Adaptation to College for Students With and Without Disabilities: Group Differences and Predictors

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Abstract

This study investigated differences between attributional style and student adaptation to college for students with and without disabilities. In terms of attributional style, the students with disabilities demonstrated a more internal, stable, and global attributional style for both positive events and negative events. In terms of student adaptation to college, the group of students without disabilities scored higher for overall student adaptation to college, social adjustment, institutional attachment, and semester GPA. Additionally, we explored the ability of six variables to predict student adaptation to college for students with disabilities. Two variables contributed significantly to the prediction: self-advocacy skill and visibility of disability.

College Attrition

The transition to college can be difficult for many students as they face the challenges of adapting to their new environments. Prior research has suggested that feelings of isolation and loneliness, difficulty with separation from family, increased interpersonal conflicts, and financial pressures are common during the first few years of college, and if students cannot adjust they may be more likely to leave the university (Baker & Siryk, 1980; Fisher & Hood, 1987; Kenny & Donaldson, 1991; Lapsley, Rice, & FitzGerald, 1990; Lapsley, Rice, & Shadid, 1989; Lopez, Campbell, & Watkins, 1988; Rice, 1992). There has been a slight increase in overall postsecondary degree completion rates in recent years, but attrition rates also continue to be high (U.S. Department of Education, National Center for Education Statistics, 2003a, 2004, 2005). For example, in a study of all students who enrolled in a 4-year college as first-time freshmen in 1995–96, 21% were no longer working towards a bachelor's degree by 2001 (U.S. Department of Education, National Center for Education Statistics, 2004). Other research suggested that one-third (32%) of students from 2-year and 4-year postsecondary institutions left without a degree within three years of beginning their academic careers (U.S. Department of Education, National Center for Educational Statistics, 2003a).

Programs and Services

To address the pervasive problem of attrition, colleges and universities have implemented retention programs designed to help those students considered at risk. Programs designed to provide the extra services and skills necessary to graduate have targeted the economically disadvantaged, minority students, women, non-traditional students, and students with disabilities (Seidman, 2005, p. xii). College students with disabilities may be particularly at risk in terms of attrition, given that these students face the same stressors as the general student population, with an additional impairment in some area of their lives.

The enrollment of college students with disabilities has increased on U.S. college campuses. During the 1999-2000 school year, 9% of all undergraduate students in degree-granting institutions reported having a disability (U.S. Department of Education, National Center for Education Statistics, 2003b) and this increased enrollment has led to changes in the postsecondary accom-

modation and support programs designed to address the needs of students with disabilities (Sharpe & Johnson, 2001, p. 169). The overall purpose of these programs is to ensure that students with disabilities have the same educational opportunities as their non-disabled peers as mandated by Section 504 of the Rehabilitation Act and the Americans with Disabilities Act of 1990. Accommodations and supports offered most frequently by postsecondary institutions include testing accommodations (extra time or alternative environment), personal and career counseling, advocacy services, note takers/readers, study skills, interpreter/translator, tutors, priority registration and course scheduling, class relocation, and learning center laboratories (Sharpe & Johnson, 2001; Sharpe, Johnson, Izzo, & Murray, 2005; Stodden, Whelley, Chang, & Harding, 2001; Tagayuna, Stodden, Chang, Zeleznik, & Whelley, 2005).

Research indicates that in general, many students with disabilities are satisfied with the accommodations and services they receive. For example, Sharpe et al. (2005) reported that 69% of student participants endorsed being very satisfied with their accommodations and 85% indicated that their accommodation was appropriate to meet their needs. However, 19% reported provision of unnecessary accommodations and 35% reported denial of accommodations believed to be needed. Similar results were found by the U.S. Department of Education, National Center for Education Statistics (2003b) in which 22% of college students with disabilities reported not receiving the services and/or accommodations they needed. Despite the many successes of disability support programs, the special needs of some students with disabilities remain unmet.

In determining the special needs of students with disabilities, one must consider the many variables that influence one's reaction to impairment and disability, and how the interaction between variables results in even greater complexity (Vash & Crewe, 2004, p. 3). More specifically, four types of reaction determinants have been proposed by Vash & Crewe (2004), including those related to the individual (e.g., attributional style) as well as to the identified disability (e.g., visibility), those associated with one's immediate environment (e.g., educational experience), and those influenced by the larger culture (e.g., laws protecting the rights of individuals with disabilities, p. 3).

Additionally, people with disabilities may be further limited within the postsecondary environment by either not possessing or not using the skills necessary to seek out available disability services and self-advocate. Individuals with disabilities may remain passive in the educational process because they were not given the opportunities to develop self-advocacy skills in primary and secondary school where services were largely dictated by the school personnel (Hicks-Coolick, 1997; Layton & Lock, 2003; Scott, 1991). It stands to reason that this complex interaction of individual characteristics and environmental determinants may influence how students with disabilities adapt within the postsecondary environment.

Student Adaptation to College

The literature pertaining to student adaptation to college has increased over the past several years due to the availability of more valid and reliable research instruments. In the past, investigators viewed college adaption as a single variable and relied on univariate approaches in examining relationships between predictors and criteria (Mooney, Sherman, & LoPresto, 1991, p. 445). However, investigators now view college adaptation as a multifaceted construct of interrelated coping or adjustment responses (Baker & Siryk, 1984; Mooney et al., 1991).

