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Science, Technology, Engineering, and Mathematics (STEM) Participation Among College Students with an Autism Spectrum Disorder

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Abstract

Little research has examined the popular belief that individuals with an autism spectrum disorder (ASD) are more likely than the general population to gravitate toward science, technology, engineering, and mathematics (STEM) fields. This study analyzed data from the National Longitudinal Transition Study-2, a nationally representative sample of students with an ASD in special education. Findings suggest that students with an ASD had the highest STEM participation rates although their college enrollment rate was the third lowest among 11 disability categories and students in the general population. Disproportionate postsecondary enrollment and STEM participation by gender, family income, and mental functioning skills were found for young adults with an ASD. Educational policy implications are discussed.

Keywords

autism spectrum disorder; postsecondary enrollment; college; major; science; technology; engineering; and mathematics (STEM); college; young adult

Theories regarding the cognitive development of individuals with an autism spectrum disorder (ASD) suggest that they tend to have a disproportionately greater aptitude toward systemizing relative to empathizing. “Systemize” refers to analyzing or constructing rule-based systems to explain the world around them, whereas “empathize” refers to social and emotional reactions to other people’s thoughts and feelings (Baron-Cohen 2006; 2009). The systemizing-empathizing theory suggests that individuals with autism are average or above on systemizing but below average on empathy (Baron-Cohen 2009). Systemizing often requires the thinking or skills needed to analyze and construct systems, which also are necessary to perform successfully in many science, technology, engineering, and mathematics (STEM)- related fields, suggesting that individuals with autism would gravitate to STEM occupations (Baron-Cohen et al. 2007).

Indeed, popular media portrayals suggest that individuals with an ASD are more likely than the general population to be good at math, science, technology, and engineering (Moore 2006; Morton 2001; Ross 2006; Safer 2012). Yet, strong evidence to support such a stereotype remains scant. Most studies that consider the issue of ASD and STEM have focused primarily on rates of autism among offspring of adults in STEM fields, and suggest

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an elevated prevalence of autistic probands and relatives in STEM-related careers (Baron-Cohen et al. 1997; Baron-Cohen et al. 1998; Jarrold and Routh 1998; Wheelwright & Baron-Cohen, 2001). In a similar vein, a population-based study of the tech-heavy San Francisco Bay Area suggests that maternal STEM careers were associated with a higher prevalence of offspring with autism, though paternal STEM career choice or joint effects were not observed (Windham et al. 2009).

While such studies allude to an innate attraction for STEM fields among individuals with autism, to date, only one published study (Baron-Cohen et al. 2007) has actually examined the hypothesis that individuals with autism are more likely to engage in STEM fields. This study found a higher prevalence of autism among mathematics majors compared with students in medicine, law, or social science. However, the generalizability of these findings is limited, as the study sample was derived from a single top-ranked university in the United Kingdom and findings have yet to be replicated in any nationally representative study of U.S. colleges and universities.

The salience of STEM ability and participation among individuals with an ASD is increasing as the identified prevalence of autism continues to rise. Between 2002 and 2008, the prevalence of autism increased 78% and the estimated prevalence of ASDs among children aged 8 years in the United States is 11.3 per 1,000 (one in 88) (Centers for Disease Control and Prevention 2012). Higher contemporary prevalence of ASDs may primarily be due to the rising numbers of individuals with high functioning autism, (Chakrabarti and Fombonne 2001), that is, those children with an ASD most able to attend college. Furthermore, as children with an ASD now grow up in an era of advocacy, early identification, and early and intensive interventions and therapies, many of today’s youth with an ASD may find themselves better prepared for college (Hart et al. 2010). If the hypothesized proclivity for STEM interests among youth with autism is accurate and high functioning ASD is on the rise, then the number of individuals with an ASD entering STEM fields in the future appears likely to increase.

