

Effects of supported employment on the competitive integrated employment outcomes of transition age and young adults with intellectual disabilities: A non-experimental causal comparative study

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Abstract.

BACKGROUND: Supported employment has long been recognized as one of the most effective services for individuals with the most significant disabilities in achieving competitive integrated employment (CIE) outcomes.

OBJECTIVE: This study examined the effect of supported employment interventions on the employment outcomes of transition-age youth and young adults with intellectual disabilities served by state vocational rehabilitation agencies using a propensity score matching (PSM) approach.

METHOD: We conducted a non-experimental causal comparative study with PSM to create a treatment group ($n = 2162$) and a comparison group ($n = 2191$) using the Rehabilitation Services Administration Case Service Report database (Program Year 2018). Chi-square test and t -test were used to analyze the differences between the treatment and control groups on employment outcomes, hourly wage and hours worked per week.

RESULTS: Results demonstrated that transition-age youth and young adults with intellectual disabilities who received supported employment were more likely to achieve CIE, earn higher wages, and work longer hours weekly than the control group.

CONCLUSION: These findings suggest that supported employment is an effective service for enhancing the vocational rehabilitation outcomes of transition-age youth and young adults with intellectual disabilities and provides valuable information for policy makers, health care providers, rehabilitation counselors, and educators.

Keywords: Transition-age youth, intellectual disability, supported employment, competitive integrated employment, gainful employment

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1. Introduction

Competitive integrated employment (CIE) is important for the health, psychological, and social well-being of individuals both with and without disabilities (Fryers, 2006; Iwanaga et al., 2021; Kamerāde et al., 2019; Taylor et al., 2022). In recent major rehabilitation legislation, the Workforce Innovation and Opportunity Act of 2014 (WIOA) and the Rehabilitation Act of 1973 as amended, CIE is the primary target goal for all persons with disabilities. Clearly, work provides a sense of belonging in a community and contributes to the satisfaction of doing things well (Taylor et al., 2022). CIE also contributes to higher self-esteem, which leads to a higher sense of self-worth and better mental health outcomes (Wehman et al., 2021). Additional benefits of being employed that are critical aspects of an individual's health and well-being include having a daily routine, having shared goals with coworkers, and contributing to a personal identity (Kamerāde et al., 2019). However, despite these well-documented benefits, the employment-to-population ratio for individuals with disabilities was strikingly low (33.1%) compared with people without disabilities (73.8%), an employment gap of 40.7% (Kessler Foundation, 2022; U.S. Bureau of Labor Statistics, 2022).

The negative effects of unemployment on workers with and without disabilities are clearly established in research findings, with individuals who are not actively engaged in a paid job at higher risk for poor physical health, poverty, and income inequality (Driscoll & Bernstein, 2012; Iwanaga et al., 2021; Taylor et al., 2022). Unemployment can also lead to behavioral health disorders, such as anxiety and depression (Drake et al., 2020), and higher suicide rates (Blakely et al., 2003; Drake et al., 2020; Jin et al., 1995; Milner et al., 2013). In a study conducted by Hall et al. (2013), it was determined that employed adults with disabilities had significantly lower rates of smoking and higher levels of self-reported quality of life and overall health and well-being than unemployed adults with disabilities (Iwanaga et al., 2021).

There are approximately 6.5 million people in America who are diagnosed with intellectual disabilities, which is approximately 2% of the total population in the United States. It is also reported that 1–3% of the world population has intellectual disabilities, which is around 200 million people worldwide (Special Olympics, 2022). According to the American Association of Intellectual and Developmental Disabilities (AAIDD), an individual is diagnosed

