over the past two decades, scholars have called into question the adequacy of the social model alone in explaining the experiences of all individuals with disabilities. One critique of the model is that the interpretation of the model has been too entrenched in structuralist or Marxist materialist theory (Freund, 2001; Gabel & Peters, 2004; Meekosha & Shuttleworth, 2009). The so-called "strong social model" interpretation focuses on the reproduction of economic, political, and social conditions that discriminate and exclude those with disabilities (Freund, 2001) but neglects the unique bodied experiences of those same individuals. The postmodern critique challenges the binary mode of thinking about disability and forces the disability discipline to consider the intersection of disability and impairment. Gabel and Peters (2004) suggested that,

> It seems likely that theories emerging from postmodernism could move the heated debates about disability/impairment forward, thereby freeing us to concentrate on models…that account for the material reality of living with physical bodies that might not work perfectly while also actively resisting the oppression of disablement. (p. 88)

This interpretation describes the disability experience as the "relationship between people with impairment and a discriminatory society" (Shakespeare, 1996, p. 3). The World Health Organization (2014) echoes this simultaneous focus on both the material body and the societal representations in its definition of disability: "Disability is the interaction between individuals with a health condition (e.g., cerebral palsy, Down syndrome and depression) and personal and environmental factors (e.g., negative attitudes, inaccessible transportation and public buildings, and limited social supports)." This new stance acknowledges the existence of differences within individuals with disabilities but advocates for a society that makes these differences less impactful in everyday life.

Beyond simply disrupting the social-versus-personal/medical model binary, disability studies seek to further contest other traditional aspects in understandings of disability in order to create a more inclusive, participatory, and nondiscriminatory society. Disability studies, as a discipline, is moving toward adopting a critical social approach to scholarly work. Borrowing from other critical social theories, critical disability theory proposes exploring the spaces between the individual/society divide in order to expose hidden power dynamics and hierarchies embedded in micro- and macro-level relations, representations, and attitudes (Meekosha & Shuttleworth, 2009). Critical disability studies also advise investigating the interactions between disability and other structures of inequality, including race, gender, and sexuality, as a means to identify and understand the systems of power and oppression and to build alliances across marginalized groups (Meekosha & Shuttleworth, 2009). The criticisms leveled at binary perspectives of disability (social-versus-personal/medical and individual-versus-societal) begs the question of whether distinguishing between dimensions is possible or even helpful in understanding students with disabilities. Darling and Heckert's (2010) factor analytic work on the social/medical model suggests that these aspects are indeed distinguishable and, more importantly, are still useful in relating to individuals' involvement in activism, but clearly, more research is needed to confirm such findings within the college student population.

Self-Determination

Self-determination theory, according to the literature on motivation, is based on the assumption that individuals have the innate drive to develop their interests and viewpoints, pursue new goals and change their environment; through these processes, they can attain their true potential (Ryan & Deci, 2002). Special education scholars have also explored this concept, applying it to those with disabilities especially in the transition to postsecondary life. These scholars have argued for the importance of self-determination skills in helping students get to know themselves better and in preparing students for success after high school. Admittedly, there is some overlap between disability identity and self-determination constructs. Getzel and Thoma (2008) proposed that self-determination skills include "acceptance of a disability" and "knowing how to describe one's disability." Hoffman and Field (1995) also defined a self-determination model that encompasses knowing (one's own strengths and needs) and valuing oneself. Yet there are features of self-determination that are exclusive of self-perceptions. In Hoffman and Field's (1995) model, they include setting goals and planning to meet goals, executing plans to attain objectives, problem-solving through setbacks and challenges, and evaluating outcomes of one's planned actions.

Wehmeyer and colleagues further refined self-determination as applicable to individuals with disabilities. According to these scholars, attitudes and behaviors are self-determined when the individual acts "as the primary causal agent in one's life" in order to "maintain or improve one's quality of life" (Wehmeyer, 2005, p. 117). Those with disabilities may not always have absolute control over all of their life activities; however, if they exercise personal agency in making decisions, they are acting in a self-determined way. Wehmeyer (1997, 1999) and colleagues (1997) developed a framework for conceptualizing self-determined behaviors that consists of four characteristics: (a) autonomy, (b) self-regulation, (c) psychological empowerment, and (d) self-realization.

Again, with this model, there are elements—specifically, in the self-realization factor—related to identity and disability knowledge. When individuals act in a self-realized manner, they are motivated to act by a comprehensive and accurate understanding of themselves, including strengths and weaknesses linked to their disability (Wehmeyer et al., 1997).

One crucial characteristic highlighted by Wehmeyer (1997) as a "cognitive and behavioral explanation" of self-determined behavior is psychological empowerment. When individuals are psychologically empowered, they believe that they have control over their circumstances (internal locus of control), that they possess the necessary skills to achieve their objectives (self-efficacy), and that their actions will produce desired results (outcome expectations). Psychological empowerment as a concept also has roots in the disability self-advocacy and rehabilitation literature. According to Zimmerman (1995), psychological empowerment is the process wherein individuals "gain mastery over issues of concern to them" (p. 581). This empowerment process can be expressed intrapersonally, interactionally, and behaviorally (Zimmerman, 1995; Zimmerman & Warschausky, 1998). The intrapersonal expression of psychological empowerment relates to the kinds of attitudes people hold about themselves, and includes self-efficacy, perceived competence, locus of control, and motivation of control. The interactional aspect refers to the way individuals engage with their environment, including acquiring knowledge about the environment, understanding the resources necessary to effectively achieve their goals, and developing ways to manage and to use appropriate resources. As such, other disability researchers have termed the interactional component the "knowledge" dimension (Koren, DeChillo, & Friesen, 1992). The third and last dimension is the behavioral component of psychological empowerment, which speaks to the capacity to act on the information gathered to attain goals (Zimmerman, 1995). Wehmeyer and Kelchner (1995) designed the Arc's Self-Determination Scale to measure the four characteristics of self-determined behaviors in various general life contexts (i.e., social life, academics, and employment). Their subscale of psychological empowerment dovetails well with the three components of psychological empowerment described by Zimmerman and Warschausky. The items included attitudinal evaluations of one's own competencies (e.g., "I have the ability to do the job I want"), assessments of one's knowledge (e.g., "I know how to make friends"), and self-ratings of behavior (e.g., "I tell others when I have new or different ideas or opinions").

Generally, scholars have found that enhanced self-determination is related to greater advocacy for more support and greater motivation for success in the college setting. In an interview study, Anctil et al. (2008) found that college students with disabilities who were more self-determined were more likely to request personal and academic accommodations to meet their needs. Related to longer term objectives in college, self-determined students with disabilities have also been found to value the ability to problem-solve, to set goals, and to have high expectations in the college setting (Getzel & Thoma, 2008; Jameson, 2007), as well as to attain higher grade point averages (Jameson, 2007). The component of psychological empowerment, in particular, has been linked to better self-advocacy for support (Morningstar et al., 2010). However, research using a nationally-representative sample has indicated that psychological empowerment, along with two other components of self-determination in Wehmeyer's model, was not related to the pursuit of accommodations and other disability-specific services in college (Newman & Madaus, 2015). The contradictory results in the literature suggest a need for greater scrutiny in the process by which self-determination and psychological empowerment may influence access to disability-related supports and academic performance.

Forms of Capital

More related to support-seeking behaviors, prior research has found that forms of capital, such as income, social networks, and knowledge of navigating systems, may be critical predictors in youths' usage of college disability-related supports. Coleman et al. (1966) and Bourdieu (1986) proposed the idea that family background and neighborhood environment were influential in student outcomes. Economically-advantaged and more highly educated families and communities have more financial and human capital (Bassani, 2007) and also have access to more "social capital" in the form of social norms, networks, and relationships (Bourdieu, 1986; Coleman, 1987). As such, they have the greatest potential in conferring these important networks and norms to their children if parents and children maintain good, positive relationships with each other (Bassani, 2007). Cultural capital pertains to the knowledge and implementation of dominant culture practices (Bassani, 2007). In the U.S. context, this relates to an understanding of and an ability to enact English-speaking, middle-class values. Specific to students with disabilities in college, cultural capital can mean knowledge of one's rights, particularly the availability of accommodations and services and the ways in which to access them. The extant data endorse claims that capital could support students' access to disability-related services. For example, the National Longitudinal Transitions Study-2 listed that students with disabilities who came from wealthier households (defined by family income greater than $50,000) were more likely to consider themselves as having a disability and to have informed the school about the disability (Newman et al., 2011). Cultural, financial, and social capital could also translate to other forms of support (e.g., tutoring), which may enhance academic performance. Typically, the source of cultural and social capital is parents, but students may also gain advantageous social networks and knowledge about accommodations and navigating the university system by sheer academic or life experiences. Therefore, one can also hypothesize that older or more mature students would also stand to have more knowledge about college supports and ways to attain academic success.

Researchers have suggested that race and ethnicity may be predictive of access to support and achievement because of its relationship with socioeconomic status and English language proficiency (Caldas & Bankston, 1997). Data have shown that White students are more likely to consider themselves as having a disability and to have informed their colleges about their disability than either African American or Hispanic students (Newman et al., 2011). Mental health research has found that the social stigma surrounding disability is more prominent in Communities of Color (U.S. Public Health Services, 2001). On the other hand, Students of Color may possess other forms of capital, such as parents' aspirations for children's success, which resist or mitigate the effects of structured inequities (Yosso, 2005). In any case, it would be beneficial to examine the contributing factor of demographics in determining the potential causes of students' usage of accommodations and academic performance in postsecondary education.

Chapter III: Method

Methodological Considerations

The review of the literature on disability identity in college students revealed that a majority of the studies are qualitative in nature, conducted on small samples. Rarely are the themes found in this literature tested on a larger, more diverse group of students. Methodological considerations were made in designing the present study to address the goals of this research. The objectives of the study are to determine the underlying subconstructs within disability identity and then to ascertain the potential relationship these subconstructs and psychological empowerment share with students' knowledge and evaluations of accommodations and their usage of these accommodations and resources. A survey study was the most reasonable approach to systematically gather information that could be used to analyze these relationships on a large group of students.

While a mixed mode survey (a combination of print-, telephone-, or web-based surveying) was considered, the literature suggests using one mode to minimize significant measurement differences, since different modes can lead to varying responses from surveyees (Dillman et al., 2009; Dillman, Smyth, & Christian, 2009; Huang, 2006). More and more, web surveys are becoming researchers' mode of choice for its ability to reach a greater number of respondents (Schmidt, 1997). Compared to traditional paper- or telephone-based survey techniques, web surveys are more efficient (Kaplowitz, Hadlock, & Levine, 2004; Schmidt, 1997), both cost-saving to the researcher in disseminating the survey and time-saving for the survey user in submitting the form.

There are specific reasons that make web surveys the most appropriate mode of data collection for this target population. One advantage of Internet-based surveys is its dynamic and responsive qualities, which can increase the precision of survey items and enhance respondents' motivation to complete the questionnaire (Schmidt, 1997). Features available on professional accounts on web survey development websites allow for the presentation of questions and response options to be tailored to the participant based on the responses supplied by the participant. Not all of the survey items will be applicable across all participants depending on their responses to some of the questions. By allowing navigation to only relevant questions, web surveys can reduce the cognitive demand placed on the surveyee (Huang, 2006), which is an especially important consideration for the population of interest in this project. The wording of web survey questions may also be tailored to students, relying on prior responses, which would make items much more precise. Furthermore, for students who may accidentally overlook questions, web surveys can also ensure that respondents answer all necessary questions before submitting the form, minimizing the potential amount of missing data (Huang, 2006). A second important benefit of web surveys for this population is that students may answer without providing much identifying information, such as home addresses or telephone numbers. This mode may encourage responses from students with disabilities who feel stigmatized by their disability and prefer the anonymity of Internet-based communication. Self-administered web surveys may also draw out more honest responses from surveyees for sensitive questions and reduce social desirability bias (Couper, 2000).

Sample

Participants in this one-time survey study were college students self-identified as having disabilities, a chronic health issue, and/or a psychological condition. Eligible respondents must also report that they are between the ages of 18 and 65 and are attending a postsecondary education institution in the U.S., including two- and four-year undergraduate degree-granting programs, graduate studies programs, technical or vocational programs, and advanced professional degree programs. As failure to request accommodations is not an issue that only pertains to individuals in traditional college programs, it is critical to include students from a wide range of postsecondary education settings to determine their reasons for seeking or avoiding support.

Students were recruited over a six-month period from postsecondary programs that provide accommodations to students with disabilities, such as disability service offices, learning resource centers, and/or offices of student or academic affairs. At first, recruitment efforts comprised of informal presentations and flyers to students and disability service staff at a community college and a public four-year university in Central California. Students attending such presentations were encouraged to inform others who qualified for the study to participate. Then, contact with programs across California was made via email (see Appendix A for copy of initial email communication). More specifically, a comprehensive list of two- and four-year public and private colleges, specialized advanced degree programs, and technical and vocational programs was first generated. Afterward, through an Internet search, email contact information was gathered for administrators of disability-related services programs for each postsecondary institution. Individual emails were sent to disability service professionals to explain the goals and purpose of the research, the human subject safeguards, as well as the details pertaining to the procedures of the survey. A majority of the interested disability service programs requested to see the informed consent (see Appendix B) and evidence of Internal Review Board approval from the author's university, and such documentation was provided when asked. Several other programs required additional human subjects approval from their local office of research; efforts were made to apply for human subjects approval at these institutions when feasible. To expand the search for survey respondents, recruitment procedures were replicated in ten other states. State selection was stratified by geographic region (Western, Midwestern, Southern, and Eastern states). Two to three states in each region with the most postsecondary educational institutions were chosen. Altogether, 1101 programs were contacted over email, and 61 of those programs agreed to disseminate information about the online survey to the students they serve, through their internal email listserv or electronic newsletter and/or through posting a physical flyer (see Appendix C) about the study in their office. Furthermore, recruitment emails were sent to 11 disability advocacy student groups on college campuses in seven of the selected states. A small number of students (n = 5) from five non-selected states (i.e., Arizona, Connecticut, Louisiana, Missouri, and Wisconsin) also completed the survey. The names of the selected states and the percentage of student participants attending school in those states are listed in Table 1.

There is evidence that lotteries in web-based surveys can be an effective way to increase the response rate (Bosnjak & Tuten, 2003; Göritz, 2006; Tuten, Galesic, & Bosnjak, 2004). As such, a lottery for electronic gift certificates to a popular online retailer was implemented and advertised with the study. Students could voluntarily provide an email address after completing the survey, which entered them into the drawing for a gift certificate to a widely-used online retailer. Those students interested in the raffle were directed to a separate password-protected website to enter their email, which would only be visible to the researcher. Email addresses were deleted after the raffle closed. Initially, five $50 gift certificates were made available for drawing. After the raffle ended and the gift certificates were sent to the randomly-selected winners, three more universities were interested in distributing information about the study, and thus, data collection was extended for three weeks, with another raffle drawing for one $50 gift certificate to the same online retailer.

Of the 569 survey respondents who met the study's eligibility criteria, 514 participants were included in the study's analyses for having completed at least approximately 80% of the survey. Table 1 conveys the sample distribution by type of postsecondary education, age, gender, race/ethnicity, and parents' education. Information related to their type(s) of disability or condition is displayed in Table 2. Although the National Longitudinal Transition Study-2 (NLTS-2), a nationally-representative sample study, indicated that more males than females enroll in postsecondary education (62% males versus 38% females; Newman & Madaus, 2014), in the current sample, approximately three-quarters identified as female. The gender discrepancy in survey responses probably reflects the response rate differences across groups in convenience sample studies where students self-select to participate in the research. Female college students have been found to be twice as likely to participate in surveys, compared to male students (Sax, Gilmartin, & Bryant, 2003). While the high proportion of White respondents may merely reflect the high rates of enrollment in higher education among White students with disabilities (66%; Newman & Madaus, 2014), White and Asian individuals have also been found to be more apt to answer surveys (Sax et al., 2003).

Measures

Survey construction. Students were administered a 70-item questionnaire (see Appendix D) on the online survey tool SurveyMonkey to obtain information related to four topics: (a) accommodation request behaviors and academic achievement; (b) self-perceptions about disability; (c) psychological empowerment; and (d) demographic factors. Some items were adopted or adapted from existing instruments and surveys. Some of the language in items pertaining to the types of accommodations and services used and to the disclosure of disability to one's postsecondary institution was drawn from the survey employed by the NLTS-2 (National Center for Special Education Research, 2009). Other items were borrowed from social identity or disability orientation scales (Darling & Heckert, 2010; Luhtanen & Crocker, 1992). Questions from these sources were modified if they were "double-barreled" (i.e., asking about two constructs) or if they were deemed unclear or misleading. Questions about students' psychological empowerment were drawn from an existing scale (Wehmeyer & Kelchner, 1995), unmodified.

