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Robert Evert Cimera¹, Sloane Burgess¹, and Peña L. Bedesem¹

Abstract

This study examined the potential impact providing transition services early had on the vocational outcomes achieved by young adults with intellectual disability. Two groups were compared: 7,520 individuals from states requiring transition services be addressed in individualized educational programs (IEPs) by age 14 and 7,520 individuals from states requiring transition services be addressed by age 16. Individual from both groups were matched based on seven demographic variables. Results found that, in each of the 4 years (2007-2009) examined, individuals from the early transition states were more likely to be employed by the time their cases were closed than their matched peers from the later transition states. Specifically, over this 4-year period, 58.8% of participants from the early transition states became employed compared with 45.6% for individuals from later transition states.

Keywords

intellectual disabilities, transition services, cost of services, early transition

Throughout the 1980s, study after study documented the poor vocational outcomes achieved by individuals with intellectual disabilities (ID) after exiting high school. For example, the U.S. Commission on Civil Rights (1983) determined that as many as 75% of adults with ID throughout the United States were unemployed. Wehman, Kregel, and Seyfarth (1985) found that this number was closer to 90% for adults with severe ID. Numerous other studies found similar results (Hasazi, Gordon, & Roe, 1985; Kiernan & Stark, 1989; Wehman & Hill, 1985; Wehman, Kregel, & Barcus, 1985).

Because of these dismal vocational outcomes, policy makers in the 1990s began to pay greater attention to the preparation of students with disabilities for life after school. Specifically, the reauthorization of Individuals With Disabilities Education Improvement Act (IDEA; PL 101-476) officially defined “transition services” and mandated that activities promoting the movement from school to post-school life be explicitly stated in individualized educational programs (IEPs) by each student’s 16th birthday.

However, since the 1990s, vocational outcomes achieved by young adults with ID have not improved. Specifically, according to Metzler, Boeltzig, Butterworth, Sulewski, & Gilmore, (2007) only 26% of individuals with ID were competitively employed. This is compared with about 80% of their non-disabled peers (Brault, 2012; Yamaki & Fujiura, 2002).

¹Kent State University, OH, USA

Corresponding Author:

Robert Evert Cimera, Kent State University, 405 White Hall, Kent, OH 44242-0001, USA.
Email: rcimera@kent.edu

Because of these continued low rates of employment (Butterworth et al., 2013; Rusch & Braddock, 2004; Sullivan, Boeltzig, Metzler, Butterworth, & Gilmore, 2004; Winsor & Butterworth, 2008), many in the special education field have suggested that transition be given an even more prominent role in the IEP process (Hendricks & Wehman, 2009; Phelps & Hanley-Maxwell, 1997; Rusch & Wolfe, 2008). Some have proposed the next reauthorization of IDEA should mandate transition planning beginning by age 14, as was previously required by the 1997 reauthorization (PL 105-17), rather than age 16, as is currently required by the 2004 reauthorization of IDEA (PL 108-446). In fact, many states still have state laws and policies adhering to the 2004 reauthorization (e.g., Iowa, North Carolina, Nevada, and Mississippi). However, the question remains, “Would providing transition services 2 years early make any significant difference in rates of employment?”

The question is an interesting one. On one hand, it seems logical to assume that two extra years of transition services would increase the vocational outcomes achieved by individuals with ID. On the other hand, perhaps “non-transition” IEPs (i.e., IEPs that do not contain transition services) prepare students with disabilities for their adult life just as well. After all, don’t *all* IEPs prepare children for their futures? If not, perhaps all IEPs should be “transition IEPs.”

Cimera, Burgess, and Wiley (2013) examined this issue for individuals with Autism Spectrum Disorder (ASD). Specifically, they examined the vocational outcomes achieved by two groups of 453 transition-age young adults with ASD who applied for services from Vocational Rehabilitation from 2006 to 2009. One group was from states requiring that transition services be addressed by age 16. The other group was from states requiring that transition services be addressed by age 14. Individuals from both groups were matched by seven variables (i.e., age, gender, ethnicity, level of education, severity of disability, and primary and secondary disabilities).

