Services and Outcomes for Transition Age Young Adults with Autism Spectrum Disorders: Secondary Analysis of the NLTS2 and RSA 911

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Introduction

Individuals with Autism Spectrum Disorders (ASD) experience challenges in adulthood that include unemployment or underemployment, difficulty sustaining employment, social isolation and dependence (Billstedt & Gillberg, 2005; Frith, 2004; Howlin, Goode, Hutton, & Rutter, 2004; Hurlbutt & Chalmers, 2004). In addition, there is insufficient information about the experiences of young adults with ASD and the relationship between personal, educational, and rehabilitation supports and post-school outcomes. Because of limited information, few clearly documented recommendations exist for secondary education and transition supports (e.g. Myles, Grossman & Aspy, 2007; Wehman, Datlow Smith & Schall, 2009).

This project conducted descriptive and predictive analyses of the factors associated with and influencing a successful transition into adulthood for young adults with ASD using secondary data sources including the National Longitudinal Transition Survey 2 (NLTS2) and the Rehabilitation Services Administration 911 database (RSA 911). The project's goals were to support the design of effective transition services and supports for students with ASD by identifying personal and programmatic factors that are related to positive outcomes, as well as understanding the differences in services and supports used by young adults with ASD compared to other young adults with disabilities.

Project domains for analysis included transition outcomes, educational and vocational rehabilitation services and experiences, and personal and family characteristics. Findings described the personal characteristics and experiences of young adults with ASD and explored the relationships between personal characteristics, experiences, and post-school outcomes. Findings also explore individual characteristics, school experiences, goals and expectations from the perspectives of the individual, family, teachers and administrative sources as they both predict outcomes and compare and differ from youth in other disability groups.

Review of the literature

More than three decades have passed since the passage of the Individuals with Disabilities Education Act (IDEA), which promised students in the United States a "free and appropriate public education." A critical component of this endeavor was transition planning for the student's life beyond high school, including postsecondary education and integrated employment.

In spite of these promises, research shows that the majority of adults with intellectual and/or developmental disabilities are being served in either facility-based work or community-based non-work programs (Butterworth, Smith, Hall, Migliore, & Winsor, 2008) and participation in postsecondary education remains sporadic (Grigal & Hart, 2010; Newman et al., 2009). Furthermore, a low percentage of young adults with developmental disabilities transitioning from public education to adult life have jobs upon exiting school (Wagner, Newman, Cameto, Garza, & Levine, 2005). Most post-school employment supports are not sufficient to meet the demand and the quality of these services varies widely (Braddock, Rizzolo, & Hemp, 2004; Mank, Cioffi, & Yovanoff, 2003; Wehman, 2006).

When considering people with ASD in particular, research indicates they are even more unlikely to achieve such outcomes (Howlin, Goode, Hutton, & Rutter, 2004). Many remain

underemployed or employed in positions that are inappropriate given their skill set (Barnhill, 2007). One must understand, therefore, the many facets of transition planning, to determine the missing links that can lead individuals with ASD to such limited outcomes. In addition to school-based transition supports provided, also important are a host of critical players who develop and implement transition plans.

Studies have shown that parents are most often the advocates for services for their transition-age children, but lack confidence in the ability of systems to help after high school (Timmons, Whitney-Thomas, McIntyre, Butterworth, & Allen, 2004). Parents of youth with ASD reported that anxiety about the transition into adulthood significantly impacted their daily lives and wanted more participation in the process (Blacher, Kraemer, & Howell, 2010). In addition, parents of youth with ASD were found to have higher expectations for their child regarding employment outcomes and were more educated regarding the adult services available than parents of children from other disability groups (Blacher et al., 2010). Some parents show a preference for post-secondary education as a transition outcome as this option provides more time for a gradual transition to adulthood and an opportunity to develop relationships within the youth's peer group (Camarena & Sarigiani, 2009).

While parents' roles are critical, also important is the level of student participation in the planning meetings as students with ASD are not often present and rarely lead the discussions (Cameto, Marder, Wagner & Cardoso, 2003) This lack of participation and leadership may not be the result of the student's indifference, as studies have shown their desire to be considered experts and consulted in decisions that affect their lives (Hurlbutt & Chalmers, 2002).

