Perceived Parental Involvement for College Students with Invisible Disabilities

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Abstract

Prior research documents the extensive supports provided by parents of postsecondary students with invisible disabilities, but has not yet evaluated whether levels of support differ based on disability status. Using regression models applied to data from an online survey of college students in Indiana, we compared student reports of parental involvement (support-giving, academic engagement, and autonomy support) across groups defined by the presence or absence of autism, attention deficit hyperactivity disorder (ADHD) or specific learning disabilities, and mental health conditions. Autistic students reported receiving more tangible support from their parents (e.g., assistance with homework) than neurotypical students and expressed higher levels of agreement with the statement that their parents contact faculty to find out how they are doing in school. Students with mental health conditions reported the lowest levels of parental involvement (e.g., lower probability of parental assistance paying for college, lower levels of emotional support). Students with ADHD and/or learning disabilities expressed higher levels of agreement with the statement that their parents track their locations but otherwise did not differ from neurotypical students. Our results encourage disability services professionals to inquire about parental involvement when assessing students' support needs. They also highlight the importance of developing campus programs to address the pronounced emotional support gaps experienced by students with mental health conditions.

Keywords: parental involvement, autism, ADHD, mental health

Over the past two decades, young adults with invisible disabilities have entered college at increasing rates (Shattuck et al., 2012; U.S. Department of Education, 2024; Wehman et al., 2014). We use the term "invisible" (sometimes referred to as "hidden" or "nonapparent") disabilities to refer to learning, cognitive, and psychiatric conditions that are not immediately observable, including conditions such as specific learning disorders, autism, attention deficit hyperactivity disorder (ADHD), and mental health disorders (Lovett et al., 2014). The increase in college enrollment for students with invisible disabilities has prompted scholarly and practical interest in their experiences in college and in the types of formal and informal supports they receive to promote academic and social success (Flegenheimer & Scherf, 2022; Gelbar et al., 2015).

Among these supports are those provided by parents. In general, financial and emotional support from parents are associated with better academic outcomes for college students (e.g., Hamilton, 2013; Roksa & Kinsley, 2019). Parental assistance with students' academic and daily life pursuits have also been implicated in college success, although here the associations are more ambivalent (Lowe & Dotterer, 2018). Despite suggestive evidence from small sample studies (e.g., Anderson & Butt, 2017; Cai & Richdale, 2016; Dymond et al., 2017) and reasonable conjecture that parents of college students with invisible disabilities are more involved than parents of nondisabled students, little is known about whether and how parental involvement varies by students' disability status.

To address this gap, we evaluate differences in perceived parental involvement by students' disability status. We distinguish students who report diagnoses of autism, ADHD or specific learning disorders, and mental health conditions, and compare their perceptions of parental support-giving, academic engagement, and autonomy support to those of students without any of these disabilities (hereafter, neurotypical).

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College for Students with Invisible Disabilities

College students with invisible disabilities perform less well academically and are less likely to graduate than students without invisible disabilities (Gotham et al., 2015; Myers et al., 2024; Shattuck et al., 2012; Wehman et al., 2014). The academic challenges that students with invisible disabilities experience are a function, in part, of poor academic preparation for the demands of college life. Students with invisible disabilities report high average levels of disengagement in high school and tend to be placed into less rigorous academic tracks (DuPaul et al., 2017; Myers et al., 2024; Shifrer, 2013). Students with invisible disabilities also struggle with management of daily tasks and organizational skills (Elias & White, 2018; Stevens et al., 2022). Although students who have Individualized Education Programs (IEPs) for special education services during the K-12 years are legally entitled to transition services, many parents and students report that they do not receive these services or that the services are of limited value (Alverson et al., 2019; Hetherington et al., 2010). When students enter college, they face additional challenges to academic success, including barriers to obtaining academic accommodations, the generic nature of available accommodations, and impaired social relations (Cai & Richdale, 2016; Dallas et al., 2015; Myers et al., 2024;).

Postsecondary institutions recognize that students with invisible disabilities need additional supports. Some, but not many, offer programs designed for students with specific invisible disabilities, especially autism and ADHD (Barnhill, 2016; DuPaul et al., 2017). However, students with invisible disabilities report a mismatch of supports, with institutions emphasizing academic supports and students expressing greater need for supports related to social, emotional, and daily living needs (Anderson & Butt, 2017; Gelbar et al., 2015). Programs that provide these supports often charge fees and, as a result, are not available to all students (Barnhill, 2016; Viezel et al., 2020). Moreover, studies find that disabled students continue to rely on parents for tangible and emotional support even when they receive services from their institutions (Anderson & Butt, 2017; Cullen, 2015; Francis et al., 2018; Lowe & Dotterer, 2018; Stevens et al., 2024).

What remains unclear is whether the parental support disabled students receive differs from that of neurotypical students. Research on parental involvement among college students suggests that the answer may not be straightforward.

Parental Involvement During Emerging Adulthood

Emerging adulthood (Arnett, 2007) refers to the stage of life between adolescence and full-fledged adulthood, including the college years. It is characterized by transitions, identity exploration, and sense of possibility. Parental involvement serves as an important resource for youth, whether enrolled in college or not, as they navigate this uncertain life stage (Lowe & Dotterer, 2018; Wood et al., 2018).