These authors found that individuals from the early transition states were significantly more likely to be employed than individuals from later transition states in all 4 years examined (80.8% vs. 58.9% in 2006; 77.9% vs. 60.4% in 2007; 75.2% vs. 52.4% in 2008; and 69.1% vs. 52.2% in 2009). Furthermore, individuals from early transition states received services costing vocational rehabilitation significantly less than individuals from later transition states in 3 of the 4 years examined. More precisely, individuals from early transition states who became employed cost an average of US\$3,560 in 2006, US\$4,868 in 2008, and US\$4,228 in 2009 compared with US\$5,164, US\$6,918, and US\$6,477 in the same years for individuals from later transition states.

The conclusions drawn by Cimera and colleagues (2013) were that providing transition services early, even by only 2 years, seems to significantly increase rates of employment for young adults with ASD while decreasing the cost of services these individuals require. If correct, these findings have significant repercussions for not only federal policy, but also day-to-day practice in schools across the United States.

Unfortunately, Cimera et al. (2013) only examined the vocational outcomes achieved by young adults with ASD and findings cannot be applied to individuals with ID. Consequently, it is unclear as to whether young adults with ID would benefit from early transition services as well. The present study is an attempt to replicate the research presented by Cimera et al. with the ID population.

As with the previous study (Cimera et al., 2013), this inquiry examined three research questions. The first explored whether young adults with ID from early transition states were more likely to become employed than individuals with identical demographics who were from the later transition states. The second research question sought to determine whether young adults from early transition states received services that cost vocational rehabilitation less than their peers from the later transition states. Finally, this study attempted to determine whether receiving transition services early resulted in better vocational outcomes (i.e., more hours worked and greater wages earned) than receiving transition services later. Each of these questions was explored 4 times—once for each year of data (i.e., 2006-2009).

Method

With the exception of the population investigated, the methods utilized in the present study are identical to those developed by Cimera et al. (2013). Identical methods were utilized in an effort to replicate the prior study in an effort to determine whether two additional years of transition services produced better vocational outcomes later in life for individuals with ID.

Source of Data

Data for this study was provided by the Rehabilitation Services Administration (RSA). Their “911” database contains detailed records on everyone who applies for services from vocational rehabilitation throughout the United States. Data in this data set include the individual’s disability(-ies), level of education, services received, and the vocational outcomes they obtain. These data are entered into the database by certified rehabilitation counselors (CRCs) and are checked for errors by two computer programs (Rehabilitation Services Administration, 2004). This study utilized RSA 911 data from 2006 to 2009.

Participants

Nearly two million people applied for services from vocational rehabilitation programs throughout the United States from 2006 to 2009. More than two-hundred thousand of these individuals had a primary or secondary diagnosis of “mental retardation” (i.e., “ID”). Of these individuals with ID, 30,017 (a) had an IEP in high school, (b) qualified for services from vocational rehabilitation (i.e., had an Individual Plan for Employment), (c) were of “transition age” (i.e., were 22 years old or younger), and (d) received services in 1 of 24 states willing to participate in this research. From these individuals, two matching groups were randomly identified—7,520 young adults who were from states requiring that transition be addressed in IEPs by age 14 (i.e., the “early transition group”) and 7,520 young adults who were from states requiring that transition be addressed in IEPs by age 16 (i.e., the “later transition group”).

Matching Criteria

Participants from each group were paired together based on exact matches across seven variables (i.e., age, gender, ethnicity, level of education, severity of disability, and primary and secondary disabilities). When more than one individual had identical demographics, matches were made randomly by computer. Demographics of the matched pairs and the population from which they were selected can be found in Table 1.

Age. Age was calculated by using the participant’s year of birth. Individuals having the same year of birth were considered to have the same age.

Gender. Options for gender included female or male.

Ethnicity. Participants could identify themselves as belonging to any combination of six ethnic groups, including White, African American, Native American, Asian, Pacific Islander, and Hispanic. In situations where participants in one cohort identified themselves as having multiple ethnicities, participants in the other cohort needed to have exactly the same ethnicities to be matched.

Level of education. Nine options were available for level of education at the time of application for services: (a) no formal schooling; (b) elementary education (i.e., Grades 1-8); (c) secondary education (i.e., Grades 9-12), but no high school diploma; (d) special education certificate of completion or diploma; (e) high school graduate or equivalent; (f) post-secondary 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. CRCs identified participants as having a “significant” disability if the participant had “physical or mental” impairments causing “substantial functional limitations” that would likely require “multiple and prolonged services” from vocational rehabilitation (RSA, 2006, p. 44). It should be noted that all participants in this study were considered to be significantly disabled.