Not only is student-directedness fundamental to effective transition planning, but it is also essential to consider the structure and content of the plans themselves. A structured, outcomes-based approach with concrete transition goals and steps to achieve these desired outcomes are optimal (Fullerton & Coyne, 1999; Nuehring & Sitlington, 2003). In addition, personalization of the transition process and subsequent consideration given to the individual student's strengths or weaknesses is often the aspect of planning that parents emphasize most (Blacher et al., 2010; Stoner, Angell, House & Bock 2007).

While it is unclear to what extent external entities engage in the transition planning process, the literature does suggest that demand for services, especially Vocational Rehabilitation (VR) services, is increasing (Cimera & Cowan, 2009). Between 1995 and 2005 the percentage of people with autism seeking VR services tripled from 1% to 3%. Almost half of these people were transition age youth (Migliore & Butterworth, 2008).

As researchers consider increased demand for VR services, they must consider specific VR services provided as an outcome predictors. Studies have found that employment outcomes are positively correlated with services such as job finding, job placement, job maintenance, and on-the-job supports (Lawer et al., 2009; Schaller & Yang, 2005). Other services positively correlated with employment outcomes include rehabilitation counseling and guidance (Gamble & Moore, 2003), supported employment, business vocational training (Hayward & Schmidt-Davis, 2003b), and college services (Gamble & Moore, 2003; Hayward & Schmidt-Davis, 2003b). Studies indicate that between services and personal characteristics of job seekers, services explain a greater percentage of employment outcomes (Bolton et al., 2000; Jung et al. 2010).

Fewer studies examined the quality of employment outcomes expressed as earnings and hours worked per week. Of the studies examined, most reported that earnings are positively correlated with job placement (Hayward & Schmidt-Davis, 2003b; Schonbrun, Sales, & Kampfe,

2007). Other services positively correlated with earnings include supported employment, on-the-job training, business vocational training (Hayward & Schmidt-Davis, 2003b), work adjustment (Gamble & Moore, 2003), and diagnosis and treatment (Schonbrun et al., 2007).

Study Design and Methods

Study Design. The study design was secondary data analysis with a focus on descriptive and predictive analyses. Data from two datasets were analyzed: The National Longitudinal Transition Study-2 (NLTS2) and the Rehabilitation Services Administration (RSA911). The NLTS2 includes data on a nationally representative sample of students with any disabilities who, in December 2000, were between the ages of 13 and 16 and receiving special education services. Variables in this dataset describe students' school experiences and transition outcomes in the domains of education, employment, leisure, and living arrangements between 2000 and 2008. Data were from students, parents or guardians, teachers, and school personnel. Parents/students' response rates varied from 82% at the onset of the study to 50% in most recent data collection at the time of this study. The data collection was funded by the National Center for Special Education Research at the Institute of Education Sciences (IES), U.S. Department of Education and managed by SRI International (http://www.nlts2.org).

The second dataset—RSA-911—includes variables that describe the characteristics, services received, and employment outcomes relative to all people who exited the vocational rehabilitation program during fiscal year 2008, the most recent dataset available at the time of this study. This dataset is an administrative dataset developed by the Rehabilitation Services Administration (RSA) to monitor the vocational rehabilitation's services delivered and outcomes obtained by the state Vocational Rehabilitation Programs. The RSA operates within the Office of Special Education and Rehabilitation Services (OSERS), Department of Education.

Population Studied. The population studied was youth with autism spectrum disorders (ASD) who were transition age. Data relative to youth with intellectual disabilities (ID) and youth with any other types of disabilities were also analyzed for comparison purposes. The definition of ASD relative to the participants in the NLTS2 dataset was provided by the school districts in accordance with federal standards. Disability identification of the participants included in the RSA911 dataset was made by the rehabilitation counselors and was based on the cause of the impairment to work. Transition age was defined as 16 to 26 years old.

Sample Selection. Participants in the NLTS2 dataset were selected by SRI International through stratified random sampling. Over 3,600 LEAs were randomly selected from the universe of about 12,000 LEAs operating in the United States and over 70 state-supported special schools were contacted. Over 500 LEAs and over 30 special schools agreed to participate, resulting in a total of over 11,200 eligible students with any types of disabilities.