Parental involvement is a multidimensional construct that encompasses parental support giving, parent-student contact, and parental academic engagement (Lowe & Dotterer, 2018). In general, parents provide considerable tangible (e.g., financial assistance) and intangible (e.g., advice, emotional support) support to young adults, with the level and type of support adjusted to match their child's needs (Fingerman et al., 2009; Swartz et al., 2011). For example, parents tend to offer children who have experienced serious problems (e.g., serious illness) more tangible support and children who they consider successful more emotional support (Fingerman et al., 2009). Parental support generally declines as children transition into adulthood and children become more independent (Cooney & Uhlenberg, 1992). Consistent with that general pattern, parental academic engagement (e.g., advice on coursework) typically peaks in the first year of college and declines as students become more knowledgeable and capable of independent decision-making (Harper et al., 2012; Wolf et al., 2009). In general, parental involvement is positively associated with student academic and emotional well-being (Hamilton, 2013; Bartoszuk et al., 2021; Roksa & Kinsley, 2019). However, parental overinvolvement, sometimes referred to as "helicopter parenting," is associated with a range of negative academic and personal outcomes (Bradley-Geist & Olson-Buchanan, 2014; Schiffrin et al., 2014; Padilla-Walker & Nelson, 2012). Parents are defined as overinvolved if they help their children with tasks or problems that the children are capable of handling themselves, thereby depriving their children of opportunities to learn and grow (LeMoyne and Buchanan, 2011).

Finding the optimal balance between involvement and support for autonomy can be challenging for all parents (Lowe & Dotterer, 2018) and may be especially difficult for parents of students with invisible disabilities (Miller et al., 2018; Stevens et al., 2024). Many parents of disabled students recognize that their children need help with decisions about which courses to take, campus life, how to manage financial aid, and daily living skills during the college years (Elias & White, 2018; Peña & Kocur, 2013). Par-

ents report providing significant tangible assistance to their children, including waking their children up each morning, providing transportation to class, helping them with homework, and assisting them with staying organized (Anderson & Butt, 2017; Cai & Richdale, 2016; Dymond et al., 2017; Stevens et al., 2024; Widman & Lopez-Reyna, 2020). Students with invisible disabilities report relying on their parents for emotional support, particularly support for coping with stress, depression, and anxiety (Francis et al., 2018; Stevens et al., 2024). At the same time, many parents of students with invisible disabilities recognize the importance of encouraging independence and self-advocacy in their children (Peña & Kocur, 2013) and the limits on their involvement imposed by the Family Educational Rights and Privacy Act (FERPA, 1974).

The Current Study

The current study asks the following question: How does perceived parental support differ between students with invisible disabilities and neurotypical students? In exploring this question, we improve upon prior research in three ways.

First, unlike most prior studies, which focus on a single disability (typically autism or ADHD; e.g., Barnhill, 2016; Stevens et al., 2024), we include multiple disabilities in our analysis: autism, ADHD, learning disabilities, and mental health conditions. Including multiple disabilities allows us to generate better estimates of the associations of specific disabilities with parental support by accounting for the significant comorbidity among disabilities. Over half of college students with ADHD report a comorbid mental health condition, with depression and anxiety being especially common (Anastopoulos et al., 2018; Mak et al., 2022). Rates of ADHD and mental health conditions are similarly high among autistic college students (Anderson et al., 2018; Jackson et al., 2018). Analyses that fail to account for comorbidities may misidentify the disabilities most strongly associated with perceived parental support.

Second, we incorporate explicit comparisons of perceived parental support among students with invisible disabilities to neurotypical students, comparisons that are lacking in most prior studies (e.g., Barnhill, 2016; Stevens et al., 2024). Without these comparisons, we cannot develop firm conclusions about similarities and differences in the experience of parental support based on disability status.

Third, and finally, we measure multiple dimensions of parental support—support-giving (tangible and emotional support), academic engagement (direct assistance with academics), and support for autonomy—yielding a rich description of how college students with different invisible disabilities compare to neurotypical students in their experience of parental support. Most prior studies on this topic developed themes regarding parental involvement based on qualitative data and, as a result, have not been able to compare different types of involvement across student groups systematically.

We offer two competing hypotheses for how perceived parental support differs based on disability status. The first hypothesis draws from two lines of research: one on general parental support, which shows that parents tailor support to their children's needs (Fingerman et al., 2009), providing more tangible support and less emotional support to children they perceive as having more problems. The second line of research documents that parents of students with invisible disabilities are actively engaged in supporting their children's academic progress and struggle with encouraging independence (see also, Cai & Richdale, 2016; Stevens et al., 2024; Widman and Lopez-Reyna, 2020). Together, these lines of research suggest that parents of students with invisible disabilities will provide more tangible support and less emotional support to their college-enrolled children than parents of neurotypical students, that they will be more engaged in their academic lives, and that they will provide less support for autonomy. The second hypothesis follows from general evidence for increases in "helicopter parenting"—inappropriately high levels of parental involvement—among parents of college students (Schiffrin et al., 2014). If parents are becoming more involved in their college students' lives more generally, parental support-giving, academic engagement, and support for autonomy may not differ based on disability status. This counterhypothesis highlights the importance of incorporating comparisons between students with, and without, invisible disabilities in the analysis (Flegenheimer & Scherf, 2022).

In sum, the current study advances research on parental support and involvement for college students with invisible disabilities by incorporating multiple invisible disabilities (autism, ADHD or specific learning disorders, mental health conditions), addressing comorbidities, including comparisons to neurotypical students, and incorporating multiple indicators of parental involvement. Our results provide information of value to disability services professionals about the supports parents provide to students with invisible disabilities and gaps in that support.

Methods

Participants

Participants were 3,000 students enrolled at ten colleges and universities in the state of Indiana (in the United States) who were recruited for a study of the experiences of autistic college students as compared to their neurotypical peers in spring 2021. As shown in Table 1 and discussed further below, the sampling procedure yielded a sufficient number of students with ADHD, learning disorders, and mental health conditions to allow for comparisons across multiple invisible disabilities.

To recruit participants to the study, we began by identifying institutions in the state of Indiana that were (a) public or private not-for-profit, (b) associate's, baccalaureate, master's, or doctoral universities, and (c) had enrollments of 3,000 or more students (to ensure sufficient sample sizes at each institution). Based on these criteria, 16 institutions were eligible for the study. We contacted relevant administrators as well as the directors of disability services offices at each campus to invite them to join the study; 13 agreed to participate, including three campuses of Indiana's community college network. By spring 2021, three of the institutions decided that they could no longer participate due to post-COVID 19 administrative challenges, leaving us with seven 4-year universities and three 2-year colleges.