Survey construction was also informed by input from stakeholders. For example, from a previous exploratory interview study, students' perspective of disability was found to be a major aspect of the disability identity construct. These perspectives conformed to the disability studies' conception of the personal/medical model and social model (see Chapter 2 for a discussion about these definitional models of disability). Hence, additional items regarding disability identity were generated based on comments from interviewees and from Darling and Heckert's (2010) survey related to the personal/medical and social model constructs. Another approach to obtaining student feedback was to conduct cognitive interviews (Dillman, Smyth, & Christian, 2009). Three college students with disabilities were asked to assess the readability and accuracy of items. These students were asked to read the survey and to "think aloud," or discuss their interpretation of the questions. A brief report of these cognitive interviews was generated that documented the comments and feedback of the students. From there, wording that was considered vague or caused discomfort was changed. Not only was the language of the items considered, the sequence of questions in the survey was also influenced by student feedback, as well as by the literature. Screener items that determined the eligibility of student participation in the survey were placed in the beginning of the survey so that the web survey host could redirect ineligible respondents to a disqualification page. Related questions were usually grouped together, though particularly sensitive questions (indicated by student's response during the cognitive interview) were placed at the end of the survey since respondents are more motivated to complete such questions if they have already invested a considerable length of time on the survey (Dillman, Smyth, & Christian, 2009).

Professionals and a colleague were also consulted. A college disability service program director of a central California coast community college reviewed the survey and made recommendations for further modifications, mostly to clarify wording related to accommodation categories and requests. Finally, a colleague with a developmental educational research background evaluated the survey for consistency and clarity of language and for the flow and order of items. The author and the colleague discussed the suggestions and some of the recommendations were incorporated into the survey.

The final survey was hosted on the online survey tool SurveyMonkey. This survey tool allowed students to only navigate to relevant questions based on their responses, thus customizing and expediting the survey experience for them. Question piping, another specific feature of the program, fills in survey questions with text that respondents inserted in a previous response. For instance, rather than instructing students to answer questions about disability in general, the survey was able to populate the question field with students' selection of a primary disability (the disability that most affects their learning), thus decreasing the cognitive load for students and increasing the precision of those questions.

Variables. *Frequency of usage.* The major outcome variable assessed the frequency with which students with disabilities used accommodations or services. The variable was developed on the basis of two items. One item asked students whether they have "ever used any services or accommodations in college because of [their primary disability]." If students responded "yes," they were then prompted to answer a six-point Likert scale item (ranging from "almost never" to "always": "Overall, how often do you use services or accommodations because of your [primary disability]?" For analyses, responses to both items were combined into one item, measured by seven-point Likert scale rating (ranging from 1 = "never" to 7 = "always").

GPA. A secondary outcome variable was students' cumulative grade point average (GPA), used as a proxy for college academic achievement. GPA scores ranged from 0.00 to 4.00.

Disability identity. The primary hypothesized independent variables were dimensions related to the factor of disability identity. Twenty items about disability identity were adapted or developed for this survey. Students were requested to consider their primary disability when evaluating the extent of their agreement with the twenty items (on a seven-point scale, with 1 = "strongly disagree" and 7 = "strongly agree"). Twelve of those items were derived from three subscales in the Collective Self-Esteem Scale (Luhtanen & Crocker, 1992; for a discussion about the scale, see Chapter 2), although one item ("pride") was modified due to the influence of Sellers et al.'s (1998) adaptation of Collective Self-Esteem. The revised version of the "pride" item was also better aligned with the positive evaluative language in the disability community. Since Luhtanen and Crocker's scale concerned self-perceptions of one's membership in a generic social group, the language of these questions was modified to apply to individuals with disabilities. The scale contained both positively and negatively worded items to reduce acquiescence bias. The three original subscales were found to be internally consistent (ranging from α = 0.74 to α = 0.80). The seven-point Likert response scale for this measure (with higher scores indicating stronger agreement with the statement) was retained for this survey. To address students' perspective on disability, the survey included five items adapted from Darling and Heckert's (2010) Questionnaire on Disability Identity and Opportunity and three researcher-developed items. Table 3 illustrates the items, their source, and their intended associated dimension.

Psychological empowerment. The 16-item subscale of Psychological Empowerment in Wehmeyer and Kelchner's (1995) Arc's Self-Determination Scale was incorporated into the survey in its entirety to measure one aspect of students' self-determination skills, as a possible rival predictor. While all of the subscales in the Arc's Self-Determination Scale are crucial components of self-determination, the subscale of psychological empowerment was associated with the constructs of self-efficacy and locus of control, constructs that seem to most motivate students' decision to be proactive and to obtain support when needed. The subscale has also been used independently as a measure in another study examining transition preparation and self-determination for college students with disabilities (Morningstar et al., 2010). The internal reliability for psychological empowerment is acceptable (α = .73).

Access knowledge. Students' knowledge of ways to access disability-related accommodations and services served as one possible mediator. This variable were measured through the seven-point Likert scale item "I know how to get accommodations and services that I need at my college."

Perceived usefulness. Another mediator, the student's perceptions about the utility of accommodations and services, was assessed through the item "my college offers services or accommodations that are useful to me." This item was also measured on seven-point rating scale.

Covariates. Six items regarding parents' education level, disability awareness age, visibility of disability, age, race/ethnicity, and gender were included as variables because of their potential as relevant covariates. Participants were asked to record their age in years. They were also asked to provide the age (in years) at which they were aware of having their primary disability. Parents' education level is a dichotomous variable indicating whether at least one parent holds a college degree (0 = no, 1 = yes). Under the variable visibility of disability, students were asked to select or provide information about their primary disability. The author then later categorized those with a mobility impairment or were deaf or blind as students with "overt disabilities," whereas those with other conditions were classified as "non-overt disabilities" (0 = non-overt, 1 = overt). A large majority of respondents (86.8%) were grouped as having non-overt disabilities. Race/ethnicity was also dichotomized, such that students who only identified as White were designated as one group and students who identified as any other race/ethnicity (or identified as White *and* another race/ethnicity) were grouped as "Person of Color" (0 = White, 1 = Person of Color).

Analyses

Several analyses were conducted, with SPSS 22 software used for data preparation and Mplus version 7.3 (Muthén & Muthén, 1998-2012) used for factor model development and analysis throughout the investigation. Seldom are researchers able to collect multiple waves of data to perform different analyses. It has become accepted practice to collect a large number of responses at once, randomly divide the pool of respondents, and then conduct separate analyses on each subsample (Fabrigar, Wegener, MacCallum, & Strahan, 1999). The participants were allocated into two groups at random, with different types of procedures performed on the two subsamples to address the study's research questions. In the first stage of analysis, an exploratory factor analysis (EFA) was performed to determine the factor structure of the construct of disability identity among the first subsample. In the second stage, using the second subsample, confirmatory factor analysis (CFA) procedures were employed to validate the factor structure. Lastly, two structural equation modeling (SEM) analyses were conducted on the second subsample to determine the nature of the relationship between these factors, the competing independent variable, and the outcome measures. From the SEM procedures, one would also be able to tell whether the value of the variables or factors varied across covariates.

The author relied on traditional strategies to make sample size decisions for each subsample. According to Gorsuch (1983), when conducting factor analysis, the cases-to-variables ratio should be 5:1. Since there are 20 disability identity-related items in the current survey, the smallest *n* required to conduct an EFA is 100. For the CFA and the SEM procedures, Mueller and Hancock (2010) also recommended a cases-to-estimated-parameters ratio of 5:1. The author originally projected that the proposed SEM would estimate approximately 70 parameters, and for such an SEM, the minimum sample should be about 350 respondents. Therefore, the pool of 514 participants was randomly divided such that there would be a sufficient or near sufficient sample size to perform the appropriate analytic procedures. Eventually, 122 students were assigned to the EFA subsample, while 392 students were apportioned to the CFA and SEM subsample.

Exploratory factor analysis. To answer the first research question regarding the factor structure of the disability identity construct, the first stage of analysis used exploratory factor analysis procedures on the first subsample of students on the 20 items related to disability identity. Firstly, the six negatively-worded items drawn from the Collective Self-Esteem Scale were recoded such that higher scores reflect a stronger affiliation with or more positive attitude toward disability identity. An oblique rotation (i.e., geomin rotation) was then requested, since constructs within disability identity were hypothesized to correlate. Maximum likelihood (ML) procedures were used to extract factors and estimate goodness-of-fit statistics. Indicators of goodness-of-fit in this analysis were chi-square (χ^2), the root mean square error of approximation (RMSEA), Comparative Fit Index (CFI), and standardized root mean square residual (SRMR). The chi-square statistic is a measure of the overall discrepancy between the population covariances and those predicted by the model, as indicated by a significant *p* value, so nonsignificant *p*-values are favorable (Kline, 2011). To be considered acceptable fit, CFI should be larger than 0.90 (Bentler, 1990; Bentler & Bonett, 1980), RMSEA should be less than 0.06 (Hu & Bentler, 1999), and SRMR should be less than 0.08 (Hu & Bentler, 1999). Since chi-square is often sensitive to large sample sizes, interpretation of the results will rely more heavily on the other goodness-of-fit indices.

Furthermore, eigenvalues (judged against the Kaiser criterion to retain factors which have an associated eigenvalue greater than 1.0) and a scree plot were consulted to select the most parsimonious factor structure (Brown, 2006). The rotated factor loadings were also examined for cross-loading items and for loadings below the predetermined salience level of .40; problematic items were eliminated and the factor analytic procedures were re-run with the reduced set of items until a simple structure emerged.

Confirmatory factor analysis. The second stage of analysis examined the generalizability of the factor structure proposed by the exploratory analysis. A confirmatory factor analysis was conducted on the second, larger subsample. The factor structure that emerged in the EFA was applied in this second analysis. Based on this model, statistics and goodness-of-fit indices were generated using robust ML procedures, and from these statistics and indices, the fit of the model was judged using the same criteria as for the EFA. Standardized parameter results and communalities were examined to assess how well-defined the factors are. Finally, potential factor correlations were explored.

Structural equation modeling. Using the second subsample sample, structural equation modeling procedures were implemented to reveal the relationship disability identity and psychological empowerment have with frequency of usage and to determine whether the relationship between the outcome and predictors are mediated through the effects of access knowledge and perceived usefulness. To address the third and fourth research questions of the present study, the model also included GPA as another outcome variable. The relationship between the disability identity factors, psychological empowerment, and GPA were also assessed. Furthermore, the relationship between GPA and frequency of usage were also estimated. Because not all students have completed enough course credits to have a cumulative GPA to report, only those who were at least in their second term in college were included in the SEM analysis, reducing the sample size to 363 students. As group differences within predictors, mediators, and outcomes were of interest in this study, covariates were regressed on all variables. The nature of these relationships in a more homogeneous subsample was also of interest, and so the same SEM models were specified for only four-year college students. This second SEM model had a sample size of 276 students. Robust maximum likelihood procedures were used to generate fit statistics and parameter estimates for both structural models.

Missing data and nonnormality. Social science data oftentimes contain missing data and exhibit non-normal distributions. While listwise deletion or pairwise deletion can be used to handle missingness, these approaches are only valid if there is evidence that data are missing completely at random (MCAR; Kline, 2011). Otherwise, listwise and pairwise deletion may produce biased parameter estimates. In CFA and SEM analyses, full information maximum likelihood (ML) estimation procedures are capable of analyzing incomplete data and producing less biased estimates without resorting to listwise or pairwise deletions and without imputing data. However, ML estimation operates under the assumption of multivariate normality. Absent conditions of multivariate normality, ML-produced estimates may also yield biased estimates. To address missingness and multivariate nonnormality in the dataset, the study used maximum likelihood parameter estimation with standard errors and a chi-square test statistic that are robust to nonnormality of observations.

Chapter IV: Results

The present study used factor analysis and structural equation modeling in the analyses of survey response data from 514 college students with disabilities from different types of postsecondary institutions (i.e., two- and four-year undergraduate institutions, graduate studies programs, technical/vocational programs, and advanced professional institutions). This chapter discusses the results from these quantitative methods and is organized by the type of analysis. The first two analyses, an exploratory factor analysis (EFA) and a confirmatory factor analysis (CFA), served to clarify the dimensions measuring the construct of disability identity. The subsequent analysis uses structural equation modeling (SEM) procedures to: (a) pinpoint the effects of disability identity, psychological empowerment, and other predictors on frequency of accommodation usage; (b) describe the effect of disability identity and psychological empowerment on GPA; (c) determine the relationship between frequency of usage and GPA; and (d) reveal the influence of students' personal and disability-related characteristics as covariates on the predictors and outcomes. The last analysis applied the same SEM technique to only students in four-year colleges to understand the relationships among the variables for a more similar population.

Exploratory Factor Analysis

An EFA was conducted on the first subsample of 122 college students with disabilities to discover the latent factor structure of the 20 items in the disability identity measure.

Data preparation and screening. The descriptive statistics of the measured items (i.e., means, standard deviations, and intercorrelations among items) were examined using

SPSS 22 and Mplus 7.3 (Muthén & Muthén, 1998-2012) and included in Table 4. Prior to data screening, six negatively worded items drawn from the Collective Self-Esteem Scale (Luhtanen & Crocker, 1992) were reverse coded so that higher ratings correspond to more positive evaluations of disability or stronger associations with disability.

The data were screened for multivariate outliers by examining boxplots of the univariate distributions. Although the boxplots of the two of the variables ("I often feel that people with disabilities are not worthwhile" and "most people consider individuals with disabilities to be less effective than others") showed the presence of extreme values, the values did not overlap, suggesting that that these univariate outliers were not multivariate outliers. Multivariate normality of the endogenous variables was evaluated by inspecting the means and the univariate distributions of the items for the exogenous latent variables. A majority of the items were unimodal in distribution. Most items were also somewhat symmetrical. However, the distributions for some of the indicators were skewed; skewness statistics for four of the 20 items (i.e., "not worthy," "cure," "limits," and "society") were above the absolute value of one (|1|). The skewness conveys that students were more likely to feel that people with disabilities were worthwhile and that society should make adjustments for people with disabilities. Simultaneously, students tended to wish that someone would find a cure for their disability and believed that people should overcome the limitations of their disability. Kurtosis statistics for eight of the indicators were above |1|, with the kurtosis value at 2.47 for the item, "society." Lei and Lomax (2005) specified that skewness and kurtosis statistics of 2.30 or below are not usually problematic for factor analysis and structural equation modeling. Because the kurtosis value for the latter item was only slightly greater than 2.3, it was included in the initial analysis but under more careful scrutiny at each iteration of the analysis process. Multicollinearity (correlations greater than .90) among items was not observed in the data.

Results. Using Mplus 7.3, an oblique geomin rotation was requested since the hypothesized factors were related conceptually and, therefore, assumed to be correlated. Maximum likelihood (ML) procedures extracted factors and estimated goodness-of-fit statistics. The eigenvalues (i.e., the percentage of the item covariance accounted for) associated with the various factor solutions and the scree plot were considered in order to determine the optimum number of factors to retain. The Kaiser criterion recommends retaining the number of factors associated with the eigenvalue just over 1.0. Then, geomin-rotated loadings and goodness-of-fit statistics were evaluated for the recommended model, as well as for models with one factor greater than and one factor less than the recommended number of factors. A salience level of 0.40 was used to determine whether the measurement items loaded onto a factor. If items loaded poorly (i.e., the loading was less than 0.40) or cross-loaded onto multiple factors consistently across models, the items were subject to further inspection and removal from the analysis. If removal of items was warranted, another iteration of the EFA was conducted without the items of concern. Several iterations of EFA were performed until a simple factor structure emerged, without cross-loading items and particularly with all items exceeding the predetermined salience level of .40. Table 5 displays the model fit statistics for models considered at each iteration of the EFA, along with the items of concern and the decisions made regarding the concerning variables.

At the first iteration of the EFA, in which all 20 items were included in the analysis, the Kaiser rule suggested a six-factor solution based on the eigenvalues for the sample correlation matrices, and thus, the geomin-rotated loadings and the fit statistics for the five- and six-factor solutions were examined. Had the seven-factor solution also converged, it would have also been subject to examination. The five-factor solution indicated reasonable fit ($\chi^2(74) = 88.34$, $p = 0.02$, CFI = 0.94, RMSEA = 0.06, SRMR = 0.04), and had four items with loadings lower than the salience level of 0.40 and three items cross-loading onto more than one factor. With the six-factor solution, the model yielded better fit indices ($\chi^2(61) = 78.93$, $p = 0.06$, CFI = 0.96, RMSEA = 0.06, SRMR = 0.03) but still had three low-loading items and two cross-loading items. Three of the variables (i.e., “people with disabilities must learn to accept what they cannot change about themselves,” “people should try to overcome the limitations of their disability,” and “I often feel that people with disabilities are not worthwhile”) did not load onto any factor in either the five- or the six-factor model. The former two items were drawn from a disability orientation subscale related to the medical/personal model of disability (Darling & Heckert, 2010), but unlike other items from that subscale, these two more distinctly related to the perspective of disability as an obstacle *that must be acknowledged and overcome*. That so few items represented this specific underlying concept of the medical/personal model likely resulted in their poor loadings. The third item may have yielded a low loading because, while it concerned the individuals’ affective evaluation of disability, its wording (“feel,” “worthy”) was similar to other items which loaded onto other factors. These three variables were judged to be problematic and were removed from the next iteration of the EFA.

