



NTACT

National Technical Assistance Center on Transition

NTACT Predictors and Students with ASD

Introduction

In 2009, Test, Mazzotti, et al. identified variables or *predictors* correlated with improved post-school outcomes for students with disabilities, by summarizing the correlation research in secondary transition using the quality indicators suggested by Thompson, Diamond, McWilliam, Snyder, and Snyder (2005). Predictors are macro level variables that influence systems, programs, and general practices and skills students need to be successful after high school. From this review, 16 evidence-based, in-school predictors of improved outcomes in education, employment, and/or independent living for students with disabilities were established. In 2014, Rowe et al., conducted a Delphi study to add specificity to the existing predictor definitions identified by Test, Mazzotti, et al. (2009) and operationally defined the predictors so local educators could understand the components necessary to develop, implement, and evaluate secondary transition programs based on predictor research. In 2016, using the same research procedures and inclusion criteria as Test, Mazzotti, et al. (2009), four additional predictors emerged (Mazzotti, Rowe, et al., 2016), bringing the total to 20.

To further understand what supports the post-school success of students with autism spectrum disorder (ASD), we looked at all of predictor studies to determine if students with ASD were included in the sample. Table 1 provides the predictor, its definition and the postsecondary outcome(s) for students with ASD, if they were a part of the study. Postsecondary outcomes are identified in three areas: education, employment, and independent living. While data collection on independent living is not a federal requirement, it is considered best practice to consider independent living options as needed based on individual student need.

In 2020, the definition for employment will change to align with the Workforce Investment Opportunities Act (WIOA). Those changes are reflected here in italics, within the original definition. The following outcome definitions were obtained from the Indicator 14 materials from www.transitionta.org.

- A. Higher education
 - a. enrolled full- or part-time

- b. community college (2-year program)
 - c. college/university (4- or more year program)
 - d. 1 complete term
- B. Competitive employment
- a. worked for pay at or above the minimum wage
 - b. *customary pay rate, benefits, and opportunities for advancement as those without disabilities*
 - c. setting with others who are nondisabled
 - d. 20 hours a week; 90 days in the year since leaving high school
 - e. includes military employment
- C. Other postsecondary education or training
- a. enrolled full- or part-time
 - b. education or training program (e.g., adult education, vocational technical school that is less than a 2-year program)
 - c. 1 complete term
- D. Other employment
- a. worked for pay or been self-employed
 - b. 90 days at any time since leaving high school
 - c. includes working in a family business (e.g., farm, store, fishing, ranching, catering services, etc.)

As you are looking at the NTACT post-school predictors in Table 1, some caution should be exercised when drawing conclusions between the predictors and students with ASD. While all the studies in Table 1 include at least one student with ASD (with the exception of Chiang et al., 2012 and Chiang et al., 2013 which included only students with ASD), it does not necessarily mean the predictors are generalizable to all students with ASD. At the same time, **for practitioners**, the information in the table can be used to design meaningful secondary transition experiences for students with ASD in the predictor areas. **For researchers**, Table

1 showcases the need to expand research into what works for students with ASD in secondary settings and how it impacts their success with postsecondary outcomes in education, employment, and independent living.

Table 2 represents the list of the current 20 NTACT predictors and the post-school outcome area associated with that evidence represented by the predictor studies. In this table, you will see five predictors with an *. These five studies had only students with ASD in their sample. Referring to the caution mentioned in the previous, we can say with certainty that career and technical education, goal setting, inclusion in general education, parental expectations, and social skills are predictors of post-school success in education and employment for students with ASD.

Table 1. NTACT Predictors with Definitions and Postschool Outcomes for Students with Autism Spectrum Disorders

Predictor	Definition *	Education	Employment	Independent Living	Reference(s)
Career Awareness	Learning about opportunities, education, and skills needed in various occupational pathways to choose a career that matches one’s strengths and interests.	X	X		Benz et al., 1997 (mixed sample) Carter et al., 2012 (mixed sample)
Career Technical Education	A sequence of courses that prepares students for a specific job or career at various levels from trade or craft positions to technical, business, or professional careers.	X	X		Baer et al., 2003 (mixed sample) Chiang et al., 2013 (autism only) Halpern et al., 1995 (mixed sample)
Community Experiences	Activities occurring outside of the school setting, supported with in-class instruction, where students apply academic, social, and/or general work behaviors and skills.				<i>The predictor studies for community experiences did not include students with ASD.</i>
Exit Exam Requirements/ High School Diploma Status	<u>Exit Exam Requirements</u> : Standardized state tests, assessing single content areas (e.g. Algebra, English) or multiple skill areas, with specified levels of proficiency that students must pass in order to obtain a high school diploma.		X		Heal & Rusch, 1994 (mixed sample)

