Mediation Effects of Academic Advising Behaviors for First-Year Students with Learning Disabilities and Mental Health Disorders

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Abstract

Using survey data from 6,242 first-year students with disabilities that completed the National Survey of Student Engagement and the academic advising topical module, the purpose of the current study was to explore the aspects of academic advising behaviors that mediated overall self-reported grades and student engagement. Findings indicate academic advising is positively related to grades and engagement among students with disabilities; however, some advising practices were more beneficial for students with certain disabilities than others.

Keywords: academic advising, students with disabilities, student engagement, survey research

Students with disabilities comprise an increasing percentage of the higher education US student population every year. 19% of students reported a disability in 2016, compared with only two-thirds of that number in 2015 (Snyder et al., 2019; Snyder, et al., 2018). Quantifying prevalence of specific disabilities among students is problematic due to widely inconsistent definitions and other infrastructure failings (Fujiura & Rutkowski-Kmitta, 2001) such as a lack of allocated effort to keeping track of college students with disabilities in the same way as with secondary and pre-secondary education, some estimates do exist (Evans et al., 2017).

At four-year institutions, as reported by the Higher Education Research Institute (Stolzenberg et al., 2019), students with learning disabilities made up about 20% of the population of students with disabilities; students with AD(H)D comprised 32%, students with mental illness 26%, students with health impairments 12%, students with hearing, mobility, sight, or speech disabilities 18.5%, and students with all others made up the remaining 3%. Given these numbers, and the fact that students with disabilities have higher attrition rates and do not graduate as quickly as their peers unless academic support services are offered and effective (Hartley, 2010; Troiano et al., 2010), institutions should recognize the imperative to tailor support for this significant group of students.

The purpose of this paper is to illuminate, using advanced statistical analysis of large survey data, how academic advising relates to grades and engagement experiences and contributes to the achievements of these outcomes for students with disabilities, specifically students with learning disabilities and students with mental health disorders. Focusing on academic advising is worthwhile as it will allow institutions to intentionally direct effort and resources. For students with disabilities in particular, academic advising is crucial as it is often a connecting point to other services on campus (Aune, 2000). Additionally, intrusive advising has been shown to be effective in improving engagement for students with learning disabilities (Abelman & Molina, 2002). Intrusive advising, “utilizes the systematic skills of prescriptive advising while helping to solve the major problem of developmental advising which is a student's reluctance to
In the current study, intrusive advising was applied specifically to at-risk students with learning disabilities and included requiring students to substantively meet with advisors to create a formal contact of academic expectations. Academic advising, as a functional area that affects every student’s experience, is an embodiment of institutional goals and vision, is a natural starting point for analysis and change (Zhang et al., 2017; Abelman & Molina, 2006). Since student engagement is the aspect of higher education quality of experience examined in the current study, our review of the literature includes research on the engagement of students with disabilities and the ways this aspect manifests in academic advising. On the National Survey of Student Engagement Academic Advising Topical Module, students are asked about the frequency and intensity of behaviors from their academic advisors. Behaviors include advising actions and characteristics such as listening to concerns and questions, being available when needed, etc. The Topical Module does not specifically define what role the advisor occupies, (e.g., faculty or counselor); therefore, in the current study, we consider any person that dispenses academic advice to students to be an academic advisor. Our literature review is structured regarding the three Engagement Indicators from the National Survey of Student Engagement (NSSE 2019a) that are the most cited within this literature: Supportive Environment, Student-Faculty Interaction, and Quality of Interactions. The following research questions guided our study:

1. How does academic advising behavior relate to grades and engagement among first-year students with disabilities?
2. For students with learning disabilities, students with mental health disabilities, and students with both a learning disability and mental health disability, how do aspects of academic advising mediate these outcomes?

Supportive Environment

The campus climate is among the most influential factors in the college experience of students with disabilities (Dowrick et al., 2005). Hedrick et al. (2010) found that students who reported having a disability on the National Survey of Student Engagement (NSSE) were less likely than their peers to find their campus environment to be supportive and were more likely to be poorly adjusted to the academic environment than their peers (Murray et al., 2014). Students who are poorly adjusted score lower on self-advocacy, course self-efficacy, social efficacy, family support, and campus climate than students in the average and highly adjusted groups. In other words, students with disabilities are more likely to include a supportive environment as a component of their pathway to success and are less likely than their peers to perceive their campus environment as supportive. It is therefore necessary to consider ways in which educators, staff, and administrators can provide supportive interventions for students with disabilities that will improve their perception of the campus environment. It is for this reason that we have chosen to focus on the role of academic advising as an important mediating factor to investigate.

A crucial job for educators is to empower students with disabilities and to highlight their strengths and abilities by providing and disseminating opportunities (Hall & Belch, 2000). A sense of purpose in college is linked to hope, resiliency, achievement, and civic engagement for students with disabilities (Vaccaro et al., 2018), emphasizing the important role that faculty and advisors have in guiding students in this group to resources. Developing purpose is connected to educational and professional goal setting; staff and faculty should provide encouragement and guidance.
to instill confidence in persistence (Mamiseishvili & Koch, 2011). To shift the burden of creating and pursuing goals from the students to the administration, academic advisors can utilize the minority group model and approach disability as an aspect of diversity, helping students find purpose and engagement that incorporate their abilities instead of focusing on the limitations created by their disabilities (Evans, et al., 2017). Furthermore, as explored below, academic advisors can play an important role in other areas of engagement such as student-faculty interaction and quality of interactions, with the ultimate goal of increasing support for students with disabilities.