Recently, the National Science Foundation articulated in their 2020 vision statement that the United States would need to promote a “world-class science and engineering workforce” in order to maintain its position as a leader in a technologically advancing global economy (Nagle et al 2009). However, little research has actually examined the college and STEM enrollment for individuals with an ASD. To fill these gaps in knowledge, this study is the first to investigate college enrollment and STEM participation using a large nationally representative U.S. sample that is not subject to the biases of smaller and/or clinically based samples. Specifically, we pose the following research questions:

1. Are there differences in postsecondary enrollment for young adults with an ASD as compared with their peers in 10 other disability categories?
2. Are there differences in STEM participation for young adults with an ASD as compared with their peers in 10 other disability categories?
3. What are the associated factors of postsecondary enrollment and STEM participation for young adults with an ASD?

Methods

Data

National Longitudinal Transition Study-2 (NLTS2) is the largest and richest dataset available to study transition experiences from high schools to postsecondary education and postsecondary outcomes of students with disabilities. NLTS2 was conducted by SRI

International for the U.S. Department of Education with data collected from parents and/or youth in five waves, two years apart, from 2001 to 2009. The initial sample included more than 11,000 high school students receiving special education, ages 13 through 16 on December 1, 2000. About 1,100 of them received special education services in the autism category by the Individuals with Disabilities Education Act (IDEA). Each student's eligibility for special education services was determined by the school district from which the student roster was sampled. Although the criteria for autism identification in schools may differ from the criteria found in the Diagnostic and Statistical Manual of Mental Disorders (Fourth Edition) (DSM-IV), more than 95% of children with a school designation of autism also meet DSM-IV-based case criteria in public health surveillance studies – suggesting the school label of autism is very specific (Bertrand et al. 2001; Yeargin-Allsopp et al. 2003).

The NLTS2 two-stage sampling plan first randomly sampled local educational agencies (LEAs) and state-supported special schools stratified by region, district enrollment, and wealth; then students receiving special education from rosters of LEAs or special schools were randomly selected in order to yield nationally representative estimates that would generalize to all students receiving special education services. Appropriate analysis weights for each instrument and each wave of data collection were used to produce estimates that can be generalized to the cohort of youth receiving special education services at the study's start in a given age range and disability type.

Participants

NLTS2 includes data about students with an ASD as well as students in other special education disability categories from multiple sources on a wide range of topics using parent telephone interviews and mail surveys; school, teacher, and school program surveys; transcript data; and in-person student assessments and interviews. This paper used postsecondary data from wave 5 parent and young adult telephone interviews and mail surveys, collected in 2009. Information collected at wave 5 was reported by the young adults with an ASD through either a telephone interview or a self-administered mail survey. Parents provided information when the youth were not able to respond to an interview or complete a questionnaire. Data were collected on a total of 660 young adults with autism and/or their parents at wave 5. The estimates in this report used weights from wave 5 parent and young adults interview (Wagner et al., 2005). These weights were computed by taking into account various young adult and LEA characteristics used as stratifying variables in the sampling and nonresponse in those strata. Unweighted sample sizes in this paper were rounded to the nearest ten, as required by the U.S. Department of Education.

Measures

The outcome variables and predicting variables are presented in Table 1. Postsecondary enrollment in a two-year or a four-year college was measured by survey items that asked if the youth ever attended a postsecondary institution (e.g., 2-year community college, 4-year college) since leaving high school. The postsecondary enrollment rate was calculated by dividing the number of students who reported ever attending a 2-year community college or a 4-year college by the total number of students responding to the survey item.

Parents and young adults also answered questions about the course of study at a 2-year community college or a 4-year college. This study used the NSF definition of STEM: "all fields of fundamental science and engineering." An indicator for majoring in STEM fields was coded affirmatively if the youth or parent reported a college major that aligned with this definition, including majors such as computer science, programming, information technologies, engineering, mathematics and statistics, science, biology, earth science,

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geology, physics, chemistry, and environmental science. Social, behavioral and economic sciences were not included as STEM fields because the NLTS2 questionnaires combined psychology, economics, political science, sociology (NSF STEM majors), with non-STEM majors such as history, women's studies, American studies, ethnic studies in one category. These majors were coded as social science majors in this study for comparison purposes. Respondents who reported their major as health, health care, or medical were coded as health science majors. STEM postsecondary participation among youth who reported a college major was calculated by dividing the number of students reporting a STEM major by the total number of students reporting any college major.