With three variables deleted, another EFA was performed. Analysis of the eigenvalues suggested retaining five factors, and so the four- and five-factor models were examined in this second iteration of the EFA. The six-factor model did not converge.

While the model with fewer factors suggested reasonable fit, the five-factor model now indicated evidence of good model fit (see Table 5 for fit statistics results). Across the two models, a few items cross-loaded and the item, “society should make adjustments for people with disabilities,” had a loading below 0.40. One likely reason the latter item loaded poorly is the variable’s nonnormal distribution. Skewness and kurtosis values of 2.3 or above may pose problems for factor analysis and structural equation modeling (Lei & Lomax, 2005). This specific item had a kurtosis value of 2.47. Because the item failed to load onto any factors, it was removed from analysis for the next EFA iteration.

At the next iteration, a similar pattern held, in which the four-factor model had acceptable fit, while the five-factor model had better fit. The models had one low-loading item each, but it was not the same item across models. However, the item, “overall, people with disabilities are considered good by other people,” had loaded strongly onto two different factors in both models and had done so through multiple iterations. This particular item tended to load onto factors hypothesized to relate to both self-regard for disability and others’ regard for disability and was, therefore, judged to be fit for removal. During the following iteration, the fit indices again improved when examining the five-factor model over the four-factor model. The model with four factors yielded a mediocre fitting model. Indices for the five-factor model generally pointed to better model fit. For both models, the variable, “I feel good about people with disabilities,” did not load onto any factor, and was removed from analysis. The variable, “overall, having a disability has very little to do with how I feel about myself,” was removed for the same reason in the subsequent iteration. A review of these two items in previous iterations suggested that they tended to load onto factors with other problematic items.

The eigenvalues for the final iteration recommended a three-factor solution. The scree plot also confirmed this recommendation, as there was a severe drop in the magnitude of the eigenvalue after the third factor. This three-factor model was found to possess a simple structure, without cross-loadings, and all items had loadings exceeding the predetermined salience level of 0.40. Geomin-rotated loadings for this model are displayed in Table 6. Fit statistics for the three-factor model ($\chi^2(42) = 57.81$, $p = .05$, CFI = 0.96, RMSEA = 0.06, SRMR = 0.04) indicated adequate-to-good fit. Therefore, a three-factor structure was found to best model the data for this subsample of students.

The factors that emerged from the subsample were *identification*, *private regard*, and *public regard*. The three indicators for the factor identification measured the extent to which students with disabilities feel their disability status was central to their sense-of-self. Four items loaded onto the private regard factor. Interestingly, the items which were hypothesized to load onto a medical/personal model factor loaded onto this factor. More specifically, the two items that were generated or drawn from the disability orientation scale (Darling & Heckert, 2010; “having a disability means something is wrong with me” and “I wish there was a cure for my disability”) both convey the medical/personal model tenet that the limitations and responsibility for the disability resides within the individual; but there is sufficient overlap in content with items designed to measure the affective evaluation of disability (“I am proud to have a disability” and “I often regret that I have a disability”) that they were found to be indicators for a common latent factor. Furthermore, that these items contained stronger language (e.g., “proud,” “wrong,” “regret”) may have encouraged them to load together. Similarly, items drawn from the social model subscale of the disability orientation scale loaded together with items concerning others’ regard for disability. This third factor, public regard, emphasizes the individuals' beliefs about others' feelings, attitudes, and actions toward those with disabilities. The items measuring this factor are externally, rather than internally, focused. Items that endorsed more negative private or public perceptions of disability were recoded such that all indicators loaded in the same (positive) direction for ease of interpretation; higher ratings would indicate more positive public regard. Table 6 displays the geomin-rotated loadings and the names of the items.

Confirmatory Factor Analysis

The second analysis for the present study attempted to validate the factor structure found in the EFA. This CFA was conducted using Mplus 7.3 (Muthén & Muthén, 1998-2012) on the second subsample of 392 students.

Data screening. The two variables in the data ("worthy" and "discrimination") which had far outliers did not share these extreme values, and therefore, the data did not exhibit the problem of multivariate outliers. Multivariate normality was assessed by examining the means and the skewness and kurtosis values of the individual variables. Most of the variables were within the normal range of skewness and kurtosis, with only one variable ("cure") having a positive moderate skew of 1.19 and two variables ("important" and "wrong") having a moderate platykurtic distribution. The slight positive skew in most items suggest that students tended to respond to self-evaluative (private regard) and other-evaluative (public regard) items about disability negatively. More students believed that other people view those with disabilities as less effective and that individuals with disabilities encounter discrimination and must fight for their rights. They are also less likely to be proud of their disability and more likely to regret their disability and wish for a cure. Even under moderate nonnormality (skewness and kurtosis between |1| and |2.3|), maximum likelihood (ML) estimation produces results consistent with those estimated under normal conditions. Still, a type of robust estimator was selected for the CFA to adjust for the effects of nonnormality. The correlation among items also did not indicate multicollinearity ($r > 0.90$). Table 7 shows the descriptive statistics of the items for the CFA sample.

Results. To address the nonnormal distribution in some of the items, goodness-of-fit statistics were generated using the Mplus MLR estimator, which uses robust standard errors and corrected model test statistics. To estimate the parameters, the measurement model's metric was defined using unit loading identification, in which one factor loading from each factor was fixed to 1.0 (Brown, 2006; Mueller & Hancock, 2010). The model for the three-factor solution found in the EFA converged in the CFA, and resulting fit statistics ($\chi^2(62) = 234.40$, $p < .001$, CFI = 0.84, RMSEA = 0.08, SRMR = 0.08) indicated model misfit.

Modification indices were then examined, and based on modification index values (ranging from 16.31 to 25.32) and theoretically substantive reasons, the residuals of some items were allowed to covary. The residuals of the items "discrimination" and "rights" were re-specified to correlate because there is reason to suspect that the items share similar content. Those who believe that people with disabilities are hindered by discrimination may likely also think that they need to seek redress for lack of (or violations of) rights more than nondisabled people do. The uniqueness in the item "pride" was also allowed to covary with the residuals in the items "respect," "self-image," and "reflect." In particular, those who were proud of their disability status were more likely to incorporate that status as a central part of their identity. They may also take pride in their status because they believe that others have a sense of respect for those with disabilities. The model was re-estimated and model fit substantially improved and although the significant chi-square statistic indicated some misspecification, the CFI and SRMR indices provide evidence that the model was acceptable ($\chi^2(58) = 149.18$, $p < .001$, CFI = .91, TLI = 0.88, RMSEA = .06, SRMR = .07).

As can be seen in Figure 1, all completely standardized parameter results were found to be statistically significant ($p < .001$), ranging from 0.35 to 0.88. Therefore, the item communalities (i.e., the proportion of the variance in the indicator that can be accounted for by the factor) ranged between 0.12 and 0.77. The communalities for six of the thirteen items were above 0.40. A communality of 0.40 to 0.70 is considered a moderate communality (Costello & Osborne, 2005). While this means the proportion of the variance in nearly half of the items that can be accounted for by the factors were above 0.40, more than half of the items can be considered a cause for worry and should be further examined or revised in future research.

Barring the nonsignificant association between identification and private regard, the factors were also found to correlate with each other. The correlation between public regard and private regard was 0.29 ($p < .001$), while the correlation between public regard and identification was marginally significant ($p = .056$) at -0.14. These correlations make substantive sense as how one feels about one's own disability may be influenced by perceptions of others' attitudes and reactions toward disability; positive self-regard may stem from encouraging interactions with the environment. On the other hand, negative interactions with others (particularly, experiences of discrimination and transgressions on disability civil rights) may spur some individuals to adopt a more active stance on claiming their disability identity.

Internal Reliability

The internal reliability of the items in each factor was calculated using the Cronbach's alpha. The estimate for the indicators of the identification, private regard, and public regard factors were all in the acceptable range (alphas were .72, .77, and .73, respectively). Item total statistics were also calculated for each factor. With the exception of the item "important," removing any of the indicator variables would reduce the value of the Cronbach's alpha. However, deleting the item "important" would only minimally increase the reliability index of the identification indicators from .72 to .74. Since the CFA suggested the salience of this item to its factor, it was deemed unnecessary to remove.

Structural Equation Model: All Postsecondary Students

Structural equation modeling (SEM) using Mplus 7.3 (Muthén & Muthén, 1998-2012) was performed on 363 of the 392 college students in the second subsample to test the hypothesized relationship among the latent disability identity constructs, psychological empowerment, accommodation access knowledge, perceived usefulness of accommodations, the frequency of accommodation usage, and GPA. This subset of the second subsample comprised of students who were at least in their second term at school and would have a cumulative GPA to report.

Data screening. Univariate distributions of the predictors, mediators, outcome variables, and covariates for the SEM analysis for all postsecondary students were examined through the use of boxplots to identify multivariate outliers. In general, slight negative skewness was observed in the outcome variables of frequency of usage and GPA.

Moderate negative skewness was noted in the other predictors/mediators (i.e., psychological empowerment, access knowledge, and perceived usefulness). That is, students from the second subsample tended to use accommodations frequently rather than infrequently, to have moderate-to-good grades, to be psychologically empowered, to know how to access accommodations, and to find accommodations useful. Several observations presented as extreme values in five variables, namely in the access knowledge and the age variable. Multivariate outliers in the age variable were first addressed by log-transforming the age variable; this also had the advantage of reducing the skewness value from 1.94 to 1.41. For ease of interpretation, age and disability awareness age were also mean-centered. Transforming the distribution of access knowledge failed to minimize the number of outliers and thus another approach was employed. The multivariate outliers in the access knowledge variable were addressed in a manner described by Kline (2006), by changing the extreme values of three of the observations to a value within three standard deviations of the mean. Still, skewness and kurtosis values for several of the variables were above the desired threshold, and the bivariate relationships indicated nonlinear relationships, and thus, an alternative estimator (MLR) was sought to adjust for the nonnormality of the data. Multicollinearity was not observed among the variables. Descriptives of the significant items and variables in the SEM are displayed in Table 8.

Results. An SEM analysis, using the MLR estimator in Mplus 7.3, on 363 students was conducted to assess the process by which disability identity relates to students' frequency of accommodation usage and GPA. A summary of the iterative SEM analyses and their associated fit statistics are shown in Table 9. An initial structural model was specified to test the hypothesized model, which regressed the frequency of usage on the disability identity factors and psychological empowerment. Simultaneously, GPA was regressed on the identity factors and psychological empowerment. Again, the metric of the measurement portion of the model was assigned using unit loading identification. This model was found to possess reasonably adequate fit resulting from robust maximum likelihood procedures. While the paths from identification and psychological empowerment to frequency of usage were significant, the paths from private regard and public regard to frequency of usage were nonsignificant. Furthermore, the disability identity factors and psychological empowerment were not related to GPA, although the path between psychological empowerment and GPA was approaching significant (p = .084). An alternative model was then tested in which psychological empowerment was positioned as a mediator between the disability identity factors and the outcome variables of frequency of usage and GPA. Hence, psychological empowerment was regressed on all three disability identity factors and frequency of usage was subsequently regressed on identification and psychological empowerment. GPA was also regressed solely on psychological empowerment. The fit indices, other than chi-square, indicated adequate fit, and psychological empowerment was significantly predicted by private regard and public regard, but not by identification. Since identification was not a significant predictor of psychological empowerment, the path between these variables was removed.

In the next iteration, the variables of access knowledge and perceived usefulness were inserted in the model to mediate the relationship between psychological empowerment and frequency of usage. The model fit remained acceptable. Indirect effects were then tested and private regard had an indirect effect on both frequency of usage and GPA through the variable psychological empowerment. Finally, covariates were included, but only disability awareness age and parents' education level were significant. The covariates race, gender, age, and visibility of disability were found to be nonsignificant and were thus excluded from the structural model. The model fit was considered only marginally acceptable. As such, modification indices were consulted and conceptually appropriate modifications were applied to the analysis. The largest modification index that made substantive sense to include in the model was an additional path between the error terms of private and public regard (modification index = 18.88). Figure 2 illustrates the final structural path model for all postsecondary students.

Final model fit. The fit of the final model was assessed using global fit indices. Controlling for the effects of disability awareness age and parents' education level, fit indices indicated marginally adequate fit ($\chi^2(157) = 327.10$, $p < .001$, CFI = .89, RMSEA = .06, SRMR = .07). Since chi-square is often influenced by sample size, more consideration was given to CFI, RMSEA, and SRMR in interpreting the extent the model replicated the data. In this case, SRMR suggested acceptable fit and RMSEA and CFI suggested nearly acceptable fit.

Direct effects. As seen in Figure 2, all completely standardized factor loadings in the measurement component of the model were still significant (all $p < .001$), with parameter estimates ranging from 0.35 to 0.85. All completely standardized direct path coefficients were also found to be significant (at least at $p < .05$). These standardized estimates ranged from 0.12 to 0.65. Completely standardized estimates could be interpreted as effect sizes (Moutinho, 2011), such that an estimate less than 0.20 is considered a small effect size in social science research, an estimate between 0.20 and 0.50 is a moderate effect size, and an estimate between 0.50 and 0.80 is a large effect size

(Cohen, 1992). According to these guidelines, the effect of public regard on psychological empowerment is small (standardized estimate = 0.15, $p = .022$), whereas the effect of private regard on psychological empowerment is moderate (standardized estimate = 0.31, $p < .001$). Both path coefficients for public and private regard are positive, indicating that higher levels of private and public regard are associated with higher psychological empowerment scores. The effect of psychological empowerment on knowledge about accommodation access is also moderate (standardized estimate = 0.24, $p < .001$). A large effect was found in the relationship between access knowledge and perceived usefulness (standardized estimate = 0.65, $p < .001$). The effect of perceived usefulness on the frequency of usage could be characterized as moderate (standardized estimate = 0.42, $p < .001$). A much weaker direct effect was found between the identification factor and frequency of usage (standardized estimate = 0.12, $p = .030$). Psychological empowerment had a small effect on student GPA (standardized estimate = 0.16, $p = .005$). As for correlational effects, the relationship between private and public regard was moderate (standardized estimate = 0.32, $p < .001$). No significant correlational relationship was observed between frequency of usage and GPA.

Indirect effects. The standardized estimate of the total effects of private regard on the frequency of usage was 0.02 but nonsignificant. The indirect effect of private regard on the frequency of usage (mediated by psychological empowerment, access knowledge, and perceived usefulness) was statistically significant ($p = .002$) but yielded a very small effect of 0.02. Significant total effects were observed in the relationship between private regard and GPA, where the standardized estimate of the total effects was 0.15 ($p = .006$), and the indirect relationship when mediated by psychological empowerment was also significant (standardized estimate = 0.05, p = .022).

Covariates. Two of the covariates had an effect on the variables. In particular, disability awareness age was significant for the factors of identification (standardized estimate = -0.18, p < .001) and private regard (standardized estimate = -0.20, p < .001), as well as for the variable access knowledge (standardized estimate = -0.16, p = .001). The negative estimate indicates that the younger the students when they became aware of their disability status, the greater the degree of the attachment to their disability status, the more positive their evaluation of their disability, and the more likely they are to know ways to access accommodations. Parents' education level was significant for frequency of accommodation usage (standardized estimate = 0.16, p = .005). Therefore, students who had at least one parent holding a bachelor's degree tended to seek accommodations more often.

Structural Equation Model: Four-Year College Students

To test the structural model on a more homogeneous group of students, the fitness of the structural model developed from the analysis of students from all postsecondary institutions was tested on the subset of 276 undergraduate students enrolled in four-year institutions.

Data screening. Distributions of the variables were similar to the distributions observed in the previous SEM. Firstly, to address the issue of multivariate outliers, the access knowledge values for two participants and the GPA value for one survey participant were changed to another value within three standard deviations of the mean. Then, examination of skewness and kurtosis values of the univariate distributions for individual variables indicated that four variables (psychological empowerment, access knowledge, perceived usefulness, and disability awareness age) had high kurtosis values (greater than 2.30). Bivariate charts also suggest non-linear relationships among variables, although multicollinearity was not detected. Therefore, ML robust estimator was used for the analyses of four year college students. See Table 10 for the descriptives and correlations among variables and items.

Results. The structural paths in the final model for all postsecondary students were specified for the four-year college student subset. At the next iteration, indirect paths of frequency of usage and GPA on private and public regard were specified, and all covariates were included in the model; subsequently, nonsignificant indirect paths and covariates were removed. In the measurement portion of the model, the correlation between the residuals for the items "respect" and "pride" was no longer significant, and therefore, the path was removed from this model. Information about goodness-of-fit indices for each iteration of the analysis is displayed in Table 9.

