Trait Anxiety and College Adjustment in Women With and Without Autism Symptomatology

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Abstract

The college experience can significantly increase feelings of anxiety in all students, as students find themselves in evaluative settings where academic, and often social abilities, are judged. Moreover, high levels of anxiety can lead to significant difficulties with navigating the challenges of college. For students with autism symptomatology, an elevated predisposition to feel anxious (i.e., trait anxiety) may cause more difficultly in successfully adjusting to college and succeeding academically. Thus, we examined differences in trait anxiety and college adjustment between cisgender women with and without autism symptomatology. We also explored the extent to which autism symptomatology and trait anxiety uniquely accounted for variance in college adjustment in women. Study findings showed that higher levels of autism symptomatology were associated with elevated trait anxiety. Additionally, both autism symptomatology and trait anxiety were associated with lower adjustment to college across four indices (academic, social, personal-emotional and total adjustment), although neither predicted GPA. We conclude with implications of our findings and recommendations for professionals serving autistic students, including disability resource officers.

Keywords: autism symptomatology, trait anxiety, college adjustment, academic performance, female students

Autism spectrum disorder is a neurodevelopmental disorder, characterized by difficulties associated with social communication and the presence of repetitive behaviors and a restrictive pattern of interests (American Psychiatric Association, 2013). Although the "disorder" aspect has been the focus of many studies, the autism acceptance movement asserts that autism should be defined by both strengths and challenges. Also keeping with this movement, and the recommendations of the Association on Higher Education and Disability (AHEAD; Kimball & Wells, 2021), identity first language (i.e., autistic students) is used in this paper. Additionally, all of our participants identified as cisgender women, and therefore will be referred to as women throughout the paper. With this in mind, we examined trait anxiety and college adjustment between women college students with and without autism symptomatology. Also explored was the extent to which autism symptomatology and trait anxiety uniquely predicted variance in college adjustment.

In postsecondary settings, research has shown that many autistic college students can successfully handle the academic demands of college (see Anderson et al., 2017; Flegenheimer & Scherf, 2022). For example, while some studies have found that autistic students struggle with executive functioning tasks (e.g., managing and planning a schedule; Anderson et al., 2017; Davidson et al., 2023), other studies have shown that autistic students work around these challenges by spending extra time studying and working diligently to achieve academic success (e.g., Anderson & Butt, 2017; Gurbuz et al., 2019). Moreover, autistic college students may experience intense interest in their chosen field, which enables them to do well in their studies (Flegenheimer & Scherf, 2022). Nevertheless, the college completion rate is significantly lower for autistic students than for other students in college (Newman et al., 2011; Sanford et al., 2011; Shattuck et al., 2012). Given that the lower retention rate cannot be explained by academic performance alone, it is imperative that other factors are examined

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to better understand the struggles autistic students have in the college setting. Such findings can inform professionals at disability resource offices, counseling centers, and campus wellness centers and the services they provide to autistic students.

One factor that can significantly impact students' success in college is their adjustment to college. In a large meta-analytic study of research conducted on adjustment in the general college population, Credé and Niehorster (2012) showed robust relationships between adjustment to college, grades and retention. Adjustment to college is typically measured along academic (e.g., a student's ability to manage the academic demands of school), social (e.g., the degree to which the student has integrated themselves into the social milieu of college), and personal-emotional (e.g., students' psychological and physical wellbeing) indices (Baker & Siryk, 1999). Students' attachment to their school can also be assessed, as well as their overall adjustment. Although well studied in the general college population, far fewer studies have examined adjustment to college in autistic students. As a result, there is limited information available to those working in student support offices on campus, including professionals in disability resource offices that are tasked with providing appropriate supports for autistic students.

Although understudied, a small but growing body of literature suggests that autistic students struggle with adjustment issues. Trevisan and Birmingham (2016), found that autistic college students reported poorer academic and social adjustment, as well as marginally lower personal-emotional adjustment, than those without autism symptomatology. Additionally, Davidson and colleagues (2023) showed that autism symptomatology predicted socio-emotional adjustment to college over and above executive functioning challenges. However, they found no significant differences between students with and without autism symptomatology in terms of academic adjustment or college grade point average (GPA).