Correlates were measured at waves 1 and 5. Demographic variables included young adults' gender, age at wave 5, race/ethnicity, and family income. Disability background variables include mental functioning skills and conversation ability. Mental functioning skills of the young adults were measured using a scale from 4 (low) to 16 (high) based on four items derived from parent responses about how well the youth can do the following tasks without help: tell time, read and understand common signs, count change, and look up telephone numbers and use a telephone. Each item had 4 response categories: 1=not at all well, 2=not very well, 3=pretty well, 4=very well. A summation of the scores on each item measures the overall mental functioning skills with reliability alpha 0.93. Parents rated child's conversation ability from 1=converse just as well as others, 2=has a little trouble carry conversation, 3=has a lot of trouble carrying conversation or does not carry a conversation at all.

Analysis

All analyses were performed on SAS 9.2 (SAS Institute, Cary, NC). SAS PROC SURVEY Taylor Series Linearization method was used to account for the complex sampling design and provide the exact estimate of the standard errors. Descriptive analysis on the demographic variables, background characteristics, and postsecondary enrollment and STEM participation were performed. Pairwise comparisons between each other disability group and the ASD group were conducted using chi-square tests. For young adults with an ASD, logistic regression models were used to explore the associations between demographic and background characteristics and postsecondary enrollment or STEM participation outcomes. Wave 5 weights were used for all the analysis so that the results could be generalized to the national population of students with an ASD. The rate of missing data was 6% for the postsecondary enrollment variable, and 16% for the postsecondary major variable. The missing data on correlates ranged from 0% to 6%. Missing data were list-wise deleted in the logistic regression models. No correction for multiple comparisons was applied the analysis.

Results

Table 2 shows the characteristics of the young adults with autism and young adults in 10 other disability categories weighted to represent the population. Compared with all other disability groups, young adults with an ASD were more likely to be male (84.20%), more concentrated in the highest income category (20.25% >$75,000 annual income), less concentrated in the lowest income category (19.35% <$25,000 annual income), and reported more difficulty with conversation (53.27% had lots of trouble or cannot have a conversation at all).

Young adults with an ASD were less likely to enroll in a 2-year community college (27.66%) or a 4-year college (14.95%) than all other disability groups except intellectual disabilities (ID) or multiple disabilities (MD) (Table 3). For the combined indicator of any college enrollment, young adults with an ASD had a significantly lower rate (31.95%) than their peers with learning disabilities (LD) (53.09%), speech/language impairment (SLI) (57.97%), hearing impairment (HI) (64.13%), visual impairment (VI) (63.81%), orthopedic impairments (OI) (53.34%), or other health impairment (OHI) (55.88%), but higher than for those in the ID category (19.63%) or MD category (20.75%).

Table 4 provides the weighted postsecondary STEM major rates among students in each disability category who reported a college major. Young adults with an ASD had a higher proportion of majoring in STEM related fields (34.31%) than any other disability groups. The difference was significant for seven out of the 10 pair-wise comparisons. When we broke down the STEM related fields into computer science, engineering, math, and science, we found that the high STEM participation rates among young adults with an ASD was mainly driven by a high concentration in science or computer science majors. Young adults with an ASD were significantly more likely to major in science (12.12%) than their peers with LD (4.72%), SLI (4.71%), ID (5.40%), HI (4.80%), OI (1.45%), OHI (4.55%), TBI, or MD[1]. These young adults with an ASD were also significantly more likely to major in computer science (16.22%) than those with LD (4.06%), SLI (5.90%), or OHI (5.19%). However, the high prevalence in STEM majors for young adults with an ASD was not found in non-STEM majors, such as health science (7.64%) or social sciences (9.52%).