Student-Faculty Interaction

Positive interactions with faculty are important for promoting the engagement and success of students with disabilities as this group has higher interaction levels with faculty than students in the general population (Brown & Broido, 2015). It should be noted few students disclose to their university their disability status and, instead, are more likely to choose to identify directly to faculty (Newman & Madaus, 2015). Unfortunately, many faculty members lack sufficient knowledge about different disabilities, available accommodations, and even harbor bias toward disability (Cawthon & Cole, 2010). Additionally concerning is that students with disabilities have cited faculty disbelief of their disability as one of the greatest barriers they encounter (Aune, 2000). Researchers have found that, among this group, faculty have the most positive attitudes towards students with physical disabilities/mobility impairments, slightly less positive attitudes about students with learning disabilities, and negative attitudes about students with mental health disabilities; these negative opinions lead faculty to be uninclined to provide accommodations for learning and mental health disabilities because they equate accommodations with an unfair advantage for these students (Sniatecki et al., 2015). Furthermore, many faculty contradict themselves by expressing sensitivity to the needs of students with disabilities while being unaware of the services provided through the disability services office or the requirements for accommodations. Students with mental health disabilities have reported that after disclosure, faculty treat them differently, which directly impacts and lowers their engagement with other community members and resources on campus (Salzer, 2012). Even more concerning, Hartman-Hall and Haaga (2002) indicated that the response a student with a learning disability receives to their request for assistance or accommodation can impact subsequent help seeking behavior depending on the response.

A possible mitigating factor is the role of a professional who serves as a facilitator and empowers students with disabilities, particularly learning disabilities, to overcome challenges and make decisions (Reiff, 1997). Academic advisors are beneficially positioned to serve in this facilitating role, as they are often the first and most frequent professionals who interact with students with disabilities and may be the first to learn of their needs (Preece et al., 2007). With this information, and the knowledge faculty members often serve as advisors, it is necessary to consider academic advisors’ role on this form of engagement for students with disabilities.

Quality of Interactions

The quality of interactions that students with disabilities encounter with their peers, administration and campus staff also affects their engagement and outcomes. Social integration and participation in co-curricular activities and informal interactions with peers have a positive impact on quality of interactions, learning, and development for this population (Mamiseishvili & Koch, 2011). Meanwhile, positive interactions with faculty, academic advisors, and other staff are related to the empowerment of students with disabilities, their access to opportunities, and sense of purpose, as previously discussed (Hall & Belch, 2000; Vaccaro et al., 2018). However, like faculty, staff and administrators on campus are influenced by stigma related to disability, resulting in discouragement of students with disabilities from pursuing certain campus activities, majors, and career paths due to misconceptions about types of disabilities and available accommodations (Vaccaro et al., 2018). This dynamic is especially true for students with psychiatric disabilities (Kain et al., 2019). A common theme among interactions that students with disabilities have with these institutional agents is the responsibility to normalize or justify their disability to assimilate into majority culture, and this effort often discourages them from engaging in social activities (Hodges & Keller, 1999), in addition to feeling discouraged from pursuing otherwise beneficial opportunities (Vaccaro et al., 2018). This is undoubtedly related to the perception students with disabilities have of how supportive their environment is, as well as their level of overall engagement and positive outcomes. Although academic advisors cannot provide interventions to improve the quality of interactions students with disabilities have with their peers, they can play a role in the quality of interactions they and their colleagues have with those students. Furthermore, academic advisors can connect students with disabilities to opportunities for positive social engagement with peers by being aware
of options that exist on their campus and encouraging students to seek out those opportunities.

**Academic Advising and Engagement**

Connecting with campus services encourages student engagement (Deacon et al., 2017); students with disabilities in particular achieve better outcomes when they are more engaged with the student environment (Murray et al., 2014; Vaccaro et al., 2018). In addition to titled academic advisors providing stand-alone utility in their defined roles, they often serve as connectors to other campus services (Preece et al., 2007; Rehfuss & Quillin, 2005). Therefore, formal academic advising benefits students with disabilities by engaging them directly and providing resources to other services. Abelman and Molina (2002) explored the connection between intrusive academic advising by official academic advisors and engagement for students with disabilities; Troiano et al. (2010) confirmed the connection between academic support services and positive educational outcomes. In a study of 33 academic advisors, Button et al. (2019) found specialized intervention was effective when supporting students with disabilities. Quantitative assessment of large survey data will indicate which advising behaviors are reaching college students with disabilities and the distinct ways these behaviors contribute to their overall college experience, and which are lacking and should be improved and developed to reach this population.

**Research Considerations**

**Anti-Deficit Framework**

Harper (2010) encourages using an anti-deficit framework to examine “institutional agents, policies, programs, and resources” that aid in student achievement and how students maximize their college experiences (p. 66). The use of this framework when studying students with disabilities provides researchers with an often-underused perspective; rather than focusing on personal barriers (Denhart, 2008), lower achievement or engagement (Deacon et al., 2017; Rehfuss & Quillin, 2005), or the lack of disclosure and accommodation use (Hartman-Hall & Haaga, 2002; Newman & Madaus, 2015), attention can be given to avenues of success for students with disabilities. The interpretation of existing literature using an anti-deficit framework has contributed to the development of the current study, where the role of academic advising behaviors is explored to determine the influence these educators and their actions have on improving outcomes of students with disabilities. The current study contrasts with previous research, in which scholars have compared students with disabilities to the rest of the campus population, contributing to a deficit narrative (Peña, 2014); instead, focus is given to people, resources, experiences, and opportunities fostering success.

**Critical Quantitative Framework**

In the current study, the anti-deficit framework guided the first research question, the sample selection, and the implications for practice, while the critical quantitative framework guided the second research question and the choice to disaggregate the sample by type of disability. Critical quantitative research is rooted in the questions that are asked rather than the methods used to answer them, and researchers who employ this framework typically seek to question existing models, assumptions, and measures (Stage, 2007). Therefore, to achieve the goal of illuminating rather than marginalizing the experiences of students with disabilities, the research questions were crafted by challenging existing assumptions about this group as previously described (Vaccaro et al., 2015). Scholars have called for more critical quantitative research techniques including the disaggregation of this population, which is especially important when addressing concerns that educators treat students with disabilities as a homogenous group (Peña et al., 2016). Relevant data were selected to accommodate the research questions (Vaccaro et al., 2015); a topical module concerning academic advising behaviors was chosen in addition to NSSE data that allowed for the disaggregation of the population of students with disabilities into groups by disability type.