Trait Anxiety and Adjustment to College

Given that college students often find themselves in evaluative settings (e.g., academic, social) that can lead to increased anxiety, it is not surprising that the college experience can significantly increase feelings of anxiety in all students (American College Health Association, 2020; Center for Collegiate Mental Health, 2021; Cooper et al., 2018). In fact, research during the past decade, and particularly during the pandemic years, has shown that anxiety has been on the rise on college campuses (e.g., Alemany-Arrebola et al., 2020; Center for Collegiate Mental Health, 2021; Lee et al., 2021). During the pandemic, elevated anxiety in students created a surge in demand for mental health and other disability resource services. Importantly, research has shown that this trend has not abated post-pandemic (He et al., 2022). Moreover, many postsecondary institutions are struggling to adequately staff disability resource offices (e.g., Cohen et al., 2022), which can be particularly troubling for autistic students whose success in college can be closely connected to the supports they receive from professions at disability resource service offices, counseling centers, and offices promoting student wellness (Cox et al., 2021; Davidson et al., 2023; Nachman et al., 2022).

In the general college population, past research has found that high levels of anxiety are related to a whole host of college performance variables, including adjustment to college (Arjanggi & Kusumaningsih, 2016; Nordstrom et al., 2014, Stockinger et al., 2021). Anxiety can be particularly challenging for autistic students. Studies have shown that trait anxiety, or the general disposition to feel anxious, is often elevated in autistic individuals (Jolliffe et al., 2022). Trait anxiety is a relatively stable trait that affects mental health issues (e.g., depression, insomnia), difficulty with decision-making (e.g., choosing a field of study, career path), and lower self-efficacy (e.g., confidence about meeting academic challenges). Thus, elevated levels of trait anxiety can significantly impact postsecondary success (Alemany-Arrebola et al., 2020; Kimes, 1974; Sadigh et al., 2014). A primary goal of the present research was to examine how levels of trait anxiety are associated with college adjustment indices (i.e., academic, social, personal-emotional, and overall adjustment) in students with and without autism symptomatology. Additionally, the extent to which autism symptomatology and trait anxiety each contributed uniquely to college adjustment indices and academic success (i.e., GPA) was explored.

Trait Anxiety and Adjustment to College in Women with and without Autism Symptomatology

In the present study, we focused on cisgender women with and without autism symptomatology for several reasons. Although we acknowledge that previous studies indicate an overlap between trans and nonbinary identities and autism, and the important need for studies focusing on these populations (Clyde et al., 2022; Murphy et. al., 2020; Warrier et al., 2020), there still exists an underrepresentation of studies addressing cisgender women with autism symptomology. In a comprehensive review on autism and college variables (e.g., daily living skills, social skills, academic issues), women were found

to be significantly underrepresented in most studies (Flegenheimer & Scherf, 2022). Moreover, research has shown that women are not diagnosed with autism as often as men even when autism traits are present (Duvekot et al., 2017; Dworzynski et al., 2012; Lockwood Estrin et al., 2021). We included women who exhibited autism symptomatology regardless of their formal diagnosis status in our participant pool. The decision to include women with autism symptomatology regardless of diagnostic status was deemed important because recent research with college students has shown that autism traits are associated with academic difficulties and course failure independent of an autism diagnosis (McLeod & Anderson, 2022). In fact, in terms of social adjustment to college, McLeod and Anderson (2022) found that more consistent, negative outcomes were present in those with autism traits—and no formal diagnosis—than those with an autism diagnosis. Moreover, these findings were more pronounced in women than men students. At the heart of the issue may be gender discrepancies in diagnosing autism even when autism traits are present (see Duvekot et al., 2017; Dworzynski et al., 2012; Lockwood Estrin et al., 2021; Shattuck et al., 2022). Consequently, women with autism symptomatology, yet lacking a formal diagnosis, may be inadvertently excluded from college studies and the supports that may arise from the knowledge gained from these studies.

Cisgender women were also the focus of the present study because research has shown significantly higher levels of trait anxiety and more vulnerability to developing anxiety-related disorders in women than in men (de Visser et al., 2010; Strand et al., 2021). Yet, there is a dearth of information about trait anxiety in autistic women. In a comprehensive review of studies on trait anxiety in autistic individuals, the majority of participants (87.7%) were male (Jolliffe et al., 2022). As Jolliffe et al. (2022) assert, "The under representation of females, and the lack of reporting of non-binary gender, in trait anxiety research limits our understanding of any gender difference that may be present in individuals on the autism spectrum" (p. 17). We viewed this as particularly problematic when a general disposition toward being anxious (i.e., trait anxiety) has been shown to negatively affect the postsecondary experience and may lead to earlier withdrawal from college in the general population (Downing et al., 2020; Lin et al., 2017; Stockinger et al., 2021). Women exhibiting autism symptomatology may need additional supports from student disability resource offices and other student support offices on campus (e.g., counselors and wellness centers) yet may not receive them.