We used weighted logistic regression models to examine the correlates of postsecondary enrollment or STEM participation (Table 5). Older students with an ASD had significantly higher odds of majoring in STEM fields than younger students with an ASD. Young adults with an ASD from families in the three lower annual income groupings (<$25,000 group, $25,001 – $50,000 group, or $50,001 to $75,000) had significantly lower odds of enrolling in a 2-year or 4-year college than those with families in the highest annual income category (over $75,000). Young adults with higher mental functioning skills also had significantly higher odds of enrolling in college than their peers with lower mental functioning skills. When focusing on STEM majors, the odds of STEM majoring were 13 times higher among males with an ASD than females.

Discussion

These results provide the first national picture of postsecondary enrollment and STEM participation for young adults with an ASD as well as their peers in 10 other disability categories. Our analyses suggest that young adults with an ASD who attend college are most likely to pursue STEM majors. However, they also have one of the lowest overall college enrollment rates.

Despite a previous lack of national evidence, the idea that people with autism might be predisposed to choosing and succeeding in STEM-related majors and jobs has gained a footing in popular press stories and among advocacy groups (Moore 2006; Morton 2001; Ross 2006; Safer 2012). Our findings confirm that individuals with an ASD are more likely than the general population and other disabilities groups to gravitate toward STEM. The STEM major rate (34.31%) for young adults with an ASD was not only higher than their peers in all 10 other disability categories, but also higher than the 22.80% of students in the general population that declared a major in STEM-related fields in postsecondary education (Chen and Weko 2009). In addition, this study found that young adults with an ASD in STEM fields were more likely than the general population to concentrate in science [12.12% vs. 8.3% (Chen and Weko 2009)] and computer science [16.22% vs. 6.6% (Chen and Weko 2009)].

[1]Science major point estimates are not reported for young adults with TBI or MD because of low cell counts, as required by the data use agreement with the U.S. Department of Education.

While the STEM participation rate of young adults with an ASD appeared to be high, their postsecondary enrollment rate was the third lowest of all the disability categories. As advances continue in the early identification and treatment of children with autism (Hart et al. 2010), these enrollment rates are likely to increase and, consequently, STEM participation among individuals with an ASD may also continue to increase over time.

We found that earlier mental functioning skills measured in high school were highly predictive of postsecondary enrollment, suggesting that a lack of level of basic mental functioning skills may create significant barriers to college enrollment. One of the hallmarks of autism is a desire for routine and consistency; changes in routine and exposure to new and larger social dynamics can derail a person with an ASD even in familiar settings (Hendricks and Wehman 2009) and may be particularly evident at the postsecondary level (Roberts 2010). Indeed, young adults with higher levels of mental functioning skills had higher odds of attending colleges, which may suggest that young adults with an ASD require certain life skills early on so that they are better prepared to deal with challenging life situations, such as the transition from high school to college (Hendricks and Wehman 2009; Roberts 2010; VanBergeijk et al. 2008). That said, while life skills are certainly critical to academic success, cognitive skills, which were not measured in this study, would also play an important role for these students to successfully handle the academic rigor and demands of college coursework.

Despite findings from other studies that suggest a correlation between STEM-related skills and conversation ability among younger students with an ASD (Banda and Kubina 2010; Banda et al. 2003; Donaldson and Zagler 2010), this study found that conversational skills of young adults with an ASD were not associated with postsecondary enrollment or STEM majoring rates. This inconsistency with other studies is most likely due to the fact that there was little variability in conversational ability among young adults with an ASD whose functioning skills were high enough to enable them to successfully enroll in a postsecondary institution.

We found income disproportionalities in postsecondary enrollment among young adults with an ASD. Echoing findings from Shattuck et al. (2012) using NLTS2 wave 4 data, young adults from households with lower income were significantly less likely to enroll in a two-year or four-year college even after controlling for impairment severity. An association between family income and worsening post-high school behavior and employment outcomes were found by Taylor and Seltzer (2010) and Shattuck et al. (2012). With the increase in income inequality and poverty rates in the U.S since the 1970s, future research and policies should examine new ways to promote participation in postsecondary education and STEM majors among poorer young adults with an ASD.

