# Measuring the Differential Effects of Behaviors of Academic Advisors for Students with Disabilities

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*In prior scholarship, researchers identified barriers students with disabilities encounter in accessing academic advising, such as social stigma and hesitance to disclose. Through our study, we sought to inform advising practice by exposing the perceived deficit in services toward this population, uniquely evidenced by large data. The National Survey of Student Engagement academic advising data from 55,945 first-year students and 260 institutions were analyzed through multilevel models to measure differences in academic advising behaviors toward students with disabilities (10.12%) and the general population based on student self-reporting. Results illustrate that even when accounting for student backgrounds and institutional characteristics, academic advising behaviors were perceived as lower for students with disabilities, highlighting the need to intentionally improve services for these students.*

[doi:10.12930/NACADA-19-25]

KEY WORDS: academic advising, students with disabilities, survey research

The number of students reporting disabilities increases every year, especially since learning disabilities began to be recognized and diagnosed in the 1970s (Henderson, 1992; Snyder et al., 2019). In the 2015-2016 school year, the reported number of first-year students with disabilities at four-year institutions was 19%, with 19% of male undergraduates and 20% of female undergraduates reporting a disability (Snyder et al., 2019). This number might be an underestimation, as not every individual will disclose their disability status (Newman & Madaus, 2015; Preece et al., 2007). For the scope of this study, we are defining disabilities in the same way the National Survey of Student Engagement (NSSE) defines disabilities. Initially, respondents were asked if they have been diagnosed with a disability and, if answered in the affirmative, could select specific types of disability: a sensory impairment (e.g., vision or hearing), a mobility impairment, a learning disability (e.g., ADHD, dyslexia), a mental health disorder, and/or a disability or impairment not listed above.

Students with disabilities are at a higher risk of not completing their degrees (Kutscher & Tuckwiller, 2019) or taking longer to graduate than their peers (Rehfuss & Quillin, 2005), indicating a need for more targeted and effective service delivery by student affairs professionals. Despite comprising a significant portion of higher education recipients, there is not adequate research around engagement of this population (Kimball et al., 2016). What does exist tends to be qualitative and resides in dedicated disability journals, which are not necessarily read widely. When disability is measured in higher education journals, scholars typically include this aspect as one measure in a quantitative model, comparing students with disabilities to those in the general population (Peña, 2014). Although comparisons between students with disabilities and the general population may reinforce a deficit narrative, it is important for educators to learn about the ways they may be failing to equitably support this group, as evidenced by generalizable trends from large data. The purpose of this study is to describe how the behaviors of academic advisors may differ (or change) when advising students with disabilities compared to students without disabilities.

## Disclosure and Stigma

Students must disclose their disabilities to their Office of Student Disability Services before they can receive university accommodations; this has been shown to improve outcomes for this population in a mixed-methods peer-reviewed study with participants from a single institution (Cole & Cawthon, 2015). However, many students do not take advantage of the accommodations they are entitled to because they do not disclose their disability (Brown & Broido, 2015; Hartman-Hall & Haaga, 2002). This may be due to a variety of influencing factors, including a lack of pre-college capital (economic and/or social), fear of

misconceptions by institutional professionals post-disclosure, anticipation of lack of understanding from faculty members, ignorance that some health conditions could be classified as a disability, or students' past reliance on parent advocates to secure accommodations (Aune, 2000; Brown & Broido, 2015: Denhart, 2008; Eccles et al., 2018).

Stigma around students with disabilities stems from misinformation on best practices for effective interaction with this population or from a lack of knowledge about disabilities (Preece et al., 2007). Students feel that underprepared academic advisors may direct them toward lower-level course work or provide incorrect information that hampers their progress toward graduation (Hong, 2015). This is in line with Kimball et al.'s (2016) findings that student affairs educators from a variety of functional areas are often frustrated by their lack of knowledge of appropriate accommodations and policies about students with disabilities. Additionally, student affairs educators on campus may feel discomfort with addressing a student's disability directly, since this could be construed as discrimination (Preece et al., 2007; Rehfuss & Quillin, 2005). In a membership survey by NACADA: The Global Community for Academic Advising, advisors often expressed frustration over the lack of student disclosure, as they felt it impacted their ability to administer best practices to many students (Preece et al., 2007).

## Academic Advising of Students with Disabilities

Academic advisors often face the task of connecting students with disabilities to other resources on campus, such as career services, tutoring, and, most importantly, the disability services office, since they are one of the first professionals on campus that these students will meet (Aune, 2000; Preece et al., 2007; Rehfuss & Quillin, 2005). To enhance the effectiveness of reaching students with disabilities, research shows that personalized outreach, assessment of student abilities, and consideration of the resources available are proven to increase students with disabilities' use of and satisfaction with their academic advising centers on campus (Abelman & Molina, 2002; Deacon et al., 2017). Additionally, as small-scale quantitative research and interview data demonstrate, creating a personalized academic plan tailored to a student's disability and individual accommodation provides them with tools specific to their needs (Abelman & Molina, 2002; Denhart, 2008).

In their study of intrusive interventions for at-risk students with learning disabilities at a single institution, Abelman and Molina (2002) found that intrusive advising was only temporarily effective when done on a one-time basis, suggesting that students with disabilities need frequent and long-term intrusive advising to accomplish long-term successful academic outcomes. Tools such as universal design and professional development can help academic advisors improve their service delivery. These tools, described below, recur in the literature about this population and constitute meaningful aspects of academic advising for students with disabilities.

### Universal Design

Universal design is the practice of intentionally altering environments in a way that accounts for individual differences and diverse backgrounds in order to eliminate barriers (Aune, 2000; Black et al., 2015; Griful-Freixenet et al., 2017). In the context of a university, this practice removes the burden of students individually seeking accommodations for disability due to the existing availability of physical and academic resources (Evans et al., 2017). This practice is beneficial for all student populations; for example, students on academic probation or students with a history of reading difficulties uniformly benefited from interventions created for students with disabilities, regardless of ability status (Abelman & Molina, 2002; Deacon et al., 2017).

### Professional Development

Although a majority of advising faculty members reported working with students with disabilities, the bulk of them had never studied best practices for working with this student population, nor did they have a solid understanding of applicable disability laws (Preece et al., 2007). Advisors who reported an aptitude for working with students with disabilities cited professional development on "student development, supervision, and peer support" as instrumental to their effective practices (Ryser & Alden, 2005, p. 59). An effective professional development strategy for new advisors working with students with disabilities is shadowing a current advisor to strengthen their understanding of the dynamic of advising students with various needs while building their critical reasoning skills (Mann, 2018).

## Gap in the Literature

Literature on improving academic advising for students with disabilities tends to be qualitative and use single-institution data (Kimball et al., 2016). Furthermore, in much of the literature reviewed on this topic, the authors described obstacles related to advising students with disabilities instead of distinguishing the level of advising students with disabilities received compared to the general population. In this study, we addressed this gap in the literature by examining the advising experiences of students with disabilities using multi-institutional survey data to describe perceived differential academic advising behaviors of working with students with disabilities.