Therefore, the following research aims were central to this study. First, group differences in trait anxiety and college variables (adjustment indices, GPA) were examined in women college students with and without autism symptomatology. Higher levels of trait anxiety and lower adjustment to college across social and personal-emotional indices were expected in women with greater levels of autism symptomatology. Predictions about group differences on the academic adjustment index and GPA were not made given the inconsistency in findings in past studies (e.g., Davidson et al., 2023; Trevisan & Birmingham, 2016).

Second, we examined the extent to which autism symptomatology and trait anxiety uniquely accounted for variance in college adjustment and GPA in women. It has been asserted that rather than autism symptomatology, findings may be better explained by elevated levels of anxiety or be explained entirely by anxiety conditions that often co-occur with autism (Kerns & Kendall, 2012; South et al., 2017).

Methods

Participants

Prior to participant recruitment, the methodology, measures, and procedure were approved by the Institutional Review Board (IRB) at the researchers' university. Following IRB approval, the sample included 102 cisgender women college students (M_{age} = 18 years, 8 months; age range = 17 years, 11 months – 25 years, 2 months) who were attending a private university in a large Midwestern city in the United States during the pandemic (2020-2021). Students were predominantly (86%) in their first or second year of college and were recruited from six introductory psychology classes. Students participated voluntarily as an extra credit opportunity for their course. All participants in this study identified as cisgender women. None of the participants identified as cisgender men, nonbinary, third gender, transgender, or gender fluid. Additional demographic information, including racial breakdown of the sample, is provided in Table 1. The characteristics of our sample are consistent with the demographics of the school and the introductory psychology classes in which students were recruited. Our sample was part of a larger study that included men whose data were not analyzed for this study.

To balance our sample sizes between those with and without autism symptomatology (see below for the method of determination), we analyzed the data of 60% of our women sample *without* ASD symptomatology (n = 51), chosen at random from the larger dataset of women without autism symptomatology. Women scoring above the cutoff point for autism symptomatology (n = 51) made up 38% of the entire sample of female students in the larger study. The

Table 1

Participant Characteristics

	Women without Autism Symptomatology (n = 51)	**Women with Autism Symptomatology** (n = 51)			
	M (SD)/ n (%)	*M (SD)/ n* (%)	t / χ^2	p	*d/phi*
Age (year, months)	18,05 (0,08)	18,10 (1,08)	1.64	.105	0.32
Racial/Ethnic Identity			6.85	.232	0.26
White/European American	28 (55%)	28 (55%)			
Black/African American	1 (2%)	3 (6%)			
Asian/Asian American	6 (12%)	11 (21%)			
Hispanic/Latinx	7 (14%)	2 (4%)			
More than one race	9 (17%)	6 (12%)			
Other	0 (0%)	1 (2%)			
Year in School			5.57	.134	0.23
Freshman	33 (64%)	35 (68%)			
Sophomore	13 (26%)	7 (14%)			
Junior	4 (8%)	3 (6%)			
Senior	1 (2%)	6 (12%)			
GPA Range			4.57	.470	0.23
3.80-4.00	23 (46%)	18 (36%)			
3.60-3.79	11 (22%)	11 (22%)			
3.40-3.59	10 (19%)	6 (12%)			
3.00-3.39	1 (2%)	6 (12%)			
2.75-2.99	1 (2%)	2 (4%)			
Not Reporting	5 (9%)	8 (14%)			
Overall GPA	3.76 (.27)	3.58 (.34)	2.43	.018	0.61

Note. Effect sizes given by Cohen's *d* or *phi*, as appropriate. GPA = overall grade point average on a 4.0 scale. Age is given in years and months (years, months).

higher-than-expected percentage of women scoring above threshold for autism symptomatology may have been due to the fact that students did not need a formal diagnosis to participate. That is, in the advertising of the study and recruitment of participants, it was noted that we were interested in the experiences of autistic college students with or without a formal diagnosis (e.g., could be self-diagnosed). Because we drew a sample of participants from the larger study, a post hoc power analysis, rather than an a priori power analysis, was conducted using G* Power (Faul et al., 2007) to establish whether our final sample size had adequate power to determine at least a medium effect at an alpha level of 0.05. The results showed that the study had sufficient power for our analyses (Power = 0.93).