The RSA911 dataset includes the entire national population of adults with any types of disabilities who in 2008 exited the rehabilitation program with or without employment. In this study we focused on youth with autism who exited the program after receiving vocational rehabilitation services. This group included 2,913 people who represented 46% of the overall number of people with autism who exited the vocational program in 2008 (N=6,294), which in turn represented 1% of the total number of people with any types of disabilities who exited the VR program in fiscal year 2008 (N=618,054).

Statistical Techniques. Frequencies and cross-tabulation were performed for describing categorical variables (e.g. gender, race) whereas means and standard deviations were performed for describing continuous variables (e.g. wages, work hours). Chi Square was performed to test the differences across groups in the NLTS2 dataset. In the case of the RSA911 dataset—because more cases were available—stepwise logistic regression could be performed to test multiple predictors simultaneously. All analyses relative to the NLTS2 dataset were performed after applying weights for estimating the national figures and standard errors of measures (SEM). However, as recommended by IES, estimates were reported only if at least 30 cases were available. Also, in compliance with IES' guidelines set to protect the confidentiality of participants, unweighted data were not reported. Finally, data analysis was conducted using SPSS v.17, complex samples.

Findings

National Longitudinal Transition Study 2 Findings

As table 1 shows, supported employment and sheltered employment were the most frequently reported post-high school goals in the students with ASD's transition planning. Almost half of the students had these goals whereas only a quarter of students or less had the goals of competitive employment or postsecondary education. However, only a small minority of students considered the goals in the transition planning right for them. Less than half of the students received services such as career skill assessment and career counseling and close to none had internship or apprenticeship experiences. The most frequent contacts engaged by schools with external organizations for transition planning purposes were with vocational rehabilitation and supported employment services. However, schools also contacted sheltered workshops and adult day centers for about a third of their students. Expectations about the students' professional careers were mixed. Only about half of the parents thought that their sons and daughters were likely to get jobs after school. In terms of outcomes, less than a quarter of the students attended postsecondary education after high school and less than half of the students who exited high school were working for pay at the time of the interview. On average, the youth who were employed earned slightly more than the federal minimum wage.

Noticeable differences across disability groups emerged, especially between students with ASD and students with other types of disabilities. Sheltered employment was a goal adopted more often for students with ASD compared to their peers with other disabilities whereas living independently, competitive employment, and postsecondary education were reported less often as goals for students with ASD. Only in the case of the two or four-years college goal students with ASD were at an advantage compared with their peers with ID. Students with ASD received career skills assessment or career counseling services less often than their peers. During students with ASD's transition planning, schools were more likely to contact state vocational rehabilitation programs, supported employment programs, sheltered workshops and adult day programs compared with transition planning for students with other disabilities. However, schools were less likely to contact postsecondary education programs or potential employers in the case of students with ASD compared with other students.

Students with ASD's parents or guardians were less positive about their sons or daughters getting jobs compared with parents or guardians of the other students. In terms of outcomes,

students with ASD showed similarities with students with ID, but they were less likely to enjoy the same level of outcomes experienced by students with other types of disabilities.

We found that some school experiences were significant predictors of employment outcomes. For instance, the odds of being employed were over five time greater for students who had competitive employment as a goal, χ^2 (1) = 20.49, p < .000 and almost four times smaller for students who had sheltered workshop as a goal, χ^2 (1) = 16.21, p < .000. The odds of working after high school were 2.75 greater for students who received career skill assessment χ^2 (1) = 9.67, p < .05 and 2.45 greater for students who received career counseling χ^2 (1) = 6.51, p < .05. Finally, participating in postsecondary education increased the odds of working by almost five times, χ^2 (1) = 39.87, p < .000. There were not enough data or the differences were not statistically significant to show any relationships between employment and the other variables.