Primary and secondary disabilities. Primary and secondary disabilities could involve any combination of 37 different diagnoses recorded by RSA. These diagnoses included, but were not limited to, depression, blood disorders, amputations, mood disorders, cerebral palsy, and autism. To be matched together, participants

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

	Entire sample of participating states (2006-2009)		Matched pairs			
	Age 14	Age 16	2006	2007	2008	2009
<i>n</i>	16,932	13,030	1,484	1,615	1,590	2,831
Average age (in years)	20.32	20.38	20.30	20.28	20.33	20.31
Had multiple disabilities	32.7%	35.1%	6.7%	7.4%	11.4%	13.6%
Gender						
Male	56.5%	56.6%	56.7%	55.7%	55.3%	54.6%
Female	43.5%	43.4%	43.3%	44.3%	44.7%	45.4%
Ethnicity						
White	52.1%	53.7%	46.8%	49.3%	50.6%	47.8%
African American	46.4%	42.1%	52.3%	49.7%	48.5%	51.1%
Asian	0.7%	1.4%	0.3%	0.4%	0.5%	0.7%
Native American	1.4%	2.4%	0.5%	0.4%	0.4%	0.4%
Pacific Islander	0.2%	1.2%	0.1%	<0.1%	<0.1%	<0.1%
Hispanic	4.7%	6.3%	2.4%	3.0%	3.7%	3.2%
Level of education at application						
No formal education	>0.1%	0.1%	—	—	—	—
Elementary education	1.6%	1.8%	0.6%	0.7%	0.7%	0.8%
Secondary education, no degree	63.2%	68.7%	79.6%	79.1%	76.3%	68.6%
Special education certificate	25.1%	20.8%	17.2%	17.6%	19.4%	19.4%
High school graduate	9.4%	8.2%	2.6%	2.5%	3.6%	11.2%
Post-secondary, no degree	0.5%	0.4%	—	—	—	—
Associate/tech certificate	<0.1%	<0.1%	—	—	—	—
Bachelor's degree	—	—	—	—	—	—
Master's degree or higher	—	—	—	—	—	—

from both cohorts had to have exactly the same disability or combination of disabilities. As indicated in Table 1, 89.65% of the participants had only ID as their disability; 10.4% had multiple conditions.

Variables

Early versus later transition states. The lead author contacted each state's Department of Education (or its equivalent) to ascertain the age by which transition had to be addressed in IEPs during the years 2004 to 2009. Thirty-one states responded. Twenty-four of these states provided the requested information while the remainder indicated that they either did not know the information or did not wish to participate in the study. Of the 24 states who provided information, 13 (i.e., Delaware, Idaho, Indiana, Iowa, Maryland, Massachusetts, South Carolina, Wyoming, Florida, Maine, Mississippi, Nevada, and North Carolina) had state laws or official policies mandating that transition services 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 services be addressed in IEPs by age 16 (i.e., "the later transition" group).

Despite matching participants from each transition group across seven demographic variables, there was no attempt to control for differences occurring between states. For instance, an analysis of economic data found substantial differences in the unemployment rates among the general population between the states in these two groups. Specifically, states from the later transition group had lower annual rates of unemployment (i.e., 3.97%, 3.92%, 4.69%, and 7.20% for years 2006, 2007, 2008, and 2009, respectively) than states from the early transition group (i.e., 4.40%, 4.29%, 5.43%, and 8.87%; U.S. Department of Labor, 2012).

These differences were not controlled statistically in this or the previous study as they ran counter to the a priori hypothesis that individuals from the early transition states would have higher rates of employment than individuals from the later transition states.

Successful employment. A participant was considered to be successfully “employed” if his or her case was closed because an employment outcome (e.g., employment in the community paying at least minimum wage) was achieved. All other reasons for case closure (e.g., death, unwilling to cooperate, declining additional services) resulted in unsuccessful employment outcomes, or unemployment.

Cost of purchased services. The cumulative cost of services purchased by vocational rehabilitation counselors was included within RSA’s 911 database for each participant. The costs reported only pertain to services contracted to other entities. Services provided directly by vocational rehabilitation, such as vocational assessment, were not included.

Results

Research Question 1: Does early transition services lead to higher rates of employment?