Autism Symptomatology

The Social Responsiveness Scale (SRS-2; Constantino & Gruber, 2012) is a widely used measure shown to capture symptomatology that can be indicative of autism (Chan et al., 2017). The SRS-2 consists of 65-items in a questionnaire format that identifies the presence and severity of social impairment associated with autism, as well as repetitive and restricted behaviors (Constantino & Gruber, 2012). Individuals are asked to rate items about their behaviors during the past six months using a Likert-type scale ranging from 1 (*not true*) to 4 (*almost always true*). Raw scores on the SRS-2 can be converted into *T*-scores (μ = 50, *SD* = 10) that take into account respondents' gender (Constantino & Gruber, 2012). In general-population groups, a SRS-2 total raw score cut point value of 70 or greater (*T*-score of 60 and above) is indicative of clinically significant difficulties associated with autism. SRS-2 scores above this cut point value have been found to corroborate gold-standard diagnostic tools of autism (e.g., ADOS-2 and ADI-R) and the constructs that are considered essential for an autism diagnosis (Bölte et al., 2008; Reszka et al., 2014).

The strategy of using the SRS-2 to examine autism symptomatology regardless of formal ASD diagnostic history has been used by others when assessing the connections between ASD symptomatology and anxiety (e.g., Morie et al., 2019). Including students without a formal diagnosis also aligns with the spectrum nature of autism, with autism traits falling along a continuum in the general population (APA, 2013; Constantino & Todd, 2005). In our sample, women with autism symptomatology did not differ on study variables from the small percentage (10%) of women who had received a formal diagnosis of autism, had self-diagnosed (10%) or were being treated for clinically elevated anxiety (< 5%).

Measures

Trait Anxiety

The State-Trait Anxiety Scale (STAI; Spielberger et al, 1983, 2015) is a 40-item questionnaire that includes 20 items assessing state anxiety and 20 items assessing trait anxiety. State anxiety items assess anxiety about current events or temporary feelings of anxiety (e.g., "I am presently worrying about possible misfortunates"), whereas trait anxiety evaluates relatively stable aspects of proneness to anxiety (e.g., "I take disappointments so keenly that I can't put them out of my mind"). All items are rated on a 4-point scale as they relate to the individual (from *almost never to almost always*). For this study, we examined students' trait anxiety scores because elevated trait anxiety and the general disposition to feel anxious can impact all aspects of college life. Higher scores on the STAI-T subscale indicate greater trait anxiety. Across the entire sample, internal consistency on the STAI-T subscale was high (Cronbach's α = .94).

Adjustment to College

The Student Adaption to College Questionnaire (SACQ; Baker & Siryk, 1999) is a 67-item self-report measure that assesses students' adjustment to college. The SACQ is one of the most widely used measures of college adjustment and has been well-validated, with the four SACQ indices associated with grade point average, use of campus services, and attrition (Beyers & Goossens, 2002; Credé & Niehorster, 2012). On this measure, students rate items from 1 (*doesn't apply to me at all*) to 9 (*applies very closely to me*) to determine adjustment across four subscales (academic, social, personal-emotional, institutional affiliation). *Academic adjustment* assesses how well the student manages the academic demands of college including the adequacy of their studying and academic efforts, along with their attitudes toward their course of study. *Social adjustment* captures the degree to which the student has integrated themself into the social milieu of college, has made friends and is involved in activities with others. *Personal-emotional adjustment* reflects a student's sense of psychological and physical well-being, and the extent to which the student is experiencing psychological distress and concomitant somatic problems (e.g., insomnia). Finally, *institutional attachment* identifies how much a student is emotionally attached to their university. Although scores on institutional attachment were gathered, they were not analyzed for the present study, but were included in the calculation of total adjustment scores, per the guidelines of the manual.

Across the entire sample, internal consistency was good on the total adjustment score (Cronbach's

α = .95) and academic (α = .90), social (α = .87), and personal-emotional (α = .90) subscales.

Procedure

Following IRB approval and informed consent, students completed the measures on the survey through a link to a secure online platform. The order of the measures was randomized so that students did not complete the measures in the same order. After completion, participants were debriefed about the purpose of the study.