Predictors of college adaptation/success that have been cited in past research include ACT scores and intellectual ability (Aspinwall & Taylor, 1992; Brooks & DuBois, 1995; Sternberg & Kaufman, 1998), problem solving skills and coping styles (Baker, 2003; Brooks & DuBois, 1995; Cantor, Norem, Neidenthal, Langston, & Brower, 1987; Clark & Hovanitz, 1989; Heppner & Anderson, 1985; Hovanitz, 1986; Kirsch, Mearns, & Catanzaro, 1990; Nezu & Ronan, 1988), emotional stability (Brooks & DuBois, 1995), self-esteem (Cantor, et al., 1987; Geist & Borecki, 1982; Mooney et al., 1991), assertiveness (Elliott & Gramling, 1990), attributional style and locus of control (Day, 1999; Mooney et al., 1991; Zika & Chamberlain, 1987), optimism (Darvill & Johnson, 1991), sense of mastery (Felsten & Wilcox, 1992), personality variables (De Raad, 1996), motivational orientations (Baker, 2003), learning approaches (Minnaert & Janssen, 1992), the number of hours spent on-line (Lanthier & Windham, 2004), stressful events and social support (Brooks & DuBois, 1995), and perceived distance from home to college (Mooney et al., 1991).

A small body of literature specifically addresses student adaptation to college for individuals with disabilities. Predictors of student adaptation to college for individuals with disabilities researched in past literature

have included problem solving skills, stressful events, perceived social support, resource use, satisfaction with the disability resource office (Sanders & DuBois, 1996), attachment to parents and peers (Leatherman-Sommers, 1999), extra-curricular involvement (Miller, 2001), and perceived need for academic and counseling support (Saracoglu, Minden, & Wilchesky, 1989).

Finally, a number of studies have identified general characteristics of successful college students and adults with disabilities including mild to moderate range disabilities (Greenbaum, Graham, & Scales, 1995), early diagnosis (Neilson, 2001), the ability to reframe disability in a positive manner (Gerber, Ginsberg, & Reiff, 1992; Reiff, Ginsberg, & Gerber, 1995), social support from significant others (Gerber et al., 1992; Greenbaum et al., 1995; Neilson, 2001; Reiff et al., 1995), knowledge of individual strengths (Goldberg, Higgins, Raskind, & Herman, 2003), knowledge of one's disability and how it impacts learning (Goldberg et al., 2003; Greenbaum et al., 1995), self-determination (Greenbaum et al., 1995), a sense of internal and external control (Gerber et al., 1992; Goldberg et al., 2003; Reiff et al., 1995), the ability to set flexible goals (Gerber et al., 1992; Goldberg et al., 2003; Madaus, Gerber, & Price, 2008; Reiff et al., 1995), self-esteem (Johnson, Zascavage, & Gerber, 2008; Neilson, 2001), persistence and learned creativity (Gerber et al., 1992; Reiff et al., 1995), satisfaction with accommodations and services (Sharpe et al., 2005), and attendance at a two-year college prior to a four-year college (Johnson et al., 2008). Based on a review of the literature relevant to general student adaptation to college, the specific and unique challenges faced by college students with disabilities and the characteristics of those students who achieve success, possible predictors of adaptation to college for students with disabilities that warrant exploration include psychosocial adjustment to disability, attributional style, perceived visibility of disability, level of self-advocacy skill, and level of educational experience.

Psychosocial Adjustment to Disability

Psychosocial adjustment to disability has been described as an emotional acceptance of one's disability reflected by a positive self worth, a realization of one's potential, active pursuit of goals, and overcoming obstacles when they arise in pursuit of goals (Martz, Livneh, & Turpin, 2000, p. 15). The construct has been found to be an established correlate of rehabilitation, vocational adjustment, and overall life-satisfaction for individuals with chronic illness or impairment resulting in disability (Livneh, Martz, & Wilson, 2001, p. 227). Variables associated with psychosocial adjustment to disability have included self-concept and self-esteem; coping strategies and styles; emotional reactions such as anxiety, depression, and anger (Livneh et al., 2001); locus of control or attributional style (Martz, Livneh, & Turpin, 2000; Roesch & Weiner, 2001); and the degree to which disability is visibly evident to others (Martz et al., 2000; Livneh et al., 2001; Livneh & Wilson, 2003; Tam, Chan, Lam, & Lam, 2003). There are no known studies which investigate the relationship between adjustment to disability and adaptation to college.

Perceived Visibility

Perceived visibility of condition has been associated with stigma formation and marginality (Frable, 1993; Goffman, 1963), and for individuals with invisible disabilities, the threat of possible stigmatization may result in efforts to conceal one's disability status from others. It has been proposed that lack of disclosure may result in an ever present anxiety associated with the possibility of discovery, low self-esteem, and difficulty accepting one's condition (Falvo, Allen, & Maki, 1982; Livneh et al., 2001; Matthews & Harrington, 2000).

There are a small number of published research studies focusing on the role of perceived visibility in relation to psychosocial adjustment to disability, but results from the limited studies have been mixed (Livneh et al., 2001; Livneh & Wilson, 2003; Martz et al., 2000; Tam et al., 2003). Additionally, there are several studies represented in the literature (Barkley, Murphy, & Kwasnik, 1996; Greenbaum et al., 1995; Ryan, 1994; Ryan, Nolan, Keim, & Madsen, 1999; Saracoglu et al., 2000; Shaw-Zirt, Popali-Lehane, Chaplin, & Bergman, 2005) addressing student adaptation to college for individuals with learning disabilities and ADHD (both of which are considered largely invisible disabilities), however, there are no known studies that investigate the relationship between degree of visibility and student adaptation to college.

Attributional Style

Attributional style is a measure of one's optimism and/or pessimism regarding causal explanations for events (Peterson, Maier, & Seligman, 1993; Seligman, 1990). As students enter college, they bring with them deeply held beliefs about personal causality, which have evolved from their unique histories of successes and/or failures and feedback from significant others

(Borkowski, Weyhing, & Carr, 1988, p. 46). Attributional style has been found to influence student adaptation to college for those without disabilities, as well as psychosocial adjustment to disability for individuals with disabilities. Based on a review of the literature by Day (1999), attributional style has also been identified as significantly correlated with academic success in diverse student populations.

