

Examining College Student Attitudes Toward Individuals with Disabilities: Implications for College Adaptive Sports Development

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Abstract

Attitudes toward students with disabilities play a crucial role in creating an inclusive and supportive campus environment. This study investigated college students' attitudes toward peers with disabilities and explored the factors that influence these attitudes. Data from 457 students were analyzed using structural equation modeling. Results indicated that students' attitudes toward peers with disabilities were moderately positive overall, with room for improvement. Specifically, the findings highlighted several key factors that positively influenced attitudes including presence of a family member or friend with a disability and students' involvement in disability-related programming. However, the study also identified areas that require attention including limited exposure to disability-related coursework among students, and low involvement in disability-related programming on campus. Implications highlight the significance of creating a supportive and inclusive campus climate for students with disabilities. Recommendations include various academic focused strategies, but focus on one social opportunity, namely intercollegiate adaptive sports.

Keywords

Attitudes, disability, inclusion, campus climate, collegiate adaptive sports

From an early age, young adults in the United States learn that completing college is the key element for obtaining a high-paying job and setting themselves up for increased social mobility (Fleming et al.,

2017). For young adults with disabilities, education beyond the secondary level (i.e., high school) contributes just as much, if not more, to their ability to maintain an independent and healthy lifestyle

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and achieve gainful employment and social mobility (Wilson et al., 2000), as people with disabilities (PWD) are less than half as likely to be employed, are more likely to live at or below the poverty line as adults, and lack sufficient savings (Miller et al., 2020; Nolan & Gleeson, 2017). Although improved education systems and opportunities have contributed to a growing population of students with disabilities on college campuses, just 19% of undergraduates in the 2015–2016 academic year identify as a student with a disability (Postsecondary National Policy Institute, 2021). The research on the persistence and graduation rates of college students with disabilities paints a complex picture regarding the quality of the college experience for these students.

For instance, Evans et al. (2017) indicated that students with disabilities experience alienation, stigma, and discrimination that likely challenges their success in college. McFarland et al. (2019) discussed the higher dropout rates of students with disabilities as compared to students without disabilities, and Wessel et al. (2009) indicated that about 53% of students with disabilities persisted to graduation. Conversely, Knight et al. (2018) demonstrated that the presence of a disability did not negatively impact undergraduate students' graduation rates, but did impact time to degree completion. This finding seemed not to apply for graduate students with disabilities in online programs as discussed by Verdinelli and Kutner (2016). Despite the contrasting findings, the similarities between these studies depict a worrisome scenario regarding dropout and degree completion rates of students with disabilities. Furthermore, these rates are likely underestimated as recent data released by the National Center for Education Statistics (Irwin et al., 2022) indicate that less than 15% of two- and four-year college students inform universities about their current disabilities. As such, a clear understanding of dropout and degree completion rates for students with disabilities is unknown.

Various theoretical frameworks have been used to explore the reasons behind dropout and persistence to graduation, and almost all of them center around the integration or involvement of students with the academic system (Astin, 1993; Tinto, 2006). Academic systems refer to the

academic processes that students engage with while enrolled in college, including faculty, advising, support services (e.g., priority registration and testing accommodations), and service delivery models (Hong, 2015). On the other hand, social systems are informal and semiformal extracurricular activities that promote positive social communication amongst students and college faculty and include clubs and organizations, study abroad programs, Greek life, residency hall activities, faculty contact outside the classroom, and various campus recreation activities and programs. Students who successfully persist to graduation are academically invested and socially connected to the institution (Tinto, 1975, 2006). Factors that impact persistence for the typical student body (i.e., formal and informal academic and social systems) are similar for students with disabilities (Habley & McClanahan, 2004; Hong, 2015; Milem & Berger, 1997); however, students with disabilities often lack the skills to be able to integrate themselves into those systems, and as such, it can take them twice as long to complete their degrees (Hong, 2015).

Notably, attitudes toward students with disabilities on college campuses, particularly among faculty members, have been deemed a significant barrier to students with disabilities' educational success (Fleming et al., 2017; Hong, 2015; Lynch & Gussel, 1996). However, even though research on attitudes toward PWD is comprehensive, and a subset of that literature focuses on attitudes toward students with disabilities specifically (Kavanagh, 2001), it is still largely centered on faculty attitudes as they relate to classroom activities (Ehlinger & Ropers, 2020). In this context, the current study was developed to understand the attitudes of college students toward other students with disabilities (Vaccaro, 2014).

Attitudes Toward Students with Disabilities

According to Grames and Leverentz (2010), an attitude consists of a series of beliefs, ideas, and opinions (cognitive component), behaviors (behavioral component), and emotions (affective component), which predict people's behaviors

toward other people in individual and collective relationships. More specifically, people's attitudes—either positive or negative—toward PWD can be influenced by several factors, including, but not limited to past and current experienced social-cultural-political milieu, knowledge about disabilities, the type of disabilities, the quality and frequency of contact with PWD, communication challenges, superstition, and ignorance (Daruwalla & Darcy, 2005; Lu & Kim, 2017; Wang et al., 2021).