## Theoretical Frameworks

In this study, we drew on three frameworks to guide our model development and interpretation of the results: student engagement, the medical model of disability, and the minority-group model. Student engagement is defined as "the time and energy students devote to educationally sound activities inside and outside of the classroom, and the policies and practices that institutions use to induce students to take part in these activities" (Kuh, 2003, p. 25). When reimagining engagement for a diverse student population, Quaye and Harper (2015) described how this concept can be used to understand the experiences of several underserved student populations, including students with disabilities. In the same volume, Brown and Broido (2015) detailed research on academic engagement of students with disabilities, most notably finding that students with disabilities reported higher interaction with faculty members than their peers and a similar level of academic challenge and active and collaborative learning. Co-curricular engagement, including social engagement, is beneficial for students with disabilities and can lead to increased persistence of this population. Successful methods for engaging students with disabilities include transition programs that help students navigate the social and legal context of higher education (Shmulsky et al., 2015). Additionally, a variety of mentor programs have goals such as ensuring a successful transition to higher education, success in college, and career development (Brown & Broido, 2015).

Broadly, students who engage with services on campus tend to feel more included as members of the community (Deacon et al., 2017). Academic advising, one service offered on campus, can be especially useful to students with disabilities when considering the factors that influence the engagement of these students. For example, previous research on the implementation of varied strategies by academic advisors showed that they influenced outcomes related to student engagement of students with disabilities (Abelman & Molina, 2002). However, it is important to note the existence of institutional barriers to engagement for this population, such as the previously described issue of stigma towards students with disabilities, as well as a lack of institution-wide commitment to supporting these students (Brown & Broido, 2015). Colleges may meet the legal requirements of equal access, but this alone does not ensure the success of students with disabilities. One way to address this issue is shifting the responsibility of expanding access and enhancing the engagement of students with disabilities to offices throughout campus, not just to offices that provide accommodations. Academic advising, as one of these functional areas, should collaborate with disability offices to foster engaging opportunities for students with disabilities (Brown & Broido, 2015).

Previous scholarship on engagement at large is helpful in understanding how this concept is related to various student backgrounds and institutional characteristics. For the current study, previous research guided the selection of the following covariates at the student level: gender (BrckaLorenz et al., 2017; Mayhew et al., 2012; Rocconi et al., 2015), race and ethnicity (Finley & McNair, 2013; Fosnacht & Nailos, 2016; Harris & Brcka-Lorenz, 2017; Harris et al., 2018), first-generation status (Pike et al., 2012; Rocconi et al., 2013), transfer status (Webber et al., 2013; Zilvinskis & Dumford, 2018), and participation in science, technology, engineering, and mathematics (STEM) programs (Hedrick et al., 2010; Nelson Laird et al., 2011). Previous research also guided the selection of the following covariates at the institution level: private vs. public (Gonyea & Kinzie, 2015), institution type (e.g., doctoral universities, master's colleges and universities, baccalaureate colleges; Astin, 1977; Carini et al., 2006; Centra & Rock, 1971; Ewell, 1989; Gonyea & Kinzie, 2015; Hu & Kuh, 2002; Porter, 2006), and enrollment size (Kezar, 2006; Zilvinskis & Rocconi, 2018).

## Minority Group Model

In the minority group model, disabilities are socially constructed and impacted by environmental obstacles and attitudes of other people, which

can lead to discrimination and marginalization (Connor et al., 2008, Smart & Smart, 2006). The minority group model is also known as the social justice model because disability rights were finally recognized as civil rights upon the passing of the 1990 Americans with Disabilities Act (Evans et al., 2017). This model has been used in other research to reject the medical model and the idea that disability is inherent to the individual (Connor et al., 2008; Evans et al., 2017; Olkin, 2002), describe common experiences of oppression and the expectation that students with disabilities should emulate majority culture (Connor et al., 2008; Evans et al., 2017; Olkin, 2002), and explain the importance of disability studies in higher education (Taylor, 2011). This model differs from the medical model, in which disability is understood as a medical issue that is based in the individual's body and which causes hardship (Evans et al., 2017). This viewpoint focuses on the input of medical professionals who identify and diagnose the disability and prescribe steps for individuals to return to "normal" functioning.

Here we use the minority group model to guide both our understanding of disability as part of diversity and our belief that it is the responsibility of institutions to better include this diversity in higher education broadly and academic advising specifically. The following research questions guided this study:

**RQ1.** Are there significant differences in the behaviors and frequencies of academic advisors toward students with disabilities compared with the general population?

**RQ2.** Accounting for student backgrounds and institutional characteristics, do these differences remain significant?

## Data Sources and Sample

In this study, data were used from the 2015 and 2016 administration of the National Survey of Student Engagement (NSSE) collected by the Indiana University Center for Postsecondary Research in Bloomington. The average (within institution) student response rate across all participating colleges and universities in the 2016 administration of NSSE was 29%, with student response rates within institution ranging from 5% to 77%.[1] The NSSE is administered yearly to first-year students and seniors at participating four-year higher education institutions as a means to understand engagement related to educational outcomes (Kuh, 2001). A subset of institutions also administers a specific topical module with items designed to measure frequency, visibility, availability, and efficacy of academic advising (NSSE, 2019). We used responses from this topical module, coupled with items from the main survey that assessed disability and other demographics (as described in the measures) to carry out our analysis. The first author accessed the NSSE data through an agreement with the Indiana University Center for Postsecondary Research, and the analysis effort was funded by a grant from NACADA: The Global Community for Academic Advising.

The dataset comprised 55,945 first-year students attending four-year institutions. Of the total number of participants for the current study, 5,661 (10.12%) self-identified as having a disability, and 50,284 (89.88%) identified as not having a disability. For the overall sample, 64.87% of participants identified as women, 41.59% of participants were first-generation college students, and 27.92% of participants were STEM majors. Responses came from a total of 260 institutions: 35.91% of students from private universities, 45.82% from doctoral universities, 38.22% from master's colleges and universities, and 68.03% from colleges with a large undergraduate enrollment (see Table 1). Annual data were combined to yield a sizable subpopulation of students with disabilities. For the purposes of maintaining adequacy within institution cluster sizes for multilevel modeling, only institutions with 40 cases were retained for the current study (Kreft & De Leeuw, 1998).

## Measures

Our primary variable of interest was disability status, which was assessed by the question on the NSSE, "Have you been diagnosed with any disability or impairment?" in which respondents could answer, "Yes," "No," or "I prefer not to respond." If respondents answered "Yes," we included those students in the analysis as "students with disabilities." If participants responded "No" to that question, we included them in the analysis as constituting the "general population." We use the term "general population" here to describe students without disabilities and students who may

[1] For more information on the NSSE, as you would find in a methodology report, see National Survey of Student Engagement, 2020, February 13.

have a disability but chose not to disclose on the NSSE. If participants responded "I prefer not to respond," they were excluded from the analysis. As such, these classifications were based on self-selection of the respondents.

