Project ATTAIN on Predictors of Positive Post-School Outcomes for Youth with Autism Spectrum Disorder

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Agenda

- Introductions
- Project ATTAIN
- Predictors of Postschool Success
- Current Outcomes for Youth with Autism
- ATTAIN Research
- Practitioner Tool and Policy Brief
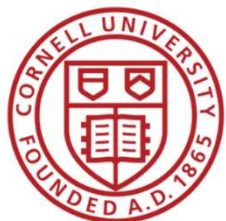- Conclusion & Next Steps

Our Research Team

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Pause

Autistic v. Person with Autism

Our Work

Autism Transition to Adulthood Initiative (ATTAIN): A multi-year research project led by researchers at Cornell University's Yang Tan Institute on Employment and Disability.

Purpose of ATTAIN: To help improve post-school outcomes for young adults with autism through identifying predictors of obtaining a job, pursuing college/university, or living on one's own (or with roommates) after high school.

https://autismtransitiontoadulthood.org/

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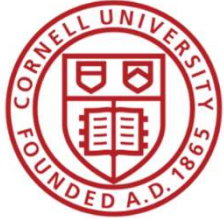
Predictors of Post-School Success

In-school experiences correlated with improved post-school outcomes

23 Predictors for Students with Disabilities

Policy

- Inclusion in Gen Ed
- Exit Exam Req./ HS Diploma Status
- Program of Study

Student Skills

- Community Experiences
- Decision-Making
- Goal Setting
- Psychological Empowerment
- Self-Advocacy/Self-Determination
- Self-Care/Independent Living
- Self-Realization
- Social Skills
- Technology Skills
- Travel Skills

Career Development

- Career Awareness
- Career Technical Education
- Occupational Courses
- Paid Employment/Work Experience
- Work Study

Collaborative Systems

- Interagency Collaboration
- Parent Expectations
- Parental Involvement
- Student Support
- Transition Program

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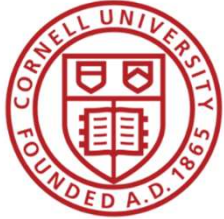(e.g., Haber et al., 2016; Mazzotti et al., 2016; Mazzotti et al., 2021; Test et al., 2009)

Why Investigate Predictors?

Predictor research can help inform and strengthen transition programs and practices in secondary education by pinpointing which in-school experiences have been linked to participating in education, employment, independent living, or other desired outcome areas (Rowe et al., 2015)

Frequently Researched Outcomes

- **Higher education:** being enrolled full- or part-time in community college (2-year program) or college/university (4- or more year program), and completing 1 term (IDEA, 2004)

- **Competitive employment:** work for pay at or above the minimum wage for 20 hours a week (90 days in the year since leaving high school), with customary pay rate, benefits, and opportunities for advancement as those without disabilities; the setting is with others who are nondisabled (IDEA, 2004)

- **Independent living *philosophy*:** "emphasizes consumer control… having crucial and valuable perspective to contribute, and deserving of equal opportunity to decide how to live, work, and take part in their communities…" (National Council on Independent Living, 2020, para. 11)

Why does our work focus on predictors of post-school success **for youth with autism**?

Current Issues

- People with autism often experience prejudice, discrimination, and other forms of societal stigma.

- Myths and misconceptions about their job performance, productivity, and safety (Scott et al., 2017; Solomon 2020; Unger et al., 2002)

- Some people with autism may exhibit certain behaviors (like avoiding eye contact or repetitive movements) that others may interpret as problematic and can affect securing a job or achieving other postsecondary goals.