Next, at each participating institution, we invited two samples of students: (a) all students who were registered for disability accommodations based on autism and (b) a 20% probability sample of general population students. Autistic students who were registered with disability services—according to records maintained by each institution's disability services office—were sampled with certainty to ensure adequate cell sizes. The sample of general population students included autistic students who were not registered with disability services, neurotypical students, and, as described below, students who reported other invisible disabilities in the survey. The sample was restricted to undergraduate students between the ages of 18-24 who were enrolled at the institution as of January 2021. No restrictions were put in place regarding year of study (which did not vary significantly by disability status), but high school and dual credit students were excluded from the sample. At nine of the ten institutions, the campus disability services office distributed survey invitations to registered students on our behalf and the Indiana Center for Survey Research distributed survey invitations to students in the general sample. One institution distributed the survey to both sets of students due to data privacy concerns.

Survey invitations were distributed by email. The initial survey invitation included study information and a survey link (personalized, for students in the general sample; anonymous, for students in registered samples). Students received up to four messages, consisting of the initial survey invitation and up to three reminders. The survey was administered between February and April 2021, with the timing of survey invitations and reminders varying slightly across institutions to accommodate differing term dates and spring break schedules. The overall response rate for the general sample was 15.7%, with a range of 5.7%-32.5% across institutions. The registered samples had an overall response rate of 24.3% (range was 8%-83%). Comparisons of respondents and non-respondents, which were only possible for the general sample due to the way the survey was administered, revealed that men in the general sample responded at significantly lower rates than women. Supplementary analyses involving a series of by-gender interactions revealed very few significant gender differences—well within chance—suggesting that differential non-response by gender did not bias our results.

Measures

Participants completed a survey questionnaire implemented through Qualtrics.

Disability Status

In the survey, all students were asked whether they had ever been diagnosed with any of a series of physical or mental health conditions, including "an autism spectrum disorder," "attention problems or attention deficit hyperactivity disorder (ADD, ADHD)," "a learning disorder (dyslexia, dysgraphia)," "depression," "posttraumatic stress disorder," "anxiety or panic disorder," "an eating disorder," or "another mental health condition." We used these responses, together with information on whether students were in the registered sample, to determine students' disability statuses. We coded students as autistic if they were in the registered sample or reported having ever been diagnosed with an autism spectrum disorder in the survey. We coded students as having ADHD, a specific learning disorder (LD), or a mental health condition based on their responses to the relevant survey questions asking them to report if they had ever been diagnosed with ADHD, a learning disorder, depression, PTSD, anxiety, eating disorder, or another mental health condition. For our analyses, we created three dummy variables to represent (a) autistic students compared to all others, (b) students with ADHD or a learning disorder (ADHD/LD) compared to all others, and (c) students with a mental health condi-

tion compared to all others. We grouped students with ADHD and learning disorders into a single category in part to avoid small cell sizes, but also because these groups often experience similar challenges when negotiating the unique academic demands of college (Stevens et al., 2022). Students with physical or sensory impairments were categorized as neurotypical if they did not report any of the invisible disabilities. Such impairments were relatively rare in our sample, leaving us with little power to analyze their unique associations with parental involvement.

Parental Involvement

Our measures of parental involvement span support-giving, academic engagement, and autonomy support.

Support-giving. We included measures of tangible (financial, daily living) and emotional support-giving. We asked students how they were paying for college, with the option to select multiple sources. Students who selected "financial support from parents, guardians, or other family members" were coded as receiving parental financial support (0 = no, 1 = yes). Students were also asked whether either parent assists with transportation to attend class (0 = no, 1 = yes), and whether parents help with shopping or other household chores (0 = no, 1 = yes). To operationalize emotional support, we asked students if they can rely on their parents for help if they have a serious problem, if they can open up to their parents if they need to talk about their worries, and whether their parents give them a lot of encouragement for attending college, each with response options 1 = strongly disagree, 2 = disagree, 3 = agree, 4 = strongly agree. The first two items are standard measures of social support, drawn from the National Comorbidity Survey (Kessler, 1994). For purposes of the analysis, we created a scale of emotional support, calculated as the average of the items for which respondents had valid values (α = 0.79). Supplemental analyses that analyzed each item separately produced substantively identical results.

Academic Engagement. This dimension of parental involvement encompasses direct assistance with college work, for which we had two indicators: whether students reported that their parents helped them complete their college applications (0 = no, 1 = yes) and whether their parents help with their academic work in college (1 = strongly disagree, 2 = disagree, 3 = agree, 4 = strongly agree).

Autonomy Support. Finally, we evaluated parents' support for autonomy with six items from the Helicopter Parenting Behaviors scale (Schiffrin et al., 2014), the first four of which indicate parental overinvolvement (i.e., lack of support for autonomy), whether parents contact faculty or staff at the student's college to find out how students are doing, call students to track how they are doing in school, monitor who students spend time with, and track the student's location via an app, texting, or calling. The final two items indicate parental encouragement of autonomy: whether parents encourage students to make their own decisions and take responsibility for their own choices, and whether they encourage students to deal with interpersonal problems with roommates and friends independently. Response categories for each item were 1 = strongly disagree to 4 = strongly agree.

Covariates

We included in our models several covariates to limit the influence of confounding effects from other student characteristics: race/ethnicity, gender identity, highest level of parental education in years, number of years enrolled at the current institution, and institution type (0 = 4-year institution, 1 = 2-year institution). Students responded to questions about race/ethnicity (American Indian or Alaska native, Asian, Black or African American, Hispanic or Latino, Native Hawaiian or Other Pacific Islander, White, or Other), gender identity (man, woman, intersex, transgender, other), and parents' highest level of education (in years). Small racial/ethnic categories were consolidated into the residual other category to maintain adequate cell sizes, as were participants who identified with multiple racial/ethnic groups. Respondents' gender identities were consolidated into three categories (man, woman, other) for the same reason.