### Academic Advising Topical Module

The purpose of this study was to examine the behaviors of academic advisors and the frequencies of advising between students with disabilities and the general population based on student responses to NSSE items. As such, the academic advising topical module on the NSSE (2019) was integral to the analysis (see Appendix A). This module contains four questions, two of which were employed in the analysis, as they specifically pertained to academic advisor/student interaction.

The first question, "During the current school year, to what extent have your academic advisors done the following? (ADV02)," measured how often students reported receiving academic advising services among nine behaviors. The nine behavior items were measured on a four-point scale, with "Very little" corresponding to a value of 1, "Some" being 2, "Quite a bit" being 3, and "Very much" being 4. Responses of "Not applicable" for these items were coded as missing data and were not included in the Likert scale.

The second item also used a four-point scale (Never, Sometimes, Often, and Very often, corresponding to values 1-4, respectively) to measure how frequently academic advisors reached out to their advisees: "During the current school year, how often have your academic advisors reached out to you about your academic progress or performance? (ADV04_15)."

For clarification, each item variable name (e.g., ADV02, ADV04_15) aligns with the variable code in the NSSE (2019) datafile. This shorthand was retained so that readers could replicate the analysis in the current study using their own NSSE institutional data.

### Covariates

The following covariates were used in the multilevel model to measure the relationship between student background and institutional characteristics with academic advising behaviors (see Appendix B). For student background characteristics, variables included: gender (Man; Woman; Another gender identity; Gender - prefer not to respond); race or ethnicity (Asian, Native Hawaiian, Other Pacific Islander, Black or African-American, Hispanic or Latino, Multiracial, Another race or ethnicity, White); veteran status (Veteran, Not a Veteran); STEM major status (Yes, No); first-generation status (Yes, No); transfer student status (Yes, No); and traditional age status (Yes, No).

It is important to note that the "Another race or ethnicity" category includes students who selected "American Indian or Alaska Native," "Other," or "Prefer not to respond." Since our sample only included first-year students, traditional age students were defined as such if they were under the age of 21. Respondents were defined and coded "First-generation" if they indicated that neither of their parents held a college degree. The covariates for institution type included distinctions between: private and public; Carnegie classification (e.g., doctoral universities, master's colleges and universities, baccalaureate colleges); a dichotomous variable for size in which institutions were coded as having "Large undergraduate enrollment" if they had more than 10,000 undergraduate students; and Barron's selectivity (Noncompetitive, Less competitive, Competitive, Competitive plus, Very competitive, Very competitive plus).

### Analysis

To answer RQ1, we conducted independent sample t-tests for each of the nine advising behaviors items and one frequency item to compare means between students with disabilities and the general population. Homogeneity of variance was measured using Levene's test of equality of variances. We then calculated effect sizes and interpreted them using the guidelines by Mayhew et al. (2016) to account for the impact of our sample size on the significance of the difference in means. Effect size is useful for determining the meaningfulness of our results (Lomax & Hahs-Vaughn, 2012).

To answer RQ2, our group accounted for level-one (student) and level-two (institution) covariates through multilevel modeling. The justification for this choice is that students are nested within institutions; therefore, with an adequate average within-institution cluster size of 40 and a large enough number of institutions (30), multilevel modeling is appropriate (Ethington, 1997; Snijders & Bosker, 2011). Most of the level-one covariates (Gender, First-generation, Transfer, Veteran status, and STEM major) are recoded as dichotomous variables in the model. This yielded the reference group as the counterfactual: men, white students, non-first-generation, non-transfer (which

accounted for most of the students in the sample since only first-year students were included), non-veteran, and non-STEM. For the variables related to race and ethnicity, effect coding was employed; therefore, instead of understanding the effect as it related only to the reference group (in this case, white students), readers should interpret the effects in relation to all other students in the sample (including white students; Mayhew & Simonoff, 2015a; Mayhew & Simonoff, 2015b). Although our research questions did not include aspects related to race and ethnicity, the consideration to include race/ethnicity was made to offset the norming of the white experience prevalently featured in higher education literature.

We created nine multilevel models for each of the behavior measures of academic advisors toward students (dependent variables) to see if statistically significant differences in these reported behaviors at the $p < 0.05$ level emerged among disability status (independent variable) after accounting for student backgrounds and institutional characteristics (covariates). A tenth model for the outcome of frequency was not created because the t-test did not yield significant results.

For each model, a likelihood ratio test was conducted to ensure that the change in the chi-square statistic was beyond the threshold required for the degrees of freedom sacrificed between the null, level-one, and full (level-one and level-two) models (Snijders & Bosker, 2011). Once this measure was calculated, the effect estimates, significance, and standard error (SE) were reported, and the Intraclass Correlation Coefficient (ICC) was calculated to understand the proportion of the variance that can be explained at the second level. Finally, the Design Effect (DE) was calculated to ensure that multilevel modeling was appropriate. Unlike the ICC, this measure takes into account the average cluster size; any DE value above 2.00 indicates that modeling for multiple levels of nested data is warranted (Muthén, 1999; Muthén & Satorra, 1995).

## Results

For RQ1, the results from the independent samples t-test indicated consistent differences in behaviors of academic advisors toward students with disabilities and the general population that were statistically significant ($p < 0.05$; see Table 2). According to Levene's test, the assumption of homogeneity of variance was consistently violated (i.e., not met) among the independent samples t-tests ($7.32 < F < 59.85$, $p < 0.05$). Therefore, the t-statistics reported here are for t-tests for which the assumption of homogeneity of variance was violated, addressing this data issue.

The largest statistically significant mean difference was related to the item "Helped you get information on special opportunities (study abroad, internships, research projects, etc.)," with a sample mean of 2.43 ($SD = 1.13$) for students with disabilities and a sample mean of 2.57 ($SD = 1.11$) for the general population. The smallest statistically significant mean difference was related to the item "Informed you of academic support options (tutoring, study groups, help with writing, etc.)," with a students with disabilities sample mean of 2.70 ($SD = 1.07$) and a general population sample mean of 2.76 ($SD = 1.05$). Further addressing the first research question, the independent samples t-test related to the item "During the current school year, how often have your academic advisors reached out to you about your academic progress or performance?" did not yield a statistically significant difference, with a students with disabilities sample mean of 1.94 ($SD = 0.93$) and a general population sample mean of 1.95 ($SD = 0.90$). According to Levene's test, the assumption of homogeneity of variance was also not satisfied for this comparison ($F = 16.86$, $p < 0.05$).