Currently, there is a noticeable gap in the literature when it comes to understanding college students' attitudes toward other students with disabilities in the context of activities outside the classroom. As discussed by several authors (Astin, 1993; Hong, 2015; Tinto, 2006), the college experience is made up of academic and social systems, which are both vital to the overall success of students. However, the literature about attitudes toward students with disabilities is primarily focused on the academic systems (i.e., classroom accommodations) and has failed to adequately explore the social systems (Ehlinger & Ropers, 2020; Fleming et al., 2017; Johnson, 2000).

Students with disabilities pursuing postsecondary education spend substantially more time investigating potential college attributes and amenities when selecting their institution compared to their peers without disabilities (Wilson et al., 2000). Beyond considering important factors such as academic adjustments, waivers and substitutions, course load, graduation timeline, and tutorial support, campus climate substantially attracts students' interests. Campus climate reflects not only the academic system of an institution but also its social system and respective attributes. Wilson et al. (2000) indicate that students are interested in the overall campus atmosphere toward students with varying learning styles (academic system), as well as the amount of potential involvement they may have with planning and participating in campus-life activities (social system). The relevance of campus climate for the current study lies in the fact that it contributes to either a positive or negative view of an institution plays a significant role in determining if an institution is considered disability-friendly or not, and whether a student

with a disability would then apply to that institution (Wilson et al., 2000).

In this context, a truly disability-friendly campus is described by Huger (2011) as one that allows students to interact with all facets of the campus community with ease. Disability-friendly campuses are not for the sole purpose of benefiting students with disabilities but are intended to benefit the entire campus body in a multitude of ways. When students with disabilities are fully and equally included in campus life, they have the potential to change overall attitudes toward students with disabilities and broaden the perspectives of all students, faculty, and staff, whether they intend to or not. This change in attitudes and perspectives can be attributed to and explained by several theories: mere exposure theory (Zajonc, 1968), extended contact theory (Wright et al., 1997), and intergroup contact theory (Allport, 1954). Although each theory discusses differing levels of contact (direct and indirect), they all indicate that having contact between peers of different groups (in this case, students with disabilities and students without disabilities) can reduce prejudice, increase tolerance, and improve acceptance of the other group.

Theoretical Frameworks about Attitudes. Mere exposure theory posits that individuals possess prejudices toward people or groups who are different from themselves, and those prejudices are reduced through indirect contact by being exposed to pictures, videos, or stories about those people and groups who are different than themselves (Zajonc, 1968). According to Huger (2011) university brochures displaying students with disabilities in both academic and social settings have the potential to diminish prejudices among college students and improve the overall campus climate. Extended contact theory is similar to mere exposure theory in the sense that participants do not have direct contact with individuals of different groups. However, it differs in that an individual reduces prejudices by knowing that in-group members have cross-group friends, notably in those different or so-called out-groups (Zhou et al., 2019). Alternatively, intergroup contact theory (Allport, 1954) contends that direct contact is paramount to attitude change, but only when it occurs amid favorable

conditions, which are characterized by equal status, shared goals and rewards, relational intimacy and longevity, and institutional support (Devine & Wilhite, 2000; Pettigrew et al., 2011). More recently, Vezzali and Stathi (2016) argued that direct contact between people who belong to different groups can influence the development of positive attitudinal change in relation to individuals in different or out-groups, including those with disabilities.

Previous literature on students with disabilities suggests evidence of these theories in the academic and social systems of college campus climates. For example, academically, Folsom-Meek et al. (1999) suggested that a curriculum requiring more hands-on experiences and course content about disability resulted in higher positive views and attitudes toward students with disabilities. Socially, Huger (2011) and McClellan and Larimore (2009) indicated that inclusive campus-life activities provide increased opportunity for engagement with diverse groups of peers, which promotes growth and development in students without disabilities, all while fostering shared experiences that challenge assumptions, beliefs, and stereotypes of individuals with disabilities. As such, campus-life activities, including clubs, Greek life, and intramural sports and recreation are not just about providing opportunities for students with disabilities to be successful and have a well-rounded college experience; they are also vital to the image and success of the institution and the overall campus climate toward students with disabilities. Understanding the overarching influence of campus climate, it is important to acknowledge the potential impact of campus recreation opportunities, a vital aspect of the social system, in fostering a welcoming and diverse atmosphere for all students, including those with disabilities.

Campus recreation centers provide a wide variety of recreational experiences and opportunities for students, faculty, and staff, ultimately contributing to their health, wellness, and academic success (NIRSA, 2023). Campus recreation programs and services are designed to enhance the student experience, promote positive lifestyles, foster inclusivity, and provide opportunities for physical activity, stress

reduction, and socialization. These centers play a vital role in making physical activity a priority, helping students maintain healthy lifestyles, and serving as hubs of campus community activity (Kampf et al., 2018; King et al., 2021; Strande & Fry, 2022).