Final model fit. Global fit statistics suggest that, similar to the final model for students of in all postsecondary institutions, this final model fit was marginally adequate ($\chi^2(176) = 299.64$, $p < .001$, CFI = .90, RMSEA = .05, SRMR = .08) when controlling for the effects of the disability awareness age, visibility of disability, and parents' education level.

Direct effects. As shown in Figure 3, all factor loadings for the measurement model portion of the SEM remained significant (all $p < .001$), with loadings ranging from 0.35 to 0.85. Pertaining to the structural relationships, psychological empowerment was significantly predicted by public regard (standardized estimate = 0.18, $p = .017$) but more strongly predicted by private regard (standardized estimate = 0.30, $p < .001$). Psychological empowerment had a moderate effect on access knowledge (standardized estimate = 0.24, $p < .001$), which then had a strong effect on perceived usefulness (standardized estimate = 0.65, $p < .001$). Frequency of usage was moderately predicted by perceived usefulness (standardized estimate = 0.40, $p < .001$). Identification had a small effect on frequency of usage (standardized estimate = 0.16, $p = .007$). Psychological empowerment also predicted GPA, albeit weakly (standardized estimate = 0.14, $p = .038$). Public regard moderately correlated with private regard (standardized estimate = 0.25, $p = .005$). Figure 3 illustrates the structural model with standardized parameter estimates.

Indirect effect. The standardized estimate for the total effect private regard has on frequency of usage was 0.07 and nonsignificant. The indirect effect was significant ($p = .007$) though small (standardized estimate = 0.02) when the relationship was mediated by psychological empowerment, knowledge of accommodation access, and perceived usefulness of accommodations. There was no indirect effect of public regard on frequency of usage. No indirect effect was also detected for the disability identity factors on GPA.

Covariates. Three covariates were found to be significant in this analysis. Again, there was evidence that the identification factor was influenced by disability awareness age (standardized estimate = -0.14, $p = .019$), such that earlier awareness of the disability status was related to greater identification with the disability. Parents' education level was also again a significant but weak covariate on frequency of usage (standardized estimate = 0.13, $p = .022$); students who have at least one parent with a college degree were more likely to use accommodations more often. Visibility of disability had a moderate, positive effect on psychological empowerment (standardized estimate = 0.22, $p < .001$), such that students with overt disabilities (e.g., mobility disabilities, blindness) were more likely to have more positive evaluations of their disability status. The covariates race/ethnicity, gender, and age were not found to be significant covariates in the final model for four-year college students.

Chapter V: Discussion

Prior research indicated that less than a quarter of students with disabilities access accommodations, services, and modifications when enrolled in higher education settings (Newman & Madaus, 2014), despite the purported advantages to using them (Alster, 1997; Hudson, 2013; Lewandowski et al., 2013; Newman et al. 2015; Troiano et al., 2010). Therefore, the purpose of the present study was to illuminate the possible factors that encourage or impede college students from pursuing supports and services in the classroom, mostly among students who have already registered with their college disability services program. As a secondary research interest, the study also sought to attest to whether accommodation usage could be related to GPA, since improved grades could be considered an associated advantage to using disability supports. One of the oft-mentioned contributing factors to students' access to accommodations and services is disability identity, but seldom is identity studied in relation to accommodation usage in a quantitative manner. Therefore, data gathered from this survey research was analyzed, firstly, to explain the construct of disability identity, and secondly, to understand the relationship identity shares with usage. Particularly, this study focused on the process by which the frequency of accommodation usage might be influenced by disability identity, psychological empowerment, knowledge about accommodation access, and students' perceptions about the usefulness of accommodations.

The results of the exploratory and confirmatory factor analyses indicated that the construct of disability identity did indeed contain multiple dimensions. Thirteen indicators on the combined identity scales measured the factors of identification, private regard, and public regard. Once the factor structure of the disability identity construct was identified and then confirmed, the predictive ability of these identity factors on the accommodations usage was able to be tested in a structural equation model for students attending various postsecondary institutions, as well as for a more homogeneous set of students in four-year postsecondary education settings. Two of the disability identity factors were significant direct or indirect predictors for the frequency of accommodation usage. One factor, identification, which measured the extent to which students identified with their disability, was positively and directly related to accommodation usage; in other words, the more students identified themselves as a person with a disability, the more frequently they accessed their accommodations and services. This link was observed for both students in four-year colleges and for postsecondary students in general. The other factor that played a significant role in accommodation usage was the self-perceptions of disability, or private regard. This factor indirectly contributed to accommodation usage through student's psychological empowerment, their knowledge of accessing accommodations, and their opinion about the usefulness of these supports. Thus, rather than being a rival predictor of accommodation usage, as originally anticipated, psychological empowerment actually mediated the relationship between usage and private regard. Although perceptions of others' feelings about disability (public regard) can predict psychological empowerment, this latent factor was not found to be a significant indirect predictor of accommodation usage.

The association between private regard and frequency of accommodation usage featured multiple steps that applied to both students enrolled in higher education in general and those in four-year college settings more specifically. The findings suggested that positive private regard predicted higher levels of empowerment, which then predicted more knowledge of how to access disability accommodations and services. A greater understanding of disability support access was then a predictor of more positive evaluations of the utility of the accommodations. Finally, the more beneficial students found the supports, the more often they were to use them. In terms of variables that affected academic achievement, while none of the identity factors directly influenced GPA, private regard was found to be an indirect predictor of GPA through the mediating variable of psychological empowerment for postsecondary students.

This study supplies further evidence about the importance of students' perceptions of disability and their identification with disability, as well as the importance of being psychologically empowered, in influencing the support-seeking behaviors of students in postsecondary educational settings. To a lesser extent, it also posits that disability identity and psychological empowerment play a role in student achievement. The findings of this relatively large sample size study offer strong empirical evidence to this research topic via quantitative methods. Most research conducted on this population about this set of issues employed qualitative methodology with small groups of students (e.g., Olney & Brockelman, 2003). These qualitative studies were instrumental in enlightening the disability and education field about predictive factors of accommodation usage; however, the current study is one of the first of its kind to claim that these factors may be critical for a wider set of postsecondary students as a whole. The present study also raises theoretical, methodological, and practical implications that ought to be discussed in higher education and across disciplines about the nature of disability and the nature of college supports for students who identify with having a disability. The following sections discuss the implications of the major findings in greater detail.

Measuring Disability Identity

Past research has grappled with the task of measuring disability self-perceptions (Darling & Heckert, 2010; Nario-Redmond et al., 2012). Scholars have assessed self-perceptions or identity using scales developed in the sociology discipline grounded in social identity theory (e.g., Hahn, 2001) or have developed scales of their own, grounded in social theories of understanding disability in the disability studies discipline (e.g., Darling & Heckert, 2010). A major task of the present study was to assess the possibility of statistically distinguishing among different dimensions of disability identity based on measures developed in the social identity (Luhtanen & Crocker, 1992) and existing disability identity literature (Darling & Heckert, 2010). The items drawn from three social identity factors and two disability orientation factors—a combined five factors—narrowed down to only three during analysis as a result of this study: identification, private regard, and public regard. From the results, most items adapted from Luhtanen and Crocker's (1992) Identity subscale loaded onto the same factor called the identification factor in the present study. Two items hypothesized to be in personal/medical model, however, loaded onto the same factor as those expected to be in the private regard. Similarly, three items originally thought to measure the social model factor loaded onto the same factor as three items of the hypothesized public regard factor. Although the items drawn from four different hypothesized identity factors merged into two factors, the resulting factors made substantive sense. The identification factor measures the degree to which students see their primary disability is reflected in their sense of self. The private regard factor represents the way students feel about their primary disability, whereas the public regard factor refers to the way students think others feel about their primary disability and how others treat people with their primary disability.

We cannot ignore the possibility that the wording of the questions, especially when questions are combined from different sources, affect the responses of the participants and the factor structure of the overall construct. For example, there has been some debate about method effects associated with negatively worded items, especially in self-esteem scales (Marsh, 1996; DiStefano & Motl, 2006). In the psychometric literature, it is noted that simply including negatively worded questions can weaken the internal consistency and reliability of a questionnaire or can cause items to load onto a separate factor (Roszkowski & Soven, 2010). Scholars have argued that instead of reducing respondent acquiescence or bias, these items diminish reliability because the wording confuses or mentally fatigues the respondents (van Sonderen, Sanderman, & Coyne, 2013). In the present study, the internal reliability of the factor identification was attenuated by the item, “having a disability is not important to my sense of what kind of person I am,” a negatively worded item borrowed from Luhtanen and Crocker’s (1992) Collective Self-Esteem Scale. The negative wording coupled with verbose phrasing might have misled or disoriented student respondents. Still, the reliability index of the identification factor suggested that the items are consistent. A more pressing issue is that only half of the expected items in the private regard and the personal/medical model were retained and that these four items, expected to load onto two factors, actually loaded together in the exploratory factor analysis. Through a methodological lens, these items that remained contained powerful emotional language (e.g., “proud,” “wrong,” “regret”) that may have caused these items to load together compared to the more moderate language found in the eliminated items (e.g., “not worthy”).

One theoretical implication of the exploratory and confirmatory factor analyses findings may be that cognitive and affective evaluations of disability are difficult to isolate. Sellers and colleagues (1997), in constructing a measure of African American racial identity, adapted subscales from the Collective Self-Esteem Scale but also incorporated items concerning ideological (hence, more cognitive) perspectives about being African American. These scholars were unable to distinguish the factors from each other and so the construct validity of each dimension was measured separately. The present study attempts to create a scale of disability identity following a similar procedure of adapting measures and items from different disciplines. When combining the universal dimensions of the social identity model with the disability-specific identity models developed within the discipline of disability studies, it is not unexpected that there would be some overlap in the measurement model. Consistent with the conclusions of Swain and French (2000) and other proponents of the social theories of disability, the personal/medical model’s definition of disability often positions disability as an overwhelmingly negative experience. That some of the personal/medical model items did strongly—and negatively—relate to the positive private regard items seems to confirm this aspect of the social theories of disability. The disability studies literature would also argue that the social model offers a more positive self-evaluation of disability (Swain & French, 2000). In a way, the study corroborates this argument; items anticipated to measure the social model of disability did positively relate to items in the factor of private regard, but contrary to the expectations of the discipline, they did not load very strongly. These items secured stronger loadings in the factor about the perceptions of others. The “self-versus-other” divide is not completely unfamiliar in the disability identity literature. In their qualitative study of students with disabilities, Olney and Kim (2001) found two themes of identity: the meaning of disability to oneself and what one chooses to reveal to others. The results of the present study argues perhaps that the locus of the perceptions—whether they are internally manifested or outwardly projected—is more crucial in determining the factor structure of disability identity than the cognitive-versus-affective difference.

The relationships among the factors and the items comprising the factors are also deserving of discussion. There was a significant inter-factor correlation between the public regard and private regard factors. This is reasonable given other findings in the literature; how individuals with disabilities perceive others with disabilities (i.e., a theme in the private regard items) may be influenced by how they think society views disability and treats others with disabilities (Li & Moore, 1998; Low, 1996; May & Stone, 2010). The identification factor was not significantly related with public regard nor with private regard, but there was especially strong correlations observed between items of the two different factors. In order for the model to adequately fit patterns in the data, certain modifications, including cross-factor item residual correlations, were specified in the measurement model. In particular, students’ pride in having a disability, an indicator for the private regard factor, was specified to correlate with items defining the public regard and identification factors. According to social identity theory, identification and affiliation with a social group may require that one first thinks positively of that social group (Abrams & Hogg, 1990; Howard, 2000); people usually want to associate with groups that they consider to be good and shun associations with groups that they consider shameful. Therefore, items in the identification factor would reasonably relate to a private regard item. These positive correlations suggest that students who more closely identified with their disability were likely students who also thought more positively about their disability. Generally, these strong relationships across factors and items lend support to postmodern *critiques* of binary oppositions (oppositions such as social-versus-medical model, cognitive-versus-affective interpretation, internal-versus-external locus, self-versus-other) and suggest that these factors may be much less distinct, and much more interrelated than conceived by the original developers of the social identity and disability identity scales from which the present measurement model drew.

Given that the final items in the disability identity scale measure identification with disability and private and public regard of disability, one unsettling but unsurprising finding was that, on average, students responded negatively toward items related to self-perceptions and others' perceptions of disability. The strong language in private regard items elicited equally strong responses. Students were more apt to believe that disability was something they regret and for which they wish there was a cure. Fewer students indicated they had pride in their primary disability status, but many believed having a disability meant something was "wrong" with them. These negative feelings about disability were reflected or projected onto others. A majority of students believed there was discrimination against individuals with disabilities and that the attitudes of others are a barrier for individuals with disabilities. Moreover, students are prone to think that other people consider those with disabilities to be less effective than the nondisabled. It is already troubling that students think poorly about an aspect of themselves, but that so many students also think the environment replicates or reinforces these sentiments calls into question societal attitudes about those with disabilities, as well as their social environment (including campus life) pertaining to disability. Again, these findings are not unexpected as the literature found that people with disabilities tend to think negatively about their disability experiences (Finlay & Lyons, 1998) and are aware of negative stereotypes about their disability (Braithwaite, 1991; May & Stone, 2010).

Effects of Identity/Psychological Empowerment

The primary contribution of the present study is that it developed a process model for understanding how disability identity can influence accommodations usage. Notably, identification with disability was a weak but significant predictor of accommodation usage. The more that students felt their disability represents them, the more likely and frequently they are to seek and use accommodations. The rationale behind this result may simply be that students who see themselves as people with disabilities are more apt to use disability-related services and accommodations. Conversely, those who identify less with their disability status tend to shy away from using these supports. The NLTS-2 results had suggested that identification would play a role in accommodation usage. More than half of students with disabilities no longer identified as having a disability once they set foot on a college campus (Newman et al., 2011), much less claim disability-related accommodations and services, which may single them out as having a disability in the eyes of their instructor and peers. However, one can also imagine that this directional relationship between identification and accommodations usage be reciprocal. Those who choose to disassociate from their primary disability do so because they no longer think their condition demands educational accommodations. Some students, especially those with learning disabilities or AD/HD, may define their ability/disability in relation to how much support they believe they require to be successful in school. Traditional age college students who avoid accommodations may be attempting to exercise their autonomy as adults in a new setting (Lynch & Gussel, 1996). If they can manage without supports, then perhaps they no longer need this identification.

Compared to public regard, private regard was a stronger predictor of the mediating variable psychological empowerment. This may be the case because both private regard and psychological empowerment have more elements of self-evaluation than does public regard, which is a factor more distanced from the self. Still, both private and public regard influence psychological empowerment more than the identification factor. The literature suggests that for students with nonapparent disabilities, concealing a disability could be psychologically harmful (Fitzgerald & Paterson, 1995; Zahn, 1973). Concealing a disability involves disassociation with the identifying trait because of negative perceptions of the trait. The findings from the structural model would imply that detaching oneself from a disability identification, on its own, does not affect a psychosocial trait such as psychological empowerment. However, thinking poorly about disability and knowing others evaluate disability similarly does have a psychological impact. That students generally think ill of disability makes it ever more clear and urgent that they need support to develop more positive perspectives on disability. The association between public regard and psychological empowerment, however small, is also quite critical. Students are much more likely to feel empowered if they think the environment is supportive and accepting of students with disabilities.

This study's findings also offer a counterpoint to the recent results of the NLTS-2 study, which indicated that psychological empowerment, along with two other aspects of self-determination, was not a significant direct predictor of the receipt of accommodations (Newman & Madaus, 2015). An earlier iteration of the structural model in the present study suggested that this direct relationship was indeed significant. However, the final model revealed that there were intervening variables which linked this self-determination dimension with frequency of accommodation usage, these variables being students' knowledge about accessing disability accommodations and their perceptions about the benefits of such accommodations. Based on the present study's final results, a case could be made that accommodation usage is not a proximal outcome of psychological empowerment but rather a distal one.

There was a relationship between psychological empowerment and GPA, suggesting that students who are psychologically empowered may do better academically. Furthermore, the indirect relationship between private regard and GPA, through the mediator psychological empowerment, was also significant and positive. Therefore, more positive self-evaluations of disability do contribute to psychological empowerment, which then influences students' performance in college. However, this relationship was fairly weak. Predictors of GPA may be more complicated than students' confidence in themselves, an internal locus of control, and their evaluations of disability. Still, the potential effects of private regard and psychological empowerment on GPA cannot be ignored. Targeting disability identity, specifically personal understanding of disability and perceptions of the public's view of disability, may possibly help students feel more proactive and competent in various life domains, including academic settings, thereby enhancing students' academic performance.