Self-Determination and Self-Advocacy Skill

Fostering self-determination has been recommended practice in the education and transition planning of students with disabilities (Field & Hoffman, 2007; Wehmeyer, 2002; Wehmeyer, Field, Doren, Jones, & Mason, 2004). Research suggests that promoting self-determination leads to more successful goal attainment throughout one's education and the transition into adulthood (Field & Hoffman, 2007; Field, Sarver, & Shaw, 2003; Wehmeyer et al., 2004). Characteristics of self-determined behavior have also been shown to predict overall quality of life in those with disabilities (Lachapelle, Wehmeyer, Haelewyck, Courbois, Keith, Schalock, Verdugo & Walsh, 2005; Nota, Ferrari, Soresi, & Wehmeyer, 2007).

Self-determination has been defined as "a combination of skills, knowledge, and beliefs that enable a person to engage in goal-directed, self-regulated, autonomous behavior. An understanding of one's strengths and limitations, together with a belief of oneself as capable and effective are essential to self-determination. When acting on the basis of these skills and attitudes, individuals have greater ability to take control of their lives and assume the role of successful adults in our society" (Field, Martin, Miller, Ward, & Wehmeyer, 1998, p. 2).

Facets of self-determination include skills related to decision-making, problem solving, goal-setting and attainment, self-regulation, leadership, perceptions of control, efficacy expectations, self-awareness, and self-knowledge (Field & Hoffman, 2007, p. 182). Self-advocacy has also been identified as a critical component of self-determination. Self-advocacy skills impact a student's ability to plan and execute their academic goals (Bassett & Lehmann, 2002; Layton & Lock, 2003).

While researchers have yet to come to a consensus, many have attempted to operationalize self-advocacy into a conceptual framework (Hicks-Coolick, 1997; Layton & Lock, 2003; Test, Fowler, Wood, Brewer, & Eddy, 2005). According to the conceptual framework of Test et al., (2005), one must first and foremost develop knowledge of one's self including "knowledge of one's interests, preferences, strengths, needs, learning styles, and attributes of one's disability" (p. 50). An individual must also possess knowledge of their rights "as a citizen, as an individual with a disability, and as a student receiving services under federal law" (p. 50). Knowledge of the self and one's rights are the foundation of the self-advocacy model by Test et al. (2005), for individuals must have sufficient insight into themselves before they can express their needs and desires to others. Individuals will then need to be able to communicate effectively through "negotiation, assertiveness, and problem solving" (p. 45). Finally, although not a necessary component of self-advocacy, one may develop the leadership skills needed to effectively advocate for the collective needs or desires of a larger group (p. 45).

Level of Educational Experience

The first few years of the college experience may be the most difficult for students in terms of adapting to their new environment and its demands. The majority of students who leave college do so in good academic standing and within their first two years of beginning their academic career (Tinto, 1993). Therefore, it seems logical that students who make it through the first few difficult years of college life have managed to adapt to their new college environment more successfully than those who leave the university earlier in their academic career.

If attributional style, psychosocial adjustment to disability, visibility of disability, self-advocacy skill and level of educational experience significantly influence the adaptation to college and academic success of individuals with disabilities, efforts to increase retention of students with disabilities must be increasingly multifaceted, focusing on academic skills and accommodations as well as psychological or psychosocial influences. Therefore, in an effort to clarify the differences between college students with and without disabilities and to identify predictors of adaptation to college for students with disabilities, this study was designed to answer the following research questions:

1. What is the difference between the attributional style for positive events and negative events of students with and without disabilities, controlling for educational experience and age?
2. What is the difference between the college adaptation (including academic adjustment, social adjustment, personal/emotional adjustment,

institutional attachment, and semester GPA) of students with and without disabilities, controlling for educational experience and age?

3. What is the proportion of variance explained by visibility of disability, attributional style for positive events, attributional style for negative events, psychosocial adjustment to disability, perceived self-advocacy skill, and level of educational experience in prediction of student adaptation to college?

Method

Participants

The research sample consisted of a total of 230 undergraduate and graduate students at five postsecondary institutions located in the southeastern region of the United States. Students represented two groups, those with disabilities and those without disabilities. Of the 115 students with disabilities, 81 (70.4%) were female. Additionally, 91 (79.1%) participants were Caucasian, 11 (9.6%) were African-American, 7 (6.1%) were Hispanic-American, 3 (2.6%) were Asian-American, 1 (.9%) was American-Indian, and 2 (1.7%) identified themselves as other. Eighty-nine participants (77.4%) in this group were single, 18 (15.7%) were married, 1 (.9%) was separated, and 7 (6.1%) were divorced. In terms of the number of years completed in college, 12 (10.4%) were classified as freshman, 10 (8.7%) were sophomores, 36 (31.3%) were juniors, 34 (29.6%) were seniors, 20 (17.4%) were graduate students, and 3 (2.6%) classified themselves as other. One hundred ten of the students (96.5%) were enrolled in a four-year institution, 3 (2.6%) were enrolled in a two-year institution, and 2 (1.7%) failed to designate. The mean age of participants was 26.67 (SD = 10.27) and the mean GPA was 3.14 (SD = .63) on a 4-point scale (see Table 1). Areas of disability represented in the sample included 44 (41.5%) students with learning disabilities, 41 (38.7%) with physical/sensory disabilities, 17 (16.0%) with mental/psychiatric disabilities, and 4 (3.8%) with other disabilities (e.g., Epilepsy, Asperger's Syndrome, 3.8%). The mean age of disability onset was 12.17 years (SD = 10.60) and the mean age of diagnosis was 16.43 years (SD = 12.48) (see Table 2).