Given the knowledge we have surrounding the factors that contribute to successful academic and social experiences for students with disabilities, including campus climate and attitudes toward disability, as well as the scarcity of investigations on college students' attitudes toward peers with a disability, the purpose of this study was to determine the overall attitudes of students at a large university in the southeast toward individuals with disabilities, and to understand the contribution of various personal and academic characteristics to those attitudes. We take a broad view of disability in line with the World Health Organization's (2023) conceptualization that suggests that disability results from an interaction between an individual's health condition and personal and environmental factors (such as negative attitudes). As such, we did not define the term disability for study participants to reflect any certain type(s) and/or categories of disability (like specific intellectual or physical health conditions). In this context, five groups of hypotheses were tested to determine the effects of various dynamics on students without disabilities attitudes toward peer students with disabilities. More precisely, as illustrated in Table 1, five groups of hypotheses (25 total hypotheses) examined the relationships between theoretical predictors (1. family member or 2. friend with a disability, 3. frequency of contact with PWD, 4. involvement with disability-centered programming (DCP), and 5. awareness of disability sport) and dependent variables (a. inclusive relationships, b. burden, c. discrimination, d. gains, and e. prospects). The nature of the hypothesized effects is also identified. For example, hypothesis 1-A can be read as follows: There is a negative relationship between having a family member with a disability and perceptions of inclusive relationships with PWD. In other words, individuals who had a family member with a disability had lower scores on inclusive relationships items (which reflects better attitudes).

Table 1. Proposed Hypothesized Effects.

Hypothesis	Predictor variable	Dependent variable	Hypothesized effect
H1A	Family member with a disability	Inclusive Relationships	Negative
H1B	Friend with a disability	Inclusive Relationships	
H1C	Frequency of Contact of PWD	Inclusive Relationships	
H1D	Involvement with DCP	Inclusive Relationships	
H1E	Awareness of disability sport	Inclusive Relationships	
H2A	Family member with a disability	Burden	Negative
H2B	Friend with a disability	Burden	
H2C	Frequency of Contact of PWD	Burden	
H2D	Involvement with DCP	Burden	
H2E	Awareness of disability sport	Burden	
H3A	Family member with a disability	Discrimination	Positive
H3B	Friend with a disability	Discrimination	
H3C	Frequency of Contact of PWD	Discrimination	
H3D	Involvement with DCP	Discrimination	
H3E	Awareness of disability sport	Discrimination	
H4A	Family member with a disability	Gains	Positive
H4B	Friend with a disability	Gains	
H4C	Frequency of Contact of PWD	Gains	
H4D	Involvement with DCP	Gains	
H4E	Awareness of disability sport	Gains	
H5A	Family member with a disability	Prospects	Positive
H5B	Friend with a disability	Prospects	
H5C	Frequency of Contact of PWD	Prospects	
H5D	Involvement with DCP	Prospects	
H5E	Awareness of disability sport	Prospects	

Note. PWD = Person with a Disability; DCP = Disability Centered Programming.

Methods

This study utilized a cross-sectional, convenience sampling method to examine college student attitudes toward students with disabilities and was conducted at a large university located in the southeastern region of the United States with a population of approximately 26,000 students (~21,000 undergraduate and ~5,500 graduate students). All study procedures began after receiving approval from the institutional review board. For five days (in three-hour blocks at various times of the day) during the midway point of fall and spring semesters in the 2018–2019 academic year, research assistants approached students at common locations around campus (specifically, outside the library, campus recreation center, and the two student dining halls) and invited them to take a short (~10 min) online questionnaire. In parallel and during the same time frame, an email with the

same survey link was sent to all students registered with the campus recreation center (approximately 5,000 students). This student listserv was chosen because all other higher level student listservs at the university required approval of the provost, which we were unable to obtain. It is worth mentioning that all on-campus students have access to campus recreation services upon enrollment, and as such, the campus recreation listserv, theoretically, reflects the general on campus student body. Inclusion criteria for this study required that participants be enrolled as undergraduate or graduate students at the university. Individuals who were exclusively online students were excluded from the study.

Instrumentation

Student attitudes were measured using the general form of the Attitudes to Disability Scale (ADS;

Power & Green, 2010), a 16-item multidimensional measure of attitudes toward individuals with disabilities developed by the World Health Organization Quality of Life Group. This measure was chosen as it was the most recently developed measure of attitudes toward individuals with disabilities and takes a more progressive stance on these attitudes by using the voices of individuals with disabilities to inform the items on the scale (Power & Green, 2010). The measure has also been used cross-culturally (Palad et al., 2021; Zheng et al., 2014, 2016) and with a sample of nursing college students (Lyon & Houser, 2016).

Items on the ADS were grouped into four subscales, three of which were negative in focus (Inclusion, Discrimination, and Prospects) and one that was positive in focus (Gains). The presence of a higher-order overall attitudes scale (sum of the 16 items) has been demonstrated in prior investigations (Palad et al., 2021; Power & Green, 2010; Zheng et al., 2014, 2016). The ADS was scored on a five-point Likert scale ranging from 1 = strongly disagree to 5 = strongly agree. The three negatively worded subscales were reversed coded to be logically and consistently interpreted for data analyses, paralleling past implementations of the ADS. Put differently, higher scores indicate better inclusion, less discrimination, more gains, and better prospects, paralleling the approach to interpretation by Palad et al. (2021). Acceptable levels of internal consistency for the Inclusion, Discrimination, Gains, and Prospects subscales have been reported by Zheng et al. (2014; Cronbach's $\alpha = 0.76, 0.76, 0.78, \text{ and } 0.73$, respectively).

