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Does Providing Transition Services Early Enable Students With ASD to Achieve Better Vocational Outcomes as Adults?

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This study investigated whether receiving transition services early (i.e., by age 14) promoted better vocational outcomes than receiving transition services later (i.e., by age 16) for young adults with ASD. To do this, the outcomes achieved by two matched groups were examined—453 young adults from states requiring transition services be addressed by age 14 and 453 young adults with ASD from states requiring transition services be addressed by age 16. In each of the four years examined (i.e., 2006–2009), individuals from the early transition states were significantly more likely to be employed than individuals from the later transition group. Further, early transition individuals who became employed appeared to earn more wages and cost less to serve.

DESCRIPTORS: transition, employment, cost of services, vocational outcomes

Whether it is reading, writing, or social skills, what students learn in school should help prepare them for their adult lives. One critical outcome typically achieved in adulthood is employment. Being employed enables people to earn a living so they can meet their basic needs including food, clothing, and housing. But employment also enables people to build their self-esteem, develop a sense of purpose, and cultivate friendships with people with similar interests. Clearly, employment, although not the quintessential outcome of adulthood, is certainly a desirable outcome for many individuals.

Unfortunately, throughout the 1970s and 1980s, numerous studies found that individuals with disabilities typically achieved poor employment outcomes after exiting high school. For example, Kiernan and Stark (1989) estimated that 87% of all working age adults with disabilities were unemployed in the mid-1980s. Numerous other studies found similar results (cf., D'Amico & Blackorby, 1992; Hasazi, Gordon, & Roe, 1985; Wehman & Hill, 1985).

To increase rates of successful employment among young adults with disabilities, federal legislation in the United States began promoting the movement from school to work. For instance, in 1990, the reauthorization of IDEA (PL 101-476) officially defined "transition services" and mandated that activities promoting the movement from school to postschool life be explicitly stated in individualized education programs (IEPs) by each student's 16th birthday.

Twenty years later, studies are still finding that students with disabilities lag far behind their nondisabled peers when it comes to successfully obtaining and maintaining competitive, community-based employment. For instance, according to data from the Bureau of Labor Statistics (2012), just over two thirds of adults with disabilities were unemployed in 2011 compared to 23.4% of adults with no disabilities. Furthermore, Wagner, Newman, Cameto, Garza, and Levine (2005) found that only 37% of youth with disabilities worked full time 2 years after leaving high school. In short, an overwhelming amount of research has consistently demonstrated that, once leaving school, adults with disabilities are far more likely to be unemployed or underemployed than their nondisabled peers (cf., Blackorby & Wagner, 1996; Hendricks, 2010; Louis Harris & Associates, 1994; National Organization on Disability, 2000).

These disappointing outcomes occur across disability groups—including students with autism spectrum disorder (ASD). Cimera and Cowan (2009) determined that only 40.8% of individuals with ASD who sought services from Vocational Rehabilitation became employed by the time their cases were officially closed. Moreover, those individuals who became successfully employed worked an average of just 18.7 h and earned $146.65 per week, which results in a yearly salary far below the poverty threshold for single adults (U.S. Census Bureau, 2012). Furthermore, Shattuck and colleagues (2012) found that more than half of young adults with ASD did not participate in paid employment or post-secondary education 2 years after exiting high school. Liptak, Kennedy, and Dosa (2011) obtained similar results.

In response to these low rates of employment, many in the special education field have advocated that transition from school to work be given greater emphasis in the development of IEPs (Hendricks & Wehman, 2009; Phelps & Hanley-Maxwell, 1997; Rusch & Wolfe, 2008). Some have gone on to suggest that transition should be addressed earlier than age of 16 currently required by the 2004 reauthorization of IDEA (PL 108-446). Of late, this notion has gained considerable attention (Powers

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et al., 2005). In fact, many states now mandate that transition be addressed by age 14 (e.g., Iowa, North Carolina, Nevada, and Mississippi).

The question thus arises, "Does providing transition services earlier make any difference?" That is, does receiving two additional years of transition planning enable students with disabilities to achieve better vocational outcomes at a lower cost to taxpayer? Or does all education (e.g., IEPs without transition services) prepare students with disabilities for employment equally well?