Analytic Approach

We first calculated descriptive statistics for the full sample and the invisible disability subsamples. Next, we fit models that express parental support as a function of disability status using ordinary least squares (OLS) regression or logistic regression models as appropriate to each outcome. Each model included the three disability variables (autism, ADHD/LD, mental health condition) along with the covariates. We report coefficients for the OLS models and average marginal effects (AMEs) for logistic regression models. AMEs represent the average change in the probability of an outcome given a one-unit change in the predictor. These models support conclusions about how students with each disability differ from students without that disability, accounting for all other disabilities. Because students can report more than one disability, we then used the margins command in Stata to generate predicted probabilities/values of each outcome for all possible combinations of disabilities

(e.g., autism alone, autism and ADHD/LD). The margins command generates predicted probabilities/values from the parameter estimates from each model. To estimate predicted probabilities/values for each comorbid group, we set each binary disability indicator to 0 or 1, as appropriate, while keeping all other covariates at their observed values. For example, to estimate predicted values for students with comorbid autism and ADHD/LD, the indicators for autism and ADHD/LD were set to 1 and the indicator for mental health conditions was set to 0. The margins command estimates the predicted probability/value of the outcome for each student in the group and then averages the predictions across the entire comorbid group to estimate group-level predicted probabilities. We then tested the significance of differences in predicted probabilities/values between each group and neurotypical students. These additional analyses allowed us to evaluate whether and how specific combinations of disabilities were associated with perceptions of parental support.

Missingness

Because we focus on parental support, we excluded students whose parents, or those who raised them, are no longer alive (n = 47). We then used listwise deletion to remove respondents with missing information on the predictor variables (n = 175). Most missing cases were for respondents who did not answer the questions about their demographic characteristics. Because none of the remaining respondents were missing responses on every outcome measure, we did not remove respondents who are missing on one outcome measure from other models in which the respondent has valid outcome data to maximize sample size. Consequently, the sample size varies between models. The total sample size after listwise deletion for missingness and removing respondents whose parents are no longer living is 2,778.

Results

Table 1 presents the descriptive statistics for the outcome and predictor variables for the total sample and for each disability group. (Recall that students with invisible disabilities may be included more than one disability group.) Of the 2,778 students in our sample, 86 (3.1%) were in the registered sample or reported a diagnosis of autism, 303 (10.9%) reported a diagnosis of ADHD or a specific learning disorder, and 883 (31.8%) reported a mental health condition. Sixty-three percent of the students (n = 1,763) did not report any of these disabilities. Rates of comorbidity across the disability groups were high. Among autistic students, 48.8% also reported ADHD or a learning disorder, 66.3% also reported a mental health condition, and 38% reported both. Among students with ADHD or a learning disorder, 63.0% also reported a mental health condition. These figures highlight the importance of accounting for comorbidities when analyzing the experiences of college students with invisible disabilities.

Bolded figures in Table 1 indicate significant differences between each disability group and neurotypical students. According to these comparisons, students with mental health conditions were less likely than neurotypical students to receive financial assistance from their parents to pay for college. Students in all three disability groups reported lower levels of emotional support than neurotypical students. Relative to neurotypical students, autistic students reported higher levels of parental academic engagement, higher levels of parents contacting faculty, and lower levels of parents tracking their academic progress and monitoring their companions. There were few other differences in parental support for autonomy based on disability status: Students with ADHD/LD reported higher levels of parents tracking their location while students with mental health conditions reported lower levels of parents tracking their academics and of parents encouraging independent decisions than neurotypical students.

The covariates also differed meaningfully between students with invisible disabilities and neurotypical students. Students in all three disability groups were more likely to be White than neurotypical students. Autistic students were more likely than neurotypical students to be men whereas students with ADHD/LD or a mental health condition were more likely to be women. Students in all three disability groups were more likely than neurotypical students to report a nonbinary gender identification. The parents of autistic students had higher average years of education and the parents of students with mental health conditions had lower average years of education relative to neurotypical students. Because the covariates may be associated with parental support, the group differences in their means highlight the importance of adjusting for them in our models.

Support-Giving

Table 2 presents the results for students' reports of parental support-giving, including whether their parents were helping pay for college, whether their parents provided assistance with transportation or chores, and emotional support. Consistent with the bivariate analyses, students with mental health conditions were less likely than students without men-

Table 1

Descriptive Statistics and Bivariate Associations with Disability Status for Analysis Variables

	Neurotypical (*n*=1,763) Referent	Autistic (*n*=86)	ADHD/LD (*n*=303)	MH Condition (*n*=883)
Support-Giving				
Helps pay for college (% yes)	67.1%	67.4%	65.3%	**59.2%**
Assists with transportation (% yes)	33.6%	38.4%	30.4%	33.5%
Helps with chores (% yes)	51.8%	54.7%	49.5%	51.5%
Emotional support (mean & SD)	3.44 (0.61)	**3.24 (0.72)**	**3.31 (0.75)**	**3.28 (0.77)**
Academic Engagement				
Helped with college application (% yes)	59.0%	**75.6%**	63.7%	57.0%
Helps with homework (mean & SD)	1.66 (0.85)	**1.95 (0.96)**	1.72 (0.87)	1.62 (0.82)
Autonomy Support				
Contacts faculty (mean & SD)	1.22 (0.53)	**1.49 (0.82)**	1.27 (0.57)	1.20 (0.54)
Tracks student's academics (mean & SD)	2.96 (0.89)	**2.76 (0.96)**	2.88 (0.94)	**2.80 (0.98)**
Monitors companions (mean & SD)	2.15 (0.88)	**1.89 (0.82)**	2.07 (0.91)	2.08 (0.93)
Tracks location (mean & SD)	2.17 (1.05)	2.15 (1.12)	**2.32 (1.13)**	2.20 (1.10)
Encourages independent decisions (mean & SD)	3.52 (0.61)	3.52 (0.63)	3.48 (0.65)	**3.46 (0.70)**
Encourages managing interpersonal problems (mean & SD)	2.98 (0.82)	3.00 (0.84)	3.00 (0.80)	2.97 (0.82)
Disability				
Autism (% yes)	--	--	**13.9%**	**6.5%**
ADHD/LD (% yes)	--	**48.8%**	--	**21.6%**
Other mental health condition (% yes)	--	**66.3%**	**63.0%**	--
Covariates				
Race or ethnicity (%)				
Non-Hispanic White	66.6%	**86.0%**	**83.8%**	**78.1%**
Non-Hispanic Black	4.9%	**3.5%**	**1.7%**	**3.6%**
Hispanic	7.8%	**3.5%**	**5.6%**	**7.2%**
Asian or Pacific Islander	16.0%	**2.3%**	**3.3%**	**5.0%**
Other race	4.6%	**4.7%**	**5.6%**	**6.0%**