When calculating effect size using the Cohen's $d$ guidelines from Mayhew et al. (2016), where 0.15 = small, 0.30 = medium, and 0.50 = large, the results of each independent t-test were interpreted as trivial to small in size. The largest effect size using Cohen's $d$ (calculated using the pooled standard deviation) was 0.13 for the item "Helped you get information on special opportunities (study abroad, internships, research projects, etc.)." The smallest effect size was 0.06 for the items "Listened closely to your concerns and questions" and "Informed you of academic support options (tutoring, study groups, help with writing, etc.)." Taken together, the statistically significant findings and effect sizes suggest that advisors are perceived as less likely to engage in advising behaviors with students with disabilities compared to the general population based on student self-report, although the meaningfulness of the difference between advisors reportedly engaging with different groups is small to non-existent.

To answer the second research question via multilevel modeling, the likelihood ratio test for each model revealed a chi-square statistic that was beyond the threshold needed for the degrees of freedom for the level-one model ($\chi^2_{14}$=23.68) and

the full models ($\chi^2_5$=11.07), indicating that the fit of each of the nine models was adequate for the covariates added (see Table 3).

The results of Table 4 included the unstandardized estimates relating the independent variable (disability status) and the covariates (student background and institutional characteristics) to the dependent variables (the nine advising behaviors). For example, when interpreting the estimates related to the first academic advising behavior, readers should interpret this effect as such: students with disabilities on average held a 0.08 lower score compared with students in the general population when other factors related to student background and institutional characteristic were held constant. The estimates related to disability remained significantly negative for all of the nine items except for "Informed you of academic support options (tutoring, study groups, help with writing, etc.)" (see Table 4). The largest estimate was related to the item "Helped you get information on special opportunities (study abroad, internships, research projects, etc.)," in which, on average, students with disabilities reported a 0.11 decrease in this measure compared to the general population. All other significant estimates indicated at least a 0.05 decrease for students with disabilities in the seven other outcomes.

Other level-one covariates in which respondents consistently reported differing levels in the behaviors of academic advisors toward students included gender, race and ethnicity, and major. First, respondents who identified as "Woman" and "Gender - prefer not to respond" reported statistically significantly lower estimates compared with respondents who identified as "Man." Second, Black or African-American students, as well as Hispanic or Latino students, reported statistically significantly higher estimates compared with others in the sample; however, lower estimates were reported by students who identified as "Another race/ethnicity" compared with all other students in the sample. Third, STEM students consistently reported lower estimates compared to their non-STEM counterparts on most advisor behaviors. For the level-two covariates, private colleges or universities on average consistently reported higher levels of behaviors of academic advisors than public ones. Meanwhile, selectivity was negatively related to this measure, which shows that behaviors of academic advisors were less frequent at more selective institutions.

In the multilevel modeling, list-wise deletion was used for respondents who were missing data, which led to 12.64% to 24.83% of the sample being removed, depending on the model. The greatest outcomes for missing data, subject to list-wise deletion, included the following survey items: "Helped you when you had academic difficulties" and "Helped you get information on special opportunities (study abroad, internships, research projects, etc.)," in part because a portion of respondents selected "Not applicable." When examining the model measurements, the ICC ranged between 0.02 and 0.04, indicating that very little of the variance (between 2%-4%) can be explained at the institution level. For each model, the DE was above 2.0, designating that multilevel modeling was appropriate for these data.

## Limitations

Limitations related to the data source and the way disability was measured are found within this study. Institutional participation in the NSSE is voluntary; thus, the data were skewed due to an overrepresentation of private institutions and the fact that the sample only included four-year institutions. Students with disabilities tend to be more highly represented in the 2-year arena and in public institutions, which might create a sample in this study that is not representative of the overall student population (Fichten et al., 2003). In addition to the skew toward private and four-year institutions, this study investigated only the institutions that administered the advising module and received 40 or more responses, which may explain the discrepancy between the study's percentage of students with disabilities (10.2%) and the national statistics (19-20%; Snyder et al., 2018). Further complicating the generalizability of the sample is the academic advising topical module, which is opt-in per institution (NSSE, 2019). The institutions that opt in may be more invested in understanding the academic advising functional area than their peers.

There are conceptual tradeoffs in how respondents were asked about disability within the survey. In the NSSE, the survey question that respondents were presented with regarding presence or absence of a disability is grounded in the medical model ("Have you been *diagnosed* with any disability or impairment?"), while we utilized the minority group model in our analysis and conceptualization. Additionally, the options to classify disability did not appear until after one indicated they have a disability, and students with mental illness who should have been included in the sample may not

**Table 1.** Select student background and institutional characteristics

| | Overall Sample | | Students with Disabilities | | General Population | |
|---|---|---|---|---|---|---|
| **Model Covariate** | ***n*** | ***%*** | ***n*** | ***%*** | ***n*** | ***%*** |
| Student backgrounds (n = 55,652 students) | | | | | | |
| Man* | 18,680 | 33.39 | 1,864 | 32.93 | 16,816 | 33.44 |
| Woman | 36,292 | 64.87 | 3,550 | 62.71 | 32,742 | 65.11 |
| Another Gender Identity | 327 | 0.58 | 127 | 2.24 | 200 | 0.40 |
| Gender - Prefer Not to Respond | 520 | 0.93 | 104 | 1.84 | 416 | 0.83 |
| Asian, Native Hawaiian, Other Pacific Islander | 4,404 | 7.87 | 181 | 3.20 | 4,223 | 8.40 |
| Black or African-American | 4,630 | 8.28 | 275 | 4.86 | 4,355 | 8.66 |
| Hispanic or Latino | 5,331 | 9.53 | 299 | 5.28 | 5,032 | 10.01 |
| Multiracial | 4,386 | 7.84 | 534 | 9.43 | 3,852 | 7.66 |
| Other Race or Ethnicity | 2,561 | 4.58 | 294 | 5.19 | 2,267 | 4.51 |
| White* | 34,518 | 61.70 | 4,063 | 71.77 | 30,455 | 60.57 |
| First-Generation | 23,267 | 41.59 | 2,031 | 35.88 | 21,236 | 42.23 |
| Transfer | 4,520 | 8.08 | 621 | 10.97 | 3,899 | 7.75 |
| Traditional Age | 52,808 | 94.39 | 5,205 | 91.94 | 47,603 | 94.67 |
| Veteran | 847 | 1.51 | 193 | 3.41 | 654 | 1.30 |
| STEM major | 15,620 | 27.92 | 1,460 | 25.79 | 14,160 | 28.16 |
| Institutional characteristics (n = 260 institutions) | | | | | | |
| Private | 20,092 | 35.91 | 2,204 | 38.93 | 17,888 | 35.57 |
| Doctoral Universities | 25,632 | 45.82 | 2,331 | 41.18 | 23,301 | 46.34 |
| Master's Colleges and Universities | 21,384 | 38.22 | 2,302 | 40.66 | 19,082 | 37.95 |
| Large Undergraduate Enrollment | 38,060 | 68.03 | 3,574 | 63.13 | 34,486 | 68.58 |
| Barron's Selectivity | | | | | | |
| Noncompetitive | 874 | 1.56 | 84 | 1.48 | 790 | 1.57 |
| Less Competitive | 4,252 | 7.60 | 450 | 7.95 | 3,802 | 7.56 |
| Competitive | 29,346 | 52.46 | 2,968 | 52.43 | 26,378 | 52.46 |
| Competitive Plus | 10,063 | 17.99 | 1,016 | 17.95 | 9,047 | 17.99 |
| Very Competitive | 6,570 | 11.74 | 648 | 11.45 | 5,922 | 11.78 |
| Very Competitive Plus | 3,154 | 5.64 | 328 | 5.79 | 2,826 | 5.62 |
| Total | 55,945 | 100.00 | 5,661 | 100.00 | 50,284 | 100.00 |