Postsecondary Outcome Facts

- **Fewer than 60%** of young adults, ages 21-25, with autism work in paid employment, outside the household. (Roux et al., 2015)

- People with autism are **less likely** to live on their own leaving high school compared to people with other disabilities. (Anderson et al., 2013)

- **Only 36%** of high school graduates with autism have attended any form of postsecondary education (such as college or university) before their early 20s compared to more than 60 percent of all high school graduates. (Roux et al., 2015)

Impact on Low-income Youth with Autism

- College attendance rates are **lower** for autistic youth from low-income backgrounds (Roux et al., 2015; Shattuck et al., 2012)

- **53%** of autistic children live in low-income households, with **25%** living in poor households (Anderson et al., 2022)

- **25%** of teens with autism in all households receive one or more forms of public assistance (Shattuck et al., 2018)

Gap in the Literature for People with Autism

Researchers, policy makers, and practitioners have taken greater interest in understanding what in school experiences predict positive transition outcomes.
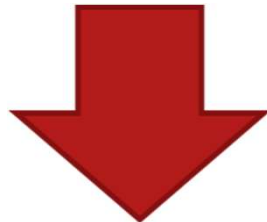
Yet, in spite of this growing body of research targeting youth with disabilities, more generally, little is known about which in school experiences promote better outcomes for those with autism.

Test et al. (2009)

- Systematic literature review

- 1984 – March 2009

- Identified 16 predictors across 22 studies

- Only 4 of the 22 studies included, or may have included, students with autism, where this population accounted for 1% or less of their total samples

Haber et al. (2016) & Mazzotti et al. (2016)

Haber et al. (2016)

- Meta-analysis
- Assessed the strength of Test et al.'s (2009) predictors & updated literature to May 2010
- Included 36 studies
- **Limited evidence indicating whether predictors can be applied directly to the autism population**

Mazzotti et al. (2016)

- Systematic Literature Review, 2009 – 2014
- Targeted studies conducting secondary analyses of the National Longitudinal Transition Study-2 (NLTS-2)
- Identified four new predictors based on 11 included studies
- **4 studies included autistic students with other disabilities, 2 autism only, 1 unclear**

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Mazzotti et al. (2021)

- Systematic literature review

- 2009 – Jan. 2019

- 22 included studies

- 3 studies included students with autism among other disabilities, 5 exclusively targeted students with autism, and 1 was unclear whether autistic students were included

Predictor	Employment	Education	Ind. Living
Cornell University			
Career Awareness	yes	yes	no
Career Technical Education	yes	no	no
Community Experiences	no	no	no
Exit Exam Requirements/ High School Diploma Status	no	no	no
Goal-Setting	no	yes	no
Inclusion in General Education	no	yes	no
Interagency Collaboration	yes	no	no
Occupational Courses	no	no	no
Paid Employment/ Work Experience	yes	no	no
Parent Expectations	yes	yes	yes
Parental Involvement	no	no	no
Program of Study	no	no	no
Psychological empowerment	no	yes	no
Self-Care/ Independent Living	yes	yes	no
Self-determination/Self-advocacy	yes	yes	no
Self-realization	no	no	no
Social Skills	yes	yes	no
Student Support	no	no	no
Technology Skills	no	no	no
Transition Program	yes	yes	no
Travel Skills	yes	no	no
Work Study	yes	no	no
Youth Autonomy/Decision-Making	yes	yes	no
Total # of Predictors	12	10	1
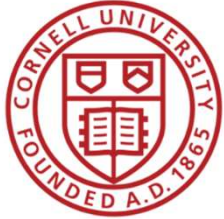
Autism Transition to Adulthood Initiative
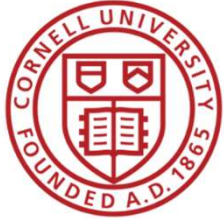
Our Research Question: What We Want to Know…

Do the known predictors of successful transition to adulthood for youth with disabilities also apply to youth with autism?

Our Timeline for Data Collection & Analysis

Year	Project Task	Description
1	Analysis of Existing PROMISE Data	Use rigorous research methods to analyze existing data from New York State PROMISE (Promoting the Readiness of Minors in Supplemental Security Income), a federally sponsored research initiative focused on removing obstacles to adult success for youth who receive Supplemental Security Income.
2	PROMISE Follow-Up Survey	Create and administer a new survey for young adults who participated in PROMISE to better understand what predictors they experienced in high school and their outcomes now. Analyze survey data using rigorous research methods.
3	Longitudinal Nationally-Representative Survey	Create and administer a nationally-representative longitudinal survey to better understand predictors of different outcomes for youth with autism. Analyze survey data using rigorous research methods.

Year 1 & 2 Sample: Where does it come from?