	Neurotypical (*n*=1,763) Referent	Autistic (*n*=86)	ADHD/LD (*n*=303)	MH Condition (*n*=883)
Gender identity (%)				
Male	42.4%	**54.7%**	**32.0%**	**16.8%**
Female	56.9%	**36.0%**	**63.0%**	**78.1%**
Other	0.7%	**9.3%**	**5.0%**	**5.1%**
Enrolled in 2-year institution (% yes)	3.0%	**12.8%**	**7.9%**	**4.5%**
Years at current institution (%)				
1 year	32.3%	40.7%	**33.0%**	32.5%
2 years	26.7%	23.3%	**27.1%**	26.0%
3 years	22.0%	19.8%	**25.4%**	24.0%
4 years	17.4%	12.8%	**10.9%**	15.3%
5 or more years	1.6%	3.5%	**3.6%**	2.2%
Parental education in years (mean & SD)	16.16 (2.51)	**16.79 (2.44)**	16.36 (2.23)	**15.92 (2.55)**

Note. Bolding indicates a significant difference between neurotypical students and students in each disability group ($p<0.05$). Group differences for continuous variables were tested using two-tailed *t*-tests and those for categorical variables were tested using χ^2tests for significance.

tal health conditions to report that their parents were supporting them financially (AME = -.05, $p < 0$ .01). They also reported receiving less emotional support from their parents than did students without mental health conditions ($\hat{\beta}$ = -0.13, $p < 0.001$). None of the disability groups differed from their comparators in the likelihood that parents helped with transportation or with chores.

The absence of significant associations of autism and ADHD/LD with parental support-giving does not necessarily mean that the modal autistic student and student with ADHD/LD perceives the same levels of support as their neurotypical peers. In particular, students with ADHD/LD and/or autism who also experienced a mental health condition reported significantly lower levels of parental emotional support than neurotypical students. We used the parameter estimates from the models in Table 2 to generate predicted values for each indicator of support for all possible combinations of disabilities (e.g., autism alone, autism and ADHD/LD) and then tested the significance of the differences between each group and neurotypical students. The predicted value of parental emotional support for neurotypical students is 3.43, compared to 3.21 for students with autism and a mental health condition, 3.26 for students with ADHD/LD and a mental health condition, and 3.17 for students with all three disabilities. The differences between each of these comorbid disability groups and neurotypical students was significant (results available from authors).

Academic Engagement

Table 3 presents the results of regression models predicting academic engagement (help with college applications, help with homework) from the disability indicators and the covariates. Autistic students were more likely than non-autistic students to report that their parents were academically engaged. They had an 11% higher probability of reporting parental assistance with college applications than non-autistic students and a 27% higher probability of receiving help with homework. In contrast, students with mental health conditions had a 5% lower probability of having received help with college applications from their parents than students without mental health conditions. As for support-giving, we used the parameter estimates from the models in Table 3 to generate predicted values for each indicator of academic engagement for all possible combinations of disabilities. According to these models, the predicted probability that students with autism received parental assistance with college applications was 0.71 and the predict-

Table 2

Estimates from Models Predicting Support-Giving

	Paying for College	Assists with Transportation	Helps with Chores	Emotional Support
Autism	0.01	0.10	0.06	-0.09
	(0.05)	(0.06)	(0.06)	(0.07)
ADHD/LD	0.02	-0.02	-0.02	-0.04
	(0.03)	(0.03)	(0.03)	(0.04)
Mental health condition	-0.05**	0.01	0.01	**-0.13*** **
	(0.02)	(0.02)	(0.02)	(0.03)
Parental education	**0.06*** **	-0.00	**-0.02*** **	**0.04*** **
	(0.00)	(0.00)	(0.00)	(0.01)
Race/ethnicity				
Non-Hispanic black	**-0.25*** **	**0.13** **	**0.14** **	**-0.18** **
	(0.04)	(0.05)	(0.05)	(0.06)
Hispanic	0.00	0.04	0.09*	-0.08
	(0.03)	(0.03)	(0.04)	(0.05)
Asian-Pacific Islander	**0.12*** **	**0.15*** **	**0.10*** **	**-0.20*** **
	(0.03)	(0.03)	(0.03)	(0.04)
Other race	-0.13**	0.06	0.06	-0.09
	(0.04)	(0.04)	(0.04)	(0.06)
Gender				
Female	-0.02	**0.04***	0.00	-0.01
	(0.02)	(0.02)	(0.02)	(0.03)
Other	0.03	-0.00	-0.06	**-0.56*** **
	(0.06)	(0.06)	(0.07)	(0.09)
2-Year Institution	-0.15**	-0.06	-0.01	-0.05
	(0.05)	(0.05)	(0.05)	(0.07)
Academic Year				
2 years	-0.04	0.01	**-0.08*** **	0.02
	(0.02)	(0.02)	(0.02)	(0.03)
3 years	-0.02	-0.01	**-0.10*** **	-0.01
	(0.02)	(0.02)	(0.03)	(0.03)
4 years	-0.02	-0.01	**-0.17*** **	0.02
	(0.03)	(0.03)	(0.03)	(0.04)
5 or more years	**-0.**20**	0.01	0.00	-0.00
	(0.07)	(0.07)	(0.07)	(0.09)
Observations	2778	2776	2775	2774