Table 1: Experiences and transition outcomes across disability groups *(Source: NLTS2)*

	ASD		ID		Other	
	%	SEM	%	SEM	%	SEM
Primary Post-HS Goal						
Supported employment	49%	3.2%	45%	3.7%	7%***	1.4%
Sheltered employment	43%	3.5%	33%*	4.4%	7%***	3.2%
Live independently	30%	2.9%	50%*	4.2%	61%**	3.9%
Competitive employment	26%	3.4%	46%*	4.3%	60%**	4.0%
2- or 4-year college	23%	3.4%	11%*	2.2%	58%**	4.3%
Postsecondary voc training	22%	3.3%	25%	4.0%	46%**	4.2%
Youth thinks IEP goals were right	12%	2.6%	28%*	4.4%	23%*	3.0%
Services received						
Career skills assessment	44%	3.7%	53%	4.4%	66%*	4.0%
Career counseling	26%	3.3%	40%*	4.7%	60%**	3.8%
Internship or apprenticeship	na	na	na	na	6%	3.4%
Contacts made (transition plan)						
State voc rehab agency	59%	3.9%	62%	4.8%	43%*	5.4%
Supported employment programs	39%	4.3%	46%	4.2%	10%**	2.3%
Sheltered workshops	36%	4.1%	35%	4.4%	10%**	5.1%
Other voc training programs	34%	4.2%	43%	5.0%	38%	5.4%
Job placement agencies	34%	4.7%	47%*	5.4%	27%	3.8%
Postsecondary voc schools	30%	4.7%	32%	6.3%	41%*	5.3%
Adult day programs	29%	4.2%	33%	5.9%	4%**	0.6%
Potential employers	26%	3.9%	42%*	5.2%	37%*	5.4%
Youth will definitely get a job	46%	3.30%	64%*	2.90%	88%***	1.60%
Postsecondary education outcomes						
Vocational/technical school	16%	3%	15%	2%	28%*	2%
Two-year/community college	23%	3%	18%	3%	37%*	2%
Four-year college/university	11%	2%	na	na	15%	2%
Employment outcomes						
Currently has a paid job	47%	5%	46%	3%	74%**	2%
Hourly wage at current job	$7.87	$0.42	$8.06	$0.69	$9.90	$0.24

Note. Effect size h (Cohen, 1988) compared to students with ASD: *Small; **Medium; *** Large

Most youth were males with a higher percentage of males in the ASD subgroup (84%) compared to the ID subgroup (58%) and the other disability subgroup (66%). The overall sample was mostly white (61%) with no major differences across disability groups.

Rehabilitation Services Administration 911 findings

Table two shows the services provided by the state Vocational Rehabilitation Programs—RSA911 dataset. The services most often provided were assessment and rehabilitation counseling with over half of the youth receiving them. In contrast, less than 10% of youth with autism received services such as college services or on-the-job training. No major differences in services provided occurred between youth with autism and youth with ID with the exception that youth with autism were more likely to receive college services compared to youth with ID. Compared to youth with other disabilities, youth with ASD were more likely to receive job placement and on-the-job supports whereas they were less likely to receive diagnosis and treatment, college services, occupational vocational training, and maintenance.

Table 2: Services provided to youth by disability group *(Source: RSA 911)*

	Autism	**ID**	**Other Disability**
Assessment	70.5%	66.9%	63.3%
Rehabilitation counseling & guidance	63.1%	58.4%	65.1%
Job placement	47.8%	44.3%	33.5%*
On-the-job supports	44.8%	39.8%	15.2%**
Job search	34.2%	33.2%	27.7%
Other services	24.7%	27.3%	28.0%
Transportation services	23.3%	23.8%	29.4%
Diagnosis and treatment	22.6%	21.6%	35.1%*
Job readiness training	22.0%	26.6%	16.5%
Information/referral	19.5%	15.0%	17.4%
Misc. training	15.6%	14.9%	13.3%
College services	9.6%	3.0%*	25.7%*
Occupational/vocational training	9.0%	7.7%	15.5%*
Maintenance	7.6%	10.8%	16.2%*
On-the-job training	6.7%	6.3%	3.5%
Disability related training	2.6%	2.2%	2.3%
Basic academic/literacy training	2.1%	2.2%	2.7%

Note. Effect size h (Cohen, 1988) compared to students with ASD: *Small; **Medium.