Note. STEM = science, technology, engineering, or mathematics
*= Served as reference group for multilevel modeling

see themselves as "disabled" (Rehfuss & Quillin, 2005), have reported "No," and therefore been included in the "general population." Furthermore, there may be students who selected "No" on the survey, but disclosed a disability to their advisors (Preece et al., 2007). Finally, we would like to note that "general population" is not the most accurate or fitting label for students who reported no disability but rather the most understandable, concise term we felt was still able to inform practice.

## Discussion

Demonstrated in this study is a statistically significant difference in perceived behaviors of academic advisors toward students with disabilities when compared to the general population. In other words, behaviors of academic advisors were consistently perceived as lower for students with disabilities. The only item which did not reach statistical significance was the frequency of academic advisors reaching out to students about their academic performance or progress. Although the effect sizes were trivial, suggesting that we must be cautious when generalizing these results, the fact that these differences were consistent is noteworthy. The conclusion is that while the different treatment of students with disabilities by advisors is statistically significant, it is not meaningfully different as indicated by the effect sizes.

**Table 2.** Difference in behavior of academic advising toward students with disabilities and the general population

| | Descriptive Statistics | | Independent Samples t-tests | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Overall Sample | | Students with Disabilities | | General Population | | | | |
| **Advising Behaviors** | ***M*** | ***SD*** | ***M*** | ***SD*** | ***M*** | ***SD*** | ***t*** | ***p*** | ***ES**** |
| Been Available When Needed (*ADV02a*) | 3.00 | 0.94 | 2.92 | 0.97 | 3.01 | 0.93 | −6.05 | 0.00 | 0.10 |
| Listened Closely to Your Concerns and Questions (*ADV02b*) | 3.03 | 0.94 | 2.97 | 0.98 | 3.03 | 0.94 | −4.55 | 0.00 | 0.06 |
| Informed You of Important Deadlines (*ADV02c*) | 2.83 | 1.03 | 2.75 | 1.07 | 2.84 | 1.03 | −6.07 | 0.00 | 0.09 |
| Helped You Understand Academic Rules and Policies (*ADV02d)* | 2.79 | 1.02 | 2.71 | 1.05 | 2.80 | 1.02 | −6.24 | 0.00 | 0.09 |
| Informed You of Academic Support Options (Tutoring, Study Groups, Help with Writing, etc.) (*ADV02e*) | 2.75 | 1.05 | 2.70 | 1.07 | 2.76 | 1.05 | −3.97 | 0.00 | 0.06 |
| Provided Useful Information About Courses (*ADV02f*) | 2.89 | 1.01 | 2.81 | 1.03 | 2.90 | 1.01 | −5.75 | 0.00 | 0.09 |
| Helped You When You had Academic Difficulties (*ADV02g*) | 2.69 | 1.09 | 2.60 | 1.12 | 2.71 | 1.08 | −6.29 | 0.00 | 0.10 |
| Helped You Get Information on Special Opportunities (Study Abroad, Internships, Research Projects, etc.) (*ADV02h*) | 2.56 | 1.11 | 2.43 | 1.13 | 2.57 | 1.11 | −7.95 | 0.00 | 0.13 |
| Discussed Your Career Interests and Post-Graduation Plans (*ADV02i*) | 2.56 | 1.11 | 2.46 | 1.13 | 2.57 | 1.11 | −6.19 | 0.00 | 0.10 |
| During the Current School Year, How Often Have Your Academic Advisors Reached Out to You About Your Academic Progress or Performance? (*ADV04_15*) | 1.95 | 0.91 | 1.94 | 0.93 | 1.95 | 0.90 | −1.24 | 0.22 | 0.01 |

Note. * = Cohen's *d* reported

**Table 3.** Results of multilevel model fitting

| Model | Test | DF | -2LL | Models Compared | Chi-Square Statistic |
|---|---|---|---|---|---|
| Been Available When Needed (*ADV02a*) | | | | | |
| Model A: Null | | 3 | 141,991.80 | | |
| Model B: Level One Student Background | LTR with 14 DF | 17 | 136,753.50 | (B) - (A) | 5,238.30 |
| Model C: Level Two Institutional Characteristics | LTR with 5 DF | 22 | 132,806.10 | (C) - (B) | 3,947.40 |
| Listened Closely to Your Concerns and Questions (*ADV02b*) | | | | | |
| Model A: Null | | 3 | 141,962.10 | | |
| Model B: Level One Student Background | LTR with 14 DF | 17 | 136,666.10 | (B) - (A) | 5,296.00 |
| Model C: Level Two Institutional Characteristics | LTR with 5 DF | 22 | 132,897.90 | (C) - (B) | 3,768.20 |
| Informed You of Important Deadlines (*ADV02c*) | | | | | |
| Model A: Null | | 3 | 150,725.70 | | |
| Model B: Level One Student Background | LTR with 14 DF | 17 | 145,080.70 | (B) - (A) | 5,645.00 |
| Model C: Level Two Institutional Characteristics | LTR with 5 DF | 22 | 140,995.90 | (C) - (B) | 4,084.80 |
| Helped You Understand Academic Rules and Policies (*ADV02d)* | | | | | |
| Model A: Null | | 3 | 147,570.70 | | |
| Model B: Level One Student Background | LTR with 14 DF | 17 | 142,082.10 | (B) - (A) | 5,488.60 |
| Model C: Level Two Institutional Characteristics | LTR with 5 DF | 22 | 138,055.70 | (C) - (B) | 4,026.40 |
| Informed You of Academic Support Options (Tutoring, Study Groups, Help with Writing, etc.) (*ADV02e*) | | | | | |
| Model A: Null | | 3 | 149,118.90 | | |
| Model B: Level One Student Background | LTR with 14 DF | 17 | 143,401.30 | (B) - (A) | 5,717.60 |
| Model C: Level Two Institutional Characteristics | LTR with 5 DF | 22 | 139,300.60 | (C) - (B) | 4,100.70 |
| Provided Useful Information About Courses (*ADV02f*) | | | | | |
| Model A: Null | | 3 | 150,406.50 | | |
| Model B: Level One Student Background | LTR with 14 DF | 17 | 144,946.20 | (B) - (A) | 5,460.30 |
| Model C: Level Two Institutional Characteristics | LTR with 5 DF | 22 | 140,859.20 | (C) - (B) | 4,087.00 |
| Helped You When You had Academic Difficulties (*ADV02g*) | | | | | |
| Model A: Null | | 3 | 135,764.70 | | |
| Model B: Level One Student Background | LTR with 14 DF | 17 | 130,686.90 | (B) - (A) | 5,077.80 |
| Model C: Level Two Institutional Characteristics | LTR with 5 DF | 22 | 127,101.50 | (C) - (B) | 3,585.40 |
| Helped You Get Information on Special Opportunities (Study Abroad, Internships, Research Projects, etc.) (*ADV02h*) | | | | | |
| Model A: Null | | 3 | 140,299.30 | | |
| Model B: Level One Student Background | LTR with 14 DF | 17 | 135,136.50 | (B) - (A) | 5,162.80 |
| Model C: Level Two Institutional Characteristics | LTR with 5 DF | 22 | 131,586.70 | (C) - (B) | 3,549.80 |