Participants also reported personal characteristics such as age, gender, ethnicity, and whether they had any friends or family members with disabilities (not defined as any specific type or category of disability) and how often they interacted with them (never, daily, weekly, monthly, and yearly; see Table 2). Additional items asked about respondent year in school, program of study, level of involvement in disability-related programs and sports, and levels of exposure to disability-related courses or topics in their college career, and awareness of disability sport programming available on campus.

Participants

Respondents ($N=457$) were primarily undergraduate students, nearly evenly split between females and males, and were predominantly White. Most students did not have family members or friends with a disability, but most (83%) reported having some interaction in the prior year with someone with a disability, whether that was an acquaintance, friend, or family member. The overwhelming majority of students had no coursework with any disability-related content. The majority of those that did indicate having disability-related coursework indicated that the coursework was only sometimes dedicated to this content. Most students were not involved in any DCP on campus, and those that were involved were primarily volunteers (28.9%). About half of those who were involved (53.1%) did so on a daily, weekly, or monthly basis for just a few hours at a time. See Table 2 for details of the demographics.

Data Preparation and Analyses

Prior to hypothesis testing, the data were examined for significant ($p < .001$) multivariate outliers employing a combination of the chi-square distribution function and Mahalanobis distance. This analysis suggested 17 respondents exceeded the criteria (i.e., $p < .001$) and thus were removed from further analyses. Next, the data were examined for multivariate nonnormality utilizing the MVN package (version 9) in RStudio (Korkmaz et al., 2014). This analysis suggested the data were non-normal as indicated by the significant levels of Mardia kurtosis (13.247, $p < .001$) and skewness (2313.599, $p < .001$). As such, robust estimation techniques were employed in measurement and hypotheses testing (Bentler et al., 2009).

The proposed study measures and hypotheses were tested with a structural equation modeling (SEM) approach, utilizing the lavaan (version 0.6–11; Rosseel, 2012), tidyverse (version 1.3.1; Wickham, 2021), semTools (version 0.6–6; Jorgensen, 2022), and MBESS packages in RStudio (version 4.8.1; Kelley, 2022). Specifically, confirmatory factor analyses (CFAs) were employed to assess the measurement properties of the proposed

Table 2. Participant Demographics.

	N = 457	Percentage
Biological Sex	Female	54.9%
	Male	44.9%
Ethnicity	American Indian or Alaska Native	0.4%
	Asian	5.0%
	Black or African American	10.3%
	Hispanic or Latinx	3.7%
	Native Hawaiian or Other Pacific Islander	0.7%
	White	76.8%
	Choose not to identify	1.1%
Family member with a disability	Multiple	2.0%
	Yes	34.1%
Friend with a disability	No	65.9%
	Yes	36.3%
Frequency of contact of person(s) with a disability	No	63.7%
	Never	6.8%
	Annually	10.1%
	Monthly	33.7%
	Weekly	33.3%
Respondent takes courses with disability content	Daily	16.2%
	Yes	24.0%
Frequency of course content	No	76.0%
	Sometimes	54.6%
	Often	27.8%
Type of involvement with disability centric organizations	Always	17.6%
	None	64.7%
	Volunteer	28.9%
	Employee	2.9%
Frequency of involvement with disability centric organizations	Participant	3.6%
	Annually	46.9%
	Monthly	30.0%
	Weekly	18.1%
Duration of involvement with disability centric organizations	Daily	5.0%
	1 h	44.4%
	2 h	27.5%
	3 h	15.0%
	4–6 h	9.4%
	7–9 h	0.6%
Year in school	10 or more hours	3.1%
	Freshman	27.8%
	Sophomore	23.3%
	Junior	21.3%
	Senior	19.6%
	Graduate student	7.8%
	Other	0.2%

16-item four-factor scale, and SEM was employed to test the study hypotheses. As these approaches assume multivariate normality and the prior data diagnostics suggested the data were non-normal,

robust estimation techniques (i.e., Maximum Likelihood Robust) were applied to the study analyses (Bentler et al., 2009; Yuan & Bentler, 1998). Model fit for the CFA and SEM was tested utilizing

a combination of indices. To determine the closeness of the proposed model(s) to a perfect fit, the root mean squared error of approximation (RMSEA) and a supporting 90% confidence interval were utilized, where values closer to zero (e.g., RMSEA < .060) indicate better model fit. Similarly, to compare the proposed models to a null version, both the comparative fit indices (CFIs) and Tucker–Lewis index (TLI) were utilized. When values are closer to one (e.g., CFI > .900), this demonstrates the model is a better fit than a null model (Brown, 2015; Kline, 2016). Importantly, the acceptance/rejection of the models were not purely informed by arbitrary cutoff criteria and/or data driven (e.g., RMSEA < .060: reject vs. RMSEA = .059: accept) but also informed by prior theory, the performance of the selected items in past studies and present study data (Lance et al., 2006; Marsh et al., 2004).