**Data Sources and Sample**

Data from the 2015 and 2016 administrations of the National Survey of Student Engagement (NSSE) and the opt-in topical module on academic advising were used in the current study analysis (NSSE, 2019b). The NSSE is administered twice yearly to first-year students and seniors at four-year institutions with the goal of measuring engagement on their campuses as it relates to educational success (Kuh, 2001). NSSE data were used with permission from The Indiana University Center for Postsecondary Research. The current research project was funded by a grant from the National Academic Advising Association (NACADA).

In accordance with the theoretical frameworks for the current study, only first-year students from 312 four-year institutions who self-identified as having a disability were included in the sample (6,242) for comparisons to be made (see Table 1). Disaggrega-
Table 1

Descriptive Statistics of Study Sample

<table>
<thead>
<tr>
<th>Model Variables</th>
<th>Overall Sample n=6,242</th>
<th>Learning Disability n=1,957</th>
<th>Mental Health Disorder n=1,487</th>
<th>Learning and Mental Health n=480</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SE</td>
<td>M</td>
<td>SE</td>
</tr>
<tr>
<td>Advisor behaviors</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Been available when needed (AD1)</td>
<td>2.92</td>
<td>0.01</td>
<td>2.93</td>
<td>0.02</td>
</tr>
<tr>
<td>Listened closely to your concerns and questions (AD2)</td>
<td>2.97</td>
<td>0.01</td>
<td>3.01</td>
<td>0.02</td>
</tr>
<tr>
<td>Informed you of important deadlines (AD3)</td>
<td>2.75</td>
<td>0.01</td>
<td>2.77</td>
<td>0.02</td>
</tr>
<tr>
<td>Helped you understand academic rules and policies (AD4)</td>
<td>2.71</td>
<td>0.01</td>
<td>2.76</td>
<td>0.02</td>
</tr>
<tr>
<td>Informed you of academic support options (tutoring, study groups, help with writing, etc.) (AD5)</td>
<td>2.70</td>
<td>0.01</td>
<td>2.78</td>
<td>0.02</td>
</tr>
<tr>
<td>Provided useful information about courses (AD6)</td>
<td>2.81</td>
<td>0.01</td>
<td>2.83</td>
<td>0.02</td>
</tr>
<tr>
<td>Helped you when you had academic difficulties (AD7)</td>
<td>2.60</td>
<td>0.02</td>
<td>2.69</td>
<td>0.03</td>
</tr>
<tr>
<td>Helped you get information on special opportunities (study abroad, internships, research projects, etc.) (AD8)</td>
<td>2.42</td>
<td>0.02</td>
<td>2.51</td>
<td>0.03</td>
</tr>
<tr>
<td>Discussed your career interests and post-graduation plans (AD9)</td>
<td>2.45</td>
<td>0.02</td>
<td>2.51</td>
<td>0.03</td>
</tr>
<tr>
<td>GPA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grades</td>
<td>5.74</td>
<td>0.02</td>
<td>5.51</td>
<td>0.04</td>
</tr>
<tr>
<td>Student-Faculty Interaction (SF)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Talked about career plans with a faculty member (SF1)</td>
<td>2.24</td>
<td>0.01</td>
<td>2.28</td>
<td>0.02</td>
</tr>
<tr>
<td>Worked with a faculty member on activities other than coursework (committees, student groups, etc.) (SF2)</td>
<td>1.76</td>
<td>0.01</td>
<td>1.81</td>
<td>0.02</td>
</tr>
<tr>
<td>Discussed course topics, ideas, or concepts with a faculty member outside of class (SF3)</td>
<td>2.08</td>
<td>0.01</td>
<td>2.13</td>
<td>0.02</td>
</tr>
<tr>
<td>Discussed your academic performance with a faculty member (SF4)</td>
<td>2.23</td>
<td>0.01</td>
<td>2.33</td>
<td>0.02</td>
</tr>
<tr>
<td>Quality of Interactions (QI)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quality of interactions with students (QI1)</td>
<td>5.38</td>
<td>0.02</td>
<td>5.55</td>
<td>0.03</td>
</tr>
<tr>
<td>Quality of interactions with faculty (QI2)</td>
<td>5.35</td>
<td>0.02</td>
<td>5.42</td>
<td>0.03</td>
</tr>
<tr>
<td>Quality of interactions with student services staff (QI3)</td>
<td>5.03</td>
<td>0.02</td>
<td>5.07</td>
<td>0.04</td>
</tr>
<tr>
<td></td>
<td>Overall Sample</td>
<td>Learning Disability</td>
<td>Mental Health Disorder</td>
<td>Learning and Mental Health Disorder</td>
</tr>
<tr>
<td>---------------------</td>
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</tr>
<tr>
<td></td>
<td>( n ) = 6,242</td>
<td>( n ) = 1,957</td>
<td>( n ) = 1,487</td>
<td>( n ) = 480</td>
</tr>
</tbody>
</table>

| Quality of interactions with other administrative staff and offices (QI4) | 2.84 | 2.83 | 2.84 | 2.84 | 2.84 | 2.84 |
| Supportive Environment (SE) | 4.93 | 4.81 | 4.93 | 4.81 | 4.81 | 4.81 |
| Providing support to help students succeed academically (SE1) | 3.05 | 3.03 | 3.05 | 3.03 | 3.05 | 3.03 |
| Providing opportunities to be involved socially (SE3) | 2.95 | 2.92 | 2.95 | 2.92 | 2.95 | 2.92 |
| Providing support to help students succeed socially (SE2) | 3.13 | 3.10 | 3.13 | 3.10 | 3.13 | 3.10 |
| Providing support for your overall well-being (recreation, health care, counseling, etc.) (SE4) | 2.94 | 2.92 | 2.94 | 2.92 | 2.94 | 2.92 |
| Attending campus activities and events (performance arts, athletic events, etc.) (SE5) | 2.79 | 2.76 | 2.79 | 2.76 | 2.79 | 2.76 |