Results

Preliminary Analyses

All data analyses were performed using IBM SPSS (version 27.0). Preliminary analyses were conducted on the dependent variables to ensure appropriateness of parametric procedures, which included checks for the normality of distributions and for outliers. Outliers were defined as values that were ≥ three standard deviations from the mean and were not part of the normal distribution (Cohen et al., 2003). Skewness was defined as variable values greater than +/-2.0 standard deviations whereas kurtosis was defined by values greater than +/-7.0 standard deviations (West et al., 1995). These checks showed normally distributed data for all dependent variables in the sample (skewness ranged from -.70 – .58; kurtosis ranged from -.65 – .68). All analyses of total and subscale scores maintained the continuous nature of the variables. Effect sizes and covariance inflation factor (VIF) were also calculated and are included in the tables. VIF estimates multicollinearity when variables may be closely associated and are included in a regression analysis. An unacceptable level of multicollinearity is problematic because it undermines the statistical significance of the independent variables in the regression equation.

Research Aim 1: Group Comparisons: Trait Anxiety and College Variables

Table 2 provides means, standard deviations, and effect sizes for trait anxiety and college variables (adjustment indices, GPA) for women with and without autism symptomatology. Independent-samples t-tests were conducted between the groups with Bonferroni correction. As depicted in Table 2 and in line with our predictions, women with autism symptomatology showed significantly higher trait anxiety than those without autism symptomatology, $t(96)=6.94$, $p< .001$.

In terms of college variables, students with autism symptomatology showed lower total adjustment to college (SACQ), $t(96) = 7.56$, $p < .001$, and lower adjustment on the academic, social, and personal-emotional adjustment subscales, $t(96) = 4.49$-7.71, $p < .001$, than their peers without symptomatology (see Table 2). Women with autism symptomatology showed a slightly lower overall GPA than women without symptomatology, $t(63) = 2.43$, $p = .018$, although when examining GPA ranges, the groups were similar (see Table 1).

Research Aim 2: Predictors of College Adjustment

After examining VIF factors to determine the appropriateness of regression analyses (see Table 3), linear regression analyses were conducted separately on adjustment indices (total, academic, social, and personal-emotional). In each analysis, autism symptomatology and trait anxiety were entered as separate predictors for each of the college adjustment indices, allowing us to determine the unique variance they accounted for in college adjustment. The regression results are presented in Table 3. In terms of total adjustment, the overall model with autism symptomatology and trait anxiety was significant, $F(2, 97) = 78.20$, $p < .001$, adjusted $R^2 = .614$. As shown in Table 3, both autism symptomatology and trait anxiety were significant predictors of total adjustment to college. The overall models were also significant for academic adjustment $F(2, 97) = 28.30$, $p < .001$, adjusted $R^2 = .360$, social adjustment $F(2, 95) = 30.83$, $p < .001$, adjusted $R^2 = .381$, and personal-emotional adjustment $F(2, 97) = 96.42$, $p < .001$, adjusted $R^2 = .663$ to college. As shown in Table 3, both autism symptomatology and trait anxiety were significant predictors on each adjustment index. However, and as shown in Table 3, trait anxiety accounted for more variance in the models than autism symptomatology.

Finally, regression findings showed that the overall model with autism symptomatology and trait anxiety as predictors was not significant for GPA, $F(2, 59) = 1.31$, $p = .277$, adjusted $R^2 = .010$.

Discussion

Success in college often focuses on academic achievement and in particular, grade point average (GPA) and coursework completion. Although disability resource officers have known for some time that adjustment problems can lead to poorer academic achievement and retention problems in the general college population (Tinto, 1993), we are just beginning to explore how adjustment issues affect the college experience for autistic students, particularly women. As others have asserted, previous studies on the college experience (e.g., Flegenheimer & Scherf, 2022) and on trait anxiety (e.g., Jolliffe et al., 2022)