In regard to youth with ASD, the cost of purchasing services ranged between $0 and $21,776 per capita (M = $4,468, SD = $4,354) and the time from application to exit of the program ranged between seven days to about 7.5 years (M = 2.25 years; SD = 1.5 years). The majority of youth with ASD who received vocational rehabilitation services exited the VR program with jobs in integrated settings (60.5%). Youth worked an average of 23 hours of work per week at closure (SD = 10; N=1,762) and earned an average of $7.91 per hour (SD = $2.35; N=1,762). Finally, we found that 12% of the youth with ASD attended some form of postsecondary education (N=353) and about a third of them obtained a degree or diploma (N=110). The large majority of youth with ASD were male (84%), most were white (81%), and nearly all of them were identified as having a significant disability (99%). However, less than

half of them received public support in the forms of Supplemental Security Income or Social Security Disability Insurance (40%), or Medicaid or Medicare insurance at application (39%). Most participants lived in private residences (95%) and most reported that high school was their highest level of education at application (92%).

Predictors for exiting the vocational rehabilitation program with paid jobs. Greater spending in purchasing services and providing job placement services were the strongest predictors of employment outcomes with odds ratios of 4.56 and 3.41, respectively (Table 3). A smaller number of days from application to closure, not receiving college services, improving in postsecondary education, being male, receiving rehabilitation counseling, receiving job search services, and being white were also predictors of employment outcomes, although with much smaller odds ratio. In addition, we found 10 predictors that overall explained 13.6% of the variance in hourly earnings and 11 predictors that overall explained 11.3% of the variance in weekly work hours for the youth who exited the program with paid jobs. Given the modest explanatory power of these two multiple regressions we provide further details in a separate document (Migliore, Timmons, Butterworth, Lugas, submitted). Finally, we found that having received college services, not being a social security benefits recipient, and being white were strong predictors of participation in postsecondary education with odds ratios of 13.84, 0.46, and 1.59, respectively (Table 4).

Table 3: Predictors of integrated employment outcomes (N=2,810) *(Source RSA911)*

			95% C.I.for EXP(B)		
	Wald	Exp(B)	Lower	Upper	Sig.
Constant	26.01	.49	.00	.00	.000
Personal characteristics					
Improved postsecondary education	11.38	1.70	1.25	2.31	.001
Gender (M/F)	11.93	.66	.52	.83	.001
Race (Other/White)	5.91	1.32	1.06	1.65	.015
SSI or SSDI at application	3.67	.80	.64	1.01	.055
Medicaid/Medicare at application	3.58	.80	.64	1.01	.059
Services provided					
Cost of purchased services (Below/Above median)	262.90	4.56	3.80	5.48	.000
Job placement	157.29	3.41	2.81	4.13	.000
Days from application to closure (Below/Above median)	43.66	.54	.45	.65	.000
College services	11.96	.56	.41	.78	.001
Rehabilitation Counseling & Guidance	9.50	1.35	1.12	1.63	.002
Job search	4.11	1.25	1.01	1.54	.043

Cox & Snell Square=.23; Negelkerke=.31; Hosmer and Lemeshow Test=.000

Note. Stepwise iterations excluded the following variables: Hispanic/not Hispanic, age, postsecondary participation or degree at closure, assessment, job readiness training, misc. training, and other services

Table 4: Predictors of postsecondary education (N=2,617) *(Source RSA 911)*

			95% C.I.for EXP(B)		
	Wald	Exp(B)	Lower	Upper	Sig.
Constant	.97	.48	.00	.00	.324
Personal characteristics					
SSI or SSDI at application	22.82	.46	.33	.63	.000
Race (Other/White)	5.44	1.59	1.08	2.34	.020
Age at application	9.07	.89	.83	.96	.003
VR Services					
College services	272.77	13.84	10.13	18.91	.000
Assessment	5.01	1.41	1.04	1.91	.025
Other services	3.54	1.31	.99	1.74	.060

Cox & Snell Square=.23; Negelkerke=.31; Hosmer and Lemeshow Test=.863
Note. Stepwise iterations excluded the following variables: gender, Hispanic/Not Hispanic, Medicaid or Medicare at application, misc. training, cost of purchased services

Discussion and Interpretation of Findings

Conclusions

The findings from this study suggest that youth with ASD experience greater transition challenges compared to their peers with other disabilities and that there is room for improvement in assisting them to achieve better transition outcomes.