Predictor	Definition *	Education	Employment	Independent Living	Reference(s)
	<u>Diploma Status</u> : Achieved by completing the requirements of the state awarding the diploma including the completion of necessary core curriculum credits.				
Goal-Setting	*Goal directed behavior involves actions that enable a person to reach a specified preferred outcome. Teaching goal setting and attainment skills involves teaching students to define and articulate a goal, identify current status in relation to the goal, develop an action plan, and evaluate progress toward achieving the goal (Wehmeyer & Schwartz, 1998).	X	X		Chiang et al., 2012 (autism only)
Inclusion in General Education	Requires students with disabilities to have access to general education curriculum and be engaged in regular education classes with peers without disabilities.	X	X	X	Baer et al., 2003 (mixed sample) Chiang et al., 2012 (autism only) Halpern et al., 1995 (mixed sample) Heal & Rusch, 1994 (mixed sample) Heal et al., 1997 (mixed sample)

Predictor	Definition *	Education	Employment	Independent Living	Reference(s)
					Lombardi et al., 2012 (mixed sample)
Interagency Collaboration	A clear, purposeful, and carefully designed process that promotes cross agency, cross program, and cross disciplinary collaborative efforts leading to tangible transition outcomes for youth.	X	X		Bullis et al., 1995 (mixed sample) Repetto et al., 2002 (mixed sample)
Occupational Courses	Individual courses that support career awareness, allow or enable students to explore various career pathways, develop occupational specific skills through instruction, and experiences focused on their desired employment goals.	X	X		Halpern et al., 1995 (mixed sample)
Paid Employment/ Work Experience	<u>Paid Employment</u> : Includes existing standard jobs in a company or organization or customized work assignments negotiated with the employer, but these activities always feature competitive pay (e.g., minimum wage) paid directly to the student by the employer.	X	X	X	Benz et al., 1997 (mixed sample) Bullis et al., 1995 (mixed sample) Carter et al., 2012 (mixed sample) Doren & Benz, 1998 (mixed sample)

Predictor	Definition *	Education	Employment	Independent Living	Reference(s)
	<u>Work Experience</u> : Any activity that places the student in an authentic workplace, and could include: work sampling, job shadowing, internships, apprenticeships, and paid employment.				
Parent Expectations	* Parent expectations typically mean having high expectations for their children (Pleet-Odle et al., 2016). Parent expectations include parents and family members planning, articulating an expectation that their child will participate in integrated and inclusive postsecondary education, and be employed in integrated and inclusive settings in the community after high school (Doren, Gau, & Lindstrom, 2012).	X	X		Carter et al., 2012 (mixed sample) Chiang et al., 2012 (autism only) Doren et al., 2012 (mixed sample)
Parental Involvement	Parents/families/guardians are active and knowledgeable participants in all aspects of transition planning (e.g., decision-making, providing support, attending meetings, and advocating for their child).				<i>The predictor studies for parental involvement did not include students with ASD.</i>
Program of Study	An individualized set of courses, experiences, and curriculum designed to develop students' academic and		X		Shandra & Hogan, 2008 (mixed sample)

Predictor	Definition *	Education	Employment	Independent Living	Reference(s)
	functional achievement to support the attainment of students' desired post-school goals.				
Self-Advocacy/ Self-Determination	The ability to make choices, solve problems, set goals, evaluate options, take initiative to reach one's goals, and accept consequences of one's actions.	X	X		Halpern et al., 1995 (mixed sample)
Self-Care/ Independent Living	Skills necessary for management of one's personal self-care and daily independent living, including the personal management skills needed to interact with others, daily living skills, financial management skills, and the self-management of healthcare/wellness needs.	X	X	X	Carter et al., 2012 (mixed sample) Heal & Rusch, 1994 (mixed sample)
Social Skills	Behaviors and attitudes that facilitate communication and cooperation (e.g., social conventions, social problem-solving when engaged in a social interaction, body language, speaking, listening, responding, verbal and written communication).	X	X		Benz et al., 1997 (mixed sample) Carter et al., 2012 (mixed sample) Chiang et al., 2013 (autism only) Halpern et al., 1995 (mixed sample)