Additionally, as part of the measurement model testing, the factor loadings (λ) were examined to establish how well the item reflected the latent factor, where lower levels (e.g., $\lambda < .400$) indicate the item(s) may not fit within the identified factor (Brown, 2015). The reliability of the factors was assessed utilizing McDonald's omega (ω) (which does not have the limiting assumption of tau-equivalence across item loadings that Cronbach's alpha does), where levels closer to one (e.g., $\omega > .600$) indicates potentially lower rates of measurement error within a factor (Hayes & Coutts, 2020). Further, to assess the discriminant validity of the factors, the between factor correlations were examined, where lower levels (e.g., $r < .700$) indicate the factors were measuring distinct constructs.

Measurement Model Analyses

Prior to testing of the study hypotheses, the measurement properties of the selected scales were examined with a combination of CFAs and supporting psychometric statistics. The proposed four-factor 16-item model demonstrated unacceptable levels of model fit relative to past implementations of the selected measures (Lyon & Houser, 2016; Palad et al., 2021): ($\chi^2(98) = 305.135$, $p < .001$, CFI = .865, TLI = .835, RMSEA = .068 (90%, CI .060–.077)). Examination of the factor loadings

indicated sources of this misfit may be due to evidence of a “split” within the inclusion factor. Specifically, two items in the Inclusion domain (*People with a disability find it harder than others to make new friends* and *People with a disability have problems getting involved in society*; $\lambda = .166$ and $\lambda = .131$, respectively) were demonstrating unacceptable factor loadings relative to the other two items in the same domain (*People with a disability are burden on society* and *People with a disability are a burden on their family*; $\lambda = .735$ and $\lambda = .798$, respectively). Further examination of the item wordings and mod.Indices function with lavaan would result in a substantial improvement in the model. As such, the four-item inclusion factor was split into two 2-item factors, *Inclusive Relationships* and *Burden*. Additional examination of the mod.Indices output also suggested that two items within the discrimination factor (*People tend to become impatient with those with a disability* and *People tend to treat those with a disability as if they have no feelings*) were sharing variance beyond that reflected by the factor; to account for this shared variance, the errors between these items were covaried (see CFA Table 2). These modifications to the measurement model resulted in a substantial improvement of the model fit ($\chi^2(93) = 193.445$, $p < .001$, CFI = .935, TLI = .916, RMSEA = .049 (90%, CI .039–.058)). As evidenced in Table 3, the final study measure exhibited acceptable levels of reliability across the five factors ($\omega = .575$ to $\omega = .800$). Similarly, as illustrated in Table 4 there were no correlations that exceeded .700 indicating the factors accounted for more unique variance than they shared.

Results

Given the acceptable measurement properties of the scale, the study hypotheses were tested through SEM. The SEM also illustrated acceptable model fit: ($\chi^2(148) = 265.768$, $p < .001$, CFI = .927, TLI = .902, RMSEA = .042 (90%, CI .034–.050)). The support for the study hypotheses was relatively weak as illustrated in Figure 1 and Table 5, with only four of the 25 hypothesized effects supported. Specifically, as presence of a family member or friend increased, attitudes toward discrimination decreased (H3A; $\beta =$

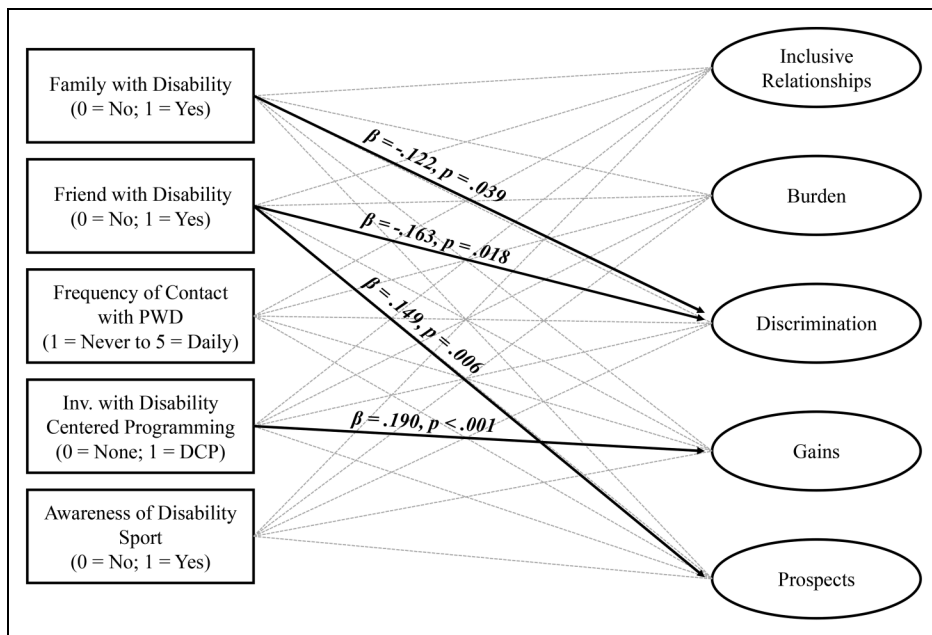


Figure 1. Structure equation model of associations between respondent characteristics and attitudes toward disability.