Of the 115 participants in the non-disabled group, 80 (69.7%) were female. Additionally, 76 (66.1%) participants were Caucasian, 25 (21.7%) were African-American, 10 (8.7%) were Hispanic-American, 1 (.9%) was American-Indian, and 3 (2.6%) identified themselves as other. One hundred eight participants (93.9%) in this group were single and 7 (6.1%) were married. In terms of the number of years completed in college, 58 (50.4%) were classified as freshman, 19 (16.5%) were sophomores, 14 (12.2%) were juniors, 22 (19.1%) were seniors, and 2 (1.7%) were graduate students. All students (100%) were enrolled in a four year institution. The mean age of participants was 19.99 (SD = 3.4) and the mean GPA was 3.16 (SD = .52) on a 4-point scale (see Table 1).

Procedures

Students with disabilities were identified through the disability service centers at the five respective institutions. To register with disability services, students must provide current written documentation (within the last three years) of disability from an appropriate health care provider subject to review by the respective center. Although what constitutes appropriate evaluation and documentation varies somewhat by disability type, in general, documentation should include the specific diagnosed disability, a description of the impact of the diagnosed disability on major life functions and academic performance, and specific recommendations for accommodation. A diagnosed disability does not necessarily mean that students qualify for accommodations and services. To qualify for accommodations and services, the documentation must not only indicate the presence of a disability, but also indicate that the disability substantially limits some major life activity, including learning as compared to the average person in the general population.

The postsecondary disability support programs included in the study provided a variety of accommodations including, but not limited to, accessible classrooms, assistive technology and alternative format learning materials, course substitutions, entrance/exit requirement wavers, classroom accommodations (e.g., note takers and sign language interpreters) and examination accommodations (e.g., extended time limits, readers, and scribes). Support services offered to students with disabilities included tutoring, academic coaching, educational and career advising, assistance with course registration, personal counseling, and orientation to campus facilities. Support services were offered either directly through the disability support program or indirectly via referral to other campus or community services.

Students registered with disability services were

Table 1

Participant Demographic Information by Group

Demographic Variable	Non-Disability (*n* = 115)	Disability (*n* = 115)
Gender:		
Male	30.4 % (*n* = 35)	29.6 % (*n* = 34)
Female	69.6 % (*n* = 80)	70.4% (*n* = 81)
Ethnicity:		
Caucasian	66.1 % (*n* = 76)	79.1 % (*n* = 91)
African-American	21.7 % (*n* = 25)	9.6 % (*n* = 11)
Hispanic-American	8.7 % (*n* = 10)	6.1 % (*n* = 7)
Asian-American	--	2.6 % (*n* = 3)
American-Indian	0.9 % (*n* = 1)	0.9 % (*n* = 1)
Other	2.6 % (*n* = 3)	1.7 % (*n* = 2)
Marital Status:		
Single	93.9 % (*n* = 108)	77.4 % (*n* = 89)
Married	6.1 % (*n* = 7)	15.7 % (*n* = 18)
Separated	--	0.9 % (*n* = 1)
Divorced	--	6.1 % (*n* = 7)
Institution:		
Four Year	100 % (*n* = 115)	96.5 % (*n* = 110)
Two Year	--	3.5 % (*n* = 5)
Year of College:		
Freshman	50.4 % (*n* = 58)	10.4 % (*n* = 12)
Sophomore	16.5 % (*n* = 19)	8.7 % (*n* = 10)
Junior	12.2 % (*n* = 14)	31.3 % (*n* = 36)
Senior	19.1 % (*n* = 22)	29.6 % (*n* = 34)
Graduate	1.7 % (*n* = 2)	17.4 % (*n* = 20)
Other	--	2.6 % (*n* = 3)
Mean Age	19.99 (*SD* = 3.4)	26.67 (*SD* = 10.27)
Mean Grade Point Average	3.16 (*SD* = .52)	3.14 (*SD* = .63)

Table 2

Disability Group Demographic Information

Demographic Variable	Disability (*n* = 115)
Disability Type:	
Learning	41.5 % (*n* = 48)
Physical/Sensory	38.7 % (*n* = 45)
Mental/Psychiatric	16.0 % (*n* = 18)
Other (e.g. Epilepsy, Asperger's Disorder)	3.8 % (*n* = 4)
Cause of Primary Impairment:	
Congenital	39.1 % (*n* = 45)
Illness	13.0 % (*n* = 15)
Accident/Injury	10.40 % (*n* = 12)
Unknown	37.4 % (*n* = 43)
SDRC Registered:	
Registered	100 % (*n* = 115)

contacted via research announcements posted in the center facilities or by e-mail sent by the center staff to all registered students. All consenting students with disabilities who responded to the posted research announcement or e-mail by accessing the research materials via URL were included in the study as part of the group of students with disabilities.

Students without disabilities were identified through select courses offered at the postsecondary institutions, including courses related to career development, education, communication, and psychology. Students without disabilities were contacted via research announcements given by the course instructors, and also completed the instruments online using the provided URL.

Participants with disabilities were asked to complete an online survey encompassing the Demographic Information Sheet (DIS), Self-Advocacy Questionnaire (SAQ), Reaction to Impairment and Disability Inventory (RIDI), Attributional Style Questionnaire (ASQ), and the Student Adaptation to College Questionnaire (SACQ). Participants without disabilities were asked to complete a survey encompassing the DIS, ASQ and SACQ. Participant responses were sent directly to a secure password protected database, and were stored directly on the server.

Measures

Demographic information. The Demographic Information Sheet (DIS) is a 14 item on-line questionnaire. Questions include participants' age, gender, ethnicity, marital status, educational level, educational setting, current semester GPA, primary type of disabling condition, cause of disability, age of disability onset, and age at initial diagnosis. Students without disabilities completed

an abbreviated version of the DIS that omitted questions specifically addressing a diagnosed disability.