This project uses existing data collected under New York State PROMISE [Promoting the Readiness of Minors in Supplemental Security Income]:

- Funded by the United States Department of Education
  - Included interagency collaborations with Social Security Administration (SSA), United States Department of Health and Human Services (HHS), and the Department of Labor (DOL)
- Recruited social security income (SSI) eligible youth (14-16 years of age) between 2014 and 2016
- Randomized control trial (RCT) used to test interventions to predict positive outcomes for youth with the control group continuing to receive typical services available to them
- Six years of data including administrative, service records, youth surveys, and parent surveys

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Year 2: Who was in our study?

Total number of participants: 363

- Number of participants with autism: 81 (22.3%)

- Average age for participants with autism is 22.48 years; for all other participants 22.68 years

- Respondent characteristics similar to larger sample of all NYS PROMISE youth

- Most responses from Western NY

Participant Characteristics	Autism	Not Autism
Observations	*81*	*282*
Overall Representation	17.75	82.25
Race/Ethnicity		
Alaskan or American Indian	4.9%	1.8%
Asian	34.6%	47.2%
Black	40.7%	31.9%
Hispanic or Latino	8.6%	5.0%
Multiple	4.9%	7.4%
White	6.2%	6.4%
Not Disclosed	4.9%	1.8%
Sex		
Male	79.0%	65.6%
Female	21.0%	34.4%
Region		
Central NY	8.6%	13.8%
Western NY	86.4%	69.1%
New York City	4.9%	17.0%

Year 2: Empirical Approach

- The aim of this work is to understand the differential role that known predictors have for youth with ASD on binary outcomes of high school completion, post-secondary school participation, and employment

- We separately run logit regressions for each predictor and each outcome

- Results are reported as odds ratios

- Robust standard errors

- Multiple Imputation by Chained Equations (White, Royston, & Wood, 2011) used in Stata 16 to address instances of missing data

Year 2: Post School Outcomes

Outcomes	Autism	Other	p
Unsuccessful High School Exit	12.3%	8.2%	.249
In High School	25.9%	7.8%	< .001
Successful High School Exit	58.0%	78.0%	< .001
Post-Secondary Participation	27.2%	38.7%	.058
Ever Employed	33.3%	59.7%	< .001
Have paid job	12.3%	32.5%	< .001
Worked part-time for pay in prior 5 years	30.9%	52.2%	.001
Worked full-time for pay in prior 5 years	6.2%	24.1%	< .001

Year 2: Empirical Model

$$Y_i = \beta_0 + \beta_1 ASD_i + \beta_2 P_i + \beta_3 ASD_i P_i + X_i \delta + \varepsilon_i$$

- Model includes
  - Y: binary measure of outcomes for student *i*
  - ASD: Indicator of ASD status
  - P: Single predictor tested in this model
  - X: Age, race/ethnicity, region, responses to functional capacity questions
  - ε: Idiosyncratic error
- β_1 is the estimate of the change in the odds of the outcome among youth with ASD who did not engage in predictor *P*
- β_2 is the estimate of the change in the odds of the outcome among youth with other disabilities who engaged in predictor *P*
- β_3 is the estimate of interest as it identifies the differential role of the predictor for youth with ASD

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Two Key Insights from Empirical Model

- Our approach leverages data for youth with ASD and youth with other disabilities to better understand the role of predictors for youth with ASD

  - Larger sample size

  - Relative comparisons

- Direct estimation of the *differential role* for youth with ASD

- Post-estimation calculation of the *total role* for youth with ASD

  - Due to odds ratios, total role is the product of $\widehat{\beta_2}$ and $\widehat{\beta_3}$

Year 2: Successful High School Exit

Predictor Variable	Autism	Predictor	Autism x Predictor
Successful High School Exit			
Transition program	0.58**	2.18*	11.18*
Parent Expectation to Live away from home	0.49**	1.50**	2.01*
Household tasks	0.37**	1.45*	2.27*
Post-secondary Participation			
Transition program	0.53**	2.70**	19.77*
Household tasks	0.23**	1.49*	3.85*

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Year 2: Total Role on Educational Outcomes (1)