(Table 1 Continued)
tion by disability type was conducted to achieve this comparison; the sample includes 1,957 students with a learning disability (31.35%), 1,487 students with a mental health disorder (23.82%), and 480 students with both a learning disability and a mental health disorder (7.69%). The rest of the sample includes students with a sensory impairment, students with a mobility impairment, students with a disability or impairment not listed, and any students who selected two or more disability types, not including those who selected learning and mental health as co-occurring disabilities. Overall, the sample included mostly students who identified as a woman (n = 3,925), white (n = 4,182), non-first-generation (n = 3,923), and full-time (n = 5,881). Almost 60% of the sample attended public institutions and around 37% were enrolled at Doctoral Universities with the same proportion enrolled at Master's Colleges and Universities. The authors would like to express appreciation for those students who disclosed disabilities on the NSSE survey for the contribution they made to this and other postsecondary disability research.

Measures
To create the sample for this study, disability status was determined using the NSSE item “Have you been diagnosed with a disability or impairment?” to which students could respond Yes, No, or I prefer not to respond (item description appendix available upon request). Only students who responded Yes were selected for the current study; those who responded No or I prefer not to respond were excluded from the analysis. To further disaggregate by disability type, a second disability item was used. The item asks students to select all disability or impairment types with which they are diagnosed and includes the following options: a sensory impairment (vision or hearing), a mobility impairment, a learning disability (e.g., ADHD, dyslexia), a mental health disorder, and a disability or impairment not listed above. It is important to note that this question is only available to students who respond Yes to the first disability item; those who respond No or I prefer not to respond are not provided this question. For the current study, three distinct disability measures were created from the largest subgroups: students who selected only a learning disability, students who selected only a mental health disorder, and students who selected a learning disability and a mental health disorder only (Learning and Mental Health). Last, it is uncommon to include ADHD with learning disabilities, however we were restricted to the formatting of this disability question as secondary data.

The Academic Advising Topical Module portion of the NSSE is an opt-in measure of students’ experiences with academic advising selected to accompany the survey administration by the participating institution (NSSE, 2019b). Participants are asked questions regarding the quality of advisor interactions. For the purposes of this study, only the second question, which measures the quality of nine advisor behaviors respondents are asked, “During the current school year, to what extent have your academic advisors done the following?” and presented with nine items. Each item was measured using a 4-point Likert scale, with the option of answering Very often = 4, Quite often = 3, Sometimes = 2, or Never = 1.

For the outcomes, to measure the academic performance (Grades), participants are asked “What have most of your grades been up to now at this institution?” This item was measured using an 8-point Likert scale, with C- or lower = 1 to A = 8. Scholars have warned that the use of self-reported grades should be done with caution (Kuncel et al., 2005); however, researchers investigating the validity of self-reported academic scores using NSSE data have found students’ responses to be highly accurate (Cole & Gonyea, 2010). Three NSSE Engagement Indicators were used to measure engagement outcomes with slight alterations, compared to the recommended factors from the NSSE, to more succinctly align with the purposes of the current study. These indicators include: Student-Faculty Interaction (SF), Quality of Interactions (QI), and Supportive Environment (SE). To measure SF, students were asked, “During the current school year, how often have you done the following?” responding to four items: Talked about your major, minor, or career plans with a faculty member (SF1), Worked with a faculty member on activities other than coursework (committees, student groups, etc.) (SF2), Discussed course topics, ideas, or concepts with a faculty member outside of class (SF3), and Discussed your academic performance with a faculty member (SF4). Each item was measured using a 4-point Likert scale, with options of answering Very often = 4, Often = 3, Sometimes = 2, or Never = 1.
For QI, students were asked to “Indicate the quality of your interactions with the following people at your institution” such as Students (QI1), Faculty (QI2), Student services staff (career services, student activities, housing, etc.) (QI3), and Other administrative staff and offices (Registrar, financial aid, etc.) (QI4). Each item was measured using a 7-point Likert scale with the option of answering Excellent = 7 to Poor = 1. To mitigate collinearity, the traditional NSSE scale item measuring quality of interactions with academic advisors was not included. Similarly, using the previously cited scholarship on the experiences of students with disabilities, only five of the eight total items were used from the SE indicator to align with the purposes of the current study. For this outcome, respondents were asked, “How much does your institution emphasize the following?” for institutional characteristics such as Providing support to help students succeed academically (SE1), Using learning support services (tutoring services, writing center, etc.) (SE2), Providing opportunities to be involved socially (SE3), Providing support for your overall well-being (recreation, health care, counseling, etc.) (SE4), and Attending campus activities and events (performing arts, athletic events, etc.) (SE 5). Each item was measured using a 4-point Likert scale with the option of answering from Very much = 4 to Very little = 1.

Analysis

For the current study, we employed correlation analysis, exploratory factor analysis, and structural equation modeling. The purpose of the correlation analysis was to evaluate possible issues of multicollinearity between the model variables, whereas exploratory factor analysis authenticated the clustering of advising measures into factors (factor table featured in appendix available upon request). The structural equation modeling allows us to answer our research questions by examining the relationships between these advising factors and study outcomes, while measuring the mediation path for students with distinct disabilities. A critical quantitative framework guided the selection of these three analyses, which enabled an investigation that avoided typical assumptions that all students with disabilities have similar lived experiences on campus. Furthermore, this analysis allows us to realize the goal of an anti-deficit framework, by mapping the pathways to success for these students (Harper, 2010).