Visibility. The degree of perceived visibility was measured by a single subjective item (e.g., Extent to which other people can tell that I have a disability) that asks participants to indicate on a 10-point scale (1 = People cannot tell that I have a disability, 10 = People can easily tell that I have a disability) the visibility of their disability to other people. Measurement of perceived visibility of disability with participants' response to a single question is an established practice in the disability literature (Livneh & Wilson, 2003; Livneh et al., 2001; Martz et al., 2000; Tam et al., 2003).

Self-advocacy. For the purposes of the current study, a Self-Advocacy Questionnaire (SAQ) was developed by the researchers based on the conceptual framework of self-advocacy posed by Test et al. (2005). The SAQ is a 15-item online questionnaire in which participants were asked to rate their perceived level of self knowledge (e.g., How well do you know what personally interests you?), knowledge of rights (e.g., How well do you know your rights as an individual with a disability?), communication skill (e.g., How skilled are you at basic communication with others?), and leadership skill (e.g., How skilled are you at representing the entire group?) on a 7-point scale (1 = Little Knowledge/Skill, 7 = Full Knowledge/Expert Skill). The scale anchors were constructed to specifically address the content of each question.

Factors related to the construct validity of the SAQ were addressed during the construction phase in that the researcher based the measure on a careful review of the theoretical literature and the conceptual framework of self-advocacy posed by Test et al. (2005). The SAQ items and instructions were then reviewed by respected professionals in related fields of study including counseling psychology, school psychology, and rehabilitation counseling. Input from the respected stakeholders resulted in revision and refinement of the 15 SAQ items and instructions for completion of the SAQ. Analysis of participant responses for the pilot study revealed that the SAQ achieved a Cronbach alpha coefficient of .88.

Attributional style. An on-line version of the Attributional Style Questionnaire (ASQ; Peterson, Semmel, von Baeyer, Abramson, Metalsky & Seligman, 1982) was used to identify the participants' attributional style for both positive events (e.g., You apply to a position that you want very badly and you get it) and negative events (e.g., You go out on a date and it goes badly). The ASQ is a self-report instrument in that after identifying one major cause of the event, respondents are asked to then rate the cause of each event along three 7-point scales 1) whether the outcome is due to something about them or something about other people or circumstances (Locus), 2) will this cause again be present (Stability), and 3) does the cause influence just this situation or other areas of their life (Globality).

The construction of the scale allows one to combine the internality, stability, and globality scales into two composite attributional style scores, one for good events and one for bad events, based on 18 items each. According to Peterson et al., (1982) respectable alpha coefficients of .75 and .72 were obtained for the composite attributional style scales for both good events and bad events, respectively.

Adjustment to disability. Adjustment to disability was measured using the Adjustment Scale of the Reaction to Impairment and Disability Inventory (RIDI; Livneh & Antonak, 1990). The RIDI is a multidimensional instrument which measures the degree to which specific disability reactions are felt by the individual (Livneh & Antonak, 1990). The Adjustment Scale was singled out from the other seven scales of the RIDI, because it best captures the construct of Adjustment as defined by Livneh and Antonak (1990, 1991) in a parsimonious and reliable manner.

Each item on the RIDI is rated on a 4-point scale, ranging from 1 = never (signify the reaction is never experienced) to 4 = often (the reaction is frequently experienced, more than 10 times per month). The Adjustment scale consists of 8 items with a range of 8 to 32. Responses to the items were summed to yield a global score for the scale. Cronbach's alpha values obtained for the Adjustment Scale alone have been consistently reported to range from 0.80 to .89 (Livneh & Antonak, 1990; Livneh et al., 2001; Livneh & Wilson, 2003).

Adaptation to college. Student adjustment to college was measured using an on-line version of the Student Adaptation to College Questionnaire (SACQ; Baker & Siryk, 1999). The SACQ is a 67-item, self-report questionnaire. Each SACQ item is a statement that the student responds to on a 9-point scale ranging from "applies very closely to me" to "doesn't apply to me at all". Some items are reverse-scored. The SACQ yields a Full-Scale score as a summed index of overall adjustment to university as well as four specific aspects of adjustment to college or university (i.e., academic adjustment, social adjustment, personal-emotional ad-

justment, and institutional attachment). SACQ scores are presented as T-scores, which have a mean of 50 and a standard deviation of 10. T-scores of 40 and 30 would be regarded as low and very low, respectively, and 60 and 70 would be seen as high and very high, respectively. All four subscales of the SACQ proved to be internally consistent (range from .77 to .91) in several independent studies (Baker & Siryk, 1999).

Results

Multivariate Analysis of Covariance

To address the first two research questions, the researcher used MANCOVA and follow-up ANCOVAs. MANCOVA was conducted to determine if significant statistical differences existed between students with and without disabilities in terms of the following eight dependent variables: attribution for positive events, attribution for negative events and student adaptation to college (as measured by overall college adaptation, academic adjustment, social adjustment, personal/emotional adjustment, institutional attachment, and semester GPA), while controlling for differences between the groups with and without disabilities in level of education and age. The unadjusted and adjusted means for the eight dependent variables for both groups of individuals are summarized in Table 3.

MANCOVA results revealed significant differences among the two groups on the combined dependent variables, Pillai's Trace = .304, $F(8,219) = 11.96$, $p<.001$, multivariate partial $\eta^2 = .30$ (large effect size (ES); Cohen, 1988). The first covariate (years of education) significantly influenced the combined dependent variable, Pillai's Trace = .134, $F(8,219) = 4.24$, $p<.001$, multivariate partial $\eta^2=.13$ (medium ES), as did the second covariate (age), Pillai's Trace = .086, $F(8,219) = 2.59$, $p<.05$, multivariate partial $\eta^2 = .09$ (medium ES).