Predictor Variable	Successful High School Exit	Post-secondary Participation
Career technical education	1.93*	2.32*
Employment	1.94*	2.57**
High school completion	-	112.99***
Paid employment	2.01*	3.27**
Interagency collaboration	1.45	2.29*
PE: Attend PSE	7.79***	-
PE: Financial Indep	2.56**	2.08+
PE: Live away	3.02***	1.5
PI: After HS services	2.27*	2.1
PI: Plans after HS	2.01*	2.83*

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Year 2: Total Role on Educational Outcomes (2)

Predictor Variable	Successful High School Exit	Post-secondary Participation
PI: Transition services	2.4*	1.17
Student support	3.02**	3.86**
Transition program: Number services	1.14***	1.16***
Transition program: SEd	24.41**	53.39***
Frequently+ in General Education	4.5***	5.07***
Makes own decisions	2.93**	2.77*
SCIL: Grooming	3.23*	4.6*
SCIL: HH tasks	3.3**	5.75**
SCIL: Own health	2.68**	3.01**
Travel skills	3.46***	4.05***

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Year 2: Any Employment

Predictor Variable	Autism	Predictor	Autism x Predictor
Current Employment			
Occupational Courses	0.94	2.54**	0.17*
Service Providers while in High School - Any	2.13	0.73	0.18*
Career Awareness - Total	1.22	1.23**	0.62*
Transition Program	1.69	1.13+	0.67*
Full-time In the Last 5 Years			
Psychological Empowerment	0.0457*	1.3133*	2.5462*
Personal Grooming	0.0058*	1.4362**	4.0648*

Year 2: Total Role on Employment Outcomes

Predictor Variable	Any Employment	Current Employment	Part-Time in Past 5 Years	Full-Time in Past 5 Years
Decision Making	1.33*	1.36**	1.30*	1.87*
Goal Setting	1.53*	1.21	1.69*	2.04**
SCIL: Household Tasks	2.04**	1.09	2.18**	2.34*
SCIL: Personal Grooming	2.03***	1.64	2.19***	5.84**
Travel Skills	1.53**	1.32	1.56**	2.29**
Psychological Empowerment	1.39	1.13	1.43	3.34**
Self-Advocacy/Self-Determination	1.66	1.20	1.73*	1.45
Career Awareness (Total)	1.24	0.76	1.28*	1.70*
Service Providers in High School (Any)	0.34	0.13*	0.27	0.20

Conclusion of our Findings

- Many predictors confirmed for youth with all other disability types

- Nine of the 23 known predictors apply to youth with autism receiving social security benefits in NYS in comparison to youth with other disabilities

- Relatively small sample size impacted findings

ATTAIN Research to Practice & Policy

Transition Predictors of Education for Youth with Autism (p. 1-2)

Source: https://autismtransitiontoadulthood.org/resources

Transition Predictors of Education for Youth with Autism (p. 3-4)

Source: https://autismtransitiontoadulthood.org/resources

Policy Brief

Policy Brief

ATTAIN — Autism Transition to Adulthood Initiative

BACKGROUND: The time frame when a young adult exits high school and enters emerging adulthood is often considered one of the most difficult transitions a person can experience. In order to help young adults with this transition, known as the postsecondary transition, effective transition planning and preparation beginning in middle school and continuing during high school is crucial. For students with disabilities, this planning and preparation should include supports tailored to their individual needs and engagement in meaningful activities that helps lead them to postsecondary activities of their choosing. For many young adults with autism, the postsecondary transition is a particular challenge.

Autism is a complex developmental disability that can cause significant social, communication, and behavioral challenges.

CURRENT ISSUES:
- People with autism often experience prejudice, discrimination, & other forms of societal stigma.
- Myths and misconceptions about their job performance, productivity, and safety can lead to employers' resistance to hire autistic applicants. (Scott et al., 2017; Solomon, 2020; Unger et al., 2002)
- Some people with autism may exhibit certain behaviors (like avoiding eye contact or repetitive movements) that others may interpret as problematic and can affect securing a job or achieving other postsecondary goals.