It should be noted that the mediation models specified in the present study did not meet the traditional guidelines for mediation effects. According to Baron and Kenny (1986), the first step in establishing the existence of a mediation effect is to ensure that the hypothesized causal factor is significantly related to the outcome variable, yet in the present study, the disability identity factors were mostly not found to be correlated with the outcome variables of accommodations usage frequency and GPA. However, methodologists have questioned the need to satisfy this assumption (Collins et al., 1998; MacKinnon, 2000; Shrout & Bolger, 2002). If the outcome is theoretically a distal outcome, which appears to be case for accommodation usage and to a lesser extent for GPA, it is not necessary to test or to demonstrate a direct bivariate relationship between the predictor and outcome. Moreover, in studies with a smaller sample size, oftentimes there may not be enough power to detect the correlation between the predictor and outcome (Shrout & Bolger, 2002).

Contrary to expectations, frequency of accommodation usage was not correlated with GPA. This finding could reflect a number of scenarios. While more frequent usage of accommodations might improve GPA over period of time, it is likely that students who used accommodations and services more often were students who had lower academic achievement in the first place and needed the additional support. As the study's survey was a one-time measure of these variables, it may fail to capture the improvement in academic performance that could be attributed to the use of disability-related supports. For assessing the effect of accommodation usage on GPA adequately, there would be a need to take measures of GPA at multiple waves. A study by Troiano and colleagues (2010) did collect

GPA data at multiple time points, and their research was able to provide evidence that students who received more academic support have higher GPAs.

The present model offers some direction about the student and institutional characteristics that need to be addressed so as to increase the use of accommodations and to improve student academic outcomes. This research suggests that students who embrace their disability label are more likely to seek accommodations and services. More positive feelings about disability also indirectly help improve grades. College disability counseling services, by encouraging students to take on a more positive perspective of disability and to accept their disability as a more central part of their sense-of-self, may indirectly improve those outcomes by boosting students' psychological empowerment. College disability service programs interested in improving their student enrollment may also find value in targeting possible vulnerabilities in institutional characteristics that may affect the frequency of students' accommodation usage. Since public regard is partly defined by students' perceptions of the discrimination individuals with disabilities encounter, addressing practices and physical (and virtual) spaces at college campuses that are hostile to students with disabilities may enhance students' perceptions of the public's attitude about disability, as well as their psychological empowerment. Furthermore, understanding that students' knowledge of how to access supports directly affects students' perceptions of these supports may encourage college disability offices and other campus policymakers to make information about accommodations access more widely available.

Effect of Covariates

Interestingly, race/ethnicity, gender, and age were not significant covariates in the model. However, as suggested by research, age of disability and visibility of disability had some effect on disability identity (Hahn & Belt, 2004; Olney & Brockelman, 2003; Olney & Kim, 2001). Age of disability awareness had a consistent significant effect on identification with disability. The findings indicate that early awareness of disability status was significantly related to stronger identification with disability for all postsecondary students and for the more specific subset of four-year college students; it was also related to positive private regard for all postsecondary students. As age of disability awareness is oftentimes related to (if not a proxy for) the age at which students were identified with disability, this finding supports evidence in the literature which argues that early onset of disability creates more opportunity for students to come to terms with their disability (Hahn & Belt, 2004). This also makes the case for early identification and for starting discussions about disability early on to help students develop a more positive sense of being a person with a disability. Early disability awareness also predicted greater knowledge about accommodation access, suggesting that the sooner students are made aware of their disability, the more exposure they may have had to information about obtaining supports.

Similarly, visibility of disability was also a significant covariate for private regard in the four-year college student sample. Many of the more overt disabilities, such as blindness, can be considered life-long conditions, whereas many of the nonapparent disabilities do not manifest in the same manner over the course of one’s lifetime (Lovett, Nelson, & Lindstrom, 2014). The stability in the presentation of more visible disabilities may contribute to students’ acceptance of their disability. More likely, those who are unable to conceal their disability may have little choice but learn to accept their disability and to develop a more positive outlook on it. This finding endorses a conclusion reached by Darling (2003), who found that people with less apparent disabilities are more likely to try to pass as abled people and to conform to a personal/medical model perspective on disability.

Embedded in this model also is the contribution of the family context, specifically parents' education, which was a significant covariate for frequency of students' usage of accommodations and services. Related to the concept of capital, which hypothesizes that ones' social networks, education, and cultural knowledge affect resource acquisition, students with more highly educated parents may experience greater mobilization of social and cultural capital necessary to obtain resources at school (Trainor, 2008). Interestingly, parents' level of education did not have an effect on knowledge of accommodation access; however, the effect of parent's education on accommodation usage suggests that capital plays a critical role in helping students get resources in higher education institutions.

Limitations

The present study had methodological and analytic limitations in the measurement and the structural model analyses. The first major methodological limitation was the sample, which was a convenience sample. While contact with college disability service programs across the nation was stratified by region, the author was at the mercy of programs who were interested in the study to self-select into research participation; students also self-selected to participate in taking the survey. Being unable to employ random selection of students or colleges makes it so the results are less generalizable to the total population of postsecondary students. Sample size also affects the power to detect significant relationships. Although this study would qualify as one of the larger studies focusing on disability identity, the results of the structural models might not be completely trustworthy because of the small subsample. To have enough power, the study would need to have a sample size five times the number of parameters estimated (Mueller & Hancock, 2010). While the first structural model had the minimal participants needed, the second structural model was shy 100 participants. Should there have been sufficient participants, the analyses may have revealed additional relationships or significant covariates.

The sample could also be construed as simultaneously too heterogeneous or too homogeneous. The pool of participants was composed of students from four-year undergraduate programs and some students from graduate programs, community college programs, advanced professional schools, and technical/vocational schools. Having one model that represents the experiences of such a diverse group may not be realistic. In a way, the study remedies that by examining the subset of four-year college students, and also controlling for age in the two structural models, even though the age variable did not turn out to be a significant covariate. Additionally, while recruitment for the study occurred at student organizations, it generally occurred at college disability offices. Therefore, most of the participants (96%) represent individuals who had disclosed their disability to their postsecondary institution. What the present study provides information about are the students who—while having identified themselves to the school—still do not access accommodations as frequently as they could. However, 65% of students do not report their disability to their college at all (Newman et al., 2011), and therefore, this research fails to represent those students well. Respondents to the survey were also mostly women (74%), and so the gender composition did not reflect the proportion of individuals with disabilities who attend postsecondary school even though it might more closely reflect the proportion of people who respond to surveys (Sax, Gilmartin, & Bryant, 2003). Future usage of this dataset should take into consideration methods of applying sample weights that could mitigate some of the problems regarding representativeness.

Specific to the measurement model, the resulting indicators do present some issues of concern. Because the items of the disability identity scale originate from different sources based on different theoretical frameworks, the communalities of the indicators were generally low-to-moderate, and this may have influenced how well the data fit the model specified in the measurement and structural analyses. Furthermore, a majority of the items from the EFA and CFA contained negative valence, especially regarding evaluations of disability. The questions drawn from a subscale measuring personal/medical model of disability assumes the individual views disability disparagingly, and similarly, questions drawn from a social model subscale assumes society antagonizes those with disabilities. Although such questions would not be considered aversive stimuli, it may present the unintended effect of encouraging such thoughts about disability. Should future research be conducted using a scale with items in the final measurement model, it is recommended that additional items be created to more fully explain the hypothesized dimensions of disability identity, that existing items be revised to reverse some of the negatively valenced language, and that further exploratory and confirmatory factor analytic work be conducted incorporating any newly developed indicators.

The structural model also featured some analytical shortcomings. The major drawback of the study was the inability to determine the relationship between the usage of accommodations and GPA. At minimum, the research should entail collecting multiple data points of GPA to determine change in the academic performance. Studies employing this approach were able to find evidence of the effect of using disability-related resources

(Troiano et al., 2010). Moreover, the process by which accommodation usage influences student performance may not be just a simple direct relationship. Other studies have investigated predictors of GPA and have found that a number of factors contribute, including cognitive ability, study habits (Murray & Wren, 2003), and social integration to campus life (DaDeppo, 2009). Future research ought to take into account a more comprehensive set of potential predictors and mediators when examining the link between accommodations and achievement.

These alternative factors also elicit the idea that the covariates employed in the study were not all ideal control variables. Students' functional or cognitive ability would be helpful to include, as students at different functional levels may have different help-seeking patterns and may likely perform differently in the classroom. But since this study relied completely on student self-report, the information gathered by inquiries into this domain may not yield trustworthy responses. Also, in the study, age was used as a proxy for institutional knowledge and savviness; the assumption is that the older the student, the more exposure to information about supports and how to obtain them. A more precise covariate would be the number of terms or years at their current school, but the varied types of postsecondary institutions (ranging from two-year colleges to advanced degree programs) in the surveyed sample rendered this alternative covariate less relevant. For instance, students enrolled in their first year of graduate school may have a better sense of navigating and accessing college supports than a third year student in a community college. Information, such as number of terms or years at the current school, may likely be more useful in a more homogeneous sample, such as for four-year college students. Additionally, race/ethnicity and gender was dichotomized during analysis to simplify analysis and to yield large enough subgroups of such demographic variables so that significant differences can be detected. Unfortunately, this has the effect of erasing the nuanced experiences of individuals who do not conform to those group designations or whose social group was collapsed into a less meaningful category.

Future Directions

The present study creates opportunities to explore methodological, analytic, and theoretical issues related to disability identity and accommodation usage. In regards to measuring the disability identity construct, future research could consider revising the indicators to achieve a balance in positively and negatively valenced items. For example, the private regard factor would benefit from having additional strongly and positively worded indicators. More critical, additional items could be generated to continue to test the ability to define cognitive perspectives on disability that are distinguishable from affective considerations.

For continued quantitative work on structural models examining the relationship among disability identity, psychological empowerment, and accommodation usage, it would be helpful to recruit students who have not currently identified themselves to their postsecondary institutions and test whether disability identity affect their choice to reject accommodations. The present model may not be equivalent for this population. Furthermore, it is would be beneficial to collect data on a larger but more homogeneous sample. From an analytical standpoint, a larger sample size would allow the use of a weighted least squares estimator (e.g., WLSMV in the Mplus software), which handles nonnormal ordinal outcome variables (i.e., frequency of accommodation usage) better. A more homogeneous sample would also allow researchers to study predictors specific to certain subpopulations of college students with disabilities. Undergraduate students with disabilities in four-year colleges who were identified with having disabilities prior to college may have experienced secondary transition programs more recently, compared to those in graduate or advanced professional programs. Recent research has indicated that secondary transition programs that invite student participation are related to receipt of accommodations and services (Newman & Madaus, 2015). Although this study does not include the support of family members and helpful others in its model, research has indicated that nonstigmatizing, delimited, and modifiable conceptualizations of disability in children were related to greater parent, classmate, and friend support (Rothman & Cosden, 1995) and that family support is tied to the individuals' adjustment to disability (Li & Moore, 1998). Helpful adults or peers in the family, school, and community can present more positive perspectives about disability, discuss the importance of disability, and encourage students to seek academic help at the institutional level. With a larger sample size, one can collect and include data about family support and school transition services and examine how such factors fit into the model predicting access to disability-related supports.

More research could be conducted also to advance theories related to disability identity. Although race/ethnicity and gender were not significant covariates, a larger and more race- and gender-representative sample may allow researchers to examine the ways disability interacts with race/ethnicity, gender, language, class, and other social identities. The framework of intersectionality was first used to explain the structural, political, and representational interactions between the racialized and gendered experiences of Black women and how these interactions serve to disempower them (Crenshaw, 1991), and this framework has been extended to include the dynamics of other nondominant groups' experiences. Current critical social theorists posit that these identity markers cannot be isolated and studied singularly (Annamma, Connor, & Ferri, 2013). These issues have been explored by disability scholars since the 1990s (Alston, Bell, & Feist-Price, 1996; Hernandez, 2005; Vernon, 1999). For instance, Alston, Bell, and Feist-Price (1996) looked at racial/ethnic identity development through the lens of having a disability. They found that Black individuals with disabilities might not only identify themselves by their race/ethnicity nor solely by their disability. Furthermore, their disability may uniquely affect the way they see themselves as a member of their racial/ethnic group. Those who are blind may not have the same perspective on racial identity as someone who is sighted, in that judgments being made based on visually-based differences may not come as naturally to them. Meekosha and Shuttleworth (2009), as well as Hosking (2008), contends this as a much-needed research direction for those conducting work using critical disability theory. There is resistance among critical social theorists to employ quantitative research, citing that complex social problems cannot be "mathematized," and that such types of research using proxy indicators such as race and ethnicity elide historical, structural, ideological, cultural, and contextual factors (Annamma et al., 2013; Artiles, Kozleski, Trent, Osher, & Ortiz, 2010). However, future research, employing both quantitative and qualitative approaches, could take on the challenge of collecting larger sample sizes with greater representation from nondominant groups to understand relationships between disability identity and other social identities.

It is essential to note that the current study examined primarily student characteristics as predictors of usage of accommodations. Although the analyses did consider model differences in four-year postsecondary institutions apart from postsecondary settings in general, the author did not collect information about colleges that would enable a finer-grain investigation into the effect of institutional characteristics on students' support-seeking behaviors. For example, the types of services and accommodations available to students, the amount of funding earmarked for disability services, the number of students with disabilities enrolled in the institution, the campus administration's priorities, and the vision of the disability services program could perceivably influence the institutions' efforts to increase students' use of disability-related resources. To obtain a fuller understanding of this topic, more research conducted at the molecular level, examining the policies of individual postsecondary schools and their adequacy in addressing the needs of the students they serve, is warranted.

Conclusion

Disability identity matters, theoretically and practically. Skrtic (1986) maintained that knowledge about the nature of disability ought to be "multidisciplinary," grounded in a broad theoretical base in "sociology, political science, anthropology, psychology, and biology" (p. 85). The present research highlights the importance of integrating social understandings about disability with more conventional knowledge about disability, in order to better support students in postsecondary education. Particularly, it is critical to learn about students' perceptions of disability, as well as their identification with their disability label. Disability service professionals and transition support professionals, especially, could develop programming to endorse more positive self-regard for disability in students, steering students away from the perception that disability is something wrong or regretful to an attitude that recognizes challenges associated with disability can engender resilience. One student from the author's prior exploratory interview study commented that his AD/HD could be boon: "You have really good awareness of your surroundings…rather than if you're just focused on one thing." He explained that he adopted this discourse and perspective through interactions with educators. The same student also noted the importance of embracing his disability and accepting help to improve in school when needed. This study extends that exploratory work by providing quantitative evidence that positive disability identity can contribute to student's access to supports and academic achievement in higher education. Additionally, disability-friendly environments empower students. Students who perceive disability as an identity that is welcomed by others are more likely to feel capable, an apparent prerequisite to finding the courage to seek support and to achieving better academic outcomes. College professionals ought to carefully examine institutional policies and everyday practices and proactively treat problematic habits that discriminate and alienate this growing student population.

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Table 1

General Demographic Information

Variable	*n*	%
Type of postsecondary education	514	
4-year college		74.5
Graduate school		14.8
2-year college		9.1
Advanced professional school		1.4
Technical/vocational school		0.2
State	511	
Michigan		19.4
California		13.3
Pennsylvania		13.1
New York		10.2
Illinois		9.2
Texas		8.6
Ohio		8.2
Washington		7.8
Florida		4.5
North Carolina		4.5
Colorado		0.2
Other states		1.0
Age (*M* = 25.5, *SD* = 9.4, Range = 18-62)	510	
Traditional age (18-23 yrs)		65.7
Non-traditional age (24+ yrs)		34.3
Gender	511	
Female		74.0
Male		23.5
Other		2.5
Race	505	
White only		72.5
Student of Color		27.5
Parents' education	502	
At least one graduated college		68.9
At least one completed some college		12.5
At least one with high school diploma		14.1
Neither with high school diploma		4.4

Table 2

Disability-Related Demographic Information

Variable	*n*	%
Type(s) of disability or condition*	514	
Psychological disability		45.5
AD/HD		35.2
Learning disability		31.9
Chronic health condition		24.5
Mobility impairment		11.7
Deaf or hard of hearing		5.3
Head injury		4.9
Blind or low vision		3.3
Developmental disability		1.8
Other		0.6
Disability that most affects learning	514	
Psychological disability		28.8
Learning disability		20.0
AD/HD		18.7
Chronic health impairment		15.4
Mobility impairment		6.6
Deafness or hard of hearing		3.9
Blindness or low vision		2.7
Head injury		2.7
Developmental disability		0.6
Other		0.6
When college disability services made aware of respondents' disability	514	
Before or during enrollment		44.4
During first year		22.6
After first year		29.2
College not aware		2.9
No disability services		1.0
Respondent has used accommodations because of disability	514	
Yes		87.5
No		12.5

Note. *Respondents were allowed to select more than one category. Percentages total above 100.