Analysis of Covariance (ANCOVA) was conducted on each dependent variable as a follow-up test to MANCOVA. Statistical differences between the group of individuals with disabilities and the group without disabilities were significant for Overall Student Adaptation to College, Social Adjustment, Institutional Attachment, GPA, Attributional Style for Positive Events, and Attributional Style for Negative Events. The computed values for $F(1,226)$ were 4.10, 18.05, 42.75, 6.0, 6.20, and 11.05 for each of the dependent variables respectively. The values of strength of association (partial η^2) for the same variables were .02, .07, .16, .03, .03, and .05 (all small ES, except .16, which is considered large; Cohen, 1988).

In general, when controlling for years of education and age, the group of individuals without disabilities scored higher for Overall Student Adaptation to College, Social Adjustment, Institutional Attachment, and semester GPA. In terms of Attributional Style, the group of individuals with disabilities scored higher indicating a more internal, stable, and global attributional style for both positive events and negative events. The standardized values of the estimated group differences in Table 3 ranged from .31 to 1.0, differences that are usually considered to be small to large in size.

Multiple Regression Analysis

To address the third research question, the researchers used a standard multiple regression analysis technique on the data obtained from the group of individuals with disabilities to allow the inclusion of multiple independent variables (i.e., visibility of disability, self-advocacy skill, psychosocial adjustment to disability, attributional style for positive and negative events, and level of education) in the same model for a single outcome (i.e., overall student adaptation to college). The use of multiple independent variables provides statistical control in the estimation of the unique effect of each independent variable on the outcome.

The model R2 of .19, reflecting the overall strength of relationship between college adaptation and the predictor variables, was statistically significant at the 0.05 level ($F = 4.23$, $F[.05; 6, 108] = p < .05$). The adjusted R2 was .15, reflecting a relatively modest overall strength of relationship. The standard error of estimate was 8.80. The effects of the individual predictor variables on college adaptation are summarized in Table 4.

Only two predictor variables contributed significantly to the prediction of student adaptation to college, self-advocacy skill, and visibility of disability. Comparison of the standardized beta weights for each predictor suggests that self-advocacy skill was of greater importance than visibility of disability. For every one standard deviation increase in self-advocacy skill, student adaptation to college increased .25 standard deviations. For every one standard deviation increase in visibility of disability, student adaptation to college increased .18 standard deviations.

Table 3

Unadjusted and Adjusted Mean Differences for the Disability and Non-disabled Groups

	Unadjusted Group Means					Adjusted Group Means				
Variable	Disability Status		Mean Difference			Disability Status		Mean Difference		
	Disability (*n* = 115)	Non (*n* = 115)	Raw	Standard	*p*	Disability (*n* = 115)	Non (*n* = 115)	Raw	Standard	*p*
Adapt	45.77	47.97	-2.20	-.23	.09	45.37	48.37	-3.0*	-.31*	.04
Acad	49.72	49.70	.02	.002	.99	49.22	50.20	-.98	-.10	.52
Social	43.29	47.68	-4.39*	-.48*	.00	42.62	48.34	-5.72*	-.65*	.00
Pers/Em	43.92	47.24	-3.32*	-.32*	.02	44.21	46.96	-2.75	-.26	.09
Attach	43.20	50.51	-7.31*	-.81*	.00	42.44	51.27	-8.83*	-1.0*	.00
GPA	3.14	3.16	.02	-.03	.83	3.05	3.26	-.21*	-.38*	.02
Att: Pos	15.70	14.89	.81*	.43*	.00	15.66	14.93	.73*	.38*	.01
Att: Neg	13.35	12.22	1.12*	.59*	.00	13.27	12.30	.97*	.51*	.00

* Mean differences significant at the .05 level.

[a] Adaptation to College (Adapt), Academic Adjustment (Acad), Social Adjustment (Social), Personal/Emotional Adjustment (Pers/Em), Institutional Attachment (Attach), Grade Point Average (GPA), Attributional Style for Positive Events (Att:Pos), Attributional Style for Negative Events (Att: Neg)

[b] The first five variables are subscales of the Student Adaptation to College Questionnaire (SACQ).

Discussion and Practice Implications

Group Differences

Student adaptation to college. Results of the current study support previous-held conclusions that psychological theories can enhance understanding of student retention (Day, 1999; Gerdes & Mallinckrodt, 1994). On average, students with and without disabilities reported being within the normal ranges of student adaptation to college; however, in comparing students with disabilities to students without disabilities, the current study found that students with disabilities are more at risk in terms of their overall student adaptation to the college experience, social adjustment, and institutional attachment to college. More specifically, on average, students with disabilities in the current sample were more likely to report feeling that they do not fit in well as part of the college environment and may be having thoughts of dropping out of college altogether. These results are consistent with past research addressing adaptation to college for students with disabilities and, more specifically, social adjustment factors associated with student adaptation (Leatherman-Sommers, 1999; Miller, 2001; Shaw-Zirt et al., 2005). However, after controlling for age and level of educational experience, students with disabilities did not differ significantly from their non-disabled peers in terms of personal/emotional adjustment. These results are inconsistent with past research suggesting that

Table 4

Multiple Regression Results Summary

Variable	Unstandardized Coefficients		Standardized			Descriptive Statistics	
	B	Std. Error	ß	*t*	*p*	*M*	*SD*
Visibility	.58	.29	.18	2.02*	.05	3.87	2.94
SAQ	.23	.09	.25	2.54**	.01	81.87	10.51
RIDI	.30	.22	.13	1.36	.18	27.58	4.10
Att: Pos	.05	.42	.01	.11	.91	15.70	2.07
Att: Neg	-.74	.42	-.16	-1.77	.08	13.35	2.02
Education	-.27	.67	-.04	-.41	.69	3.43	1.25

* Significant at the .05 level

** Significant at the .01 level

[a] Visibility of Disability (Visibility), Self-Advocacy Questionnaire (SAQ), Reaction to Impairment and Disability Inventory (RIDI), Attributional Style for Positive Events (Att:Pos), Attributional Style for Negative Events (Att: Neg), Level of Education (Education)

students with disabilities have more difficulty coping with the emotional and psychological stresses imposed on them in college (Saracoglu et al., 1989; Shaw-Zirt et al., 2005).