Note. β indicates standardized regression coefficient; exact p -value presented unless $p < .001$; Gray dashed line represents non-significant ($p > .05$) parameters (see Table 4 for comprehensive presentation of modeled parameters); covariances, error terms, and items excluded for illustrative purposes.

$-.122, SE = .129, p = .039$; H3B; $\beta = -.163, SE = .147, p = .018$); as involvement with disability programming increased (from none to volunteer, staff, or participant), attitudes about gains increased (H4D; $\beta = .190, SE = .110, p < .001$); and as presence of a friend increased, attitudes toward prospects for individuals with disabilities increased (H5B; $\beta = .149, SE = .116, p = .006$).

Discussion

This study aimed to explore college students' attitudes toward individuals with disabilities and examine various factors that influence these attitudes. The findings of the study revealed several insights about the students in this sample and the characteristics that influenced their attitudes toward individuals with disabilities. Regarding the geographic and institutional context of the study, the findings from this specific large southeastern university may be unique, but they generally align with previous research that has examined college student attitudes toward

individuals with disabilities in various contexts and regions (Fleming et al., 2017; Folsom-Meek et al., 1999; Huger, 2011; Johnson, 2000). This study provides additional evidence and reinforces the existing understanding of the prevailing attitudes toward students with disabilities in a specific setting. Generally, these college students had mostly positive attitudes toward their peers with disabilities, and those who had more interaction with those peers had better attitudes.

In light of this broad statement, the study demonstrated weak support for the study hypotheses, with only four out of the 25 hypothesized effects being supported. Specifically, it was found that as the presence of a family member or friend with a disability increased, attitudes toward discrimination decreased. Additionally, increased involvement in disability programming was associated with more positive attitudes about gains for individuals with disabilities, and having a friend with a disability was associated with more positive attitudes toward prospects for individuals with disabilities. Despite the limited support for the

Table 3. Descriptive and Confirmatory Factor Analysis Statistics.

Factor/Item	M	SD	λ	ω
Inclusive Relationships				.575
People with a disability find it harder than others to make new friends	2.34	.86	.509	
People with a disability have problems getting involved in society	2.41	.83	.759	
Burden				.800
People with a disability are a burden on society	4.48	.80	.982	
People with a disability are a burden on their family	4.08	1.06	.706	
Discrimination				.580
People often make fun of disabilities	2.61	1.05	.574	
People with a disability are easier to take advantage of (exploit or treat badly) compared with other people	2.33	.92	.604	
People tend to become impatient with those with a disability*	2.23	.81	.483	
People tend to treat those with a disability as if they have no feelings*	2.90	1.12	.499	
Gains				.728
Having a disability can make someone a stronger person	4.10	.70	.767	
Having a disability can make someone a wiser person	3.99	.75	.859	
Some people achieve more because of their disability (e.g., they are more successful)	3.65	.87	.579	
People with a disability are more determined than others to reach their goals	3.52	.86	.419	
Prospects				.724
Sex should not be discussed with people with disabilities	4.07	.88	.558	
People should not expect too much from those with a disability	4.00	.85	.677	
People with a disability should not be optimistic (hopeful) about their future	4.44	.94	.575	
People with a disability have less to look forward to than others	4.35	.84	.732	

Note. \diamond Means (M) are based upon complete case values; λ = standardized coefficient (factor loading); ω = McDonald's Omega; * = error terms of these items are covaried, due to evidence of high shared variance.

study hypotheses, the findings do support existing theories about attitudes toward PWD (Allport, 1954; Vezzali & Stathi, 2016; Wright et al., 1997; Zajonc, 1968; Zhou et al., 2019). Implications for higher education with respect to the development of recreational adaptive sport opportunities are discussed.

Implications for Higher Education

Institutions of higher education are responsible for providing equitable educational experiences for all students, including those with disabilities (Campanile et al., 2022). Considering the theoretical background for and findings from this study, recommendations for higher education administrators go beyond the typical discussion of compliance with ADA regulations that ensure physical access to educational spaces, and address both the academic and social systems

within the institution. These include enhancing disability-centered coursework for the general student body, increasing disability programming and involvement opportunities for students with and without disabilities, facilitating opportunities for personal connection and interaction across various student groups, and generally fostering a culture of inclusion on campus. Sports and recreation opportunities on college campuses are one type of structured social experience that can be used to accomplish some of these recommendations. Inclusive adaptive sports and recreation opportunities not only provide students with disabilities access to campus recreation and athletics activities which fosters engagement and involvement that may lead to increased persistence to graduation but they also facilitate interaction between students of different groups (i.e., those with and without disabilities) that leads to an overall positive campus climate.