To identify possible issues of multicollinearity between the mediator variables and dependent outcomes, the Pearson correlation coefficient was calculated for each of these variables to be included in the final model (correlation table featured in appendix available upon request). Although many of these correlations were significant ($p < 0.05$), the strength of relationships between the mediating and outcome variables was quite small ($r < 0.31$) and posed no multicollinearity concern (Lomax & Hahs-Vaughn, 2012). This analysis was important to ensure the effects of the mediating variables were distinct from the outcomes; for example, it may be the case that a student’s academic advisor is faculty, so establishing that the measures related to SF were not strongly correlated with advising behaviors was crucial. Not surprising, the largest correlations existed been survey items within the same Engagement Indicator; for example, QI3 with QI4 ($r = 0.67$) and SE3 with SE4 ($r = 0.61$). However, these moderate correlations were acceptable since these items would ultimately be placed into the same latent variables.

Exploratory factor analysis was used to identify which items could be averaged together to create the latent variables of advising. Since the inter-factor correlations were substantial, the results of the oblique (promax) rotation were used to create models comparing the loading of two, three, four, and five factors. Only items with a factor loading value greater than or equal to 0.40 on a given factor were considered for consolidation. This process of simple loading achieved four factors, all with acceptable reliability measures (Cronbach’s alpha greater than 0.80).

To compare mediation for students with learning disabilities and mental health disorders, a Multiple Indicators Multiple Causes (MIMIC) model was employed with general latent variables in the structural equation model. First, the thirteen engagement measures were constructed into three latent variables. Second, four endogenous latent variables were built from the nine academic advising behavior items. Third, the four outcomes (grades, Student-Faculty Interaction, Quality of Interactions, and Supportive Environment) were regressed on the four academic advising factors. Finally, in three separate models, an indirect mediation relationship was added to measure if these advising factors could serve as significant ($p < 0.05$) mediators for three distinct types of disabilities (learning disability, mental health disorder, and both a learning disability and mental health disorder) and the outcomes of the study. This modeling was performed used Mplus Version 8 and the Maximum Likelihood estimates to identify which errors could be correlated to improve model fit which, ultimately, met good fit standards proposed by Hu and Bentler (1999): $p < 0.05$, RMSEA < 0.05, and CFI & TLI > 0.95.
Results

The standardized parameter estimates between academic advising latent variables and the outcomes were measured to answer the first research question, “How does academic advising behavior relate to grades and engagement among first-year students with disabilities?” (see Table 2). Meanwhile, the standardized direct and indirect effects for the outcomes for each disability type were calculated to answer the second research question, “For students with learning disabilities, students with mental health disabilities, and students with both a learning disability and mental health disability, how do aspects of academic advising significantly mediate these outcomes?” (see Table 3). Reported below are the results for both research questions by study outcome.

Grades

For the overall sample of students with disabilities, the relationship between the academic advising behaviors both (1) Availability and Listening and (2) Obtaining and Discussing were moderately, positively related to the outcome of grades, whereas the behavior of Supporting, Providing, and Helping was strongly, inversely related to this outcome ($R^2 = -0.41$). It is unlikely that this academic advising behavior is causing poor grades, but rather it may be that the students seeking out these behaviors from advisors already exhibit lower grades. It could also be the case that the advising was poor quality or the advisor provided general support, but that was not sufficient for the needs of a student with a disability, from these data the nature of the relationship is undetermined. Students with learning disabilities held moderate, inverse direct relationships with this outcome ($R^2 = -0.18$); Indicating that students with learning disabilities reported lower grades. Meanwhile, the behavior Supporting, Providing, and Helping served as a negative mediator, and Obtaining and Discussing for these students indicated that students with learning disabilities receiving increases in this behavior also held higher grades compared with other students with disabilities.

For students with a disability related to mental health, there was a positive, albeit small, direct relationship with grades ($R^2 = 0.11$) compared with the reference group of students with other disabilities. For students with both learning and mental health disabilities, similar to those with a learning disability alone, there is a significant direct relationship with the outcome of grades ($R^2 = -0.18$); however, Supporting, Providing, and Helping served as a positive mediator, while (1) Availability and Listening and (2) Obtaining and Discussing served as negative ones.

Student-Faculty Interaction

For the overall sample of students with disabilities, there was a small, inverse relationship between the academic advising behavior Availability and Listening and Student-Faculty Interaction (SF) ($R^2 = -0.08$). Meanwhile, the academic advising behavior Obtaining and Discussing was strongly, positively related to this outcome ($R^2 = 0.60$). For students with a learning disability, there was a small, positive direct relationship with SF and a small, positive indirect relationship between this outcome and the academic advising behavior Obtaining and Discussing ($R^2 = 0.06$), indicating that students with learning disabilities were more likely to interact with faculty compared to students with other disabilities; meanwhile, receiving invitations to educational opportunities or career advice from advisors increased these interactions.

For students with disabilities related to mental health, there was a small, inverse direct relationship with the SF outcome ($R^2 = -0.12$; i.e., these students were less likely to interact with faculty); however, none of the academic advising behaviors served as significant mediators. For students with both a learning disability and mental health disability, there was not a significant direct relationship to SF. For these students, the academic advising behavior Obtaining and Discussing served as a small, inverse mediator for this outcome, indicating a complete mediation ($R^2 = -0.09$). In other words, students with both disabilities were less likely to interact with faculty when advisors invited them to educational activities or discussed career plans.

Quality of Interactions

For the overall population of students with disabilities, (1) Availability and Listening and (2) Supporting, Providing, and Helping had positive relationships with these students’ Quality of Interactions (QI), although these effect sizes were small ($R^2 = 0.10$) and large ($R^2 = 0.38$), respectively. After disaggregating by type of disability, it was found that only students with mental health disorders held a direct relationship with this outcome and that these students were more likely to have lower QI ($R^2 = -0.07$) than their peers with other types of disabilities. Supporting, Providing, and Helping, had a small, positive, indirect effect ($R^2 = 0.04$) for students with learning disabilities, constituting a complete mediation. Indicating that students with learning disabilities who received help, information, and support from academic advisors reported higher quality of interactions with educators compared with other students with disabilities.