Academic adjustment. Surprisingly, while the adjusted mean semester GPA of college students with disabilities differed slightly from their nondisabled peers, the GPA of both groups remained near 3.0. Additionally, there was not a significant difference in academic adjustment between the group of individuals with disabilities and those without disabilities. After controlling for age and level of educational experience, the two groups in the current study rated their overall perception of the difficulty level of college work and academic performance similarly, which is contrary to previous findings (Hartman-Hall & Haaga, 2002; Saracoglu et al., 1989).

Many of the previously discussed accommodations and services offered through disability service centers focus on leveling the academic playing field within the classroom for students with disabilities (e.g., testing accommodations such as extra time or alternative environment, note takers/readers, study skills, interpreter/translator, tutors, priority registration and course scheduling, learning center laboratories) and given that no significant differences were found in academic adjustment or GPA in the current study, it appears these accommodations and services have been successful in fulfilling their intended purpose. However, given the overall differences in student adaptation, social adjustment, and institutional attachment, those providing needed services and accommodations to students with disabilities must not underestimate the importance of services

more indirectly related to academic success and degree completion (e.g., personal and career counseling, advocacy services, social-networking activities and college orientation services). Students with disabilities would be well served by established partnerships between disability service centers, college counseling centers, and retention programs and activities designed to facilitate the success of the general student population.

In terms of identification, socially at-risk students with disabilities may not come to the attention of instructors or advisors because they are succeeding academically. Therefore, in addition to academic variables, postsecondary faculty and staff must remain cognizant of broader issues related to the social adjustment of students and development of feelings of affiliation with the institution, especially for those students with disabilities (Baker, 2003; Brooks & DuBoise, 1995; Day, 1999; Gerdes & Mallinckrodt, 1994).

Attributional style. Students with disabilities had a significantly more internal, stable, and global attributional style for positive events than their nondisabled peers. This particular attributional style is considered adaptive, meaning that it is healthy for students to experience success and attribute the success as being totally due to themselves, to factors that will always be present, and to factors that influence all situations in their lives.

Unfortunately, students with disabilities in the current study also had a significantly more internal, stable, and global attributional style for negative events, which is contrary to the common tendency (self-serving bias) and is considered maladaptive in terms of protecting self-esteem and maintaining expectations for success (Gladstone & Kaslow, 1995; Peterson & Seligman, 1984, 1985; Valas, 2001; Weary, 1979). Consistent with past research, participants with disabilities in the current study indicated that when negative events or failures are encountered, they are more likely to attribute the cause of failure as being totally due to themselves, to something that will always be present, and to something that influences all situations in their life.

In sum, students in the current study indicated that they are more likely to internalize both positive and negative events, an attributional pattern that is relatively uncommon in the literature. These findings may be explained in part by the research on spread, stigma, and shame represented in the disability literature. For example, Wright (1983) postulated that a person with a disability who "experiences their disability as a deviation that stands out (and identifies themselves in terms of the deviation) has a strong tendency to attribute wide-ranging personal characteristics and events of life to that deviation" (p. 37). It appears likely that for participants in the current study, the salience of their disabilities was such that causal attributions were made to their disability, which is largely considered internal, stable, and global. Given the demonstrated link between an internal, stable, and global attributional style for negative events and lowered self-esteem, it is even more surprising that the group of individuals with disabilities in the current study did not exhibit more difficulties with personal/emotional adjustment than their peers without disabilities. Further research is needed to determine whether the attributional style found in the current study can be replicated in other studies of college students with disabilities, and if so, what the implications are for student adaptation to college.

Predictors

The present study adds significantly to the available literature in terms of identifying possible predictors of overall college adaptation for students with disabilities. In the current study, 19% of the student adaptation to college outcome variance was explained by the proposed model and both visibility of disability and self-advocacy skill contributed significantly to the prediction.

Self-advocacy skill. Results of the current study indicate that level or degree of perceived self-advocacy skill does in fact predict student adaptation to college for students with disabilities, which supports the documented need for self-advocacy skills in postsecondary settings (Bassett & Lehmann, 2002; Layton & Lock, 2003; Field, 1996; Greenbaum et al., 1995). Self-advocacy skill is critical to postsecondary student success because students with disabilities must identify their own needs before colleges and universities will provide accommodations. To do so, individuals must have a good understanding of themselves as well as how their disability impacts learning and be able to advocate for themselves (Hitchings, Luzzo, Retish, Horvath, & Ristow, 1998, p. 23). They must also understand their rights and responsibilities under the law, in both the educational and work settings (Madaus et al., 2008).

While fostering self-determination has been recommended practice in the education and transition planning of students with disabilities (Field & Hoffman, 2007; Wehmeyer, 2002; Wehmeyer et al., 2004), research has identified that self-advocacy skills (a critical component of self-determination) are not taught and opportunities

to self-advocate are not readily available to students with disabilities (Arnold & Czamanske, 1991; Test et al., 2005). Additionally, there is some evidence that many teachers feel ill-prepared to teach students self-advocacy skills. Thus, training may need to begin at the level of the teacher (or college-level service provider) via pre-professional or in-service learning opportunities (Mason, Field, & Sawilowsky, 2004). It will likely benefit students with disabilities of all ages to be directly taught self-advocacy skills and be given opportunities to practice these skills within the academic environment from an early age.