Predictor	Definition *	Education	Employment	Independent Living	Reference(s)
Student Support	A network of people (e.g., family, friends, educators, and adult service providers) who provide services and resources in multiple environments to prepare students to obtain their annual transition and post-secondary goals aligned with their preferences, interests, and needs.	X	X	X	Doren & Benz, 1998 (mixed sample) Halpern et al., 1995 (mixed sample)
Transition Program	Prepares students to move from secondary settings (e.g., middle school/high school) to adult-life, utilizing comprehensive transition planning and education that creates individualized opportunities, services, and supports to help students achieve their post-school goals in education/training, employment, and independent living.	X	X		Benz et al., 1997 (mixed sample) Halpern et al., 1995 (mixed sample) Repetto et al., 2002 (mixed sample)
Travel Skills	Travel skills are defined as the ability to get to places outside home independently (Carter et al., 2012; McDonnall, 2011).	X	X		Carter et al., 2012 (mixed sample)
Work Study	A specified sequence of work skills instruction and experiences designed to develop students' work attitudes and		X		Baer et al., 2003 (mixed sample)

Predictor	Definition *	Education	Employment	Independent Living	Reference(s)
	general work behaviors by providing students with mutually supportive and integrated academic and vocational instruction.				Carter et al., 2012 (mixed sample)
Youth Autonomy/ Decision-Making	* Wehmeyer (1997) suggested autonomy occurs when an individual acts in relation to their own interests, preferences, and abilities without the undue influence of others and Wehmeyer and Schwartz (1998) defined decision-making as a process of selecting or coming to a conclusion about which set of potential solution is the best by teaching students to utilize problem-solving skills.	X	X		Berry et al., 2012 (mixed sample) Carter et al., 2012 (mixed sample) Doren et al., 2012 (mixed sample)

* = Definitions are from Rowe et al. (2014) unless otherwise noted.

Table 2. NTACT Predictors and Postschool Outcome Areas

Predictors/Outcomes	Education	Employment	Independent Living
• Career Awareness	X	X	
• Career Technical Education*	X	X	
• Community Experiences		X	
• Exit Exam Requirements/High School Diploma Status		X	
• Goal-Setting*	X	X	
• Inclusion in General Education*	X	X	X
• Interagency Collaboration	X	X	
• Occupational Courses	X	X	
• Paid Employment/Work Experience	X	X	X
• Parent Expectations*	X	X	X
• Parental Involvement		X	
• Program of Study		X	
• Self-Advocacy/Self-Determination	X	X	
• Self-Care/Independent Living	X	X	X
• Social Skills*	X	X	
• Student Support	X	X	X
• Transition Program	X	X	
• Travel Skills		X	
• Work Study		X	
• Youth Autonomy/Decision-Making	X	X	

* = Predictors that have only students with ASD in the sample.