As can be seen in Table 2, in each of the 4 years examined, individuals from the early transition states were significantly more likely to become employed than their matched peers from the later transition states. For example, in 2006, 74.3% of young adults from the early transition states were employed compared with 57.8% for the later transition states. This difference was both statistically significant, $t(1483) = 14.18$; $p < .001$, and had a large effect size ($d = 0.74$). Similar significant findings were found for 2007, $t(1614) = 2.91$; $p < .05$; $d = 0.14$; 2008, $t(1589) = 13.20$; $p < .001$; $d = 0.66$; and 2009, $t(2830) = 11.64$; $p < .001$; $d = 0.44$.

Research Question 2: Does early transition reduce the cost of services?

The cost of services received by the early and later transition cohorts were comparable across all 4 years, with one exception. In 2006, individuals from the later transition states received services costing 27.5% less than individuals from the early transition state (i.e., US\$2,164 vs. US\$2,985), $t(1483) = 6.32$; $p < .001$; $d = 0.33$. No other statistically significant differences were identified for either the transition groups as a whole or the employed subgroup.

Research Question 3: Do individuals from early transition states achieve better vocational outcomes?

No significant differences were detected between the two transition groups with regard to wages earned or hours worked.

Discussion

One of the primary purposes of education is to prepare children for their lives as adults. Certainly one of the defining outcomes of adulthood is employment. Unfortunately, the vast majority of adults with ID are unemployed (Butterworth et al., 2013; Brault, 2012; Metzel et al., 2007; Rusch & Braddock, 2004; Sullivan et al., 2004; Winsor & Butterworth, 2008; Yamaki & Fujiura, 2002).

Results from Cimera and colleagues (2013) suggest that one method of increasing rates of employment is to provide transition planning earlier than by age 16, as is currently required by the 2004 reauthorization of IDEA (PL 108-446). Specifically, these authors found that students with ASD who received transition services by age 14 were more likely to be employed and required less expensive services than similar students who received transition services by age 16. This would make intuitive sense. After all, additional preparation should result in better vocational outcomes.

Utilizing methods outlined by Cimera et al. (2013), the present study attempted to determine whether students with ID would also benefit from early transition services. To this end, the vocational outcomes of

Table 2. Vocational Outcomes Achieved by Matched Pairs by Year.

	2006		2007		2008		2009		2006 to 2009	
	Age 14	Age 16	Age 14	Age 16	Age 14	Age 16	Age 14	Age 16	Age 14	Age 16
<i>n</i>	1,484	1,484	1,615	1,615	1,590	1,590	2,831	2,831	7,520	7,520
Employed	74.3%***	57.8%	61.7%*	57.0%	69.7%***	53.8%	42.8%***	28.2%	58.8%	45.6%
Cost of services (all) (in US\$)	2,985 (3,909)	2,164 ^a (3,283)	2,467 (3,390)	2,484 (3,352)	2,818 (3,801)	2,595 (3,250)	1,929 (3,390)	2,141 (3,296)	2,441 (3,579)	2,315 (3,296)
Cost of services (employed) (in US\$)	3,641 (4,184)	3,699 (3,667)	3,300 (3,742)	3,275 (3,818)	3,657 (4,146)	3,491 (3,591)	3,563 (4,284)	4,192 (4,583)	3,542 (4,119)	3,750 (4,028)
Wages earned (in US\$)	200.44 (103.32)	207.32 (101.56)	205.73 (107.20)	201.96 (117.19)	211.43 (103.81)	218.40 (117.65)	206.00 (111.55)	217.03 (113.23)	205.99 (107.36)	212.17 (112.71)
Hours worked	28.6 (10.3)	30.7 (10.0)	28.7 (10.7)	30.7 (10.1)	27.9 (10.5)	29.0 (10.8)	26.0 (10.8)	27.7 (10.8)	27.5 (10.6)	29.2 (10.5)

Note. Standard deviations presented in parentheses.

* $p < .05$. ** $p < .01$. *** $p < .001$.

two groups of 7,520 individuals with ID who were matched across seven demographic variables (i.e., age, gender, ethnicity, level of education, severity of disability, and primary and secondary disabilities) were compared.

Data presented here suggest that, in all 4 years examined (2006-2009), individuals who received transition services by age 14 were significantly more likely to be employed after they enter vocational rehabilitation programs than individuals receiving transition services by 16. Over this period as a whole, 58.8% of individuals from the early transition states became employed compared with only 45.6% from the later transition states. If accurate, these findings could have noteworthy implications for individuals with ID who wish to become employed, policy makers at both the state and federal levels, as well as to practitioners within high school classrooms.