Table 2

Group Comparisons on Study Variables

	Women without Autism Symptomatology (n = 51)	Women with Autism Symptomatology (n = 51)			
	M (SD)/ n (%)	*M (SD)/ n* (%)	*t*	*p*	*d*
ASD Symptomatology (SRS-2)					
SRS-2 Raw Score	39.51 (15.09)	91.67 (20.62)	14.58	< .001	2.89
SRS-2 T-score	49.49 (5.32)	68.08 (7.27)	14.73	< .001	2.92
Normal (59 or lower)	51 (100%)	0 (0%)			
Mild (60 - 65)	0 (0%)	22 (43%)			
Moderate (66 – 75)	0 (0%)	21 (41%)			
Severe (76 or higher *T*-score)	0 (0%)	8 (16%)			
Trait Anxiety (STAI-T)	43.88 (9.59)	57.23 (9.45)	6.94	< .001	1.40
Adjustment to College (SACQ)					
Full Scale	51.32 (9.65)	38.71 (6.63)	7.56	< .001	1.52
Academic Adjustment	56.20 (9.91)	44.06 (7.38)	6.85	< .001	1.39
Social Adjustment	46.50 (8.44)	39.54 (6.84)	4.49	< .001	0.90
Personal-Emotional Adjustment	48.62 (9.93)	35.21 (7.11)	7.71	< .001	1.55

Note. Effect sizes given by Cohen's *d* or phi, as appropriate. SRS-2 = Social Responsiveness Scale, Second Edition; STAI = State-Trait Anxiety Inventory (Trait Subscale-TAI); SACQ = Student Adjustment to College Questionnaire. Severity of autism symptoms can be delineated, with scores of 60*T*-65*T* in the mild range, 66*T* to 75*T* in the moderate range and 76T or higher in the severe range in terms of autism symptomatology (Constantino & Gruber, 2012). *T*-scores in the range of 59 and below are generally not associated with clinically significant autism symptomatology. On the SACQ, raw scores are converted to *T*-scores (μ = 50, *SD* = 10) and take into account year in school and sex of student. All *T*-scores are continuous.

in autistic students often include significantly more cisgender men relative to other gender identities, including cisgender women. This gender imbalance limits our knowledge and the ability of disability resource officers to use scholarly information to make appropriate recommendations for all autistic students.

Thus, in the present study, we examined the connections between autism symptomatology and trait anxiety on academic, social, personal-emotional, and total adjustment to college indices in women college students. College adjustment indices were examined not only because of their association with GPA and college retention, but also because they capture a range of adaptive behaviors in the college setting. For example, social adjustment reflects students' relationships with others, coping with being away from home, and satisfaction with their involvement in the social aspects of college. For autistic women, research has suggested that there may be more societal pressure to fit in, establish relationships (platonic and romantic), and engage in activities of a social nature than for autistic men (Kanfiszer et al., 2017). In an interview study, Bargiela and colleagues (2016) found that late-diagnosed autistic women discussed how they struggled to fit in with societal expectations regarding relationships and gender roles that expected women to be well-versed socially. Such struggles could impact social adjustment and anxiety levels for women trying

Table 3

Predictors of College Adjustment

SACQ Total	*Overall Model* $F(2, 95) = 78.20$, $p < .001$, adjusted $R^2 = .614$				
	B	SE *b*	*β*	*t*	*p*
ASD Symptomatology	-.098	.029	-.296	-3.39	.001
Trait Anxiety	-.498	.078	-.555	-6.34	< .001
Academic Adjustment	*Overall Model* $F(2, 95) = 28.30$, $p < .001$, adjusted $R^2 = .360$				
	B	SE *b*	*β*	*t*	*p*
ASD Symptomatology	-.090	.038	-.268	-2.38	.019
Trait Anxiety	-.362	.103	-.394	-3.51	< .001
Social Adjustment	*Overall Model* $F(2, 95) = 30.83$, $p < .001$, adjusted $R^2 = .381$				
	B	SE *b*	*β*	*t*	*p*
ASD Symptomatology	-.066	.029	-.248	-2.24	.027
Trait Anxiety	-.312	.080	-.430	-3.89	< .001
Personal-Emotional Adjustment	*Overall Model* $F(2, 95) = 96.42$, $p < .001$, adjusted $R^2 = .663$				
	B	SE *b*	*β*	*t*	*p*
ASD Symptomatology	-.084	.028	-.243	-2.98	.004
Trait Anxiety	-.595	.077	-.631	-7.74	< .001

Note. SACQ = Student Adaptation to College Questionnaire. Variance Inflation Factor (VIF) = 1.92. VIF cutoff values below 5 are deemed acceptable.

to find their place in campus society. In the general college population, lower social and personal-emotional adjustment scores are not only associated with lower college retention rates, but also increased mental health challenges, including greater sense of loneliness, lower self-esteem, less perceived social support, and more depression (Felton et al., 2022).