Compared to students with other types of disabilities, students with ASD's transition planning goals were less likely to include competitive employment and more likely to include sheltered workshops. In addition, students with ASD were less likely to receive services such as career skills assessment or career counseling. Finally students with ASD were less likely to attend postsecondary education. These differences in goals and services are concerning given that some of these variables were significantly correlated with employment outcomes. The odds of working were significantly greater when students had competitive employment as a goal in their transition planning, received career skill assessment services, received career counseling, or attended postsecondary education.

With few exceptions, youth with ASD who sought assistance from the Vocational Rehabilitation Program received similar types of services compared to youth with other disabilities. However, typically less than half of the youth received any given type of service. The fact that a large percentage of youth did not receive some of the services is concerning because the findings showed significant relationships between some services and outcomes: Job placement, rehabilitation counseling-and-guidance, and job search services were all associated with exiting the program with an employment outcome. In addition, the findings highlighted some disparities in employment outcomes to the disadvantage of people of color and females. Rapid job placement—i.e. fewer days from application to closure—was also associated with exiting the program with an employment outcome. An apparent discrepancy emerged with improved postsecondary education being associated with exiting the program with an employment outcome and receiving college services being associated with exiting the program without an employment outcome. We may speculate that youth seeking college services were mostly interested in completing their postsecondary education and sought jobs independently after exiting the program.

Overall, the findings showed that there were many youth who faced challenges in transitioning to employment. Youth who successfully transitioned to integrated employment earned better wages than if they attended sheltered workshops or day centers. However, their wages were still not enough to advance towards self-sufficiency.

Limitations

This research has some limitations, mostly related to the intrinsic limitations of the secondary data used. A main limitation of the NLTS2 dataset was sample size. Although the NLTS2 dataset includes a large number of participants, the sample size is considerably reduced when focusing only on the sub-group of students with ASD who gained employment. As a consequence, running bi-variate correlations was not possible for some predictors because the number of cases in some sub-groups was fewer than 30. The relatively small sample size was also an impediment to using logistic regression, which would have allowed analysis of all predictors in one test. Instead, a series of Chi Square tests had to be performed for each pair of predictor and outcome.

The main concern with the RSA911 dataset was that it provided administrative—not research—data. Vocational counselors were responsible for data collection and data entry relative to the people that they assisted. This approach to data collection introduced some variability due to the different judgment that counselors may have had when reporting data. For instance, disability identification was based on subjective evaluations made by the counselors during the applicants' interviews and assessment. It was not necessarily based on documented diagnoses. In addition, recording service delivery could have been influenced by the counselor's knowledge about whether or not certain services had been in fact provided.

Finally, the research design of this study—correlational analysis—was appropriate for uncovering relationships between predictors and outcomes, not causal relationships. Therefore, interpreting the findings should take into consideration that a relationships between variables is not necessarily a sign of causality.

Comparison with Findings of Other Studies

We found that transition planning goals in high schools were not always focused on promoting employment, a necessary step for enhancing independent living and self-sufficiency. This is in contrast with the literature showing that outcomes-based approaches with clear transition goals and concrete steps to achieve them are preferable and more successful (Nuehring & Sitlington, 2003; Fullerton & Coyne, 1999; Carter, Lane, Pierson, & Stang, 2008). Setting goals is also a way for school programs to make parents aware of the various outcomes that are possible for their children and encourage them to have higher expectations for the student (Lindstrom, et al., 2007). When goals are considered right by the people who are supposed to achieve them, the likelihood of success are higher. Unfortunately, our findings showed that the large majority of students with ASD did not think that the goals in their transition plans were right. This contrasts with the literature showing that self-determined students were employed at a higher rate and earned more per hour than those who were not self-determined (Brugnaro & Timmons, 2004; Fullerton & Coyne, 1999; Wehmeyer & Schwartz, 1997; Held, Thoma, & Thomas, 2004; Brugnaro & Timmons, 2004). Although our findings did not show statistically significant relationships between contacting external organizations and employment outcomes, the literature emphasizes the importance of involving multiple players in transition planning (Nuehring & Sitlington, 2003). By improving communication between schools and external

entities, both can familiarize each other on roles and responsibilities, increase investment in the process and capitalize on each other's strengths (Rado, Hamner, & Foley, 2004; Timmons et al. 2004; Whitney-Thomas & Hanley-Maxwell, 1996).