Note. Bolding indicates significant coefficients. Standard errors in parentheses. OLS coefficients given for emotional support; average marginal effects given for other outcomes. Comparison groups for disability indicators are students without the focal conditions. The reference group for race/ethnicity is white; the reference group for gender is male. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 3

Estimates from Models Predicting Academic Engagement

	Helped with College Applications	Helps with Homework
Autism	**0.11***	**0.27****
	(0.05)	(0.09)
ADHD/LD	0.01	0.04
	(0.03)	(0.05)
Mental health condition	**-0.05***	-0.06
	(0.02)	(0.04)
Parental education	**0.04*****	**0.03*****
	(0.00)	(0.01)
Race/ethnicity		
Non-Hispanic Black	**-0.10***	0.08
	(0.05)	(0.08)
Hispanic	**-0.24*****	0.02
	(0.04)	(0.06)
Asian-Pacific Islander	**-0.22*****	0.01
	(0.03)	(0.05)
Other race	**-0.13****	-0.06
	(0.04)	(0.07)
Gender		
Female	-0.03	0.04
	(0.02)	(0.03)
Other	0.02	-0.16
	(0.06)	(0.12)
2-Year Institution	0.05	**0.45*****
	(0.05)	(0.08)
Academic Year		
2 years	-0.02	**-0.11****
	(0.02)	(0.04)
3 years	-0.01	**-0.17*****
	(0.02)	(0.04)
4 years	0.00	**-0.23*****
	(0.03)	(0.05)
5 or more years	0.00	-0.02
	(0.07)	(0.12)
Observations	2775	2772

Note. Bolding indicates significant coefficients. Standard errors in parentheses. Average marginal effects given for both outcomes. Comparison groups for disability indicators are students without the focal conditions. Reference group for race/ethnicity is white; reference group for gender is male.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

ed probability for students with autism and ADHD/LD was 0.72, both of which were significantly higher than the predicted probability for neurotypical students (0.60).

Support for Autonomy

Table 4 presents the results of models predicting parental support for autonomy. There were only scattered significant differences across the groups. Relative to non-autistic students, autistic students reported higher levels of agreement with the statement that their parents contact faculty and staff to find out how they are doing ($\hat{\beta}$ = 0.25, $p < 0.001$). Students with ADHD/LD also expressed higher levels of agreement that their parents track their locations ($\hat{\beta}$ = 0.19, $p < 0.01$). Students with mental health conditions reported lower levels of agreement with the statement that parents call them to track their academic progress ($\hat{\beta}$ = -0.12, $p < 0.01$) and lower levels of agreement with the statement that their parents encourage them to make their own decisions ($\hat{\beta}$ = -0.07, $p < 0.01$) than students without mental health conditions.

Using the results of these models, we generated predicted values for each indicator of support for autonomy specific to each combination of disabilities. All groups of autistic students, regardless of the specific comorbidities, reported significantly higher levels of parental contact with faculty than neurotypical students (predicted values of 1.44-1.50 compared to 1.21 for neurotypical students). Autistic students who had a mental health condition, whether or not comorbid for ADHD/LD (2.67 and 2.73, respectively), like students with a mental health condition alone (2.83), reported significantly lower levels of parents tracking their academic progress than neurotypical students (2.94). Similarly, students with comorbid autism and mental health conditions, whether or not comorbid for ADHD/LD (1.90 and 1.91, respectively), reported lower levels of parents monitoring their companions than neurotypical students (2.13). Students with ADHD/LD and a mental health condition (3.43) reported significantly lower levels of parents' encouragement for making independent decisions than neurotypical students (3.53), just as did students with mental health conditions alone (3.45).

Discussion

Our analysis evaluated differences in college student reports of parental support-giving, academic engagement, and autonomy support across groups defined by the presence or absence autism, ADHD or specific learning disorders, and mental health conditions. We entered the analysis with two competing hypotheses: that students with invisible disabilities would perceive their parents as offering more tangible support, less emotional support, more direct assistance with academic work, and less support for autonomy than neurotypical students, or that perceived parental support would not differ based on disability status.

Our results provide mixed support for the hypotheses, with different conclusions depending on the disability under consideration. Consistent with our first hypothesis, autistic students were more likely than neurotypical students to have received parental assistance with college applications, to receive assistance with homework, and expressed higher levels of agreement with the statement that their parents contact faculty to find out how they are doing in school. Students with ADHD/LD expressed higher levels of agreement with the statement that their parents track their locations but did not otherwise differ from neurotypical students. Students with mental health conditions were less likely than neurotypical students to report that their parents were helping them pay for college, reported lower levels of emotional support, and reported a lower probability of having received help with college applications; they also reported lower levels of parental contact regarding how they are doing in school and lower levels of agreement with the statement that their parents encourage them to make their own decisions. Taken together, our results suggest that autistic students perceive their parents as providing greater support for their academic progress, and that students with mental health conditions perceive less support of all kinds from their parents, than neurotypical students.

Our results for autistic students are consistent with prior research: parents of autistic college students typically report high levels of tangible support and academic engagement (Anderson & Butt, 2017; Cai & Richdale, 2016; Dymond et al., 2017; Widman & Lopez-Reyna, 2020). The limited prior studies of parental support for college students with ADHD/LD suggest greater parental encouragement for students to take responsibility for their own academic progress (Stevens et al., 2024)—also consistent with the pattern of results we observed.