with intellectual disabilities if the intelligence quotient (IQ) falls below 70, the individual has significant limitations in two or more adaptive areas, and the condition manifests before the age of 18. Intellectual disability is characterized by notable limitations in both adaptive behavior and intellectual functioning, and this can affect many social and practical skills that are needed to succeed in the workplace (AAIDD, 2020). Without appropriate intervention, the employment rate of people with intellectual disabilities is strikingly low. A Gallup survey commissioned by the Special Olympics organization indicated that the employment rate for working-age adults with intellectual disabilities was 34% (Siperstein et al., 2013). Additionally, Winsor et al. (2021) reported that employment rates for individuals with a cognitive disability who received Supplemental Security Income (SSI) were found to be the lowest out of all the groups that were examined in their study (Winsor et al. 2021). These groups consisted of individuals with no disabilities, individuals with any disability (except for cognitive disabilities), and individuals with cognitive disabilities. Individuals with intellectual disabilities also contend with high levels of underemployment, which is when an individual is employed but works fewer hours than desired. The negative consequences of underemployment among individual with intellectual disabilities include greater income inequity and poorer mental health (Centre of Research Excellence in Disability and Health, 2017).

1.1. *Supported employment: A means to CIE*

The purpose of supported employment is to support individuals with the most significant disabilities in achieving CIE outcomes (Wehman, 2012). To ensure efficacy, supported employment requires the professionals providing services to hold a distinctive set of skills. Employment specialists must know how to help identify meaningful consumer choice, arrange for funding, identify employment opportunities in the community, engage employers, work with parents and families, help with Supplemental Security Income (SSI) eligibility determination issues, arrange transportation, and most importantly, effectively train clients to achieve their work goals (Wehman, 2012). Supported employment services are intensive interventions offered to individuals with the most significant disabilities in a competitive work environment. This includes individuals who have never experienced work in a competitive employment environment and individuals who cannot function

effectively at a job due to a disability (Sung et al., 2022). Existing research has demonstrated a positive relationship between supported employment and health for individuals with intellectual disabilities (Iwanaga et al., 2021).

A key aspect of supported employment is rapid placement into CIE by using a job coach trained in how to teach vocational skills to the client while they are on the job and employed (Wehman, 1981). This model has been used all over the world since the early 1980s with persons who experience intellectual disabilities. Central to the supported employment approach is the process of first securing CIE for an individual and then providing needed support, rather than waiting for “work readiness” to initiate job placement. In other words, supported employment adopts a “place then train” approach. Eliminating unnecessary preparatory training enables individuals to learn job skills in real work settings as soon as possible. With SE, there is a presumption of employment, which refers to the right of all individuals to work, regardless of disability.

1.2. Purpose of the present study

The present study focuses exclusively on individuals with intellectual disabilities using the Rehabilitation Services Administration Case Report (RSA-911) database. This study builds upon our earlier research in 2014 (Wehman et al., 2014). The 2014 study examined the effect of supported employment on the CIE outcomes of transition-age youth and young adults with intellectual and developmental disabilities served by state VR agencies. The 2014 study included 23,298 participants and the classification and regression tree (CART) method was used to estimate propensity scores and to adjust for selection bias on all prominent demographic covariates. Results yielded six homogeneous subgroups, and receiving supported employment was found to increase the rates of CIE across all groups. The effect of supported employment was especially strong for those who were SSI recipients, received special education, and individuals with intellectual disabilities or autism spectrum disorder who graduated from high school. The findings of that study suggest that supported employment significantly enhances CIE outcomes.

In the present study we examined whether supported employment is an effective intervention for transition-age youth and young adults with intellectual disabilities who were served by state VR agencies. Specifically, the present study was designed

to answer two key research questions:

1. Is supported employment an effective intervention for enhancing CIE outcomes for transition-age youth and young adults with intellectual disabilities?
2. Does supported employment improve the quality of CIE for transition-age youth and young adults with intellectual disabilities?

2. Method

2.1. Study cohort

Data for this study were extracted from the U.S. Department of Education, Rehabilitation Services Administration (RSA) Case Service Report (RSA-911) data base, which contains detailed information about demographics, primary causes of disability (e.g., intellectual disability), types of VR services, and employment outcomes and quality of employment for all clients receiving state VR services in the United States (RSA, 2017). In the present study, RSA-911 data for program year (PY) 2018 were used for data analysis. The inclusion criteria for the present study were: (a) ages between 16 and 36 (transition-age youth and young adults) at intake, (b) a primary diagnosis of intellectual disabilities at intake, (c) received special education in high school, and (d) case closed as successfully employed or not employed after receiving VR services. This study was composed of 9,291 transition-age youth and young adults who met the inclusion criteria and whose cases were closed in PY 2018. There were 2,191 individuals with intellectual disabilities who received supported employment as a VR service, whereas 7,100 individuals with intellectual disabilities did not receive SE.