For students with mental health disorders, none of the four advising behavior factors succeeded in
Table 2

**Standardized Parameter Estimates Between Academic Advising Factors and Outcomes**

<table>
<thead>
<tr>
<th>Academic Advising Behavior</th>
<th>Grades</th>
<th>Student-Faculty Interaction (SF)</th>
<th>Quality of Interactions (QI)</th>
<th>Supportive Environment (SE)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$R^2$</td>
<td>$p$</td>
<td>$R^2$</td>
<td>$p$</td>
</tr>
<tr>
<td>Availability and listening</td>
<td>0.19</td>
<td>0.00</td>
<td>-0.08</td>
<td>0.07</td>
</tr>
<tr>
<td>Informing and understanding</td>
<td>0.04</td>
<td>0.59</td>
<td>0.01</td>
<td>0.93</td>
</tr>
<tr>
<td>Supporting, providing, and helping</td>
<td>-0.41</td>
<td>0.01</td>
<td>-0.13</td>
<td>0.36</td>
</tr>
<tr>
<td>Obtaining and discussing</td>
<td>0.28</td>
<td>0.00</td>
<td>0.60</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Table 3

**Standardized Indirect Effects via Academic Advising Factors and Direct Effects for Outcomes by Disability**

<table>
<thead>
<tr>
<th></th>
<th>Grades</th>
<th>Student-Faculty Interaction (SF)</th>
<th>Quality of Interactions (QI)</th>
<th>Supportive Environment (SE)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$R^2$</td>
<td>$p$</td>
<td>$R^2$</td>
<td>$p$</td>
</tr>
<tr>
<td>Learning disability</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specific indirect</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Availability and listening</td>
<td>0.01</td>
<td>0.15</td>
<td>0.00</td>
<td>0.26</td>
</tr>
<tr>
<td>Informing and understanding</td>
<td>0.00</td>
<td>0.68</td>
<td>0.00</td>
<td>0.94</td>
</tr>
<tr>
<td>Supporting, providing, and helping</td>
<td>-0.04</td>
<td>0.06</td>
<td>-0.01</td>
<td>0.43</td>
</tr>
<tr>
<td>Obtaining and discussing</td>
<td>0.03</td>
<td>0.03</td>
<td>0.06</td>
<td>0.00</td>
</tr>
<tr>
<td>Direct</td>
<td>-0.18</td>
<td>0.00</td>
<td>0.09</td>
<td>0.00</td>
</tr>
<tr>
<td>Mental health disorder</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specific indirect</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Availability and listening</td>
<td>0.00</td>
<td>0.72</td>
<td>0.00</td>
<td>0.75</td>
</tr>
<tr>
<td>Informing and understanding</td>
<td>0.00</td>
<td>0.65</td>
<td>0.00</td>
<td>0.95</td>
</tr>
<tr>
<td>Supporting, providing, and helping</td>
<td>0.04</td>
<td>0.09</td>
<td>0.01</td>
<td>0.43</td>
</tr>
<tr>
<td>Obtaining and discussing</td>
<td>-0.02</td>
<td>0.12</td>
<td>-0.04</td>
<td>0.08</td>
</tr>
<tr>
<td>Direct</td>
<td>0.11</td>
<td>0.00</td>
<td>-0.12</td>
<td>0.00</td>
</tr>
<tr>
<td>Learning and mental health</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specific indirect</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Availability and listening</td>
<td>-0.04</td>
<td>0.01</td>
<td>0.02</td>
<td>0.09</td>
</tr>
<tr>
<td>Informing and understanding</td>
<td>-0.01</td>
<td>0.58</td>
<td>0.00</td>
<td>0.98</td>
</tr>
<tr>
<td>Supporting, providing, and helping</td>
<td>0.06</td>
<td>0.07</td>
<td>0.02</td>
<td>0.45</td>
</tr>
</tbody>
</table>
(Table 3 Continued)

<table>
<thead>
<tr>
<th>Grades</th>
<th>Student-Faculty Interaction (SF)</th>
<th>Quality of Interactions (QI)</th>
<th>Supportive Environment (SE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obtaining and discussing</td>
<td>-0.04 0.05</td>
<td>-0.09 0.02</td>
<td>0.01 0.47</td>
</tr>
<tr>
<td>Direct</td>
<td>-0.18 0.00</td>
<td>0.07 0.20</td>
<td>0.01 0.84</td>
</tr>
</tbody>
</table>

Table 4

Summary of Significant Direct Effects and Indirect Academic Advising Effects by Outcome, Disability Type

<table>
<thead>
<tr>
<th>Grades</th>
<th>Direct Effect</th>
<th>Availability and Listening</th>
<th>Supportive, providing, and helping</th>
<th>Obtaining and Discussing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning disability</td>
<td>-</td>
<td>-</td>
<td></td>
<td>+</td>
</tr>
<tr>
<td>Mental health disorder</td>
<td>+</td>
<td></td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Learning and mental health</td>
<td>-</td>
<td>-</td>
<td></td>
<td>-</td>
</tr>
</tbody>
</table>

*Student-Faculty Interaction (SF)*

| Learning disability        | +             |                            |                                   |                          |
| Mental health disorder     | -             |                            |                                   |                          |
| Learning and mental health | -             |                            |                                   |                          |

*Quality of Interactions (QI)*

| Learning disability        | +             |                            |                                   |                          |
| Mental health disorder     | -             |                            |                                   |                          |
| Learning and mental health | -             |                            |                                   |                          |

*Supportive Environment (SE)*

| Learning disability        | -             |                            | +                                 |
| Mental health disorder     | +             |                            | -                                 |
| Learning and mental health | -             |                            |                                   |

Note. *p*<0.05. Note. Magnitude corresponds with number of signs, "--" indicates a moderate negative relationship.
significantly mediating engagement. For the students with both learning disabilities and mental health disorders, only Supporting, Providing, and Helping had a small, negative, indirect effect ($R^2 = -0.06$) on QI—another complete mediation. Again, students with both disabilities reported that increases in these academic advising behaviors were related to lower engagement outcomes.