Less is known about parental support for college students with mental health conditions. Based on general studies of parenting which find that parents provide more tangible support, and less emotional support, to children who they perceive as troubled (Fingerman et al., 2009), we had expected to observe high levels of tangible support for students with mental health conditions, but we did not. To the contrary, when students with mental health conditions differed

Table 4

Estimates from Models Predicting Autonomy Support

	Contacts Faculty	Tracks Academics	Monitors Companions	Tracks Location	Independent Decisions	Managing Interpersonal Problems
Autism	**0.25*** **	-0.14	-0.19	-0.01	0.06	0.03
	(0.06)	(0.10)	(0.10)	(0.12)	(0.07)	(0.09)
ADHD/LD	0.04	0.04	0.01	**0.19** **	-0.03	0.02
	(0.03)	(0.06)	(0.06)	(0.07)	(0.04)	(0.05)
Mental health condition	-0.01	**-0.12** **	-0.05	-0.02	**-0.07** **	-0.05
	(0.02)	(0.04)	(0.04)	(0.05)	(0.03)	(0.04)
Parental education	**-0.01***	**0.03*** **	0.01	0.00	**0.02*** **	**0.02*** **
	(0.00)	(0.01)	(0.01)	(0.01)	(0.00)	(0.01)
Race/Ethnicity						
Non-Hispanic black	0.08	**0.18***	**0.17***	-0.05	-0.10	**-0.20***
	(0.05)	(0.09)	(0.08)	(0.10)	(0.06)	(0.08)
Hispanic	**0.11** **	0.05	0.08	0.11	-0.03	-0.02
	(0.04)	(0.07)	(0.06)	(0.08)	(0.05)	(0.06)
Asian-Pacific Islander	**0.08***	0.06	**0.27*** **	**0.19** **	**-0.19*** **	**-0.10***
	(0.03)	(0.06)	(0.05)	(0.06)	(0.04)	(0.05)
Other race	0.07	-0.00	0.03	0.08	-0.02	-0.08
	(0.05)	(0.08)	(0.08)	(0.09)	(0.06)	(0.07)
Gender						
Female	**-0.13*** **	-0.06	**0.11** **	**0.18*** **	0.05	**0.12*** **
	(0.02)	(0.04)	(0.04)	(0.04)	(0.03)	(0.03)
Other	-0.07	**-0.27***	-0.00	-0.09	**-0.22***	0.08
	(0.07)	(0.13)	(0.12)	(0.15)	(0.09)	(0.12)
2-Year Institution	0.03	-0.10	0.04	-0.07	0.06	0.01
	(0.05)	(0.09)	(0.09)	(0.11)	(0.07)	(0.08)

	Contacts Faculty	Tracks Academics	Monitors Companions	Tracks Location	Independent Decisions	Managing Interpersonal Problems
Academic Year						
2 years	-0.05	-0.00	**-0.11***	0.00	0.01	-0.02
	(0.03)	(0.05)	(0.04)	(0.05)	(0.03)	(0.04)
3 years	**-0.08****	-0.07	**-0.16*****	-0.05	0.01	0.02
	(0.03)	(0.05)	(0.05)	(0.06)	(0.03)	(0.04)
4 years	**-0.09****	**-0.21*****	**-0.17*****	-0.06	0.07	0.06
	(0.03)	(0.05)	(0.05)	(0.06)	(0.04)	(0.05)
5 or more years	-0.11	-0.17	-0.07	-0.22	-0.12	-0.10
	(0.08)	(0.13)	(0.13)	(0.15)	(0.09)	(0.12)
Observations	2771	2773	2771	2771	2770	2772

Note. Bolding indicates significant coefficients. Standard errors in parentheses. OLS coefficients given for all outcomes. Comparison groups for disability indicators are students without the focal conditions. Reference group for race/ethnicity is white; reference group for gender is male. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

from neurotypical students, they reported less tangible support and academic assistance. One possible explanation is that students with mental health conditions are less likely than other students to recognize the support their parents provide and, therefore, underreport it. Although we cannot definitively eliminate this possibility, we think it unlikely. While some of the indicators of support are subject to interpretation (e.g., parental help completing college applications), others are more objective (e.g., parents contribute to paying for college). An alternative possibility is that, on average, parents of students with mental health conditions do provide less tangible support than parents of neurotypical students, particularly when it comes to direct support for attending college.

Students with mental health conditions, alone or in combination with other invisible disabilities, reported receiving less emotional support from their parents than neurotypical students. Although consistent with our expectations, this result runs counter to some prior research which finds that students with a range of disabilities rely extensively on their parents for emotional support (Francis et al., 2018). The difference in results may be attributable to the absence of comparison groups in prior studies and/or to differences in how emotional support was measured.

Although we argued that reporting bias is unlikely to explain the failure to observe higher levels of tangible support among students with mental health conditions, it may have contributed to the *low* levels of parental emotional support they reported. Because we do not have access to parents' reports, we cannot determine whether the reported differences in support reflect parents' behaviors or students' interpretations of those behaviors. However, even without independent confirmation that parents provide less emotional support to students with mental health conditions, these results raise concern. Perceptions of support strongly shape mental health trajectories and social outcomes (Wang et al., 2018) and lower levels of perceived emotional support place students with mental health conditions at additional disadvantage in their college careers.

Support for autonomy has been discussed as both a priority and a challenge for parents of students with invisible disabilities (Anderson & Butt, 2017; Morrison et al., 2009; Peña & Kocur, 2013). We observed significantly lower levels of parental support for autonomy in three areas. Relative to neurotypical students, autistic students reported higher levels of parental contact with faculty, students with ADHD/LD reported higher levels of agreement with the statement that their parents track their location, and students with mental health conditions reported lower levels of agreement that their parents encourage them to make their own decisions. These differences are consistent with our first hypothesis and with prior research. Parents of autistic students are often highly involved in their children's academic progress during K-12 education and may carry that involvement into the college years (Miller et al., 2018). Parents of students with ADHD/LD may prioritize academic independence while remaining concerned about potentially problematic or impulsive behaviors in social settings (Stevens et al., 2024). Parents of students with mental health conditions may be more concerned than other parents about poor decision-making, based on their children's decision-making challenges during the high school years (Icenogle & Cauffman, 2021).