**Table 3.** Results of multilevel model fitting (cont.)

| Model | Test | DF | -2LL | Models Compared | Chi-Square Statistic |
|---|---|---|---|---|---|
| Discussed Your Career Interests and Post-Graduation Plans (*ADV02i*) | | | | | |
| Model A: Null | | 3 | 149,670.60 | | |
| Model B: Level One Student Background | LTR with 14 DF | 17 | 144,213.70 | (B) - (A) | 5,456.90 |
| Model C: Level Two Institutional Characteristics | LTR with 5 DF | 22 | 140,232.60 | (C) - (B) | 3,981.10 |



Still, the results suggest there is a tendency among advisors to treat students with disabilities differently than the general population, particularly in terms of helping these students or informing them of academic opportunities. If they participate, institutions should analyze their own NSSE data, evaluating if these behaviors occur enough. It is also important to note that even when accounting for student backgrounds and institutional characteristics, all behaviors except for "Informed you of academic support options (tutoring, study groups, help with writing, etc.)" were still negatively related to being diagnosed with a disability. Therefore, despite the different student backgrounds and characteristics of institutions, the trend of lower academic advising behaviors toward students with disabilities remains.

These consistent perceived differences add to our understanding of the engagement of students with disabilities. Notably, the largest difference between advising behaviors toward students with disabilities was the item "Helped you get information on special opportunities (study abroad, internships, research projects, etc.)," in which students with disabilities reported lower levels of this behavior from their academic advisors. These opportunities represent important forms of engagement for students with disabilities inside and outside the classroom that can be an essential component of persistence and success in college (Brown & Broido, 2015). The discrepancies among perceived behaviors of academic advisors between students with disabilities and the general population were consistent among the tested items even after accounting for student backgrounds and institutional characteristics, which should be concerning for academic advisors who wish to offer equitable experiences for students. One may assume the lower averages in behaviors are related to frequency of advising sessions for students with disabilities (i.e., with the barriers to participation for some of these students, maybe they simply cannot meet as much). However, examination of the item measuring "frequency of academic advisors reaching out" indicated the mean difference between students with disabilities and the general population was not significant. Previous literature suggests that the disparity in perceived behaviors from academic advisors may be related to dynamics involving stigma and disclosure (Aune, 2000; Brown & Broido, 2015; Denhart, 2008; Eccles et al., 2018). This disparity may also be affected by institutional commitment to supporting students with disabilities (Brown & Broido, 2015), as advisors at institutions with low commitment may not receive comprehensive professional development on topics related to disability.

Finally, an interesting finding in the current study is the degree to which respondents selected "Not applicable" to the nine behaviors of academic advisors. Fundamentally, a reader may review the list and find discrepancies between the behaviors measured in the NSSE topical module on advising (2019) and their own position descriptions. Even within our data, the outcome of greatest disparity ("Helped you get information on special opportunities [study abroad, internships, research projects, etc.]") had a considerable number of respondents who selected "Not applicable" for this behavior (16.58%). It could be the case that first-year students are not yet eligible for internships and study abroad. Using the theoretical framework of student engagement to guide the current study, we see advisors as essential educational practitioners to connect students with opportunities for future engagement.

## Implications for Practice

The results of our study suggest that academic advisors are not perceived as discussing certain topics with students with disabilities compared to the general population based on student self-report.

**Table 4.** Multilevel model describing the relationship between student background characteristics and institutional characteristics with academic advising behaviors