In the current study, women with autism symptomatology showed lower adjustment to college across all adjustment indices (i.e., academic, social, personal-emotional, and total adjustment) than women without autism symptomatology. These findings are important because many of the students in the present study had not been formally diagnosed with autism yet are showing similar struggles with adaptation to college as seen in students with a formal autism diagnosis (Flegenheimer & Scherf, 2022; McLeod & Anderson, 2022). That is, previous college studies have focused primarily on male students with a formal autism diagnosis. Thus, our results are important to disability resource officers because they provide evidence that female college students with autism symptomatology share similar adjustment struggles as their autistic male peers and therefore may also need extra support from disability resource offices.

Additionally, our findings suggest that future studies examining the connections between autism symptomatology, anxiety and adjustment to college must make a concerted effort to include individuals who represent the range of gender identities. This point echoes similar calls in Jolliffe and colleagues' (2022) review article on trait anxiety in autism. As Jolliffe et al. point out, most of the studies they reviewed were conducted with autistic men (i.e., 87.7%). In the studies reviewed by Jolliffe et al. (2022), less than one in eight participants identified as autistic women, falling short of current proportion estimates (1 in 4 individuals with autism are women). Given the intersectionality of autism and nonbinary or trans identities (Murphy et al., 2020), it will also be important for future studies to expand our college adjustment work to individuals who identify differently from the

populations that have been studied. This increased focus will better inform those working directly with students, including disability resource officers, staff at counseling and wellness centers, and others on campus (e.g., faculty, residence hall staff).

Along these lines, postsecondary institutions should consider implementing educational programs for disability resource officers and staff at counseling, wellness, and other student support centers (e.g., tutoring, writing) that enable professionals on campus to learn about autism symptomatology and the unique challenges associated with it, including college adjustment issues. In addition, disability resource professionals who have direct experience working with autistic students, faculty studying autism, as well as autistic students and faculty on campus could share their experiences to increase knowledge about, and acceptance of, autistic individuals. One possible step forward is training for faculty to better understand autism and how the strengths and challenges associated with autism can impact students in the classroom. See Waisman et al. (2022) for a discussion of a sample online training program and its results.

Importantly, many students disclose their autism diagnosis to disability resource officers only when they need to receive academic accommodations (Petcu et al., 2021). Recent studies have shown that autistic students may feel that their school's student disability resource office cannot provide other services beyond purely academic ones (e.g., extra time on exams) that would be beneficial to them (Cox et al., 2017, 2021; Davidson et al, 2023). Thus, institutions should reconsider current supports for autistic students. Traditional accommodations such as extended time and providing quiet spaces for taking tests should be expanded for autistic students to include efficacious transition programs that extend into the college years, support groups based on stakeholder (i.e., autistic college students) feedback focusing especially on anxiety and adjustment issues, and sensory-friendly, anxiety-reducing spaces for studying and relaxation (Accardo et al., 2018; Cox et al., 2017; Roux et al., 2015).

Finally, while the present study findings showed that both autism symptomatology and trait anxiety predicted women's adjustment to college, trait anxiety accounted for more variance on all of the college adjustment indices than autism symptomatology. A valuable next step in future studies would be to identify aspects of trait anxiety that are unique to autistic individuals and may lead to challenges in college (Kerns et al., 2014). For example, South and Rodgers (2017) suggest that unique mechanisms for anxiety in autism may include intolerance of uncertainty, sensory concerns, and alexithymia (difficulty in identifying and describing emotions). Certainly, the college setting evokes many instances of uncertainty within academic and socioemotional contexts. Autistic college students must also learn to navigate myriad sensory concerns in the college setting (e.g., in the classroom and dorm) that can increase anxiety (Lizotte, 2018).

As Nachman and Brown (2022) suggest, future qualitative studies that directly capture autistic students' views about how their needs can be best supported can uncover categories of stressors and their relations to elevated anxiety that autistic students are experiencing. Such knowledge would prove beneficial when disability resource officers are trying to make accommodations for autistic students inside and outside of the college classroom. Future studies should also consider how various coping strategies are beneficial to a broad range of autistic students. For example, in general college population studies, hardiness, personal-growth initiative and coping self-efficacy were found to mediate the negative effects of being highly anxious (Weigold & Robitschek, 2011). Nevertheless, Cox and colleagues (2017) suggest that disability resource officers, faculty, resident hall staff, and other professionals may need to re-consider traditional recommendations for autistic students who are struggling with elevated anxiety. For example, in the general college population, students may be encouraged to join student organizations, participate in extra-curricular activities, and live on campus, yet these activities may promote anxiety in some autistic students.