This study also found a very large gender gap in majoring in STEM-related fields among young adults with an ASD (39% of male students with an ASD vs. 3% of female students with an ASD). Similarly, a smaller gender gap in STEM major rates is also present for students in the general population, with 29% of male college freshmen vs. 15% of female freshman planning to major in STEM (National Science Foundation 2009). Our study suggests that increasing the STEM participation rate among females is an even greater urgent issue for those with developmental disabilities than in the general population.

This study has several limitations. First, ASD diagnosis was based on district reports of students receiving special education services under the autism category. Consequently, students with an ASD who were not qualified for special education services were not included in this study, which limits our ability to generalize findings to the total population of young adults with an ASD.. Second, the analyses were correlational and do not allow

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causal inferences. Third, the postsecondary enrollment and major data were collected by using parent or young adult survey instead of college registration records, which may result in potential reporting biases. Future research should validate the results of this study through other data sources, e.g. enrollment data from the university disability support office. Fourth, in order to take full advantage of this large-scale dataset, our research aims were broad in scope and compared the ASD group to each of the other disability groups, which could potentially inflate the rate of false discoveries.

In an era where a world-class science and engineering workforce is needed to remain competitive in a technologically advancing global economy, it becomes imperative to discover previously untapped sources of STEM talent. This study confirms that individuals with an ASD may indeed have the potential to become such a resource. The implications from these findings also support previous research indicating that postsecondary educational institutions need to provide extra supports and services for students with autism to complete their college degrees and navigate toward STEM careers (Roberts 2010; VanBergeijk et al. 2008). Future studies in the area of ASD and STEM should continue to bridge the gap between education research and practice by informing stakeholders, such as parents, high school teachers and administrators, college deans, and counselors of resource centers, of the postsecondary educational environments that best support the enrollment, persistence, and completion of STEM degrees among college students with an ASD.

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Table 1

Outcome variables and correlates from NLTS2 data sources

Measures	Description
Outcomes	
Postsecondary Enrollment	Parents and young adults were asked whether they ever attended 4-year college (np5S5a_A3i_ever) or 2-year community college (np5S3a_A3a_ever)
College major	Parents and young adults were asked whether their course of study at postsecondary schools
STEM major	Computer science, programming, information technology (np5s3hs5g_k6fk8e_07) Engineering, electrical, mechanical, chemical (np5s3hs5g_k6fk8e_09) Mathematics and statistics (np5s3hs5g_k6fk8e_16) Science, biology, earth science, geology, physics, chemistry, environmental science (np5s3hs5g_k6fk8e_19)
Non-STEM major	Social sciences (history, political science, economics, sociology, psychology, humanities, public policy, philosophy, religion, urban studies, women's studies, American studies, ethnic studies, international relations, and social sciences) (np5s3hs5g_k6fk8e_14) Health, health care, medical (np5s3hs5g_k6fk8e_13)
Correlates	
Demographic background	Gender (w5_GendHdr2009) Age at wave 5 (W5_Age2009) Race/ethnicity (w5_EthHdr2009) Family income (W5_IncomeHdr2009_detail)
Disability background	Mental functioning skill (np1Mentalskill) * conversation ability (np1B_4i_5d) *

Source: NLTS2, waves 1 and 5.

NLTS2 variable names are in brackets.

* indicates this variable is from wave 1.

[1] STEM fields are based on the NSF mission to support "all fields of fundamental science and engineering" and include majors such as computer science, programming, information technologies, engineering, mathematics and statistics, science, biology, earth science, geology, physics, chemistry, and environmental science. Social, behavioral and economic sciences are not included because the NLTS2 questionnaires combine psychology, economics, political science, sociology (NSF STEM majors), with non-STEM majors such as history, women's studies, American studies, ethnic studies in one category. We did not include them in the STEM fields.