These questions have yet to be explored in the literature. The research presented here is a preliminary attempt to address this void. More precisely, this study examined the rates of competitive employment achieved by two groups of individuals with ASD who were of "transition age" (i.e., 22 or younger). One group included individuals who were from states requiring that transition services be provided by age 16; the other from states requiring transition services be provided by age 14. Participants in each group were matched by seven demographic variables (i.e., age, gender, ethnicity, primary disability, secondary disability, level of education, and severity of disability). Outcomes achieved by these two groups (e.g., rate of employment, cost of services, wages earned, and hours worked) were then compared annually from 2006 to 2009.

The a priori hypothesis was that students who received two additional years of transition planning (i.e., individuals from states requiring transition be addressed by age 14) would be more likely to be competitively employed after leaving high school than students who began receiving transition services by age 16. Moreover, it was thought that they would also require fewer and less costly services from vocational rehabilitation because they would have better vocational skills and be more ready for employment. If these hypotheses are true, the implications for such findings could not only increase the number of individuals with ASD who become successfully employed within their communities, but also do so at lower cost to the taxpayer.

Methods

Source of Data

Data for the this study came from the Rehabilitation Services Administration's (RSA) 911 database, which contains detailed records on all persons who apply for services through vocational rehabilitation throughout the United States, including indications of their disabilities, services received, and outcomes obtained. Data were entered into the database by certified rehabilitation counselors and crosschecked by two computer programs for potential duplications or errors (Rehabilitation Services Administration, 2004). The data presented here are from the years 2006 through 2009.

Participants

During the 4 years spanning 2006–2009, over 1.8 million people applied for services from vocational rehabilitation throughout the United States and its territories. Among these individuals, 8,516 had (a) either a primary or secondary diagnosis of "autism" (i.e., ASD), (b) were 22 years old or younger, (c) had an IEP while in high school, and (d) qualified for services from vocational rehabilitation. Two thousand three hundred and one young adults received services in 1 of the 24 states willing to present research. From this pool, two groups were created—453 young adults from states requiring that transition be addressed by age 16 (i.e., "later transition group") and 453 young adults from states requiring that transition be addressed by age 14 (i.e., "early transition group").

Matching Criteria

Participants from each group were matched based upon their exact demographics across seven variables. In cases where multiple participants with suitable demographics were available, individuals were matched randomly by computer. Table 1 presents the demographics of the matched pairs for each year as well as the 2,301 transition age young adults from which they were selected.

Age

Age was calculated by use of the participant's year of birth. If individuals had the same year of birth, they were considered to 6be the same age.

Gender

Choices for gender included male or female.

Ethnicity

Choices for ethnicity included White, African America, Native America, Asian, Pacific Islander, and Hispanic. Participants could indicate as many ethnicities as was appropriate. Individuals from each cohort (i.e., early vs. later transition groups) had to have the exact combination of ethnicities (e.g., African American, Hispanic, and Native American) to be matched.

Level of education

Level of education at time of application for services included nine options: (a) no formal schooling, (b) elementary education (Grades 1–8), (c) secondary education (Grades 9–12) but no high school diploma, (d) special education certificate of completion or diploma, (e) high school graduate or equivalent, (f) postsecondary education but no degree, (g) associate degree or vocational–technical certificate, (h) bachelor's degree, and (i) master's degree or higher.

Severity of disability

Severity of disability was coded as being either "significant" or "not significant." To have a significant disability, an individual had to have "physical or mental" impairments causing "substantial functional limitations" that would likely require "multiple and prolonged services" from vocational rehabilitation (Rehabilitation Services Administration, 2004, p. 44).

Table 1
Demographics of Matched Pairs and the Population From Which They Were Selected

	Entire sample of participating states		Matched pairs			
	Age 14	Age 16	2006	2007	2008	2009
n	1,343	958	146	136	210	414
Average age (in years)	20.44	20.47	20.57	20.54	20.41	20.14
Had multiple disabilities	63.3%	57.5%	49.3%	44.1%	45.7%	46.9%
Gender						
Male	84.7%	86.7%	89.0%	94.1%	96.2%	91.8%
Female	15.3%	13.3%	11.0%	5.9%	3.8%	8.2%
Ethnicity						
White	83.2%	81.3%	90.4%	83.8%	90.5%	87.4%
African American	15.3%	14.6%	8.2%	14.7%	9.5%	12.6%
Asian	0.6%	1.7%	–	1.5%	–	–
Native American	1.6%	2.5%	1.4%	–	–	0.5%
Pacific Islander	<0.1%	1.0%	–	–	–	–
Hispanic	3.0%	5.3%	–	4.4%	1.9%	1.4%
Level of education at application						
No formal education	<0.1%	<0.1%	–	–	–	–
Elementary education	1.2%	1.4%	–	1.5%	–	–
Secondary education, no degree	63.7%	63.0%	87.7%	69.1%	77.1%	72.9%
Special education. Certificate	19.0%	22.1%	6.8%	16.2%	11.4%	18.8%
High school graduate	14.1%	11.1%	5.5%	13.2%	11.4%	8.2%
Post-secondary, no degree	1.8%	2.2%	–	–	–	–
Associate degree	<0.1%	<0.1%	–	–	–	–
Bachelor's degree	–	–	–	–	–	–
Master's degree or higher	–	–	–	–	–	–