Table 4. Correlations Between Modeled Variables and Latent Factors.

	1	2	3	4	5	6	7	8	9	10
1. Family (0 = No; 1 = Yes)	-									
2. Friend (0 = No; 1 = Yes)	.176 (.002)	-								
3. Contact (1 = Never; 5 = Daily)	.215*	.404*	-							
4. Involvement With DCP	.051 (.278)	.167*	.282*	-						
5. Awareness	.052 (.273)	.072 (.130)	.077 (.093)	.098 (.039)	-					
6. Inclusive Relationships	-.077 (.184)	-.028 (.665)	.035 (.636)	.119 (.093)	.032 (.644)	-				
7. Burden	-.017 (.737)	.087 (.119)	.135 (.026)	.101 (.074)	.056 (.258)	.224 (.011)	-			
8. Discrimination	-.153 (.006)	-.194 (.001)	-.094 (.151)	-.085 (.159)	-.045 (.464)	.530*	.162 (.015)	-		
9. Gains	.079 (.114)	.084 (.097)	.057 (.329)	.197*	.068 (.181)	-.016 (.840)	.101 (.084)	-.129 (.061)	-	
10. Prospects	.036 (.518)	.190*	.168 (.005)	.096 (.074)	.055 (.322)	.139 (.101)	.461*	-.016 (.833)	.203 (.203)	-

Note. * $p < .001$, all other exact p -values provided in parentheses below bivariate correlations. Importantly, correlations between latent factors (e.g., items 5–10) are provided to illustrate discriminant validity, not for hypotheses testing.

Table 5. Strength and Significance of Hypothesized Effects.

Hypothesis	Predictor variable	Dependent variable	β	SE	p-value
H1A	Family	F1A (Incl Relation)	-.081	.130	.181
H1B	Friend	F1A (Incl Relation)	-.048	.140	.467
H1C	Contact	F1A (Incl Relation)	.037	.072	.632
H1D	Involvement with DCP	F1A (Incl Relation)	.115	.147	.098
H1E	Awareness of disability sport	F1A (Incl Relation)	.026	.139	.704
H2A	Family	F1B (Burden)	-.057	.111	.274
H2B	Friend	F1B (Burden)	.039	.116	.476
H2C	Contact	F1B (Burden)	.116	.058	.062
H2D	Involvement with DCP	F1B (Burden)	.055	.117	.314
H2E	Awareness of disability sport	F1B (Burden)	.042	.102	.402
H3A	Family	F2 (Discrimination)	-.122	.129	.039
H3B	Friend	F2 (Discrimination)	-.163	.147	.018
H3C	Contact	F2 (Discrimination)	.018	.072	.808
H3D	Involvement with DCP	F2 (Discrimination)	-.051	.132	.406
H3E	Awareness of disability sport	F2 (Discrimination)	-.023	.128	.704
H4A	Family	F3 (Gains)	.070	.108	.162
H4B	Friend	F3 (Gains)	.054	.112	.301
H4C	Contact	F3 (Gains)	-.036	.059	.561
H4D	Involvement with DCP	F3 (Gains)	.190	.110	.001*
H4E	Awareness of disability sport	F3 (Gains)	.045	.103	.362
H5A	Family	F4 (Prospects)	-.019	.124	.740
H5B	Friend	F4 (Prospects)	.149	.116	.006
H5C	Contact	F4 (Prospects)	.106	.063	.107
H5D	Involvement with DCP	F4 (Prospects)	.023	.119	.677
H5E	Awareness of disability sport	F4 (Prospects)	.033	.111	.532

Note. β = standardized regression coefficient; SE = standard error; <.001 indicates p-value is less than .001, all other exact p-values reported.

Use of Adaptive Sports to Influence Attitudes

Adaptive sport refers to the modification of sport in order to accommodate the varying needs and abilities of individuals with a disability (Lundberg et al., 2011) and has been used frequently in the past to combat negative attitudes and stereotypes about PWD, increase social networks, improve self-perception and sense of normalcy among individuals with disabilities, and increase awareness of disability-related issues (Ashton-Shaeffer et al., 2001; Devine et al., 2017; Forber-Pratt, 2015; Wilhite & Shank, 2009). To our knowledge, only three studies have examined the use of adaptive sports and recreation in institutions of higher education to influence the attitudes of nondisabled college students toward their peers with disabilities. Lundberg et al. (2008) examined the impact of a six-week

inclusive intramural wheelchair sports program on attitudes toward PWD. Of note, out of 126 participants in the study, only two identified as having a physical disability. Results indicated that participants had a significant decrease in discomfort in interaction with PWD after participation in the inclusive intramural wheelchair sports program, even though there were limited opportunities to interact with other individuals with disabilities. This supports the mere exposure and extended contact theories that posit that interaction with PWD is not necessarily required to impact attitudes.