| | *ADV02a* | | *ADV02b* | | *ADV02c* | | *ADV02d* | | *ADV02e* | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **Estimate** | **SE** | **Estimate** | **SE** | **Estimate** | **SE** | **Estimate** | **SE** | **Estimate** | **SE** |
| Fixed Effects | | | | | | | | | | |
| Intercept | 3.10 * | 0.06 | 3.18 * | 0.06 | 2.99 * | 0.06 | 2.95 * | 0.06 | 2.94 * | 0.07 |
| Level one student background characteristics | | | | | | | | | | |
| Disability | −0.08 * | 0.01 | −0.05 * | 0.01 | −0.06 * | 0.02 | −0.06 * | 0.02 | −0.03 | 0.02 |
| Woman | −0.04 * | 0.01 | −0.03 * | 0.01 | −0.06 * | 0.01 | −0.05 * | 0.01 | −0.08 * | 0.01 |
| Another Gender Identity | 0.01 | 0.06 | −0.03 | 0.06 | −0.06 | 0.06 | −0.05 | 0.06 | −0.07 | 0.06 |
| Gender - Prefer Not to Respond | −0.14 * | 0.05 | −0.16 * | 0.05 | −0.20 * | 0.05 | −0.18 * | 0.05 | −0.17 * | 0.05 |
| Asian, Native Hawaiian, other Pacific Islander | 0.00 | 0.01 | 0.01 | 0.01 | 0.02 | 0.02 | 0.06 * | 0.02 | 0.05 * | 0.02 |
| Black or African-American | 0.04 * | 0.01 | 0.08 * | 0.02 | 0.11 * | 0.02 | 0.09 * | 0.02 | 0.12 * | 0.02 |
| Hispanic or Latino | 0.08 * | 0.01 | 0.08 * | 0.01 | 0.07 * | 0.02 | 0.08 * | 0.02 | 0.09 * | 0.02 |
| Multiracial | 0.00 | 0.01 | −0.01 | 0.01 | −0.04 * | 0.02 | −0.06 * | 0.02 | −0.05 * | 0.02 |
| Other Race or Ethnicity | −0.11 * | 0.02 | −0.10 * | 0.02 | −0.11 * | 0.02 | −0.10 * | 0.02 | −0.11 * | 0.02 |
| First-Generation | 0.02 * | 0.01 | 0.01 | 0.01 | 0.04 * | 0.01 | 0.03 * | 0.01 | 0.07 * | 0.01 |
| Transfer | 0.00 | 0.02 | −0.02 | 0.02 | −0.02 | 0.02 | −0.02 | 0.02 | −0.06 * | 0.02 |
| Traditional Age | −0.09 * | 0.03 | −0.07 * | 0.03 | −0.06 * | 0.03 | −0.06 | 0.03 | 0.06 | 0.03 |
| Veteran | 0.04 | 0.04 | 0.01 | 0.04 | 0.01 | 0.04 | 0.00 | 0.04 | 0.04 | 0.04 |
| STEM major | −0.01 | 0.01 | −0.03 * | 0.01 | −0.05 * | 0.01 | −0.05 * | 0.01 | −0.01 | 0.01 |
| Level two institutional characteristics | | | | | | | | | | |
| Private | 0.07 * | 0.03 | 0.06 | 0.03 | 0.08 * | 0.04 | 0.09 * | 0.04 | 0.10 * | 0.04 |
| Doctoral Universities | −0.04 | 0.04 | −0.04 | 0.04 | 0.03 | 0.04 | 0.02 | 0.04 | 0.00 | 0.05 |
| Master's Colleges and Universities | −0.04 | 0.03 | −0.05 | 0.03 | 0.01 | 0.03 | 0.00 | 0.03 | −0.01 | 0.04 |
| Large Undergraduate Enrollment | −0.04 | 0.04 | −0.03 | 0.03 | 0.04 | 0.04 | 0.03 | 0.04 | 0.00 | 0.04 |
| Barron's Selectivity | 0.01 | 0.01 | 0.00 | 0.01 | −0.03 * | 0.01 | −0.03 * | 0.01 | −0.06 * | 0.01 |
| Random Effects | | | | | | | | | | |
| $\tau^2 0$ | 0.03 * | 0.03 | 0.02 * | 0.02 | 0.03 * | 0.03 | 0.03 * | 0.03 | 0.04 * | 0.04 |
| $\sigma^2$ | 0.85 * | 0.85 | 0.87 * | 0.87 | 1.03 * | 1.03 | 1.01 * | 1.01 | 1.06 * | 1.06 |
| Cases Used | 49,411 | | 49,101 | | 48,978 | | 48,258 | | 48,452 | |
| Groups | 246 | | 246 | | 246 | | 246 | | 246 | |
| Average Cluster Size | 201 | | 200 | | 199 | | 196 | | 197 | |
| ICC | 0.03 | | 0.02 | | 0.03 | | 0.03 | | 0.04 | |
| Design Effect | 7.81 | | 5.46 | | 6.61 | | 6.63 | | 8.13 | |

Note. STEM = science, technology, engineering, or mathematics
The category "Other race or ethnicity" includes students who selected only "American Indian or Alaska Native," "Other," or "Prefer not to respond." Students under the age of 21 were considered "Traditional age."
*$p < 0.05$

**Table 4.** Multilevel model describing the relationship between student background characteristics and institutional characteristics with academic advising behaviors (extend.)

| *ADV02f* | | | *ADV02g* | | | *ADV02h* | | | *ADV02i* | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Estimate** | | **SE** | **Estimate** | | **SE** | **Estimate** | | **SE** | **Estimate** | | **SE** |
| 2.92 | * | 0.07 | 2.93 | * | 0.07 | 2.64 | * | 0.07 | 2.67 | * | 0.07 |
| −0.08 | * | 0.02 | −0.09 | * | 0.02 | −0.11 | * | 0.02 | −0.07 | * | 0.02 |
| −0.02 | | 0.01 | −0.02 | | 0.01 | −0.04 | * | 0.01 | −0.02 | * | 0.01 |
| −0.12 | | 0.07 | −0.12 | | 0.07 | −0.05 | | 0.07 | −0.10 | | 0.07 |
| −0.16 | * | 0.06 | −0.16 | * | 0.06 | −0.11 | | 0.06 | −0.11 | * | 0.06 |
| 0.05 | * | 0.02 | 0.05 | * | 0.02 | 0.06 | * | 0.02 | 0.04 | * | 0.02 |
| 0.07 | * | 0.02 | 0.07 | * | 0.02 | 0.06 | * | 0.02 | 0.06 | * | 0.02 |
| 0.09 | * | 0.02 | 0.09 | * | 0.02 | 0.06 | * | 0.02 | 0.06 | * | 0.02 |
| −0.05 | * | 0.02 | −0.05 | * | 0.02 | −0.03 | * | 0.02 | −0.04 | * | 0.02 |
| −0.10 | * | 0.02 | −0.10 | * | 0.02 | −0.08 | * | 0.02 | −0.08 | * | 0.02 |
| 0.05 | * | 0.01 | 0.05 | * | 0.01 | 0.04 | * | 0.01 | 0.04 | * | 0.01 |
| −0.01 | | 0.02 | −0.01 | | 0.02 | 0.00 | | 0.02 | −0.02 | | 0.02 |
| −0.04 | | 0.04 | −0.04 | | 0.04 | 0.03 | | 0.04 | 0.17 | * | 0.03 |
| 0.01 | | 0.05 | 0.02 | | 0.05 | 0.02 | | 0.05 | 0.06 | | 0.05 |
| −0.07 | * | 0.01 | −0.07 | * | 0.01 | −0.07 | * | 0.01 | −0.05 | * | 0.01 |
| 0.1 | * | 0.04 | 0.10 | * | 0.04 | 0.14 | * | 0.04 | 0.08 | * | 0.04 |
| −0.02 | | 0.04 | −0.02 | | 0.04 | 0.00 | | 0.05 | −0.04 | | 0.04 |
| −0.02 | | 0.03 | −0.02 | | 0.03 | −0.05 | | 0.04 | −0.06 | | 0.03 |
| −0.02 | | 0.04 | −0.02 | | 0.04 | 0.03 | | 0.04 | −0.01 | | 0.04 |
| −0.04 | * | 0.01 | −0.05 | * | 0.01 | −0.03 | * | 0.01 | −0.07 | * | 0.01 |
| 0.03 | * | 0.03 | 0.03 | * | 0.03 | 0.03 | * | 0.03 | 0.03 | * | 0.03 |
| 1.15 | * | 1.15 | 1.15 | * | 1.15 | 1.20 | * | 1.20 | 1.20 | * | 1.20 |
| | 49,597 | | | 42,517 | | | 43,400 | | | 46,334 | |
| | | 246 | | | 246 | | | 246 | | | 246 |
| | | 202 | | | 173 | | | 176 | | | 188 |
| | | 0.03 | | | 0.03 | | | 0.02 | | | 0.02 |
| | | 6.10 | | | 5.37 | | | 5.28 | | | 5.57 |

One way to create more equitable experiences for students with disabilities would be to consider the kinds of professional development academic advisors receive. Specifically, the greatest difference existed within the academic advisors' abilities to connect students to high-impact practices (e.g., study abroad, internships, research projects, etc.). Advisors should approach working with students with disabilities through the student engagement framework, placing the responsibility on advisors to connect these students to high-impact opportunities, instead of putting the onus on the students to seek out these opportunities themselves.