Academically, women with and without autism symptomatology in the present study showed similar GPAs and both groups reported fairly high GPAs. Moreover, the number of students in high and low GPA ranges was similar. These finding are consistent with a handful of previous reports on the academic performance of autistic college students. Research has shown that autistic students often perform as well as their peers academically (Jackson et al., 2018), yet still struggle with adjusting to college (Davidson et al., 2023; Trevisan & Birmingham, 2016). Rather than focusing on academic indices such as GPA or hours completed, academic adjustment reflects students' motivation and attitudes toward their academic goals and their satisfaction with the academic environment and what it offers. Thus, longitudinal studies are warranted to determine whether autism symptomatology and trait anxiety initially impacts adjustment to college and then later, academic success. Such information could inform disability resource officers about how the trajectory of adjustment across indices affects autistic students and the retention of these students as they progress in their academic careers.

Limitations

Although we believe our findings provide a valuable addition to the literature in elucidating the role of autism symptomatology and trait anxiety on adjustment to college, certain limitations must be acknowledged. Firstly, self-reported measures were used to examine our study variables, including determining symptomatology that is indicative of autism. However, previous literature has found that high functioning adults with autism can reliably and accurately report on their own symptomatology (e.g., Sandercock et al., 2020). Secondly, our sample consisted of only individuals who identified as cisgender women and were primarily white. Future studies should move beyond binary classifications of gender and sexual identity, and seek out racially and ethnically heterogeneous student groups when exploring the role autism symptomatology and trait anxiety play in college adjustment. Our data were also collected during the COVID-19 pandemic when anxiety levels in college students were found to be significantly higher than before the pandemic (Alemany-Arrebola et al., 2020; Voss et al., 2022). Moreover, the majority of participants (86%) were in their first two years of college, and many were performing well academically. Thus, we must acknowledge that the results from our study may not be generalizable to other college populations and settings. Nevertheless, by focusing on women with autism symptomatology, we were able to ascertain that trait anxiety is elevated in these students and that both trait anxiety and autism symptomatology are contributing to adjustment issues in the college setting for them.

Implications and Conclusions

In previous research on the college experience in autistic students, women are often not the focus of the research nor are significant numbers included in the participant sample. Moreover, the focus is typically on academic performance differences (e.g., GPA) between autistic and non-autistic students. The findings of our study showed that significant differences between women with and without autism symptomatology did not center on GPA but on trait anxiety and adjustment to college. As shown in the present study, both autism symptomology and elevated trait anxiety were predictive of lower adjustment to college across adjustment indices. Thus, disability resource officers and other professionals on campus (e.g., staff at counseling and wellness centers) should consider that academic indices alone may not be the only indicator of challenges for autistic women in the first or second year of college. Equally important, it may be that adjustment issues and elevated anxiety precipitate lower GPAs as autistic students proceed through college. Ongoing research in our lab is exploring this issue. Moreover, and as advocated throughout this paper, expanding who we study is important given that the intersectionality of autism and gender identity may lead to unique challenges for college students.

Finally, given that many of the students in our study did not have a formal diagnosis of autism, they may only be eligible for services and supports for other mental health disorders (e.g., anxiety). This finding runs counter to other research findings showing that autistic students do better in college when supports are tailored to their autism diagnosis and concerns (e.g., sensory sensitivities; Cox et al., 2017; Thye et al., 2018). One issue is that students often need to provide concrete documentation of a formal autism diagnosis to be approved for institutional accommodations. As Nachman and Brown (2022) write, “The tension between institutional and disabled peoples’ authority has led the Association for Higher Education and Disability (AHEAD) to issue accommodations guidance that lists ‘student’s self-report’ as ‘primary documentation’” (p. 11). Following the suggestions made by AHEAD to consider self-reporting of autism would decrease the reliance on external documentation and the burden placed upon autistic students and increase the timeliness of when accommodations can be provided (Cox et al., 2017). When interviewing our participants, the majority of women with autism symptomatology were less likely to be formally diagnosed but reported that they believed they might be autistic. This phenomenon paired with lower adjustment across indices in the present study suggest that additional supports are needed for female college students with autism symptomatology regardless of formal diagnostic status. Thus, our findings may prove beneficial when considering the best supports to provide autistic women in college with or without a formal diagnosis, including appropriate disability resource services that directly target adjustment issues.

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