2.1.1. Participants who received supported employment before matching

The transition-age youth and young adults with intellectual disabilities who received supported employment included 1,267 (57.8%) males and 924 (42.2%) females. 1,107 (50.5%) were European Americans, whereas 1,084 (49.5%) were of other racial/ethnic backgrounds. The mean age of the participants at intake was 23.60 years ($SD = 5.29$). 1,001 participants (45.7%) were unemployed for 27 or more consecutive weeks and 1,366 participants (62.3%) were SSI recipients. 335 participants

(15.3%) received work incentives and benefits counseling. Participants were most often referred to the VR program by local educational agencies ($n = 671$, 30.6%), followed by self-referral ($n = 509$, 23.2%), community-based rehabilitation organizations ($n = 245$, 11.2%), and others ($n = 766$, 35.0%).

2.1.2. *Participants who did not receive supported employment before matching*

The transition-age youth and young adults with intellectual disabilities who did not receive supported employment included 4,054 (57.1%) males and 3046 (42.9%) females. 3,426 (48.3%) were European Americans, whereas 3,674 (51.7%) were of other racial/ethnic backgrounds. The mean age of the participants at intake was 22.42 years ($SD = 5.01$). 2,795 participants (39.4%) were unemployed for 27 or more consecutive weeks and 3,881 participants (54.7%) were SSI recipients. 310 participants (4.4%) received work incentives and benefits counseling. Participants were mostly referred by local educational agencies ($n = 3018$, 42.5%), followed by self-referral ($n = 1506$, 21.2%), community-based rehabilitation organizations ($n = 487$, 6.9%), and other agencies ($n = 2089$, 29.4%).

2.2. *Variables*

2.2.1. *Variables used for the propensity score matching analysis*

Seven demographic variables (i.e., age, gender, race/ethnicity, long-term unemployment, SSI, and referral sources) and one VR service variable (i.e., receipt of work incentives and benefits counseling) were used for the propensity score matching (PSM). These variables were used to adjust the selection bias between the supported employment (treatment) and unsupported employment (control) groups.

2.2.2. *Treatment*

Transition-age youth and young adults with intellectual disabilities who received supported employment represented as the treatment group and those who did not receive supported employment as a VR service served as the control group.

2.2.3. *Outcome variables*

Three outcome variables were used: (a) employment outcome after receiving VR services (competitive and integrated employment vs. unemployment at VR closure), (b) hourly wage at VR case closure,

and (c) average number of hours worked per week at VR case closure.

2.3. *Procedure*

The purpose of the present study was to extract data from a large government database (RSA-911 data) to determine whether transition-age youth and young adults with intellectual disabilities who received supported employment as a VR service were more likely to achieve CIE outcomes than those who did not receive SE. Because data furnished to researchers from RSA have been stripped of personal information, our study received the exempt status from the institutional review board of a research-intensive university in the Mid-Atlantic region of the United States.

2.3.1. *Statistical analysis*

Descriptive statistics, PSM, *t*-test analysis, and chi-square analysis were computed using the IBM SPSS Statistics software package (Version 28). PSM for non-experimental causal comparative studies is a statistical analysis method designed to minimize selection bias in observational studies by balancing the characteristics of participants between treatment and control groups. The propensity score for each individual in the treatment group was used to find an individual in the control group who had the most similar estimated propensity score using as many background characteristic variables as necessary (Austin, 2011). The goal of PSM is to have similar validity and reliability as those of randomized controlled trials (RCT; Austin, 2011), correcting for sample selection bias due to observable differences between the treatment and control groups (Austin, 2011; Dehejia & Wahba, 1999). In the present study, propensity score matching using logistic regression analysis and the nearest neighbour method was conducted to equalize the treatment (participants who received SE) and control groups (participants who did not receive SE) on the seven prominent variables. After matching, the matched control group and treatment group were used to examine the effect of supported employment on employment outcomes and quality of employment outcomes.