Primary and secondary disabilities

Primary and secondary disabilities included any combination of 37 different diagnoses including, but not limited to, anxiety disorders, intellectual disabilities, blood disorders, depression, muscular dystrophy, and sensory impairments. To be matched, individuals from both groups had to have the same combination of primary and secondary disabilities.

Variables

Early versus later transition states

To ascertain the maximum age at which transition services had to be addressed by in each state from 2004 to 2009, each state's Department of Education (or its equivalent) was contacted by the lead author. Thirty-one states responded, with 24 providing the requested information. Of these 24 states, 13 (i.e., Delaware, Idaho, Indiana, Iowa, Maryland, Massachusetts, South Carolina, Wyoming, Florida, Maine, Mississippi, Nevada, and North Carolina) had state laws or policies mandating that transition be addressed by the time a student turned 14 years old or earlier (i.e., "the early transition" group). Eleven states (i.e., Arizona, Georgia, Louisiana, Missouri, Montana, North Dakota, Oklahoma, Texas, Arkansas, Hawaii, and Nebraska) required that transition be addressed by age 16 (i.e., "the later transition" group).

Although individuals from both groups were matched by several demographic variables, there was no attempt to randomize or control for differences between states. For instance, in each of the 4 years examined, states comprising the later transition group consistently had lower rates of unemployment among the general population than states forming the early transition group. Specifically, states from the later transition group had annual rates of unemployment of 3.97%, 3.92%, 4.69%, and 7.20% for years 2006, 2007, 2008, and 2009, respectively. This is compared to 4.40%, 4.29%, 5.43%, and 8.87% for states comprising the early transition group (U.S. Department of Labor, 2012). These differences were not controlled statistically because they ran counter to the a priori hypotheses being tested and therefore would only enhance this study's findings should the data support the notion that early transition promoted better vocational outcomes.

Successful employment

Participants who had their cases closed because they had obtained employment within their community were considered to be successfully employed. Individuals who had their cases closed for all other reasons (e.g., declined further services, unwilling to comply, and death) were considered "unemployed."

Cost of purchased services

Also included within the 911 database was the total, cumulative cost of services that vocational rehabilitation purchased from outside vendors for each participant. These costs only apply to services not provided directly by the vocational rehabilitation counselors.

Research Questions

This study examined three research questions. The first sought to determine whether individuals with ASD from early transition states (i.e., states requiring transition services to be provided by age 14) were more likely to be employed than individuals from later transition states (i.e., states requiring transition services to be provided by age 16). The second investigated whether students from early transition states cost less to serve as adults than students from later transition states. The final research question investigated whether participants from early transition states worked more hours or earned more weekly wages than participants from later transition states. Each of these questions was explored four times (i.e., using data from 2006, 2007, 2008, and 2009). Paired-samples *t* tests were utilized to identify significant relationships.

Results

Question 1: Rates of Employment

As can be seen in Table 2, individuals from early transition states were more likely to be employed in each of the four years examined (i.e., 2006–2009). In 2009, the closest in outcomes achieved by the two groups, 69.1% of participants from early transition states were employed at the time their cases were officially closed. This is compared to only 52.2% of participants from later transition states. This difference was statistically significant [$t(206) = 3.37$; $p = .001$] and had a moderately large effect size ($d = 0.47$). Similar statistical differences were found for the other three years investigated (i.e., 2006, 2007, and 2008).

Question 2: Cost of Services

As can also be seen in Table 2, cost of the services received by both cohorts as a whole were comparable from 2006 to 2009. However, when costs were compared for only those individuals who became employed, differences emerged. In every year except 2007, employed individuals from the early transition states received services costing taxpayers less than those received by the later transition states. In 2006, 2008, and 2009, these differences were statistically significant. For instance, in 2006, employed individuals in the early transition cohort received services costing taxpayers an average of \$3,560 (*SD* = \$3,787) compared to \$5,164 (*SD* = \$4,802) for employed individuals from the later transition cohort [$t(100) = 1.97$; $p = .05$]. This difference had a moderate effect size ($d = 0.37$).