**Supportive Environment**

For the overall sample of students with disabilities, the academic advising behavior of Supporting, Providing, and Helping held a large, positive relationship with the engagement outcome of Supportive Environment (SE) ($R^2 = 0.47$). For students with both a learning disability and a disability related to mental health, the only significant relationship for SE was the negative mediating relationship of Supporting, Providing, and Helping, indicating a complete mediation for this group ($R^2 = -0.07$). Students in both of these groups seeking help, information, and support from advisors reported lower levels of support in the overall campus environment.

**Limitations**

Some limitations related to the data source and conceptualization of the results should be taken into account when considering the results of the current study. The population of students included in the analysis as “students with disabilities” was comprised of those individuals that disclosed a disability on the NSSE. It cannot be assumed that these students also disclosed their disabilities to their institutions or their academic advisors (Cole & Cawthon, 2015). This means that there was a possibility that some students in the sample had academic advisors that directed services toward them in the way they would for students without disabilities. Additionally, it is possible that some students that disclosed to their campus DSS office did not disclose on the NSSE and were therefore inadvertently excluded from the sample. The fact that the specific disabilities under study are “invisible” makes disclosure a more central complication.

The NSSE question regarding disability, “Have you been diagnosed with any disability or impairment?” is grounded in a medical model framework which, historically, by treating disability as a problem requiring a solution, “has negatively impacted the perception of individuals with disabilities” (Aquino, 2016, p. 318). The structure of this survey item may be a barrier to achieve accurate reporting; for example, students with mental health disorders often do not consider themselves as part of the disability community and this broad term can vary widely from Schizophrenia to anxiety (Rehfuss & Quillin, 2005). Although the question was written guided by the medical model framework, we attempted to minimize this stigma through anti-deficit framing. Finally, the data source from the current study contains only institutions that opted in to include the Academic Advising Topical Module. This choice on behalf of survey administrators may indicate that institutions under study have a more vested interest in their academic advising than their peers that did not opt-in. It may be the case that this self-selection on behalf of institutions could influence the degree to which the trends in the current study can be generalized to all four-year institutions. Future research comparing the outcomes between opted-in and opt-out responses may provide interesting distinctions between these groups, but was beyond the scope of the current study. Lastly, this module does not allow us to determine the source of academic advising behaviors (faculty advisor, full-time academic advising staff, or other mentors), which can limit the applicability of these results. This secondary data analysis only allowed us to understand frequency of academic advising behaviors, not the quality, intensity, or effectiveness of these interventions.

**Discussion**

The results of the current study indicated that, for students with disabilities, there were consistent significant relationships between academic advising behaviors and the outcomes of grades and the three measures of engagement: Student-Faculty Interaction (SF), Quality of Interactions (QI), and Supportive Environment (SE) (see Table 4 and Figure 1). The sole exception was the Informing and Understanding advising behavior factor, which was not significantly related to these outcomes, nor did it serve as a significant mediator for any of the three disability groups: learning, mental health, or both learning and mental health. Broadly, for students with disabilities, the other advising behaviors were significantly related to grades and engagement.

The specific academic advisor behavior Supporting, Providing, and Helping related significantly with grades, QI, and SE; it is the only factor that related with SE. The measures for the Supporting, Providing, and Helping factor included: “Informed you of academic support options (tutoring, study groups, help with writing, etc.) [AD5],” “Provided useful information about courses [AD6],” and “Helped you when you had academic difficulties [AD7].” This finding from the current study complements prior scholarship. Abelman and Molina (2002) revealed that in-
trusive academic advising was positively associated with GPA for students with disabilities. Considering this research, Supporting, Providing, and Helping is a more effective advising behavior than Informing and Understanding for this population. Showers and Kinsman (2017) explain that help-seeking behaviors for students with disabilities, which in turn lead to higher levels of support, predict better outcomes for those students.

The value of disaggregation within the population of students with disabilities is evident in this study; this aided in avoiding the trend of treating this population as a monolithic group or focusing solely on students with learning disabilities (Peña, 2014). Disaggregation has illuminated discriminant mediation patterns even among groups with co-occurring disabilities; in other words, students with different types of disabilities may vary in the ways that advising behaviors are related to positive outcomes. For example, Supporting, Providing, and Helping was a significant mediator for all outcomes except SF for students with learning disabilities while only mediating SE for students with mental health disabilities. In the case of these two groups, even strong academic advising experiences may not be enough to mitigate limitations in faculty knowledge (Cawthon & Cole, 2010), understanding (Aune, 2000), or support for students with disabilities (Sniatecki et al., 2015). There were direct relationships between all outcomes and mental health disabilities, yet there was only a direct relationship between grades and disability type for students with both learning and mental health disabilities.
disabilities. Plainly, students with different types of disabilities experienced advising behaviors distinctively. For instance, Supporting, Providing, and Helping was overall less helpful for students with mental health disabilities than it was for students with learning disabilities. These results can be used to challenge assumptions about the homogeneity of students with disabilities (Vaccaro et al., 2015), providing specific behaviors for academic advisors to use, acting as institutional agents in improving outcomes for students with distinct disabilities (Button et al., 2019).

Implications for Practice

For each of the disability groups, academic advising behaviors related to Supporting, Providing, and Helping consistently serve as a significant mediator for the outcome of grades. This finding is not surprising, as one of the largest barriers to success for students with disabilities is lacking awareness of available academic supports on their campuses (Mamiseishvili & Koch, 2011). With students facing societal and familial pressure to pursue certain academic and professional paths, academic advisors should measure and contribute to students’ success, connecting students to the courses and academic supports that allow them to enhance their strengths and improve upon their weaknesses (Vaccaro et al., 2018). Beyond in-person meetings, students with disabilities are increasingly accessing online courses and support services. Therefore, virtual support and assistive technologies may be an avenue for advisors to enhance Supporting, Providing, and Helping behaviors (DeLee, 2015).