Chi-square for independent samples analysis was used to analyze the differences in seven prominent variables between the treatment and control groups before and after matching and the differences between the treatment and control groups on employment outcomes. Two *t*-tests were used to analyze the

differences between the treatment and control groups on hourly wage and hours worked per week.

3. Results

3.1. Descriptive statistics

Seven variables, namely, age at application, gender, race, long term unemployment (i.e., unemployed for 27 or more consecutive weeks), receipt of SSI, receipt of work incentives and benefits counseling, and referral source, were used for the PSM analysis. Prior to PSM, there were 2,191 participants in the treatment group (i.e., received SE) and 7,100 participants in the control group (i.e., did not received SE). Information regarding the demographic characteristics of the treatment and control groups before and after PSM is presented in Table 1.

Before matching, the average age of VR clients in the treatment group was 22.42 years old ($SD=5.01$), which was significantly younger than the control group (23.60 years old [$SD=5.29$], $t[9289]=-9.52$, $p<0.001$). For gender and race, there were no significant differences between the two groups (gender, $\chi^2[1, N=9291]=0.547$, $p=0.55$, n.s.; and race, $\chi^2[1, N=9291]=0.063$, $p=0.06$, n.s.). Individuals in the treatment group were more likely to be unemployed on a long-term basis than individuals in the control group, $\chi^2(1, N=9291)=27.68$, $p<0.001$, and they were more likely to be receiving SSI benefits at the time of enrollment in the VR program, $\chi^2(1, N=9291)=40.22$, $p<0.001$. Participants in the treatment group were more likely to receive work incentives and benefits counseling compared to participants in the control group, $\chi^2(1, N=9356)=309.26$, $p<0.001$. Individuals in the treatment group were also more likely to be referred to the VR program by community-based rehabilitation programs and less likely to be referred by educational institutions, $\chi^2(3, N=9356)=119.11$, $p<0.001$. These results showed that the treatment and control groups differed significantly on five out of the seven prominent demographic covariates.

3.2. Propensity score matching analysis

PSM analysis using the seven prominent covariates identified 2,162 transition-age youth and young adults who did not receive supported employment (i.e., the control group) who match the prominent characteristics of the 2,191 individuals who

received supported employment (i.e., the treatment group). Chi-square test and t -test results indicated that, after matching, there were no statistically significant differences between the treatment and control groups on most of the prominent covariates and the work incentives and benefits counseling variable, except the referral sources variable. Thus, PSM created a treatment group and a control group with similar demographic characteristics.

3.3. Employment outcome and quality of employment analysis

For employment outcome, we used a chi-square test for independence to determine whether there was a statistically significant difference between the treatment group and control group on employment outcome (i.e., employed vs. not employed). For quality of CIE outcomes, we included only individuals who were employed at case closure. We used independent-samples t -tests to determine whether there were statistically significant differences between the treatment group and control group in hourly wages and hours worked per week. These between-group results are presented in Table 2.

A chi-square test of independence revealed significant between-group differences in the rates of CIE outcomes, $\chi^2(1, N=4353)=363.92$, $p<0.001$. Specifically, youth and young adults with intellectual disabilities who received supported employment (i.e., the treatment group) had significantly higher rate of CIE ($n=1570$; 71.7%) at the time of case closure than did the control group who did not receive supported employment ($n=931$; 43.1%).

For participants with successful employment outcomes, an independent-samples t -test was conducted to compare hourly wages between the treatment and control groups. The treatment group ($n=1754$; $M=\$8.83$, $SD=\$3.62$) had a significantly higher average hourly wage than the control group ($n=1643$; $M=\$5.36$, $S=\$4.91$), $t(3395)=-23.60$, $p<0.001$.

Another independent-samples t -test was conducted to compare average hours worked per week between the two groups. The treatment group worked more hours per week on average ($n=1642$, $M=18.43$ hours, $SD=9.71$ hours) than did the control group ($n=1186$, $M=16.17$ hours, $SD=12.25$ hours), $t(2826)=-5.46$, $p<0.001$.