Question 3: Hours Worked and Wages Earned

In each year examined, participants from both cohorts worked comparable hours per week. However, in three of four years, participants from the early transition states earned more wages per week. In 2006, this difference was statistically significant [$t(99) = 2.63$; $p = .010$; $d = 0.51$]. Specifically, in 2006, individuals from the

Table 2
Vocational Outcomes Achieved by Matched Pairs by Year

	2006		2007		2008		2009	
	Age 14	Age 16	Age 14	Age 16	Age 14	Age 16	Age 14	Age 16
n	73	73	68	68	105	105	207	207
Employed	80.8%[a]	58.9%	77.9%[b]	60.4%	75.2%[c]	52.4%	69.1%[d]	52.2%
Cost of services (all)	\$3,230 (\$3,520)	\$4,057 (\$5,665)	\$4,336 (\$4,660)	\$4,226 (\$7,875)	\$3,914 (\$4,063)	\$4,915 (\$3,930)	\$3,492 (\$3,475)	\$4,437 (\$6,728)
Cost of services (employed)	\$3,560[e] (\$3,787)	\$5,164 (\$4,802)	\$4,922 (\$4,614)	\$4,292 (\$3,431)	\$4,868[f] (\$4,209)	\$6,918 (\$3,701)	\$4,228[g] (\$3,411)	\$6,477 (\$8,574)
Wages earned	\$187.68[h] (\$113.61)	\$140.52 (\$66.01)	\$204.11 (\$141.16)	\$165.76 (\$93.71)	\$194.59 (\$123.47)	\$172.60 (\$84.38)	\$172.08 (\$120.97)	\$187.21 (\$126.34)
Hours worked	24.5 (10.9)	22.8 (8.34)	25.5 (12.4)	24.1 (10.7)	24.4 (12.2)	23.6 (9.8)	20.6 (10.6)	23.4 (9.8)

Standard deviations presented in parentheses.
[a] $t(72) = 3.21$; $p = .002$; $d = 0.75$.
[b] $t(67) = 2.11$; $p = .039$; $d = 0.52$.
[c] $t(104) = 3.50$; $p = .001$; $d = 0.68$.
[d] $t(206) = 3.37$; $p = .001$; $d = 0.47$.
[e] $t(100) = 1.97$; $p = .05$; $d = 0.37$.
[f] $t(132) = 2.98$; $p = .003$; $d = 0.51$.
[g] $t(249) = 2.84$; $p = .005$; $d = 0.34$.
[h] $t(99) = 2.63$; $p = .010$; $d = 0.51$.

early transition states earned $187.68 ($SD$ = $113.61) per week compared to $140.52 ($SD$ = $66.01) for individuals from the later transition states.

Discussion

"Transition" has been part of the IEP process in special education for more than 20 years. Over this period, the age at which transition services must be addressed in IEPs has changed in federal legislation from 16 to 14 and then back to age 16 again. Moreover, many states have laws or policies mandating that transition services be provided even earlier than the federal requirements. This study sought to conduct a preliminary investigation of the question, "Does addressing transition services early result in better vocational outcomes for young adults with ASD?"

To do this, two randomly selected groups of transition-aged individuals with ASD were compared—one group from states requiring that transition be addressed in IEPs by age 16, the other from states requiring that transition be addressed by age 14. Individuals from both groups were matched based on their age, gender, ethnicity (-ies), level of education, severity of disability, primary and secondary disabilities. Comparisons were made for four consecutive years (i.e., 2006–2009). From the analyses presented here, several critical findings were identified.

The first is that it appears providing transition services early substantially increases the chances that young adults with ASD will become employed after exiting high school. In each of the 4 years examined, participants from early transition states were significantly more likely to be employed than their matched counterparts from later transition states. For instance, in 2006, 80.8% of young adults from early transition states became employed by the time their cases were officially closed by vocational rehabilitation. This is compared to only 58.9% for their peers from the later transition states [$t(72) = 3.21$; $p = .002$]. Furthermore, in each of the analyses, the effect size ranged from 0.47 and 0.75. Given that numerous studies have routinely found that individuals with ASD achieve poor employment outcomes after leaving high school (cf. Cimera & Cowan, 2009; Liptak et al., 2011; Shattuck et al., 2012), this finding is noteworthy and may bring hope to the thousands of young adults with ASD who wish to work but are presently unemployed.