References

- Baer, R. M., Flexer, R. W., Beck, S., Amstutz, N., Hoffman, L., Brothers, J., ... & Zechman, C. (2003). A collaborative followup study on transition services utilization and post-school outcomes. *Career Development for Exceptional Individuals, 26*, 7-25.
- Benz, M. R., Yovanoff, P., & Doren, B. (1997). School-to-work components that predict postschool success for students with and without disabilities. *Exceptional Children, 63*, 151-165.
- Berry, H. G., Ward, M., & Caplan, L. (2012). Self-determination and access to postsecondary education in transitioning youths receiving supplemental security income benefits. *Career Development and Transition for Exceptional Individuals, 35*, 68–75.
- Bullis, M., Davis, C., Bull, B., & Johnson, B. (1995). Transition achievement among young adults with deafness: What variables relate to success? *Rehabilitation Counseling Bulletin, 39*, 130-149.
- Carter, E. W., Austin, D., & Trainor, A.A. (2012). Predictors of postschool employment outcomes for young adults with severe disabilities. *Journal of Disability Policy Studies, 23*, 50–63.
- Chiang, H., Cheung, Y. K., Hickson, L., Xiang, R., & Tsai, L.Y. (2012). Predictive factors of participation in postsecondary education for high school leavers with autism. *Journal of Autism and Developmental Disorders, 42*, 685–696.
- Chiang, H.-M., Cheung, Y. K., Li, H., & Tsai, L. Y. (2013). Factors associated with participation in employment for high school leavers with autism. *Journal of Autism and Developmental Disorders, 43*, 1832–1842.
- Doren, B., Gau, J., & Lindstrom, L. (2012). The relationship between parent expectations and postschool outcomes of adolescents with disabilities. *Exceptional Children, 79*, 7-23.
- Doren, B., & Benz, M. R. (1998). Employment inequality revisited: Predictors of better employment outcomes for young women with disabilities in transition. *The Journal of Special Education, 31*, 425-442.
- Halpern, A. S. (1995). Transition: A look at the foundations. *Exceptional Children, 51*, 479 - 486.
- Heal, L. W., Khoju, M., & Rusch, F. R. (1997). Predicting quality of life of youths after they leave special education high school programs. *The Journal of Special Education, 31*, 279-299.
- Heal, L. W., & Rusch, F. R. (1994). Prediction of residential independence of special education high school students. *Research in Developmental Disabilities, 15*, 223-243.
- Lombardi, A. R., Murray, C., & Gerdes, H. (2012). Academic performance of first-generation college students with disabilities. *Journal of College Student Development, 53*, 811–826.
- Mazzotti, V.L., Rowe, D.R., Sinclair, J., Poppen, M., Woods, W.E., & Shearer, M.L. (2015). Predictors of post-school success: A systematic review of NLT2 Secondary analyses. *Career Development*

and Transition for Exceptional Individuals, published online before print May 28, 2015, doi: 10.1177/2165143415588047

- McDonnall, M. C. (2011). Predictors of employment for youth with visual impairments: Findings from the second National Longitudinal Transition Study. *Journal of Visual Impairment and Blindness*, 105, 453-466.
- Pleet-Odle, A., Aspel, N., Leuchovius, D., Roy, S., Hawkins, C., Jennings, D., Turnbull, A., & Test, D.W. (2016). Promoting high expectations for post-school success by family members: A “to do” list for professionals. *Career Development and Transition for Exceptional Individuals*, 39, 249-126255. doi: 10.1177/2165143416665574
- Repetto, J. B., Webb, K. W., Wilson, C. G., & Washington, T. (2002). Connecting student outcomes with transition practices in Florida. *Career Development of Exceptional Individuals*, 25, 123-139. doi:10.1177/088572880202500203
- Rowe, D. A., Alverson, C. Y., Unruh, D., Fowler, C., Kellems, R., & Test, D. W. (2014). A Delphi study to Operationalize Evidence-based Predictors in Secondary Transition. *Career Development and Transition for Exceptional Individuals*, 38, 113-126. Doi: 10.1177/2165143414526429
- Shandra, C. L., & Hogan, D. P. (2008). School-to-work program participation and the post-high school employment of young adults with disabilities. *Journal of Vocational Rehabilitation*, 29, 117-130.
- Test, D. W., Mazzotti, V. L., Mustian, A. L., Fowler, C. H., Kortering, L. J., & Kohler, P. H. (2009). Evidence-based secondary transition predictors for improving post-school outcomes for students with disabilities. *Career Development for Exceptional Individuals*, 32, 160- 181. doi: 10.1177/0885728809346960
- Thompson B., Diamond, K. E., McWilliam, R., Snyder, P., & Snyder, S. W. (2005). Evaluating the quality of evidence from correlational research for evidence-based practice. *Exceptional Children*, 71, 181-194.
- Wehmeyer, M. L. (1997). Self-determination as an educational outcome: A definitional framework and implications for intervention. *Journal of Developmental and Physical Disabilities*, 9, 175-209.
- Wehmeyer, M. L., & Schwartz, M. (1997). Self-determination and positive adult outcomes: A follow-up study of youth with mental retardation or learning disabilities. *Exceptional Children*, 63, 245-255.