Table 3

Disability Identity Items

Source	Dimension	Item Content
Collective Self-Esteem Scale (Luhtanen & Crocker, 1992)	Identity	• Having a disability is not important to my sense of what kind of a person I am. • Overall, having a disability has very little to do with how I feel about myself. • Having a disability is an important reflection of who I am. • Having a disability is an important part of my self-image.
Collective Self-Esteem Scale (Luhtanen & Crocker, 1992)	Private	• I often regret that I have a disability. • I feel good about people with disabilities. • I often feel that people with disabilities are not worthwhile.
Multidimensional Model of Racial Identity (Sellers et al., 1998)		• I am proud to have a disability.
Collective Self-Esteem Scale (Luhtanen & Crocker, 1992)	Public	• In general, other people respect people with disabilities. • Others think that people with disabilities are unworthy. • Most people consider individuals with disabilities to be less effective than others. • Overall, people with disabilities are considered good by other people.
Questionnaire on Disability Identity and Opportunity (Darling & Heckert, 2010)	Social Model	• People with disabilities need to fight for their rights more than non-disabled people do. • The biggest problem faced by people with disabilities is the attitudes of other people.
Researcher-developed		• Society should make adjustments for people with disabilities. • Discrimination is one reason why people with disabilities have fewer opportunities in life.
Questionnaire on Disability Identity and Opportunity (Darling & Heckert, 2010)	Medical/Personal Model	• People should try to overcome the limitations of their disability. • People with disabilities must learn to accept what they cannot change about themselves. • I wish that someone would find a cure for my disability.
Researcher-developed		• Having a disability means something is wrong with me.

Table 4

EFA Item Correlations and Descriptives

	1	2	3	4	5	6	7	8	9	10
1. Important	1.00									
2. Reflect	0.46	1.00								
3. Self-Image	0.39	0.60	1.00							
4. Feel Self	0.49	0.24	0.30	1.00						
5. Pride	0.00	0.24	0.17	-0.30	1.00					
6. Regret	-0.09	0.08	-0.04	-0.25	0.39	1.00				
7. Not Worthy	-0.22	-0.24	-0.13	-0.19	0.03	0.13	1.00			
8. Feel Good	0.03	0.10	0.19	-0.06	0.27	0.08	0.12	1.00		
9. Effective	0.15	0.05	0.01	0.00	-0.03	0.24	0.06	-0.18	1.00	
10. Worthy	0.02	-0.09	-0.16	-0.07	0.02	0.26	0.20	-0.01	0.45	1.00
11. Respect	-0.14	-0.03	-0.11	-0.21	0.16	0.29	0.06	-0.04	0.42	0.57
12. Good Others	-0.22	0.04	-0.04	-0.33	0.24	0.27	0.08	0.07	0.38	0.32
13. Wrong	0.08	0.11	0.11	0.30	-0.41	-0.34	-0.35	-0.24	-0.06	-0.09
14. Cure	0.06	-0.01	0.01	0.28	-0.45	-0.60	-0.14	-0.14	-0.04	-0.06
15. Accept	-0.01	-0.03	0.12	0.11	-0.13	-0.22	-0.02	0.10	0.02	0.12
16. Limits	-0.13	0.03	-0.03	-0.18	-0.06	-0.07	0.10	-0.05	-0.02	0.16
17. Attitude	0.19	0.17	0.12	0.09	0.10	-0.10	-0.07	0.28	-0.17	-0.34
18. Rights	0.07	0.15	0.13	0.04	0.00	-0.12	-0.06	0.25	-0.19	-0.29
19. Discrimination	-0.02	0.15	0.10	0.12	0.15	-0.04	-0.07	0.20	-0.21	-0.46
20. Society	0.12	0.25	0.28	0.10	0.12	-0.05	-0.16	0.14	-0.06	-0.10
Mean	3.68	4.17	4.11	4.46	3.33	3.21	6.03	5.12	2.62	3.76
Standard Deviation	1.93	1.74	1.73	1.93	1.75	1.95	1.42	1.41	1.26	1.65
Skewness	0.17	-0.32	-0.16	-0.36	0.09	0.55	-1.62	-0.40	0.88	0.37
Kurtosis	-1.16	-0.86	-0.82	-1.04	-0.87	-0.92	1.78	-0.03	1.23	-0.72

(continued)

	11	12	13	14	15	16	17	18	19	20
11. Respect	1.00									
12. Good Others	0.56	1.00								
13. Wrong	-0.01	-0.06	1.00							
14. Cure	-0.09	-0.09	0.41	1.00						
15. Accept	0.10	-0.07	0.02	0.10	1.00					
16. Limits	0.14	0.18	0.11	0.11	0.20	1.00				
17. Attitude	-0.36	-0.22	-0.12	-0.06	-0.06	-0.15	1.00			
18. Rights	-0.32	-0.12	0.06	0.02	-0.01	0.03	0.37	1.00		
19. Discrimination	-0.34	-0.17	-0.03	-0.01	-0.06	-0.17	0.39	0.38	1.00	
20. Society	0.01	-0.01	-0.01	0.05	-0.12	-0.12	0.05	0.31	0.28	1.00
Mean	3.75	4.11	3.52	5.53	5.13	5.83	4.65	5.40	5.15	5.80
Standard Deviation	1.67	1.54	1.91	1.71	1.59	1.23	1.84	1.47	1.45	1.18
Skewness	-0.06	-0.11	0.05	-1.11	-0.98	-1.19	-0.57	-0.90	-0.65	-1.39
Kurtosis	-1.10	-0.82	-1.27	0.55	0.46	1.57	-0.69	0.43	-0.21	2.47

Note. Six of the items (“important, “feel self,” “regret,” “not worthy,” “effective,” and “worthy”) are already reverse coded. The reverse coding for six of the final items (“wrong,” “cure,” “attitude,” “rights,” and “discrimination”) at the conclusion of the EFA is not reflected in this table.

Table 5

Items of Concern in EFA Iterations

Iteration	Model	χ^2	*df*	*p*	RMSEA	SRMR	CFI	Items of Concern	Decision
1	5-factor	88.34	74	.02	.06	.04	.94	Low-loading: • People should try to overcome the limitations of their disability. • I often feel that people with disabilities are not worthy. • People with disabilities must learn to accept what they cannot change about themselves.	Items removed
	6-factor	78.93	61	.06	.06	.03	.96		
	7-factor*	-	-	-	-	-	-		
2	4-factor	105.18	74	.01	.06	.04	.94	Low-loading: • Society should make adjustments for people with disabilities.	Item removed
	5-factor	78.93	61	.06	.06	.03	.97		
	6-factor*	-	-	-	-	-	-		
3	3-factor	143.32	75	<.001	.09	.06	.87	Cross-loading (for 4- and 5-factor models): • Overall, people with disabilities are considered good by other people.	Item removed
	4-factor	88.34	62	.02	.06	.04	.95		
	5-factor	62.29	50	.06	.05	.03	.98		
4	3-factor	109.58	63	<.001	.08	.05	.90	Low-loading: • I feel good about people with disabilities.	Item removed
	4-factor	77.63	74	.01	.07	.04	.94		
	5-factor	51.30	40	.11	.05	.03	.98		
5	2-factor	209.47	64	<.001	.14	.11	.66	Low-loading: • Overall, having a disability has very little to do with how I feel about myself.	Item removed
	3-factor	86.14	52	.002	.07	.05	.92		
	4-factor	53.46	41	.09	.05	.03	.97		
6	3-factor	57.81	42	.05	.06	.04	.96	Negatively-loading • The biggest problem faced by people with disabilities is the attitude of others. • People with disabilities need to fight for their rights more than non-disabled people do. • Discrimination is one reason why people with disabilities have fewer opportunities in life. • Having a disability means something is wrong with me. • I wish there was a cure for my disability.	Items recoded

***Note.* Dash indicates model nonconvergence.**

Table 6

Geomin-Rotated Loadings for Final EFA Model

Item Names	Items	Factors		
		Identification	Private Regard	Public Regard
IMPORTANT	Having a disability is not important to my sense of what kind of a person I am (recoded)	**0.55**	-0.12	0.02
REFLECT	Having a disability is an important reflection of who I am	**0.88**	0.04	-0.01
SELF-IMAGE	Having a disability is an important part of my self-image	**0.67**	-0.02	-0.08
PRIDE	I am proud to have a disability	0.15	**0.61**	<-0.01
WRONG	Having a disability means something is wrong with me (recoded)	-0.20	**0.55**	-0.02
REGRET	I often regret that I have a disability (recoded)	<0.01	**0.69**	0.29
CURE	I wish there was a cure for my disability (recoded)	-0.11	**0.78**	0.02
EFFECTIVE	Most people consider people with disabilities to be less effective than others (recoded)	0.18	0.01	**0.55**
WORTHY	In general, others think that people with disabilities are unworthy (recoded)	0.05	<-0.01	**0.77**
ATTITUDE	The biggest problem faced by people with disabilities is the attitude of others (recoded)	-0.08	-0.15	**0.51**
RIGHTS	People with disabilities need to fight for their rights more than non-disabled people do (recoded)	-0.08	-0.03	**0.46**
DISCRIMINATION	Discrimination is one reason why people with disabilities have fewer opportunities in life (recoded)	-0.02	-0.17	**0.57**
RESPECT	In general, other people respect people with disabilities	0.08	0.07	**0.73**

Note. Factor loadings > 0.40 are in boldface.

Table 7

CFA Item Correlations and Descriptives

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Important	1.00												
2. Reflect	0.35	1.00											
3. Self-Image	0.45	0.59	1.00										
4. Effective	-0.07	-0.05	-0.09	1.00									
5. Worthy	-0.07	-0.04	-0.12	0.45	1.00								
6. Attitude	-0.05	-0.20	-0.18	0.30	0.36	1.00							
7. Rights	-0.02	-0.12	-0.12	0.24	0.25	0.24	1.00						
8. Discrimination	-0.06	-0.08	-0.14	0.36	0.40	0.39	0.43	1.00					
9. Respect	-0.14	0.11	0.06	0.27	0.32	0.27	0.02	0.22	1.00				
10. Pride	-0.05	0.38	0.20	0.10	0.12	-0.08	-0.07	-0.03	0.25	1.00			
11. Wrong	-0.12	0.11	-0.08	0.24	0.26	0.02	0.12	0.05	0.18	0.49	1.00		
12. Regret	-0.14	0.15	-0.02	0.25	0.22	0.04	0.16	0.12	0.17	0.56	0.48	1.00	
13. Cure	-0.05	0.11	0.05	0.12	0.07	0.01	0.07	0.00	0.10	0.43	0.39	0.44	1.00
Mean	3.77	4.19	3.96	2.90	3.75	3.29	2.63	2.70	3.96	3.19	4.47	3.14	2.39
Standard Deviation	1.85	1.81	1.75	1.46	1.51	1.70	1.31	1.38	1.53	1.81	1.98	1.92	1.72
Skewness	0.10	-0.22	-0.16	0.90	0.47	0.48	0.70	0.81	-0.02	0.49	-0.10	0.62	1.19
Kurtosis	-1.13	-0.94	-0.94	0.61	-0.46	-0.60	0.33	0.59	-0.66	-0.69	-1.27	-0.77	0.52

Table 8

SEM Correlations and Descriptives for All Postsecondary Students

	1	2	3	4	5	6	7	8	9	10
1. GPA	1.00									
2. Frequency	-0.04	1.00								
3. Useful	0.03	0.42	1.00							
4. Knowledge	0.00	0.35	0.65	1.00						
5. Empowerment	0.15	0.15	0.19	0.23	1.00					
6. Important	0.01	-0.05	-0.15	-0.17	-0.19	1.00				
7. Reflect	-0.02	0.17	0.11	0.15	0.00	0.36	1.00			
8. Self-Image	-0.07	0.11	0.00	0.03	-0.10	0.47	0.59	1.00		
9. Effective	0.02	0.05	0.07	0.05	0.16	-0.07	-0.09	-0.12	1.00	
10. Worthy	0.07	0.07	0.11	0.15	0.18	-0.08	-0.04	-0.12	0.47	1.00
11. Attitude	0.11	-0.06	-0.04	-0.02	0.12	-0.08	-0.17	-0.18	0.33	0.34
12. Rights	-0.05	-0.11	0.01	-0.04	0.00	-0.03	-0.11	-0.11	0.25	0.27
13. Discrimination	0.05	0.01	0.05	0.07	0.12	-0.06	-0.06	-0.15	0.36	0.41
14. Respect	0.03	0.14	0.24	0.23	0.19	-0.12	0.12	0.06	0.29	0.31
15. Pride	0.05	0.14	0.20	0.22	0.25	-0.06	0.37	0.17	0.09	0.11
16. Wrong	0.20	0.04	0.12	0.19	0.32	-0.15	0.12	-0.08	0.26	0.28
17. Regret	0.14	0.04	0.17	0.18	0.29	-0.14	0.14	-0.04	0.24	0.24
18. Cure	0.00	0.02	0.02	0.10	0.13	-0.05	0.13	0.05	0.10	0.05
19. Awareness Age	0.00	-0.12	-0.10	-0.15	0.04	-0.07	-0.25	-0.16	0.05	0.02
Mean	3.19	4.38	5.95	6.09	13.42	3.74	4.17	3.96	2.85	3.74
Std. Deviation	0.56	1.90	1.29	1.11	2.42	1.83	1.79	1.77	1.42	1.50
Skewness	-0.59	-0.32	-1.70	-1.75	-1.27	0.12	-0.21	-0.16	0.90	0.47
Kurtosis	-0.22	-0.92	3.01	3.63	2.46	-1.11	-0.92	-0.95	0.76	-0.43

(continued)

	11	12	13	14	15	16	17	18	19
11. Attitude	1.00								
12. Rights	0.23	1.00							
13. Discrimination	0.38	0.43	1.00						
14. Respect	0.27	0.04	0.24	1.00					
15. Pride	-0.08	-0.04	-0.01	0.25	1.00				
16. Wrong	0.02	0.11	0.07	0.20	0.51	1.00			
17. Regret	0.07	0.17	0.14	0.16	0.58	0.51	1.00		
18. Cure	0.00	0.07	0.01	0.09	0.43	0.39	0.44	1.00	
19. Awareness Age	0.03	-0.03	-0.06	-0.12	-0.26	0.00	-0.17	-0.16	1.00
Mean	3.32	2.66	2.71	3.98	3.17	4.48	3.12	2.39	-0.07
Std. Deviation	1.68	1.32	1.37	1.53	1.81	1.99	1.92	1.73	9.83
Skewness	0.48	0.68	0.79	-0.01	0.51	-0.09	0.63	1.21	1.34
Kurtosis	-0.56	0.31	0.58	-0.68	-0.67	-1.29	-0.75	0.53	3.30

Note. GPA = grade point average; Frequency = frequency of usage; Usefulness = perceived usefulness; Knowledge = access knowledge; Empowerment = psychological empowerment; Awareness age = age of disability awareness.

Table 9

Summary of SEM Analysis Decisions and Associated Fit Statistics

Model	Significant Indirect Effects	Significant Covariates		Fit Statistics						Notes
			n	χ^2	*df*	*p*	CFI	RMSEA	SRMR	
All Postsecondary Institutions:										
ID, Private, Public, & Empowerment → Frequency ID, Private, Public, & Empowerment → GPA			363	203.29	88	<.001	0.90	0.06	0.06	ID → Frequency significant (*p* = .024); Private & Public → Frequency nonsignificant; latent constructs → GPA nonsignificant
ID, Private,& Public → Empowerment; ID & Empowerment → Frequency; Empowerment → GPA			363	208.49	93	<.001	0.90	0.06	0.06	Empowerment changed to mediator; ID → Empowerment nonsignificant
Private & Public → Empowerment; ID & Empowerment → Frequency; Empowerment → GPA			363	209.74	94	<.001	0.90	0.06	0.06	ID removed as predictor of Empowerment
ID, Private & Public→ Empowerment; ID & Empowerment → Knowledge; Knowledge → Useful; Useful → Frequency; Empowerment → GPA			363	267.46	125	<.001	0.90	0.06	0.07	Additional mediators added

(continued)

Model	Significant Indirect Effects	Significant Covariates	Fit Statistics							Notes
			n	χ^2	df	p	CFI	RMSEA	SRMR	
ID, Private & Public→ Empowerment; ID & Empowerment → Knowledge; Knowledge → Useful; Useful → Frequency; Empowerment → GPA	Private → Frequency; Private → GPA	Awareness age & Parent education	363	346.24	158	<.001	0.88	0.06	0.08	Covariates added and significant covariates retained; indirect paths added; significant indirect paths retained
ID, Private & Public→ Empowerment; ID & Empowerment → Knowledge; Knowledge → Useful; Useful → Frequency; Empowerment → GPA Private ↔ Public	Private → Frequency; Private → GPA	Awareness age & Parent education	363	327.10	157	<.001	0.89	0.06	0.07	Modification: Correlation between Private and Public added.
Four-Year College Students:										
ID, Private & Public→ Empowerment; ID & Empowerment → Knowledge; Knowledge → Useful; Useful → Frequency; Empowerment → GPA			276	212.04	126	< .001	0.92	0.05	0.07	Final model (without covariates or indirect paths) applied to four-year college students

(continued)

Model	Significant Indirect Effects	Significant Covariates	*n*	Fit Statistics						Notes
				χ^2	*df*	*p*	CFI	RMSEA	SRMR	
ID, Private & Public→ Empowerment; ID & Empowerment → Knowledge; Knowledge → Useful; Useful → Frequency; Empowerment → GPA Private ↔ Public	Private → Frequency	Awareness age, Visibility, & Parent education	276	299.64	176	< .001	0.90	0.05	0.08	Covariates added and significant covariates retained; indirect paths added; significant indirect paths retained

Note. ID = identification; Private = private regard; Public = public regard; Empowerment = psychological empowerment; Knowledge = access knowledge; Usefulness = perceived usefulness; Frequency = frequency of usage; GPA = grade point average; Awareness age = age of disability awareness; Visibility = visibility of disability; Parent education = parents' level of education.