Table 1
Comparison of the no supported employment (SE) and SE groups before and after matching

Demographic variables	Before matching (N=9,291)		p level
	No SE group (N=7,100)	SE group (N=2,191)	
Age at application	M = 22.42 SD = 5.01	M = 23.60 SD = 5.29	$t(9289) = -9.52$ $p < 0.001$
Gender			
Male	4054 (57.1%)	1267 (57.8%)	$\chi^2(1, N = 9291) = 0.547$ $p = 0.55, n.s.$
Not male	3046 (42.9%)	924 (42.2%)	
Race			
White	3426 (48.3%)	1107 (50.5%)	$\chi^2(1, N = 9291) = 0.063$ $p = 0.06, n.s.$
Not white	3674 (51.7%)	1084 (49.5%)	
Long term unemployment			
Yes	2795 (39.4%)	1001 (45.7%)	$\chi^2(1, N = 9291) = 27.68$ $p < 0.001$
No	4305 (60.6%)	1190 (54.3%)	
SSI			
Yes	3881 (54.7%)	1366 (62.3%)	$\chi^2(1, N = 9291) = 40.22$ $p < 0.001$
No	3219 (45.3%)	825 (37.7%)	
WIBC			
Yes	310 (4.4%)	335 (15.3%)	$\chi^2(1, N = 9291) = 309.26$ $p < 0.001$
No	6790 (95.6%)	1856 (84.7%)	
Referral source			
Self-referral	1506 (21.2%)	509 (23.2%)	$\chi^2(3, N = 9291) = 119.11$ $p < 0.001$
Education ^a	3018 (42.5%)	671 (30.6%)	
CBRO ^b	487 (6.9%)	245 (11.2%)	
Other	2089 (29.4%)	766 (35.0%)	
Demographic variables	After matching (N=4,353)		p level
	No SE group (N=2,162)	SE group (N=2,191)	
Age at application	M = 23.40 SD = 5.15	M = 23.60 SD = 5.29	$t(4351) = -1.23$ $p = 0.08, n.s.$
Gender			
Male	1248 (57.7%)	1267 (57.8%)	$\chi^2(1, N = 4353) = 0.945$ $p = 0.95, n.s.$
Not male	914 (42.3%)	924 (42.2%)	
Race			
White	1061 (49.1%)	1107 (50.5%)	$\chi^2(1, N = 4353) = 0.34$ $p = 0.35, n.s.$
Not white	1101 (50.9%)	1084 (49.5%)	
Long term unemployment			
Yes	976 (45.1%)	1001 (45.7%)	$\chi^2(1, N = 4353) = 0.72$ $p = 0.74, n.s.$
No	1186 (54.9%)	1190 (54.3%)	
SSI			
Yes	1374 (63.6%)	1366 (62.3%)	$\chi^2(1, N = 4353) = 0.41$ $p = 0.42, n.s.$
No	788 (36.4%)	825 (37.7%)	
WIBC			
Yes	305 (14.1%)	335 (15.3%)	$\chi^2(1, N = 4353) = 0.27$ $p = 0.29, n.s.$
No	1857 (85.9%)	1856 (84.7%)	
Referral source			
Self-referral	502 (23.2%)	509 (23.2%)	$\chi^2(3, N = 4353) = 17.04$ $p < 0.001$
Education ^a	680 (31.5%)	671 (30.6%)	
CBRO ^b	165 (7.6%)	245 (11.2%)	
Other	815 (37.7%)	766 (35.0%)	

Note. ^aEducation = referral from Education Institutions (Elementary/Secondary/Postsecondary); ^bCBPO = referral from Community-Based Rehabilitation Programs; WIBC = work incentives benefits counseling.