According to Braddock et al. (2013), over a half a million individuals with developmental disabilities are served in facility-based employment programs throughout the United States. In addition, Cimera (2012) found that facility-based employment programs cost significantly more to operate than supported employment programs (i.e., US\$44,433 vs. US\$23,459). Providing transition services early, therefore, would enable more individuals with ID to experience the rewards of working within their communities while decreasing the cost of services they require by 47%, thus benefiting both individuals with ID and taxpayers alike.

The findings presented here also raise an interesting question regarding the utility of traditional, "non-transition" IEPs that occur prior to high school. If non-transition IEPs prepared students with disabilities for their future as well as transition IEPs, there would be no need for transition services. There would also be no difference in the outcomes achieved by the early and later transition cohorts. However, this was not the case. Two additional years of transition services did indeed appear to better prepare students for employment, suggesting transition IEPs are more valuable for preparing students for life as adults than non-transition IEPs. One might wonder how many students with ID would become successfully employed if *all* IEPs included transition services. After all, children without disabilities are prepared for adulthood throughout their entire academic careers. Perhaps waiting until high school is too late for children with ID.

Unfortunately, this study was unable to replicate Cimera et al.'s (2013) findings that early transition services reduced the costs of services required to become employed. Reasons for this are unclear. Perhaps results found by the prior study were an abnormality. Perhaps, the diverse service needs presented by students with ASD and ID produce different cost profiles. Future research will need to investigate this issue.

As with any research, the present study has several limitations that must be kept in mind while interpreting its findings. First, although the comparison groups were matched by seven demographic variables, including gender, ethnicity, age, primary disability, secondary disability, level of education, and severity of disability, it may be these variables were not sensitive enough to discern the wide range of abilities

possessed by individuals with ID. For example, as previously stated, vocational rehabilitation's definition of "significant disability" involved having impairments causing "substantial functional limitations" that require "multiple and prolonged services" (RSA, 2006, p. 44). This definition does not necessarily distinguish between somebody who has "substantial functional limitations" due to profound ID from somebody with ID who had "substantial functional limitations" due to co-occurring physical disabilities, such as cerebral palsy or paraplegia. Consequently, the two groups may have not been as matched as anticipated. However, it should be noted that only 10.4% of the participants had multiple disabilities. The remaining 89.6% had ID and no other conditions. So, it is likely that the substantial functional limitations identified were intellectual in nature, rather than physiological. Still, there may have been substantial differences in intellectual abilities of the two groups examined.

Similarly, the early and later transition groups may have been different based on some other mitigating variable, such as the predominance of rural versus urban areas, socio-economic status, quality of public schools and transition services, and so forth. For instance, as stated earlier, according to the U.S. Department of Labor (2012), the later transition states had annual rates of unemployment for the general population that were lower (3.97%, 3.92%, 4.69%, and 7.20% for years 2006, 2007, 2008, and 2009, respectively) than the early transition states (4.40%, 4.29%, 5.43%, and 8.87% for the same periods). However, this difference is unlikely to have impacted the results presented here as they run counter to what the data indicate. In other words, students in states with stronger economies would be more likely to become employed than students from states with weaker economies. Yet, the opposite was actually the case.

Finally, the results identified here may have been impacted by the relatively small sample size. Only 24 states agreed to participate in this study. Moreover, data were examined from a total of only 15,040 participants (i.e., two groups of 7,520). Perhaps if all states were included in the analyses, or more participants were identified, different results would have been obtained. Future research will also need to investigate these possibilities.

Conclusion

Many people with disabilities want to work competitively within their communities. Unfortunately, a significant proportion of them are unable to obtain and maintain employment.

If data from this study are accurate, providing transition services by age 14, rather than the currently required age of 16, could increase the number of these individuals who experience the monetary, and non-monetary, benefits of being a gainfully employed citizen.

Declaration of Conflicting Interests

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Author Biographies

Robert Evert Cimera is an associate professor in special education. His area of research involves the economic outcomes of employment programs for people with disabilities.

Sloane Burgess is an assistant professor in special education, speech pathology and audiology. Her primary area of research addresses the support needs of individuals with ASD.

Pena L. Bedesem is an assistant professor in special education. Her research interests revolve around students with emotional/behavioral disorders.