Table 10

SEM – Four-Year College Students – Correlations and Descriptives

	1	2	3	4	5	6	7	8	9	10
1. GPA	1.00									
2. Frequency	0.02	1.00								
3. Useful	0.08	0.39	1.00							
4. Knowledge	0.01	0.32	0.65	1.00						
5. Empowerment	0.13	0.19	0.26	0.24	1.00					
6. Important	-0.01	0.02	-0.17	-0.17	-0.18	1.00				
7. Reflect	-0.04	0.19	0.07	0.05	-0.01	0.42	1.00			
8. Self-Image	-0.07	0.13	-0.02	-0.03	-0.09	0.54	0.59	1.00		
9. Effective	0.07	0.04	0.06	0.02	0.16	-0.06	-0.09	-0.17	1.00	
10. Worthy	0.13	0.12	0.09	0.13	0.19	-0.14	-0.10	-0.20	0.45	1.00
11. Attitude	0.14	-0.02	0.00	0.00	0.09	-0.08	-0.13	-0.15	0.31	0.34
12. Rights	-0.03	-0.11	0.03	0.01	0.02	-0.09	-0.05	-0.14	0.26	0.25
13. Discrimination	0.07	0.02	0.06	0.09	0.14	-0.14	-0.04	-0.20	0.38	0.41
14. Respect	0.06	0.10	0.23	0.19	0.20	-0.14	0.05	-0.01	0.29	0.27
15. Pride	0.07	0.17	0.23	0.20	0.24	-0.09	0.36	0.12	0.05	0.05
16. Wrong	0.22	0.08	0.15	0.16	0.29	-0.19	0.04	-0.16	0.25	0.23
17. Regret	0.16	0.08	0.19	0.17	0.30	-0.19	0.12	-0.10	0.20	0.17
18. Cure	0.01	0.03	0.06	0.08	0.10	-0.09	0.07	-0.04	0.10	0.04
19. Awareness Age	-0.10	-0.10	-0.13	-0.15	0.05	-0.04	-0.24	-0.12	0.06	0.01
Mean	3.13	4.38	5.93	6.07	13.36	3.80	4.08	3.99	2.87	3.74
Std. Deviation	0.57	1.88	1.33	1.14	2.55	1.82	1.74	1.72	1.41	1.47
Skewness	-0.53	-0.31	-1.64	-1.67	-1.31	0.12	-0.17	-0.18	0.88	0.50
Kurtosis	-0.35	-0.89	2.60	3.00	2.44	-1.10	-0.89	-0.94	0.66	-0.47

(continued)

	11	12	13	14	15	16	17	18	19
11. Attitude	1.00								
12. Rights	0.21	1.00							
13. Discrimination	0.39	0.40	1.00						
14. Respect	0.32	0.05	0.30	1.00					
15. Pride	-0.10	-0.01	0.02	0.16	1.00				
16. Wrong	-0.01	0.16	0.10	0.13	0.53	1.00			
17. Regret	0.06	0.18	0.14	0.11	0.62	0.53	1.00		
18. Cure	0.00	0.09	-0.01	0.07	0.46	0.42	0.48	1.00	
19. Awareness Age	0.06	-0.02	-0.05	-0.06	-0.23	0.01	-0.19	-0.13	1.00
Mean	3.35	2.77	2.76	3.96	3.18	4.46	3.14	2.42	0.00
Std. Deviation	1.66	1.37	1.42	1.47	1.83	1.97	1.94	1.73	8.38
Skewness	0.48	0.68	0.83	-0.06	0.53	-0.08	0.61	1.18	1.30
Kurtosis	-0.50	0.25	0.60	-0.60	-0.70	-1.29	-0.81	0.50	4.25

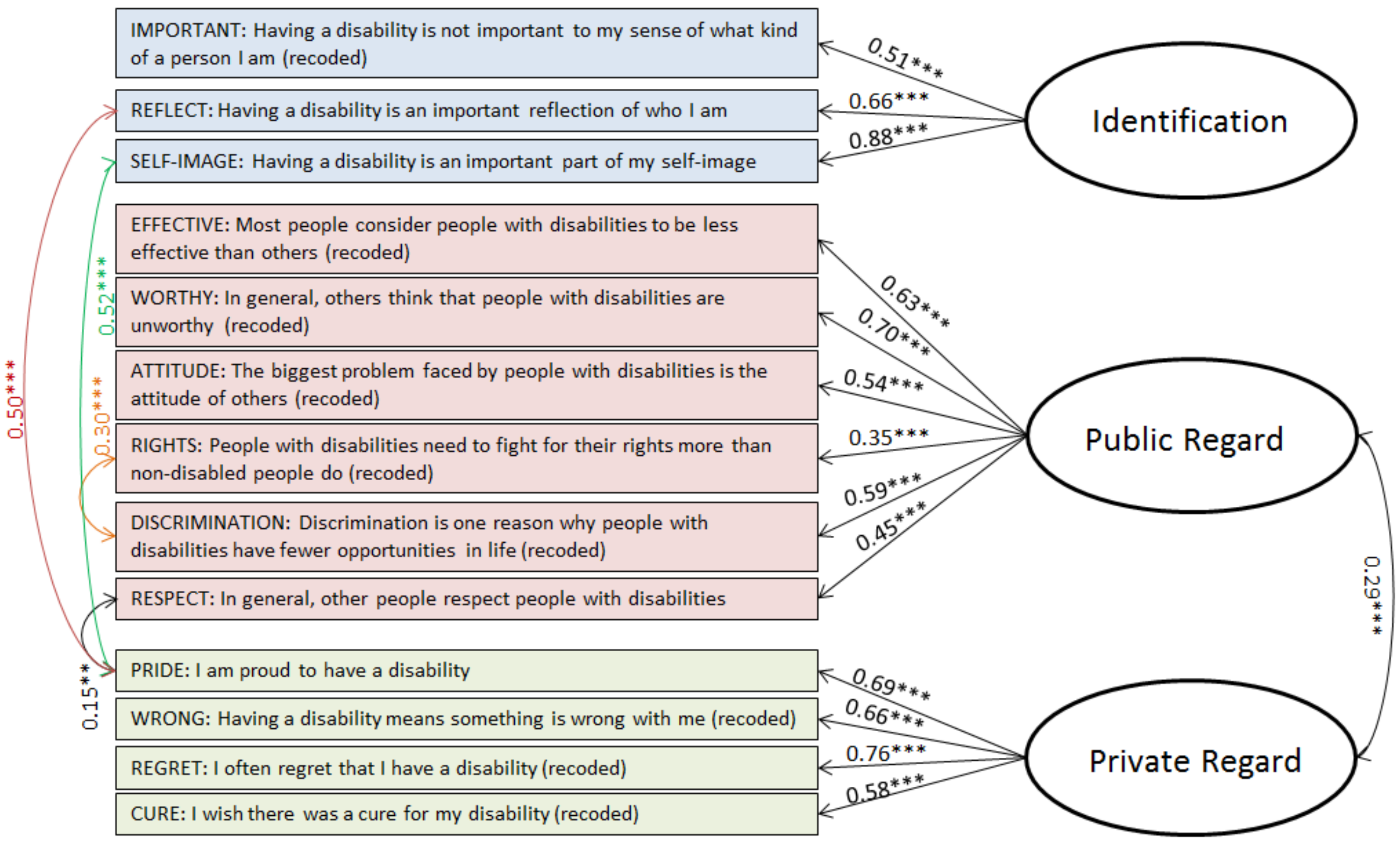


Figure1. Diagram of CFA model for disability identity.

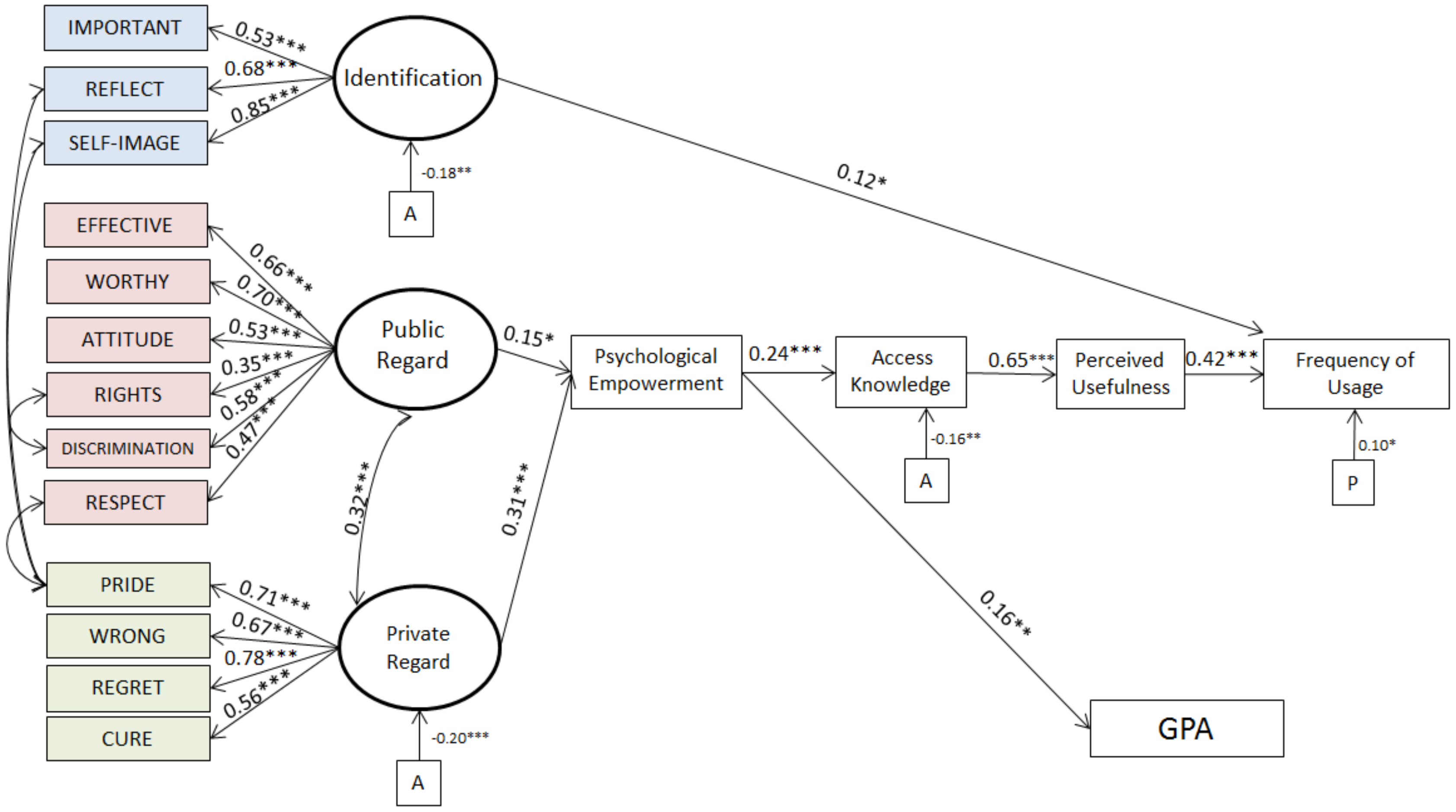


Figure 2. Diagram of SEM for all postsecondary students. Abbreviations of “A” and “P” represent the covariates disability awareness age and parents’ level of education, respectively.

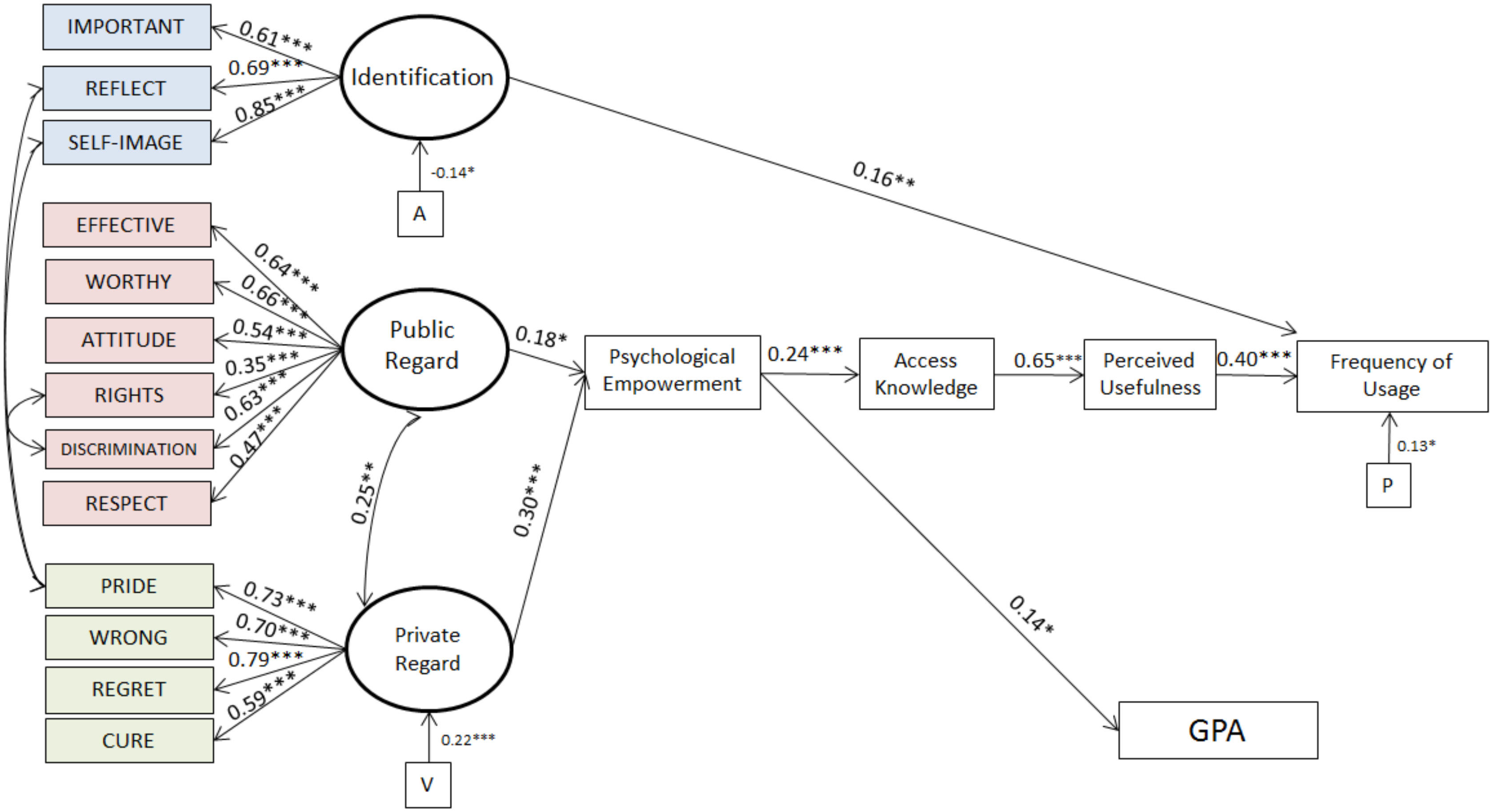


Figure 3. Diagram of SEM for four-year college students. Abbreviations of “A,” “V,” and “P” represent the covariates disability awareness age, visibility of disability, and parents’ level of education, respectively.

Appendix A: Email Communication to Disability Service Programs

Dear [Disability Services Provider],

My name is Yeana Lam, and I am a student at the School of Education at the University of California at Santa Barbara (UCSB). I am recruiting college students with disabilities and learning differences to participate in a survey study conducted under the supervision of Dr. Mian Wang. We are interested in looking at how perceptions of disability and difference could affect accommodations usage and academic achievement. The data will help us understand the factors that lead students to using campus supports and to achieving better outcomes in college.

The survey takes between 15-25 minutes to complete, and participation is entirely voluntary. Students' identifying information (e.g., name, school, social security number) will not be requested in this survey. Students interested in participating in an optional raffle could enter their email address at the end of the survey, for a chance to win a $50 Amazon gift card. Email addresses will not be linked to survey responses, and these email addresses will be deleted after the raffle.

We write to you because we believe this research will ultimately help improve services and programs for students. So we seek your assistance in circulating information about this online survey to current college students with disabilities. Students may access the survey on SurveyMonkey through this link: https://www.surveymonkey.com/s/college-services.