4. Discussion

This study was the first of its kind to use PSM to derive matched treatment and control groups of young VR clients with intellectual disabilities who received (treatment group) and did not receive (con-

trol group) supported employment services, then to compare those matched groups on their rate of CIE, hourly wages, and the average number of hours they worked per week after receiving services from state VR agencies. Our findings revealed that transition-age youth and young adults with intellec-

Table 2
Statistics for employment outcomes and quality of employment

	No SE group (N = 2162)	SE group (N = 2191)	p level
Employed	931 (43.1%)	1570 (71.7%)	$\chi^2(1, N = 4353) = 363.92$ $p < 0.001$
Not employed	1231 (56.9%)	621 (28.3%)	
	No SE group (N = 1643)	SE group (N = 1754)	p level
Hourly wage	$M = \$5.36$ $SD = 4.91$	$M = \$8.83$ $SD = 3.62$	$t(3395) = -23.60$ $p < 0.001$
	No SE group (N = 1186)	SE group (N = 1642)	p level
Weekly hours	$M = 16.17$ $SD = 12.25$	$M = 18.43$ $SD = 9.71$	$t(2826) = -5.46$ $p < 0.001$

Note. SE = supported employment.

tual disabilities who received supported employment services from state VR services had their cases closed in CIE at a rate of 71%, a significantly higher rate of successful employment than the 43% rate of CIE observed in the matched control group who did not receive supported employment services. Between-group differences in hourly wages and hours worked per week were also statistically significant and compelling. Participants who received supported employment services and were employed at case closure earned approximately \$9 per hour on average, whereas those who did not receive supported employment and were employed at case closure earned an average of approximately \$5 per hour. Employed supported employment participants also worked more hours per week than employed non-supported employment participants (18.43 hours weekly versus 16.17 hours weekly, respectively).

It must be mentioned that, although supported employment participants had higher earnings and worked more hours per week than non-supported employment participants, the wages for both groups were low, certainly not adequate for participants in either group to actualize the ultimate goal of the state-federal VR program of economic self-sufficiency for Americans with disabilities (Rubin et al., 2016). Likewise, the fact that the mean number of hours worked per week for both groups was less than 20 suggests that the phenomenon of underemployment endures as a major problem facing young people with intellectual disabilities who exit from the VR program in CIE status. If these wage and participation level figures for employed rehabilitants are concerning, and especially so for those who do not receive supported employment services, these issues are likely even more tenuous for young people with intellectual disabilities who do not obtain CIE at the time of case closure. Future research and direct service efforts must be directed toward ensuring that supported employment services for young people with

intellectual disabilities in the VR program result in lasting employment opportunities with livable wages and the opportunity for full-time CIE.

Indeed, these wage and hour data may be an artifact of the young age of participants in this study and the fact that many young people with intellectual disabilities start out working on a part-time basis in minimum-wage jobs, which is a common way for young people to initiate their careers regardless of disability status. It is also true that young people with intellectual disabilities and their families often express concerns that paid employment may result in the disruption or discontinuation of disability benefits such as SSI and Medicaid healthcare coverage (Hartman et al., 2015; Lui et al., 2010; McDonough & Revell, 2010; Schlegelmilch et al., 2019; Tremblay et al., 2006).

Findings of the present study indicated that not only was supported employment highly effective in leading to those effective outcomes, but participants in this study were all state VR clients which also indicates that VR engagement is a critical service delivery mechanism that individuals with intellectual disabilities must have access. It should be noted that the series of PROMISE studies (see *Journal of Vocational Rehabilitation Special Issue, Vol. 51, Issue 2*) conducted by numerous states and funded by several federal agencies also indicate the importance of VR engagement.

4.1. Implications

Supported employment is a heavily used modality of VR intervention, especially with individuals with intellectual disabilities as indicated by the recent Rehabilitation Services Administration (RSA) annual expenditures report (U.S. Department of Education, 2021). Return on investment has become extremely important in each state VR agency, where expectations for CIE success are increasingly high.

Therefore, it is essential to accumulate research evidence to demonstrate the effectiveness of supported employment on CIE, wages, and hours worked per week.

The findings of this study could be used for design of Medicaid waiver applications in different states tailored for ongoing payment of supported employment services for individuals with intellectual disabilities. With the rapid growth of Employment First states (U.S. Department of Labor, n.d.), the increased number of states where sheltered workshops are being ordered to close by the Department of Justice, and supported employment replacing segregated services (e.g., Oregon, Rhode Island, and North Carolina), supported employment research must be conducted to show it is an evidence-based practice. The importance of the role of VR in this process of supported employment implementation cannot be overstated. Youth and young adults with intellectual disabilities must be deemed eligible for VR services, have their cases opened, and have their IPEs developed before supported employment vendors can be found and supported employment services can be put in place. Therefore, rapid VR engagement in the earliest stages of career planning is critical.