Table 2

Descriptive statistics for young adults with an ASD vs. peers with other types of disability

Measures	ASD	LD	SLI	ID	ED	HI	VI	OI	OHI	TBI	MD
Male	84.20	64.81	62.01	55.07	72.86	48.44	55.78	54.32	73.85	69.74	58.57
Age, mean (s.e.)	23.18 (0.08)	23.13 (0.08)	22.79 (0.08)	23.29 (0.08)	23.22 (0.07)	23.30 (0.08)	23.32 (0.11)	23.35 (0.09)	23.19 (0.07)	23.41 (0.13)	23.31 (0.09)
Hispanic	8.97	16.80	12.86	9.57	9.58	18.39	13.93	13.94	8.43	10.61	12.62
Black	20.81	17.79	16.52	33.03	25.58	16.71	19.12	15.48	15.44	16.48	18.14
White	65.32	62.73	68.12	54.56	63.01	59.89	63.75	66.81	74.06	70.87	65.64
Other ethnicity	4.90	2.67	2.49	2.83	1.84	5.02	3.21	3.76	2.08	2.03	3.60
Income											
≤$25,000	19.35	35.85	24.26	51.31	37.73	24.64	26.29	26.14	18.48	31.47	29.43
$25,001– 50,000	28.55	26.74	26.74	24.18	27.11	24.62	27.54	29.58	26.47	18.59	26.51
$50,001–75,000	31.85	29.40	32.03	18.83	25.95	34.20	34.20	31.89	37.81	38.05	26.56
Over $75,000	20.25	8.02	16.97	5.68	9.21	16.54	11.98	12.39	17.24	11.88	17.50
Conversation ability											
Lots of trouble or cannot converse	53.27	2.62	9.54	25.58	4.8	17.07	10.37	18.43	9.22	7.78	45.79
Little trouble	32.95	22.82	32.33	35.40	31.12	35.14	9.39	17.12	25.15	35.30	26.90
No trouble	13.78	74.56	58.13	39.02	64.08	47.79	80.24	64.45	65.63	56.92	27.31
Mental functioning skills, mean (s.e.)	10.94 (0.29)	13.86 (0.11)	14.23 (0.27)	11.23 (0.21)	14.09 (0.20)	14.21 (0.16)	11.54 (0.32)	12.35 (0.23)	13.92 (0.11)	13.48 (0.22)	9.42 (0.30)
Unweighted N	660	430	460	480	400	490	420	550	590	210	540
Weighted N	14,328	1.287,104	82,363	253,167	234,391	26,838	9,779	23,521	93,897	5,855	37,561

Source: NLTS2, waves 1 and 5. Percentages were weighted to population levels. Unweighted N was rounded to the nearest 10.

ASD = autism spectrum disorder; LD = learning disabilities; SLI = speech/language impairment; ID = intellectual disabilities, ED = emotional disturbances; HI = hearing impairment; VI = visual impairment; OI = orthopedic impairment; OHI = other health impairment; TBI = traumatic brain injury; MD = multiple disabilities.

Table 3

Prevalence of postsecondary enrollment among young adults with an ASD vs. peers with other types of disability

Type of College	ASD	LD	SLI	ID	ED	HI	VI	OI	OHI	TBI	MD
2-year community college	27.66	48.54***	44.80***	18.75*	36.65	50.39***	49.27***	48.62***	51.44***	41.57*	18.61*
4-year university	14.95	21.30	31.54***	6.29***	10.21	34.04***	38.34***	24.76**	19.55	18.14	6.20***
2-year or 4-year	31.95	53.09***	57.97***	19.63**	39.66	64.13***	63.81***	53.34***	55.88***	47.25*	20.75**
Unweighted N	630	420	460	470	400	490	420	550	590	210	510
Weighted N	13,803	1,275,843	82,317	244,468	234,391	26,808	9,655	23,350	93,686	5,855	36,510

* $p < .05$,

** $p < .01$,

*** $p < .001$.

Source: NLTS2, wave 5. The prevalence of postsecondary enrollment refers to percentage of students in a particular disability category who reported attending a postsecondary institution. Tests of significance were performed using Chi-square test comparing each disability group with the ASD group. Percentages were weighted to population levels. Unweighted N was rounded to the nearest 10.