If you have questions or concerns about this research, or would like to know more about accommodations in taking the survey, please contact me at ywong@education.ucsb.edu or (805)699-5285. We will follow up with you within the week to discuss your participation in disseminating information about this research.

Best regards,

Yeana Lam

Appendix B: Informed Consent

Welcome to the College Accommodations and Services Survey. You are invited to participate in this survey study conducted by Yeana Wong Lam under the supervision of Dr. Mian Wang at the University of California, Santa Barbara (UCSB). The purpose of the study is to understand the experiences and self-perceptions of college students with disabilities, psychological conditions, or chronic health issues. Your participation in the survey may also help us understand how to improve services and accommodations. This survey should take about 15-25 minutes to complete.

If you are eligible for the study and would like to participate in a raffle for a $50 Amazon gift card, you can provide your email address at the end of the survey. By March 15th, five students will be randomly selected as recipients of a $50 Amazon gift card. The gift card will be sent by email.

There are very few risks involved in participating in this study. You may feel uncomfortable discussing your disability, your experience with disability-related accommodations, or your academic achievement in college. The benefit to being part of this study is that your responses could help inform professionals on how to improve programs and accommodations to better serve students with disabilities.

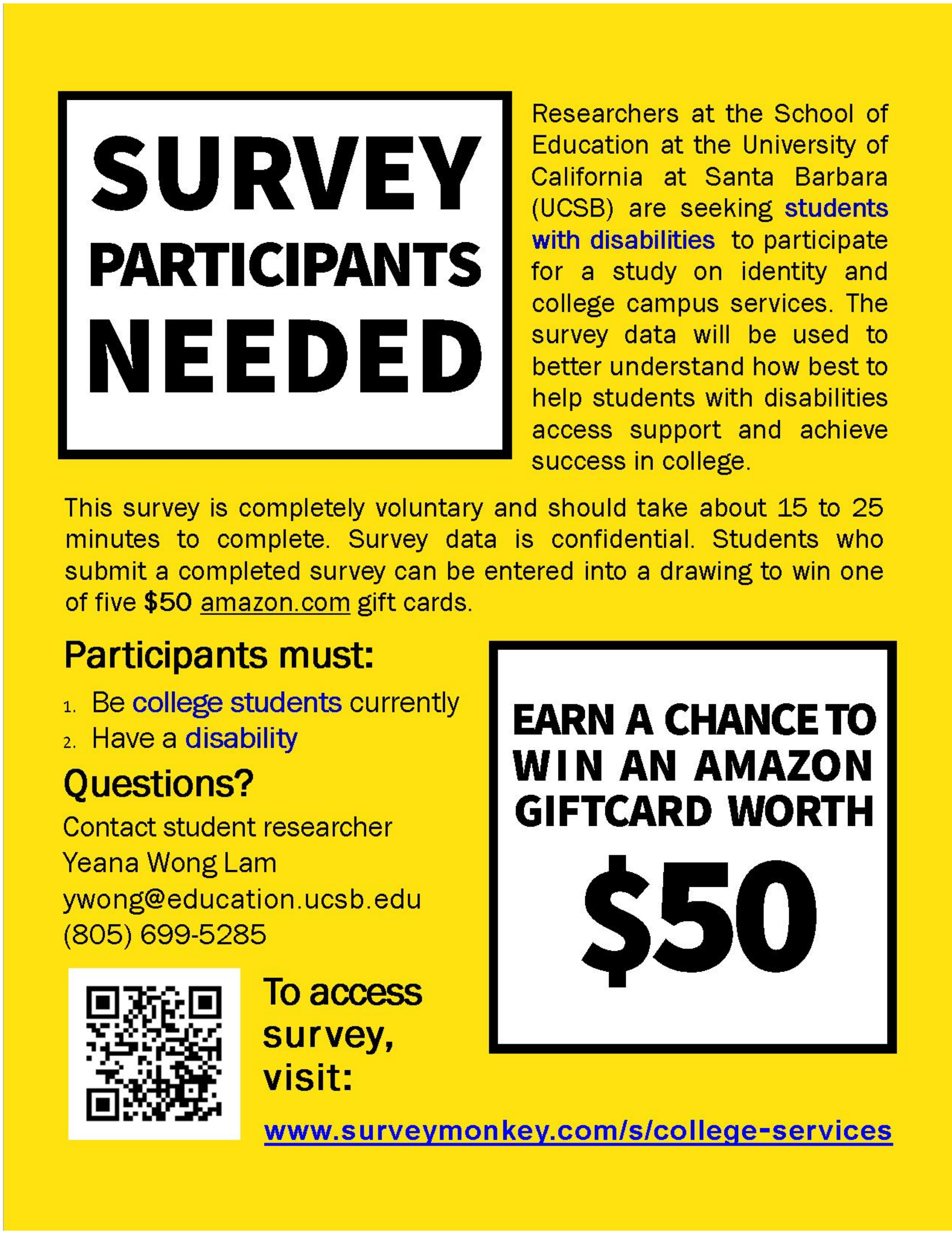
Participation in the survey is confidential. Your survey answers will be shared with faculty members of the Education Department at UCSB, and results from this study may be included in future conferences and publications. However, the data we collect will not be linked to your identity in any way. You may voluntarily provide an email address if you choose to participate in the raffle. Your email address will be collected separately from the survey data so that your survey answers are not linked to your email. Your email address will only be visible to the researcher and will be deleted from all records at the end of the raffle.

This survey is completely voluntary, and you may end your participation at any time by closing your browser window. You may change your mind about being in the study and quit after the study has started.

If you have any questions about this research project or if you think you may have been injured as a result of your participation, please contact ywong@education.ucsb.edu.

If you have any questions regarding your rights and participation as a research subject, please contact the UCSB Human Subjects Committee at (805) 893-3807 or hsc@research.ucsb.edu. Or write to the University of California, Human Subjects Committee, Office of Research, Santa Barbara, CA 93106-2050.

Appendix C: Recruitment Flyer



SURVEY PARTICIPANTS NEEDED

Researchers at the School of Education at the University of California at Santa Barbara (UCSB) are seeking **students with disabilities** to participate for a study on identity and college campus services. The survey data will be used to better understand how best to help students with disabilities access support and achieve success in college.

This survey is completely voluntary and should take about 15 to 25 minutes to complete. Survey data is confidential. Students who submit a completed survey can be entered into a drawing to win one of five **$50** amazon.com gift cards.

Participants must:

1. Be college students currently
2. Have a disability

Questions?

Contact student researcher
Yeana Wong Lam
ywong@education.ucsb.edu
(805) 699-5285

EARN A CHANCE TO WIN AN AMAZON GIFTCARD WORTH $50

To access survey, visit:

www.surveymonkey.com/s/college-services

Appendix D: Survey Instrument

Instructions: For each question, please check-off or fill in the blank.

1. What type of college or postsecondary education are you enrolled in?
    - ○ 2-year college (e.g., community college or junior college)
    - ○ 4-year university or college
    - ○ Graduate school
    - ○ Technical or vocational school
    - ○ Advanced professional school (e.g., medical, law, or business school)
    - ○ I'm not enrolled in college or any postsecondary education

2. Do you have a disability?
    - ○ No
    - ○ Yes

3. What type of disability do you have? (Choose all that apply.)
    - ☐ Learning disability
    - ☐ Attention deficit/hyperactivity disorder (ADHD)
    - ☐ Psychological disability (e.g., major depression, bipolar disorder, major anxiety, autism)
    - ☐ Chronic health impairment
    - ☐ Mobility impairment
    - ☐ Blindness or low vision
    - ☐ Deaf or hard of hearing
    - ☐ Developmental disability
    - ☐ Head injury
    - ☐ Other disability (please specify): _________

4. Which disability MOST affects your learning? If you have more than one disability, choose the disability that most affects your learning. If you have only one disability, please choose that disability.
    - ○ Learning disability
    - ○ Attention deficit/hyperactivity disorder (ADHD)
    - ○ Psychological disability (e.g., major depression, bipolar disorder, major anxiety, autism)
    - ○ Chronic health impairment
    - ○ Mobility impairment

○ Blindness and low vision
○ Deaf or hard of hearing
○ Developmental disability
○ Head injury
○ Other disability (please specify): _________

This survey will ask you questions about the disability that MOST affects your learning in college.

5. How old were you when you became aware of having [Q4 disability]? ____ years old.

6. Since attending college, whom have you revealed your [Q4 disability] to? (Choose all that apply.)
    ☐ College disability services program (e.g., DSPS)
    ☐ College instructors
    ☐ Family members
    ☐ Extended relatives (e.g., cousins, uncles, aunts)
    ☐ Significant other (like a girlfriend, boyfriend, partner, spouse)
    ☐ Close friends
    ☐ Casual friends and peers
    ☐ Employers
    ☐ Other: ___________
    ☐ I have not revealed my disability to anyone since attending college

7. When was your college disability services program aware of your [Q4 disability]?
    ○ Before or during enrollment in college
    ○ During my 1st year in college
    ○ After my 1st year in college
    ○ My college disability services program is not aware of my disability
    ○ My college does not have a disability services program

8. Have you ever used any services or accommodations in college because of your [Q4 disability]?
    ○ No
    ○ Yes

If "no," move on to #9. If "yes," move on to #15.

9. What are some reasons why you did not use services or accommodations for [Q4 disability]?

____

		Strongly Disagree	**Disagree**	**Disagree Somewhat**	**Neutral**	**Agree Somewhat**	**Agree**	**Strongly Agree**
10.	I know what accommodations and services are available at my college.	1	2	3	4	5	6	7
11.	I know how to get accommodations and services that I need at my college.	1	2	3	4	5	6	7
12.	My college offers services or accommodations that are useful to me.	1	2	3	4	5	6	7
13.	It would have been helpful to have used services or accommodations.	1	2	3	4	5	6	7
14.	I receive help from other people (for example, family, friends, classmates) to help me do my best in college.	1	2	3	4	5	6	7

15. Do you plan to use services or accommodations in the future?

○ No
○ Yes

If you do plan to use services or accommodations in the future, which ones would you use? Choose all that apply.

Move on to #27.

16. What services or accommodations have you used in college? (Choose all that apply.)

- ☐ Early registration or priority enrollment
- ☐ Extended (more) time taking tests
- ☐ Breaks during testing
- ☐ Different settings to take tests (e.g., private room)
- ☐ Reduced distraction during testing (e.g., ear plugs)
- ☐ Alternate media (e.g., audiobooks, e-texts, Braille, large print, captioning)
- ☐ Assistive technology provided by the school (e.g., Kurzweil, audio recorder for lectures, calculator, spell checker)
- ☐ Help with learning strategies or study skills
- ☐ Disability-management counseling
- ☐ An aide (e.g., note-taker, reader, scribe, captioner, sign language interpreter)
- ☐ Approval for an aide to help with personal needs
- ☐ Adaptive equipment in the classroom (e.g., special chairs or desks)
- ☐ Other: ____________________________

		Almost never	**Once in a while**	**Some of the time**	**Most of the time**	**Almost all the time**	**Always**
17.	Overall, how often do you use services or accommodations?	1	2	3	4	5	6

		Never again	**Almost never**	**Once in a while**	**Some of the time**	**Most of the time**	**Almost all the time**	**Always**
18.	In the future, how often do you plan to use services or accommodations that you have found helpful?	1	2	3	4	5	6	7

19. What are some reasons why you might choose to NOT use services or accommodations in college?

____

		Strongly Disagree	Disagree	Disagree Somewhat	Neutral	Agree Somewhat	Agree	Strongly Agree
20.	I know what accommodations and services are available at my college.	1	2	3	4	5	6	7
21.	I know how to get accommodations and services that I need at my college.	1	2	3	4	5	6	7
22.	My college offers services or accommodations that are useful to me.	1	2	3	4	5	6	7
23.	The services or accommodations I have used have been useful in helping me do my best in college.	1	2	3	4	5	6	7
24.	I receive help from other people (e.g., family, friends, classmates) to help me do my best in college.	1	2	3	4	5	6	7

We would like you to think about your [Q4 disability] and respond to each statement by using a scale from 1 to 7. There are no right or wrong answers.

		Strongly Disagree	Disagree	Disagree Somewhat	Neutral	Agree Somewhat	Agree	Strongly Agree
25.	I often regret that I have a disability.	1	2	3	4	5	6	7
26.	Overall, people with disabilities are considered good by other people.	1	2	3	4	5	6	7
27.	People with disabilities need to fight for their rights more than non-disabled people do.	1	2	3	4	5	6	7
28.	Overall, having a disability has very little to do with how I feel about myself.	1	2	3	4	5	6	7
29.	I am proud to have a disability.	1	2	3	4	5	6	7
30.	Most people consider individuals with disabilities to be less effective than others.	1	2	3	4	5	6	7

31.	People should try to overcome the limitations of their disability.	1	2	3	4	5	6	7
32.	Having a disability is an important reflection of who I am.	1	2	3	4	5	6	7
33.	I often feel that people with disabilities are not worthwhile.	1	2	3	4	5	6	7
34.	The biggest problem faced by people with disabilities is the attitudes of other people.	1	2	3	4	5	6	7
35.	In general, other people respect people with disabilities.	1	2	3	4	5	6	7
36.	Having a disability is not important to my sense of what kind of a person I am.	1	2	3	4	5	6	7
37.	I feel good about people with disabilities.	1	2	3	4	5	6	7
38.	Having a disability means something is wrong with me.	1	2	3	4	5	6	7
39.	Society should make adjustments for people with disabilities.	1	2	3	4	5	6	7
40.	Others think that people with disabilities are unworthy.	1	2	3	4	5	6	7
41.	Discrimination is one reason why people with disabilities have fewer opportunities in life.	1	2	3	4	5	6	7
42.	Having a disability is an important part of my self-image.	1	2	3	4	5	6	7
43.	People with disabilities must learn to accept what they cannot change about themselves.	1	2	3	4	5	6	7
44.	I wish that someone would find a cure for my disability.	1	2	3	4	5	6	7

Check the answer that BEST describes you. Choose only ONE answer for each question. There are no right or wrong answers.

45.	○ I usually do what my friends want…or ○ I tell my friends if they are doing something I don't want to do.
46.	○ I tell others when I have new or different ideas or opinions…or ○ I usually agree with other peoples' opinions or ideas.
47.	○ I usually agree with people when they tell me I can't do something…or ○ I tell people when I think I can do something that they tell me I can't.
48.	○ I tell people when they have hurt my feelings…or ○ I am afraid to tell people when they have hurt my feelings.
49.	○ I can make my own decisions…or ○ Other people make decisions for me.
50.	○ Trying hard at school doesn't do me much good…or ○ Trying hard at school will help me get a good job.
51.	○ I can get what I want by working hard…or ○ I need good luck to get what I want.
52.	○ It is no use to keep trying because that won't change things…or ○ I keep trying even after I get something wrong.
53.	○ I have the ability to do the job I want…or ○ I cannot do what it takes to do the job I want.
54.	○ I don't know how to make friends…or ○ I know how to make friends.
55.	○ I am able to work with others…or ○ I cannot work well with others.
56.	○ I do not make good choices…or ○ I can make good choices.
57.	○ If I have the ability, I will be able to get the job I want…or ○ I probably will not get the job I want even if I have the ability.
58.	○ I will have a hard time making new friends…or ○ I will be able to make friends in new situations.
59.	○ I will be able to work with others if I need to…or ○ I will not be able to work with others if I need to.

60.	○ My choices will not be honored…or ○ I will be able to make choices that are important to me.

61. What is your age? _____

62. What is your gender?
- ○ Female
- ○ Male
- ○ Other gender identified

63. What is your race/ethnicity? (Choose all that apply.)
- ☐ White
- ☐ Latino/Hispanic
- ☐ Black or African American
- ☐ Asian
- ☐ Filipino/Pacific Islander
- ☐ Middle Eastern
- ☐ Native American or Alaskan Native
- ☐ Other ________________

64. Have you been involved in organizations or clubs for students with disabilities?
- ○ No
- ○ Yes

65. How much education did your parents receive (either in the U.S. or in another country)?
- ○ At least one of my parents have graduated college with a degree
- ○ At least one of my parents have completed some college
- ○ At least one of my parents have a high school degree or GED
- ○ Neither of my parents have a high school degree or GED
- ○ I'm not sure

66. In which state do you attend college? (Drop down menu selection)

67. Is this your first semester/quarter in college?

- ○ No
- ○ Yes

		Strongly Disagree	**Disagree**	**Disagree Somewhat**	**Neutral**	**Agree Somewhat**	**Agree**	**Strongly Agree**
68.	I am satisfied with my academic performance so far.	1	2	3	4	5	6	7
69.	It is very likely that I will finish my degree.	1	2	3	4	5	6	7

If response to #67 was “no,” move on to #70. If response was “yes,” survey is completed.

70. What is your overall (cumulative) college GPA? _________