In regard to youth who sought assistance from the Vocational Rehabilitation program—RSA911 dataset—we found that the odds of exiting the program with integrated employment were higher when rehabilitation counseling and guidance, job search, and job placement services were provided. This was consistent with the rehabilitation literature (Gamble & Moore, 2003; Lawer et al., 2009; Schaller & Yang, 2005). In addition, consistent with Bolton et al. (2000) and Jung et al. (2010), we found that integrated employment was positively correlated with shorter time from application to closure and with higher costs of purchased services. We also found that youth with ASD who exited VR with integrated employment were more likely to be male, white, non-recipients of disability benefits, and with improved postsecondary education status from application to closure. Overall these findings were consistent with most rehabilitation literature across different disability groups (Hayward & Schmidt-Davis, 2003a; Jung et al., 2010; Schaller & Yang, 2005).

Application of Findings

Based on the findings from the NLTS2 data analysis, we recommend that post-high school goals in transition planning focus more on competitive employment and less on sheltered workshops. In addition, given the limited number of students who reported satisfaction with their transition goals, we recommend that students be involved more in the transition process. Students' owning the transition planning is critical for ensuring that they are engaged in pursuing the goals. Moreover, we recommend that schools consider expanding services such as career skills assessment and career counseling. Finally, we recommend that schools encourage students to attend postsecondary education.

Based on the findings from the RSA911 data analysis, we recommend that rehabilitation professionals ensure that job seekers move rapidly to job placement and job search. The odds of exiting the program with jobs were significantly higher when the program invested more on services and, in particular, on job placement services. In addition, we recommend that initiatives be taken to ensure that employment outcomes are unbiased based on gender or race. We also recommend greater emphasis on postsecondary education as an intermediate outcome that leads to better employment outcomes. With only 10% receiving college services there might be youth who would benefit from it and yet do not have this opportunity. Furthermore, we recommend that VR counselors and administrators explore alternative ways for improving earnings and hours worked per week. Earnings and hours worked were limited for individuals with autism, averaging only 23 hours/week and $7.91/hour. Given the possible role played by disability benefits in choosing jobs and hours worked per week, we recommend ensuring that job seekers receive adequate assistance with managing work incentives, and interventions are documented.

Policy Implications

Based on the findings from the NLTS2 data analysis, high schools should increase their expectations for students with ASD and ensure that students build a resume of career experiences prior to graduation. Compared to students with other disabilities, students with ASD faced more challenges in their transition to adulthood. Their post-high school goals were more likely to set for transitioning in sheltered workshops than competitive employment; they received career counseling less often than their peers with other disabilities; and their parents were less positive

about their sons or daughters getting jobs. Setting higher expectations is a first important step for obtaining better transition outcomes after high school. Increased emphasis on a seamless transition, ensuring that students establish employment and adult supports prior to school exit, is also a key element of effective transition services (Certo et al, 2008).

The vocational rehabilitation program is important for adults with ASD because there may not be many other alternatives for them to obtain employment supports. It is therefore important that the program increases the outcomes. Although a relatively large percentage of job seekers with ASD who received vocational rehabilitation services exited the vocational program with jobs, about 40% did not. Moreover, the average earnings and work hours of those who exited with jobs were relatively low. Given that the population of adults with autism is growing, it is critical that the program explores promising practices for serving the specific needs of this group of job seekers.

Finally, we recommend that policy makers and administrators intensify their efforts to make sure that high schools and the vocational rehabilitation program have the human, technical, and financial resources needed to succeed in assisting adults with disabilities in a coordinated way.

Suggestions for Further Research

We recommend intensifying research focused on youth with ASD and their experiences in high school as well as post-high school and the relationships with transition outcomes. In particular, we recommend that in addition to analyzing existing secondary data, research collect new data to identify best practices. Once a better understanding is available about models and good practices in supporting youth with ASD in their transitioning goals, research is needed to test these practices and increasing our understanding about what models and practices yield the best results. Experimental research would be particularly useful to this end.

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