Conversely, there was not a significant relationship between Informing and Understanding with outcomes for students with disabilities. Within this factor are the items “Informed you of important deadlines” and “Helped you understand academic rules and policies.” If students with disabilities are having difficulties grasping concepts in their courses and lack the proper academic supports to complete their coursework, then knowing important deadlines and institutional policies may be irrelevant to their outcomes (Stein, 2013). Therefore, for institutions supporting this group, academic advisor behaviors on Informing and Understanding practices should not be emphasized as these behaviors do not provide significant support to students with disabilities.

Acting on our finding that students with distinct disabilities experience differential effects of academic advising, institutions can create curated advising interventions, and be mindful of the ways in which students with invisible disabilities may differ from their peers. Relatedly, institutions must invest more in faculty preparation to work with students with disabilities, so they may take on a broader role in their engagement with these students. Intentionally designed training programs that include modules on student development and peer support are an effective pathway for advisor skill development (Ryser & Alden, 2005). New advisors have also reported that opportunities to shadow successful colleagues has strengthened their understanding of ways to support students with diverse needs (Mann, 2018). Additionally, advisors working with students with disabilities can improve their outcomes by developing collaborative relationships across campus; partnerships with disability services offices, faculty, counseling, financial aid, and other departments enable a more holistic advising experience and smoother delivery of services (Hemphill, 2002). These interventions can be especially impactful for students with invisible learning and mental disabilities, who may face challenges gaining acceptance and combating stigma on campus (Aune, 2000; Kain et al., 2019; Rehfuss & Quillin, 2005; Vaccaro et al., 2018).

Future Research

The results of the current study contribute to existing literature on students with disabilities and academic advising. Further research on this topic would be useful to better understand the inverse relationships between advising behaviors and engagement outcomes for some disability groups. It may be that the engagement of these students is negatively affected by other factors and they therefore are more likely to seek out avenues of support. Qualitative analysis informed by the current study could be used to gain a more in depth understanding of this relationship. Another way to expand on this study would be to examine the effects of institutional context on the results; there may be differences based on institution size, type, and commitment to advising or disability; degree of training for advisors; and levels of collaboration between advising offices and DSS. For this secondary data analysis, most of this grouping information has not been collected and therefore could not be explored. Furthermore, the data used in this study do not indicate if any advisors are faculty members. Although the covariance matrix did not yield any concerning correlations between the advising items and SF, this is still worth exploring.

The current study provides a better understanding of how different academic advising behaviors can distinctly contribute to success for students with disabilities. By giving sole focus to this population rather than comparing this group to other students, the anti-deficit narrative of the current study contributes to existing literature. Furthermore, in the disaggrega-
tion of students with disabilities in the current study, we conducted within-group comparisons, giving attention not only to students with learning disabilities, but also students with mental health disabilities and students with both learning and mental health disabilities. As a result, this study provides evidence that academic advising behaviors have discriminant effects on outcomes for students based on disability type. Therefore, it is imperative that academic advisors understand the influence that advising has on the outcomes for students with disabilities; more importantly, given the distinctive experiences of students from different disability groups, advisors should be discerning when choosing their strategies for supporting these students.

References


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Appendix A

NSSE Core Survey: Disability Question Used in Analysis

Have you been diagnosed with any disability or impairment?
   (No, Yes, I prefer not to respond)
Which of the following have been diagnosed?
   (Selected = 1, Not selected = 0)
   A sensory impairment (vision or hearing)
   A mobility impairment
   A learning disability (e.g., ADHD, dyslexia)
   A mental health disorder
   A disability or impairment not listed above

NSSE Core Survey: Outcome Items Used in Analysis

Grades
What have most of your grades been up to now at this institution?
   (A = 8, A- = 7, B+ = 6, B = 5, B- = 4, C+ = 3, C = 2, C- or lower = 1)

Student-Faculty Interaction (SF) (Ep^2 = 0.809)
During the current school year, how often have you done the following?
   (Very often = 4, Often = 3, Sometimes = 2, Never = 1)
   Talked about career plans with a faculty member [SF1]
   Worked with a faculty member on activities other than coursework (committees, student groups, etc.) [SF2]
   Discussed course topics, ideas, or concepts with a faculty member outside of class [SF3]
   Discussed your academic performance with a faculty member [SF4]

Quality of Interactions (QI) (Ep^2 = 0.820)
Indicate the quality of your interactions with the following people at your institution.
   (Excellent = 7, 6 = 6, 5 = 5, 4 = 4, 3 = 3, 2 = 2, Poor = 1, Not applicable = 9)
   Students [QI1]
   Faculty [QI2]
   Student services staff (career services, student activities, housing, etc.) [QI3]
   Other administrative staff and offices (registrar, financial aid, etc.) [QI4]

Supportive Environment Outcome (SE) (Ep^2 = 0.838)
How much does your institution emphasize the following?
   (4 = Very much, 3 = Quite a bit, 2 = Some, 1 = Very little)
   Providing support to help students succeed academically [SE1]
   Using learning support services (tutoring services, writing services, etc.) [SE2]
   Providing opportunities to be involved socially [SE3]
   Providing support for your overall well-being (recreation, health care, counseling, etc.) [SE4]
   Attending campus activities and events (performing arts, athletic events, etc.) [SE5]
Appendix B

Academic Advising Behaviors Survey Items and Factors

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

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

**Availability and Listening** ($\text{EP}^2 = 0.862$)
- Been available when needed [AD1]
- Listened closely to your concerns and questions [AD2]

**Informing and Understanding** ($\text{EP}^2 = 0.872$)
- Informed you of important deadlines [AD3]
- Helped you understand academic rules and policies [AD4]

**Supporting, Providing, and Helping** ($\text{EP}^2 = 0.890$)
- Informed you of academic support options (tutoring, study groups, help with writing, etc.) [AD5]
- Provided useful information about courses [AD6]
- Helped you when you had academic difficulties [AD7]

**Obtaining and Discussing** ($\text{EP}^2 = 0.828$)
- Helped you get information on special opportunities (study abroad, internships, research projects, etc.) [AD8]
- Discussed your career interests and post-graduation plans [AD9]