Other observed differences were in the direction of more support for autonomy among parents of students with invisible disabilities: autistic students reported lower levels of agreement with the statement that their parents monitor the time they spend with others and students with mental health conditions reported lower levels of agreement with the statement that their parents contacted them to find out how they are doing in school. We cannot determine whether these higher levels of autonomy support reflect a decreased emphasis on student autonomy among parents of college students in general, coincident with an increase in "helicopter parenting" (Schiffrin et al., 2014), or an increased emphasis on independence among parents of students with autism and/or mental health conditions, although the former explanation has been empirically validated by prior research (Bradley-Geist & Olson-Buchanan, 2014).

Implications for Practice

Our analysis provides several insights into parental support that are relevant to college disability and student services professionals. For the most part, parents of students with ADHD/LD and mental health conditions were not more involved in the lives of their college-enrolled children than parents of neurotypical students. To the extent that students with ADHD/LD or mental health conditions need *more* support than neurotypical students to succeed in college, the absence of enhanced parental support may place these students at a disadvantage. Education scholars have demonstrated that, due to limited resources and performance pressure, postsecondary institutions increasingly rely on parents to provide a wide range of supports to their college-age children and that student success depends on parental support (Hamilton, 2016). When support from parents is not sufficient to meet student needs, if students are to succeed, institutions must assume more responsibility for providing that support.

Our results encourage disability services professionals to inquire about the level of parental support perceived by students who seek their services. Such inquiries would help disability services offices assess the support needs of specific students while identifying common support gaps. These gaps could then be addressed by campus programs or services. Creating structured opportunities for students to discuss their experiences of parental support with peers may prove effective, both because they would help students self-assess their needs and because shared experiences can become the basis for support-giving (Thoits, 2021).

Developing approaches to address the low levels of parental emotional support reported by students with mental health conditions is of special concern. Regardless of what explains the reports, students with mental health conditions feel less able to count on their parents for support than neurotypical students. This finding suggests that it is especially important for students with mental health conditions to establish caring and trusting relationships with members of the campus community, including faculty, campus student affairs and disability services professionals, and peers (Biebel et al., 2018). Supporting students with mental health conditions can be especially challenging because they are often reluctant to disclose their disabilities (Belch, 2011). Holistic approaches are needed that involve administrators, faculty, student organizations, and student affairs professionals as well as disability services professionals working together to develop policies, practices, spaces, student involvement opportunities, and other supports for students with mental health conditions—whether or not students have disclosed their conditions (Belch, 2011). Peer mentoring programs that encourage the development of meaningful relationships with other students have shown promise in reducing symptoms of depression and anxiety among college students and would be an important component of any holistic approach (Harra & Vargas, 2023; Pointon-Haas et al., 2024).

An ongoing challenge in developing collaborative approaches to student support is engaging parents appropriately and legally in the academic and social development of their college-enrolled children. FERPA restricts parental access to information about their student's progress except in certain specific circumstances, for good reason. Yet some parents express frustration with these restrictions because they feel cut out of their children's lives at a time when their children have increased support needs. Institutions are not obligated to solicit or encourage parental involvement, even when students sign FERPA waivers and may even discourage parents of disabled students from becoming involved to encourage student independence (Folk et al., 2012). The perspectives of both parents and institutions are understandable even when in opposition. Existing programs of effective parent-professional collaboration may help reconcile these perspectives by creating opportunities for parents to feel involved in the lives of their college students without violating the letter or spirit of federal regulations (Francis et al., 2018). Key elements of these programs include student-first communication protocols, in which any questions parents have are routed to disability services staff through students and students are given the option to decide whether and how to respond, and direct communications to parents with general information about relevant campus programs, activities, and resources, and the facilitation of parent support groups. Programs such as these can help alleviate parental concerns while allowing students to maintain privacy and gain self-advocacy skills.

Strengths and Limitations

Our study has several strengths. We were able to include students who both did and did not request academic accommodations. Students with invisible disabilities often register their condition with disability services, but many students opt not to do so—either because they do not want additional support or because they encounter difficulties working with their school's disability service office (Kim & Crowley, 2021). We incorporated multiple invisible disabilities, allowing for comparisons among disabilities as well as between disabled and neurotypical students. And, we had indicators of several dimensions of parental involvement, allowing comprehensive examination of how parental support-giving, academic engagement, and support for autonomy vary based on disability status.

Our study also has several limitations that should be considered when evaluating the results. Because the participating institutions self-selected, they may not be representative of all public institutions in Indiana. The sample was also limited by the relatively low response rates which, although typical of online surveys, could be a source of concern (Kaplowitz et al., 2012). Low response rates may, although do not necessarily, introduce bias into the sample (Fosnacht et al., 2017).

Another potential limitation is that student diagnoses were not confirmed by clinicians. Postsecondary institutions typically require that students present medical documentation for their condition before they can register for disability accommodations, but we do not have independent confirmation of the diagnosis for students from the registered sample. The other diagnoses, and the reports of autism in the non-reg-

istered sample, relied entirely on student self-reports. In addition, all our measures of parental support were based on student reports and, therefore, represent students' *perceptions* of how their parents are involved in their lives. We do not have data on the parents' perceptions of their levels of support or about the reasons why parents offered (or did not offer) support. Nor do we have information on the parental supports students felt they needed and/or their level of satisfaction with parental support. Studies that incorporate parents' reports of support-giving, alone or paired with students' perceptions, and the factors parents consider when deciding what support to offer, would deepen our understanding of parental support for college students with invisible disabilities, as would studies that incorporate students' evaluations of the support they receive.

Despite its limitations, this study provides new information about the experiences of autistic college students as they compare to students with other disabilities and neurotypical students. The results encourage additional research into how college students with a range of disabilities experience parental support and actions institutions can take to bolster support for students who experience that support as lacking.

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