At the postsecondary level, disability resource centers routinely advocate for the needs of registered students, but in providing such services, they must also remember to equip students with the knowledge and skills they need to advocate for themselves during college and beyond. College counselors and disability service centers are the most logical on-campus sources for self-advocacy teaching and training programs.

Visibility of disability. The limited studies investigating the relationship between visibility of disability and psychosocial adjustment to disability have yielded mixed results (Livneh et al., 2001; Livneh & Wilson, 2003; Martz et al., 2000). Results of the current study indicated that visibility is indeed a good predictor of overall student adaptation to college for students with disabilities. In general, student adaptation to college increased with perceived visibility of disability. These results offer theoretical support for Vash and Crewe's (2004) psychology of disability, which theorizes that the nature of a disability (i.e., visibility) is one of many variables that interact with the environment to significantly impact multiple life domains.

Experiential differences between those with visible and less-visible disabilities are likely due to a myriad of factors, including discrimination and stigma, fear of discovery, and/or the stress of repeatedly explaining why educational accommodations are needed for a disability that cannot be seen. For example, college students with less visible disabilities may feel more pressure to adequately explain or "justify" their disability, given that their disability is not readily apparent to the observer. They may also be more likely to face doubt or suspicion by faculty members or peers who may erroneously suspect that the individual is fabricating the disability in order to receive academic accommodations. Furthermore, the very nature of learning disabilities and ADHD (the two most common less-visible disabilities) as well as the criteria for diagnosing these disabilities, is less agreed upon among professionals than our understanding and diagnostic criteria for more visible disabilities, such as orthopedic or hearing impairments. Therefore, due to the doubts and suspicions of others, as well as the lack of professional consensus surrounding some of the less visible disabilities, students with these disabilities may lack social support, struggle with reframing their disability in a positive manner, and suffer from low self-esteem, all of which are documented predictors of college adaptation (Gerber et al., 1992; Greenbaum et al., 1995; Johnson et al., 2008; Neilson, 2001; Reiff et al., 1995). Finally, students may not possess the self-determination that is needed to explain their disability or how it affects them academically (Madaus et al., 2008).

Those working in postsecondary settings must be cognizant of potential differences and efforts must be made to provide services that meet the unique needs of all students with both visible and invisible disabilities. In particular, the results of this study suggest that counselors must be aware that individuals with the less-visible (but more common) disabilities such as learning disbilities and ADHD may actually have more difficulty adapting to college than those with more visible (but less common) disabilities. This may be counter-intuitive, even to those accustomed to working with persons with disabilities. Disability center personnel could assist students with less visible disabilities by strengthening their own understanding of the disability and providing opportunities to role-play disclosure of their disability to others, explanation of their strengths and weaknesses, requests for accommodations, and the confrontation of others' doubt and suspicion.

Non-contributing predictors. For students with disabilities in the current study, level of educational experience did not play a significant role in predicting overall student adaptation to college. This was an unexpected finding as one would assume that students who are able to persist to their junior and senior years would be more adapted to college than those in their freshman and sophomore years. However, for students with disabilities, no relationship between level of academic experience and college adaptation was found. These findings may be due in part to the fact that as a whole, the group of students with disabilities in the current study fell within the normal ranges of student adaptation to college. In other words, very few students showed characteristics of maladjustment and the range of scores was somewhat restricted. It appears that the

individuals with disabilities in the current study do not follow the common trend for first year college students in the general population who have difficulty adapting to their new college environments, suggesting that students with disabilities, or at least those in this study, have acquired skills that help them adapt successfully to their college experience irregardless of their level of educational experience.

In addition to level of educational experience, attributional style for positive and negative events and psychosocial adjustment to disability were also found to be unrelated to overall college adaptation. Given that attributional style seems to be unrelated to college adaptation for students with disabilities, group differences found in attributional style may be relatively unimportant. Attributional style may be related to other psycho-social outcomes in the literature, but in this study it did not emerge as an important predictor of how well students with disabilities adapt to college.

This was the first study to examine the relationship between psychosocial adjustment to disability and college adaptation, and the findings were non-significant. In general, the group of individuals with disabilities in the current study indicated that they were well adjusted to their disability. More specifically, many endorsed that they realize impairment is a part of who they are but they do not let it interfere with their lives, and they have come to a place of adjustment where they realize they can do most things non-impaired people can do. These adaptive personal qualities may explain why these students were able to attempt college in the first place. Therefore, in the current study, the very well adjusted group of students yielded a restricted range of scores on the measure of psychosocial adjustment to disability, which may explain the non-significant results for predicting student adaptation to college.

Future Research Suggestions

While there have been measurement instruments designed to quantify similar constructs (e.g., self-determination) before the current study, there was no known established valid or reliable measure of self-perceived self-advocacy as conceptualized by Test et al. (2005; Hicks-Coolick, 1997). The Self-Advocacy Questionnaire, based on the conceptual framework of Test et al. (2005), was developed and piloted in the current study and proves to be a promising avenue for future research. The initial success of the SAQ warrants continued research on the validity and reliability of the measure using a larger sample size.

In the current study, there were many demographic characteristics of students with disabilities (e.g., age of onset, type of impairment) that were not addressed in terms of their relationship with visibility of disability, attributional style, psychosocial adjustment to disability, self-advocacy skill, and student adaptation to college. Vash and Crewe (2004) theorize that many different variables influence the types and intensity of reactions to disablement (p. 3). While the current study could not realistically address all variables relevant in the lives of students with disabilities, future research may wish to further explore the complex relationship between disability variables (e.g., age of onset, type of impairment/disability), person variables (e.g., gender, ethnicity, personality variables), immediate environment variables (e.g., family support, community resources, income), and cultural variables (e.g., technology, laws, multicultural differences).

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