ASD = autism spectrum disorder; LD = learning disabilities; SLI = speech/language impairment; ID = intellectual disabilities, ED = emotional disturbances; HI = hearing impairment; VI = visual impairment; OI = orthopedic impairment; OHI = other health impairment; TBI = traumatic brain injury; MD = multiple disabilities.

Table 4

Prevalence of postsecondary majors[1] among young adults with an ASD vs. peers with other types of disability

College Major	ASD	LD	SLI	ID	ED	HI	VI	OI	OHI	TBI	MD
Any STEM	34.31	18.60*	15.53**	15.82**	19.78	15.29**	14.67**	17.94*	14.79**	20.87	19.11*
Computer Science	16.22	4.06**	5.90*	7.42	7.82	6.40	7.04*	13.21	5.19**	17.61	12.06
Engineering	5.56	10.09	4.80	*a*	4.32	4.16	*a*	3.28	3.92	*a*	*a*
Science	12.12	4.72*	4.71**	5.40**	6.17	4.80*	6.17	1.45***	4.55*	*a*	*a*
Non-STEM											
Health Care	7.64	15.65	10.53	20.86	5.69	11.74	10.90	3.04	13.35	10.53	3.78
Social Science	9.52	6.68	12.01	3.98	11.86	9.63	25.11*	15.11	7.39	10.21	9.45
Unweighted N	150	170	210	50	110	220	200	250	250	80	70
Weighted N	3,142	523,150	32,818	22,956	60,935	12,226	5,513	9,611	40,251	2,271	6,192

* $p < .05$,

** $p < .01$,

*** $p < .001$.

Source: NLTS2, wave 5. The prevalence of a postsecondary STEM major refers to percentage of students in a particular disability category who reported that particular STEM major. Tests of significance were performed using Chi-square test comparing each disability group with the ASD group. Percentages were weighted to population levels. Unweighted N was rounded to the nearest 10.

[1] Math major point estimates are not reported because of low cell counts across all disability types, as required by the data use agreement with the U.S. Department of Education.

[a] Point estimate not reported because of low cell count for this category as required by the data use agreement with the U.S. Department of Education.

ASD = autism spectrum disorder; LD = learning disabilities; SLI = speech/language impairment; ID = intellectual disabilities, ED = emotional disturbances; HI = hearing impairment; VI = visual impairment; OI = orthopedic impairment; OHI = other health impairment; TBI = traumatic brain injury; MD = multiple disabilities.

Table 5

Logistic regression models of any college enrollment and STEM majoring among young adults with an ASD

Covariates	2- or 4- Year College Enrollment	College STEM Major
Age	1.17 [0.90, 1.53]	1.83* [1.14, 2.93]
Male	0.79 [0.40, 1.57]	13.46** [1.52, 119.05]
Female	Reference	Reference
Black	1.13 [0.44, 2.95]	0.59 [0.06, 5.60]
Hispanic	0.74 [0.23, 2.43]	45.41 [0.21, 999.99]
White or other ethnicity	Reference	Reference
Income		
<$25,000	0.27** [0.11, 0.69]	0.11 [0.008, 1.34]
$25,001–50,000	0.13*** [0.04, 0.40]	0.47 [0.08, 2.91]
$50,001–75,000	0.39* [0.17, 0.88]	0.89 [0.27, 2.98]
Over $75,000	Reference	Reference
Conversation ability		
Lots of trouble or cannot converse	0.50 [0.14, 1.80]	0.16 [0.02, 1.09]
Little trouble conversing	1.74 [0.46, 6.60]	2.83 [0.77, 10.36]
No trouble conversing	Reference	Reference
Mental functioning skills	1.37*** [1.18, 1.59]	0.88 [0.69, 1.13]

*$p < .05$,

*$p < .05$,

**$p < .01$,

***$p < .001$.

Source: NLTS2, waves 1 and 5.