More recently, Townsend et al. (2020) examined the impacts of a six-day train-the-trainer adaptive sports program on the attitudes of Thai college students and faculty. They found reductions in distancing behaviors, interpersonal stress, and negative emotion; however, none of these were found to be statistically significant,

and the authors discussed measurement and cultural issues as possible primary reasons. Additionally, the authors discussed that while they did provide a formal and structured educational experience for participants, as was suggested by Krahe and Altwasser (2006), those activities may not have included all the favorable conditions as identified in Allport's intergroup contact theory (e.g., shared goals, equal status, and rewards). Lastly, the oldest study integrated students with disabilities into a traditional 10-week weight training class and measured the attitudes of their classmates (Stewart, 1988). Results indicated a significant improvement in the attitudes of the students in the class with their disabled peers.

While helpful to the understanding of how adaptive sports in a college setting may positively influence college students' attitudes toward peers with disabilities, these studies do not provide a robust discussion on how to best provide long-term adaptive sports opportunities at institutions of higher education. Other studies, however, have offered more detail toward this end and have focused their efforts on the development of intercollegiate adaptive sports opportunities. Briefly, intercollegiate adaptive sports opportunities are parallel to traditional varsity collegiate athletics programs and provide competitive collegiate sports experiences for students with disabilities. While the National Collegiate Athletics Association sponsors collegiate sports programs for more than 500,000 student athletes at more than 1,100 institutions of higher education (National Collegiate Athletics Association, 2023), they do not sanction any adaptive sport programs. As such, many programs are housed in campus recreation departments, student accessibility services departments, or even academic units.

Shapiro et al. (2020) and Fines and Block (2021) offer some of the most recent research exploring the inclusion of adaptive sports opportunities in institutions of higher education through campus recreation centers. Shapiro et al. indicated that the campus recreation programs with the highest rates of participation by students with disabilities were open recreation, weight training, cardiovascular and personal training, and fitness

assessment testing. The authors note that most universities have not met the universal design standard necessary to enable full participation of students with disabilities in competitive team sports (i.e., intramurals), even though opportunities in goalball and wheelchair basketball are growing. They also indicated that the predominant reason institutions gave for not providing adaptive sports through campus recreation was that there were too few students with disabilities on campus, and hence, a lack of requests for such programs. Fines et al. discussed the need to identify change agents at an institution who could help foster "top-down and bottom-up connections" within and outside of the university that would be necessary to develop, implement, and sustain adaptive sport programming (p. 331). Organizational readiness was also identified as an important component to this process and included questioning an organization's awareness and support for the initiative, as well as leadership's readiness to engage in the process. Together, these studies provide some insight into the current state of adaptive sports opportunities in campus recreation, as well as important processes to consider in efforts to develop such programs that could have significant impact on the attitudes toward students with disabilities.

Study Limitations and Recommendations

The study sample primarily consisted of undergraduate students from a large southeastern university, which may limit the generalizability of the findings to other populations. To enhance the external validity of the study, future research could aim for a more diverse and representative sample, including students from different universities, geographical regions, ethnicities, and academic levels. We also acknowledge a limitation stemming from not defining what we meant by disability. While our survey and conceptualization of the study were in line with the World Health Organization's views on disability, we allowed participants to conceptualize their own meaning of disability when answering questions on our survey. It is likely that participants across our sample had wide and varied interpretations of what disability is and isn't, and their

experiences with individuals with disabilities in their lives. This study also identified significant nonnormality in the data, as indicated by Mardia kurtosis and skewness tests. While the appropriate contemporary estimation techniques were used to address this issue, future studies could explore additional approaches, to further validate the results and provide additional evidence regarding the inferences available from data provided through the ADS. Additionally, the initial CFA revealed some issues with the measurement model, including misfitting items within the inclusion factor. Although modifications were made to improve the model fit, further refinement of the scale could be considered in future investigations. This may involve revising or eliminating problematic items, conducting qualitative research to gather input from individuals with disabilities, and exploring alternative measurement approaches to enhance the psychometric properties of the scale.

Conclusion

Based on the findings of this study, it is likely that an institution of higher education similar to the one in this study (large-size, located in the U.S. south) would encounter favorable attitudes among the general student body toward the establishment of an adaptive athletics program for students with disabilities. Efforts such as these have been called for in recent literature and are intended to address the inequities experienced by college students with disabilities in terms of their potential for intercollegiate sports opportunities. This study found that students' involvement in disability-related programming on campus was associated with more positive attitudes toward gains, indicating a recognition of the benefits and value of such initiatives. Inclusive and adaptive campus recreation programs could provide a viable avenue for such initiatives, further contributing to the development of more positive attitudes. Additionally, the presence of friends with disabilities was associated with more positive attitudes toward prospects for individuals with disabilities, suggesting that students are receptive to fostering inclusive opportunities. Moreover, this study emphasized the importance of creating

a supportive and inclusive campus climate for students with disabilities. Establishing an adaptive sports program aligns with this goal, as it promotes inclusivity, equal opportunity, and a sense of belonging for students with disabilities. It can also contribute to changing attitudes and breaking down barriers by showcasing the talents and abilities of individuals with disabilities in the context of competitive sports.

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