Since stigma and disclosure are significant barriers for students with disabilities, advisors need additional professional development surrounding different aspects of disabilities and strategies to validate student concerns (Fleming et al., 2018). Faculty professional development that clearly identifies on-campus support available to students with disabilities, such as people, technology, and physical resources, will increase accessibility for these students. Furthermore, faculty members should receive professional development on inclusive language related to disability to maximize their communication efforts (Evans et al., 2017). Academic advisors should consider their own understandings of disability, policies and procedures of the institution, and the individual needs of each student when examining their approach to working with students with disabilities, and they should ultimately create a one-on-one experience unique to each student's situation (Mann, 2018). To complement this kind of professional development, academic advising offices should also incorporate aspects of universal design into their engagement with all students. For example, when providing information on rules, policies, deadlines, courses, and opportunities, advisors should do so in multiple formats (e.g., verbal, printed image, electronic, etc.) and should ensure that follow-up materials are accessible. Advisors should collaborate with colleagues across their institutions to assess services and develop creative ways of implementing universal design that meet the unique needs of their students.

## Future Research

Additional research that builds on the current study would be helpful to further explore how academic advising may be more effective in supporting this group. For example, to test the generalizability of the survey items, the survey item set from the NSSE (2019) could be used to measure the academic advising behaviors received by students in multiple contexts, including two-year institutions or colleges and universities that pride themselves on services for students with disabilities. Additionally, rather than relying solely on student self-report data, academic advising behaviors could be measured by the advisors themselves or a third-party to triangulate the degree to which advising behaviors as reported from the student perspective are reliable.

One of the risks taken in this study is the possibility of reinforcing a deficit narrative, such as concluding that students with disabilities are themselves at fault for being less active with their advisors than the general population (Vaccaro et al., 2015). To address this concern, we were mindful to use a dataset that asked students about behaviors of their advisors, not themselves. We believe it is important to name the consistent discrepancy in services for students with disabilities and, in turn, recommend ways advisors can improve services, rather than blame students with disabilities for any discrepancy. Despite these considerations, the next step for research with a similar scope is to realize the goals of an anti-deficit framework by asking research questions that refrain from comparison, norming the non-disabled experience, and thus promoting ableism (Harper, 2010; Stage, 2007). To do this, researchers could use data such as these to understand how students with disabilities succeed in higher education and, specific to the topic of this study, understand how academic advisor behaviors may moderate the outcomes for members of this group.

This study provides generalizable evidence based on student perception that advisors are not perceived as always engaging in the same academic advising behaviors with students with disabilities as they do with students without disabilities. If true, this trend is concerning, especially given the important role academic advisors play in the engagement of students. Even more concerning is that the largest discrepancy exists within advisors recommending engagement experiences such as study abroad, internships, and research projects. These educators may be limited by their understanding of disability, much like the NSSE survey, framing this aspect of identity from the medical model rather than understanding disability as a component of diversity that must be understood and supported. Given our results, institutions should be motivated to provide intentional

professional development for academic advisors that offers equal services for every student they serve.

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*NSSE data were used with permission from the Indiana University Center for Postsecondary Research, and the analysis effort was funded by a grant from NACADA: The Global Community for Academic Advising.*

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**Appendix A.** NSSE topical module: Academic advising items used in analysis

*During the current school year, to what extent have your academic advisors done the following?*

(Very much = 4, Quite a bit = 3, Some = 2, Very little = 1)

*Been available when needed* (ADV02a)

*Listened closely to your concerns and questions* (ADV02b)

*Informed you of important deadlines* (ADV02c)

*Helped you understand academic rules and policies* (ADV02d)

*Informed you of academic support options (tutoring, study groups, help with writing, etc.)* (ADV02e)

*Provided useful information about courses* (ADV02f)

*Helped you when you had academic difficulties* (ADV02g)

*Helped you get information on special opportunities (study abroad, internships, research projects, etc.)* (ADV02h)

*Discussed your career interests and post-graduation plans* (ADV02i)

*During the current school year, how often have your academic advisors reached out to you about your academic progress or performance?*

(Very often = 4, Often = 3, Sometimes = 2, Never = 1)

**Appendix B.** Multilevel modeling covariate information.

**Student Background**

| | |
|---|---|
| Disability | Diagnosed with a disability or impairment = 1; Not diagnosed = 0 |
| Woman | 1 = Yes; 0 = Man or Another gender or Prefer not to respond |
| Another Gender Identity | 1 = Yes, 0= Man or Woman or Prefer not to respond |
| Gender- Prefer not to respond | 1 = Yes; 0 = Man or Woman or Another gender identity |
| Asian, Native Hawaiian, Other Pacific Islander | 1=Monoracial Asian or Native Hawaiian or Other Pacific Islander, 0 = All other races, -1 = White |
| Black or African-American | 1 = Monoracial Black or African-American, 0 = All other races, -1 = White |
| Hispanic or Latino | 1 = Monoethnic Hispanic or Latino, 0 = All other races, -1 = White |
| Multiracial | 1 = Multiple races, 0 = Monoracial, -1 = White |
| Another race or ethnicity | 1 = Yes, 0 = All other races, -1 = White<br>Includes students who selected only American Indian or Alaska Native, Other, or Prefer not to respond |
| First-generation | 1 = First-generation; 0 = Non-first-generation<br>Neither parent attained a college degree |
| Transfer | 1 = Transfer student; 0 = Non-transfer student |
| Traditional age | 1 = Traditional age; 0 = Non-traditional age<br>Includes first-year students under 21 |
| Veteran | 1 = Current or former member of the U.S. Armed Forces, Reserves, or National Guard; 0 = Not a current or former member of the U.S. Armed Forces, Reserves, or National Guard |
| STEM major | 1 = In a science, technology, engineering, or mathematics (STEM) field;<br>0 = Not in a science, technology, engineering, or mathematics (STEM) field |

**Institution Characteristics**

| | |
|---|---|
| Private | 1 = Private; 0 = Public |
| Doctoral universities | 1 = Doctoral-granting institution, 0 = Master's college or University or Baccalaureate-granting institution |
| Master's colleges and universities | 1 = Master's college or University, 0 = Doctoral-granting institution or Baccalaureate-granting institution |
| Large undergraduate enrollment | 1 = Greater than 10,000 undergraduates, 0 = Less than 10,000 undergraduates |
| Barron's selectivity | 1 = Non-competitive, 2 = Less competitive, 3 = Competitive, 4 = Competitive, 5 = Competitive plus, 6 = Competitive plus, 7 = Very competitive, 8 = Very competitive plus |