POSTSECONDARY OUTCOME FACTS:
- Fewer than 60% of young adults, ages 21-25, with autism work in paid employment, outside the household—their paid employment is often part-time and at low wages. (Roux et al., 2015)
- Only 36% of high school graduates with autism have attended any form of postsecondary education (such as college or university) before their early 20s compared to more than 60 percent of all high school graduates. (Roux et al., 2015)
- People with autism are less likely to live on their own leaving high school compared to people with learning disabilities, intellectual disabilities, or emotional disturbances. (Anderson et al., 2013)

RESEARCH-BASED RECOMMENDATIONS:
The overwhelmingly lower postsecondary outcomes experienced by people with autism compared to all high school graduates has led researchers to take greater interest in understanding predictors of positive postsecondary outcomes:

Predictors: Experiences in high school that are empirically linked to different post-school outcomes, like getting a job, enrolling in college/university, or living on one's own or with roommates after high school.

* References are available upon request. Please direct any questions to Principal Investigator of ATTAIN, Leslie Shaw, Ph.D., at leslie.shaw@cornell.edu

Evidence from Cornell University's Project ATTAIN (Autism Transition to Adulthood Initiative) Year 1 findings, along with prior predictor research, empirically document that the majority of known predictors of successful transition for youth with disabilities hold true for youth with autism, including:

Predictors	Outcome Areas		
	Employment	Postsecondary Education	Independent Living
Career Awareness	X	X	
Career Technical Education	X		
Goal Setting		X	
Inclusion in General Education		X	
Interagency Collaboration	X		
Paid Employment/ Work Experience	X		
Parent Expectations	X	X*	
Psychological empowerment		X*	
Self-Care/ Independent Living	X	X*	
Self-determination/Self-advocacy	X	X	
Social Skills	X	X	
Transition Program	X	X*	
Travel Skills	X		
Work Study	X		
Youth Autonomy/Decision-Making	X	X	

Note: An asterisk indicates the entries that apply to the PROMISE data used in Project ATTAIN

A Call to Action
Districts are urged to embed transition predictors as components of their secondary transition programs. Knowledge of predictors can help a) inform and strengthen transition programs and practices in high school, b) develop and evaluate transition programs at various levels (including school and district levels), and c) guide individualized education program (IEP) team members in creating transition activities in support of the acquisition of students' post-school goals. For more information, access the following three resources:

National Technical Assistance Center on Transition: Predictor Implementation School/District Self-Assessment Instructions and Action Planning Guide

National Secondary Transition Technical Assistance Center: Predictor Implementation School/District Self-Assessment (PISA)

Complementary tools to use alongside the PISA can be found on Project ATTAIN's website

Districts are urged to engage in research to evaluate their transition programs to determine the extent to which these programs incorporate predictors, how they incorporate predictors to benefit the individual needs of each autistic student, and to learn whether newly created programs/changes to existing programs based on predictor research improves outcomes for young adults with autism.

Project ATTAIN is a multi-year research initiative, designed to obtain a greater understanding of transition predictors of positive post-school outcomes for youth with autism. Year 1 of ATTAIN used existing data from New York State (NYS) PROMISE (Promoting the Readiness of Minors in Supplemental Security Income). NYS PROMISE was one of six model demonstration projects funded by the United States Department of Education dedicated to encouraging positive post-school outcomes for youth and their families receiving SSI.

Source: https://autismtransitiontoadulthood.org/resources

Summary and Next Steps

- Youth with autism experience numerous obstacles, especially during the transition process

- There is strong evidence in the research literature supporting use of predictors for youth with disabilities, but less evidence for youth with autism

- Project ATTAIN's research expands the field's knowledge on predictors for youth with autism

- Findings from the national survey will be released in the coming months
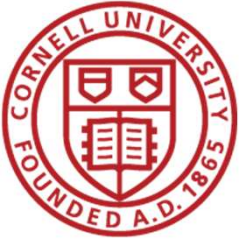
Thank you for your time.

If you have any questions, please contact Leslie Shaw at leslie.shaw@cornell.edu

Please visit our social media accounts for updates on our research!

- **Twitter**: https://twitter.com/AutismATTAIN
- **Facebook**: ATTAIN-Autism Transition to Adulthood Initiative