The data reported in this article demonstrate the strong differential effects of supported employment services on employment outcomes for young people with intellectual disabilities, but the strongest-possible effects of supported employment can be realized only if the intervention model is implemented with fidelity. Implementation of supported employment involves four phases: 1) getting to know the job seeker, 2) job development and matching, 3) training and support, and 4) job retention services (Schall et al., 2015). To briefly summarize, an employment specialist first uses a variety of methods including home visits, a review of relevant records, interviews, and situational assessments to better understand the job seeker's strengths, preferences, interests, and needs related to employment. This information is integrated and analyzed in a meaningful way to help inform the job development process. During job development (Phase 2), the employment specialist reaches out to community businesses in industries that align with the job seeker's interests. Once the worker is hired, on- and off-the-job training and support (Phase 3) is provided by the employment specialist to help the person learn job tasks and acclimate to the work environment. Funding for on-the-job services frequently comes from state VR services. The employment special-

ist fades from on-the-job supports over time as the worker becomes productive and independent. Finally, ongoing services are put in place to promote long-term job retention (Schall et al., 2015). Typically, an employment specialist will continue to visit the work-site and check in with the employee and employer monthly. This allows for any emerging problems to be addressed quickly.

4.2. *Limitations of this study*

There are several limitations of the present study that must be noted. First, the grouping variable of receipt of supported employment services versus non-receipt of VR services was dichotomously coded; therefore, researchers could not consider the quality, fidelity, intensity, or duration of the supported employment services that the treatment group received. This is an especially important consideration because the WIOA does not require state VR agencies and vendors to assess the fidelity of supported employment implementation (Rubin et al., 2016). However, Wehman et al. (2021) asserted that measuring the *quality* and *intensity* of interventions provided throughout the supported employment process is imperative. Though it was not possible in this study using the RSA-911 database, additional research is needed to investigate the quality of supported employment services being provided by state VR agencies.

Second, although we employed a case control design, this study is not experimental and causation between the independent (receipt of supported employment services or not) and dependent (employment outcome, wages, and hours worked per week) variables can only be inferred with caution. Although we have included all the relevant matching variables (i.e., age at application, gender, race, long-term unemployment, SSI, work incentives and benefits counseling, and referral sources), this study was limited by the fact that only demographic and VR service variables were available in the RSA-911 database for PY 2018. There may be other demographic variables that could influence CIE, wages, and hours worked per week.

Third, successful VR case closure is solely defined as whether the individual is employed 90 days from initial employment. The RSA-911 database does not provide longer-term tracking to monitor job retention. Also, the coding of the CIE at case closure variable does not take into consideration the client's satisfaction with the employment outcome

or the client's prospects for advancement in that job. Future research should extend the frame of observation beyond the conventional 90 days case closure criterion to examine the long-term effects of supported employment services for young people with intellectual disabilities and clinical assessment instrument must be developed and validated specifically for transition-age youth and young adults with intellectual disabilities with competitive integrated employment outcomes.

5. Conclusion

Supported employment is a well-established evidence-based practice in the field of VR and special education, one that helps transition-age youth and young adults with intellectual disabilities realize their employment and independent living goals. Findings of this study provide strong evidence that supported employment services within state VR agencies increase the likelihood of CIE at case closure, of higher wages, and of more hours worked per week among VR clients with intellectual disabilities. State VR counselors should increase the provision of supported employment services to young people with intellectual disabilities to improve their long-term prospects for employment success and independence.

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Conflict of interest

The authors declare that they have no conflict of interest.

Ethics statement

The study was approved by Virginia Commonwealth University (HM20023560).

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Informed consent

This is a secondary analysis study. RSA-911 data are collected by the U.S. Department of Education, Rehabilitation Service Administration. Therefore, informed consent was not necessary and thus not obtained.

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