Additionally, this study also found that early transition may result in higher wages earned. Specifically, in 3 of the 4 years examined, participants from the early transition states out-earned their peers from the later transition states by at least 12.7%. In one of these years (i.e., 2006), this difference (i.e., $187.68 vs. $140.52) was statistically significant [$t(99) = 2.63$; $p = .010$] with an effect size of 0.51. Unfortunately, even at these increased wages, young adults with ASD were earning wages that would keep them in poverty.

Finally, data from this study suggest that early transition may reduce the cost of services that young adults with ASD require to obtain and maintain employment within their communities. In 3 of the 4 years examined, employed participants from the early transition states received services costing at least 30% less than those from the later transition group. In each of these 3 years, the cost savings were statistically significant and had effect sizes ranging from 0.34 to 0.51.

Taken in total, data presented here suggest that providing an extra 2 years of transition services to students with ASD not only substantially increases the likelihood that they will become employed as adults but also significantly reduces the cost of services they require to obtain and maintain employment within their community. These findings make intuitive sense. With more transition preparation, young adults with ASD would need less training, thus receiving fewer costly services as adults. Furthermore, they may be more skilled and be able to obtain positions paying higher wages.

The implications of these findings are clear. If all states addressed transition by age 14, more individuals with ASD may become employed after they exit high school. Moreover, the costs attributed to the services funded by vocational rehabilitation would be substantially reduced. During this era of budgetary constraint, the fiscal importance of such an outcome cannot be overlooked. Given that vocational services received by adults with ASD cost tens of millions of dollars annually (Cimera & Cowan, 2009), a reduction of 31.8% (i.e., the average savings from 2006, 2008, and 2009) would be a substantial savings to the taxpayer.

However, several limitations must be kept in mind while considering the results of this research. First, this study is a preliminary investigation and contained data from only 24 states that responded to the lead author's e-mails. Perhaps the findings would have been different had all 50 states been included within the sample. Future research will have to explore this possibility.

Furthermore, results presented here may be attributed to other characteristics of the participating states. For example, perhaps the states who have transition addressed earlier had a different method of funding vocational services and had more stringent requirements for licensing teachers or better high school special education programs. As a result, differences noted here may have been caused by the funding policies within each state or quality of schools, rather than the age at which transition was addressed.

It should be noted that there *were* significant differences between the early and later transition states with regard to the average annual rate of unemployment for the general population. In all 4 years examined, states from the later transition cohort had a *lower* unemployment rate than the early transition states. Later transition states had annual rates of unemployment of 3.97%, 3.92%, 4.69%, and 7.20% for years 2006, 2007, 2008,

and 2009, respectively; early transition states had annual rates of unemployment of 4.40%, 4.29%, 5.43%, and 8.87% (U.S. Department of Labor, 2012). This would suggest that young adults from the later transition states would be more likely to become employed than young adults from the earlier transition states; however, as previously discussed, the reverse was true—strengthening the argument that transition services may be responsible for the outcomes described here.

Moreover, diagnosing ASD is exceedingly complicated and concerns about it being over- or misdiagnosed have been noted throughout the literature (Liptak et al., 2011). Consequently, it may be that some of the 906 participants of this study may have been misdiagnosed. However, misdiagnosis would likely affect both groups equally. Therefore, such an error would not be expected to significantly alter the results presented here.

Finally, this study only explored the effects of early transition services on students with ASD. Results presented here cannot be generalized to other populations, such individuals with learning disabilities. Future research will need to replicate this study across other disability groups.

Conclusions

The purpose of education, whether it is for a student with ASD or a student without disabilities, is to prepare that child for their future as an adult. For most of us, employment is an integral part of our adult lives. Through employment, we make money so we can buy food and clothes and, occasionally, indulge ourselves. Through employment, we make friends and expand our knowledge of the world. And through employment, we develop self-confidence and a broader sense of self that we did not have when we were in high school. Employment matters. For these reasons, students, with and without disabilities, must be actively prepared for their adult life. Findings presented here suggest that waiting until age 16 may be too late to begin this critical transition. Consequently, it would be beneficial to both individuals with ASD and taxpayers if the age at which transition services are mandated to be included in IEPs be returned to age 14.

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