

Jobsupport Input re the Queensland Productivity Commission NDIS Issues Paper

Jobsupport welcomes the Queensland Productivity Commission's interest in examining employment for people with an intellectual disability. We are pleased to provide input and would be happy to expand on any of the points raised if it would be helpful. The information presented will be further expanded in a report currently being prepared by the Centre for International Economics (CIE) that will be forwarded when available.

Jobsupport is a specialist service that provides Disability Employment Services (DES) open employment and NDIS School leaver Employment Supports (SLES) transition to employment services for people with a moderate intellectual disability. Jobsupport arguably has the best open employment outcomes rates in Australia.

A copy of the open employment outcomes achieved by New South Wales Transition to Work (TTW) services for school leavers between 2004 and 2013 is attached. The New South Wales TTW program catered for a range of disabilities, the majority were participants with an intellectual disability or autism. A copy of the DES open employment outcomes achieved by each service in Australia for people with an intellectual disability as of December 2017 is also attached. Both the attachments are attempts at more user-friendly versions of published Government data. Links to the Government data are available if required. The NDIS has not yet published any outcome data for the SLES initiative. The attached TTW and DES data are the last published results.

Both the TTW and DES data report disappointingly low open employment outcome rates, however, the higher outcomes achieved by a handful of services such as Jobsupport demonstrate that better outcomes are possible.

The DES program has made a serious and praiseworthy attempt to improve open employment services.

- An Employment Services System (ESS) data collection has been introduced.
- An outcome-based performance framework has been established.
- Consequences have been introduced for poor performance. Over 50 per cent of the DES ESS contracts were reallocated in 2013 following a tender process.
- Performance data has been published by disability type for every service.

However, even allowing for the different measurement approaches used over time there appears to be little impact on outcome rates from these measures alone.

DES outcomes over time

Year	13-week Employment Outcome	26-week Employment Outcome
	Per cent	Per cent
January 2010 DEN Capped ¹	38.64	33.67
Dec 2011 – DES-ESS ²	26.80	22.60
January 2013 – DES-ESS	30.50	30.40
December 2014 – DES-ESS ³	28.60	29.10
May 2015 – DES-ESS	27.70	28.30
February 2017 – DES-ESS	29.80	29.20
March 2020 – DES-ESS ⁴	22.4	21.4

Notes: **1.** The DES evaluation used a different cohort methodology and discounted DEN 26-week outcomes by 2.6% to allow for different program rules. **2.** The 2020 -13 contract ran from March 2010 and didn't include carry over outcomes from the previous DEN contract. **3.** The 2013-18 contract ran from 2013. Outcome KPIs use a 3 year rolling period, however approximately 50% of contracts are new, only run from March 2013. **4.** The 2018-2023 contract ran from July 2018 didn't carry over outcomes and the outcome KPIs use a 2 year rolling period.

Source: DEEWR

Change management theory suggests that change only occurs when there is a reason to change. The leading US academic John Kotter identified complacency as the main impediment to change. While DES has done a commendable job in introducing consequences for poor performance, there is a missing ingredient of information on how to improve.

The DEEWR *Evaluation of Disability Employment Services 2010-2013 Final Report* recognised that Jobsupport's higher outcomes are achieved because the organisation has put considerable effort into identifying what works for people with a moderate intellectual disability.

Jobsupport's CEO reviewed all the available literature from the early US demonstration projects in 1985 as part of a masters degree. He is on the editorial board for the Journal of Vocational Rehabilitation and continues to monitor new literature. The leading programs were visited in 1985 and every few years thereafter.

More recently, Jobsupport commissioned the Rehabilitation Research and Training Centre (RRTC) at Virginia Commonwealth University and the Centre for Disability Studies (CDS) at Sydney University to conduct a worldwide literature reviews to identify any articles or studies over the last 50 years that included data on what works for achieving open employment outcomes for people with an intellectual disability. Copies of these reports are attached.

Unfortunately, there are significant challenges in identifying what practices work from the existing literature.

- Most articles are opinion pieces that don't include analysis of outcome data.
- The articles that do include outcome data typically target broader populations (that is, a mix of disability types, not just intellectual disability). The impact of an intervention is then reported across the entire population even though it may have only worked for some types of disability.
- Even where disability specific outcome data is provided the description of the actual intervention is typically superficial with the same terms used to refer to quite different approaches across authors. This literature simply does not identify the relevant practical details of the practices studied.

The literature for what works in achieving open employment for the people with an intellectual disability identifies four key components that all need to be present for successful job placement and retention. These are:

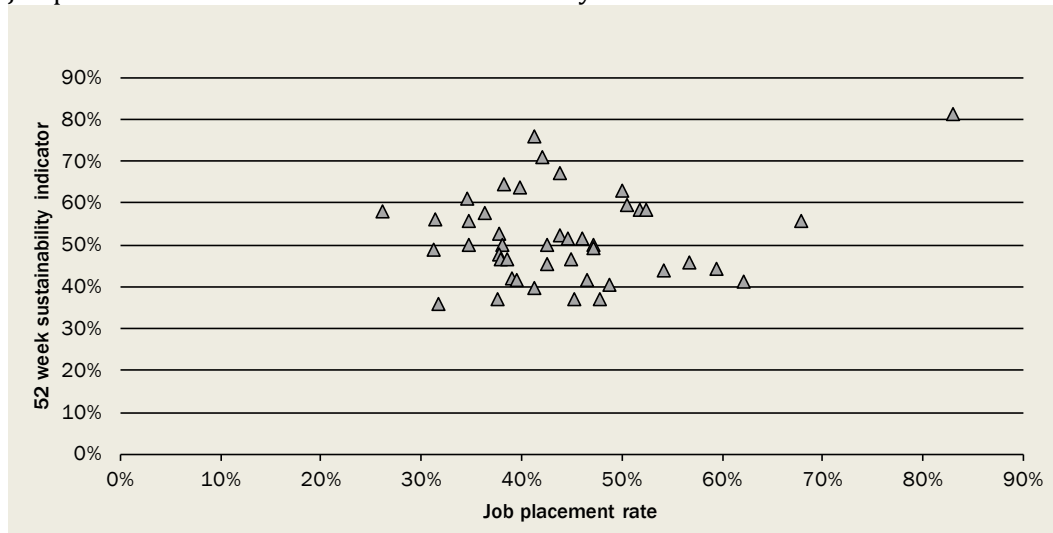
- An assessment process that identifies client strengths and possible weaknesses with a view to matching the person against a job.
- Job search and customisation or job carving to create a job that meets a genuine need for the employer whilst also matching the client's strengths and job preference.
- Systematic instruction based on applied behaviour analysis theory. It was the introduction of systematic instruction including task analysis, prompting and reinforcement that initially demonstrated the employment potential of people with an intellectual disability in the 1970's.
- Ongoing support to meet the changing needs of clients and employers. Ongoing support is much cheaper than replacement and is the area of the program that generates significant savings to Government.

While the literature is clear that these components are all critical, it does not provide information about which approach is best within each component. Hands on investigation is needed to document the approaches used by the services achieving the best outcomes for different populations.

There is currently no data about how best practice is applied in Australia, although a large divergence in measured outcomes suggests that it is not.

Indeed, the available data suggests that for most providers, there is little integration between the four components as there is no link between initial placement rates and 52 week job sustainability. This is illustrated in the chart below which indicates a random scatter between initial job placement rates and 52 week outcome rates. A service that is good at one is not necessarily good at the other. (The single outlier with high rates on both axes is Jobsupport)

Job placement rate versus 52 week sustainability indicator



Notes: The 52 week sustainability indicator is the proportion of clients for which the job lasted a year from first starting the job. This is the terminology also used in the 2017 DES Star Ratings methodology. Under the current contract (2018) this is referred to as '52 Week Outcomes'.
Data source: DES-ESS database

The DES reporting of outcomes by disability type allows some broad comparison of outcome rates between services. Examining the latest available data illustrates considerable diversity of results.

For example:

- The job placement rate varies between 25 per cent and 83 per cent, with an average of 45 per cent.
- The 52 week job sustainability rate varies from 36 per cent to 81 per cent, with an average of 52 per cent.

Combining these two rates gives an indication of an *effective* 52 week outcome: the probability that a client commencing with a service will achieve a job that lasts 52 weeks. This probability ranges from 11 per cent to 67 per cent, with an average of 23 per cent.

Thus, a client commencing with the lowest performing service has a one in ten chance of getting and maintaining a job for a year. With the top performing service, this is a two thirds chance. The average, however, is only a one in five chance. In terms of effective outcome rates, there is a twofold difference between the best and second best performer.

The wide diversity of results, and the very low overall outcomes suggest that either:

- Practices that actually work are not understood or disseminated; or
- There are effective (and unintended) barriers to the adoption of best practice; or
- Some combination of these.

The DES database provides an opportunity for outcome improvement. It could be used to identify the best performing services in Australia by type of disability. These services could then be investigated, and detailed information distributed describing how the services operate. Given the diverse range of results, there is an opportunity to undertake careful analysis of actual 'on the ground' practices to discover which approaches are driving the different outcome levels. From this understanding, it would be possible to:

- Disseminate information about what practices work (as distinct from popular approaches)
- Ensure that the policy environment supports practices that actually work.

The DES outcome data by type of disability was previously published every six months. A resumption of the publication of this data is important. The data forms a basis for the improvement strategy approach outlined above and is also important to provide a basis for informed choice for DES clients and their employers. An informed market should result in a 'vote with your feet' effect that provides an additional consequence for poor performance.

The literature review by the RRTC and CDS found work experience incorporating the four key components listed above was also the most effective way of overcoming self-fulfilling low expectations and encouraging people with an intellectual disability to attempt open employment. The success of effective transition to employment services such as Jobsupport's SLES service was also found to be dependent on a partnership with an DES open employment service that achieved good employment outcome rates.

The improvement strategy outlined above for DES including the publication of service outcome data to create an informed market and a 'vote with your feet' effect could also be used to improve outcomes across NDIS SLES providers. It is important that open employment outcome data for SLES services by type of disability is published.

The literature review by the RRTC and CDS also found that:

'Experimental evidence documents a direct relationship between the delivery of training and technical assistance provided to staff in open employment programs and improved client outcomes for persons with intellectual disability in open employment.'

Recommendations

- **Resume the six monthly publication of DES outcome data including job placement and 12 month job sustainability by type of disability for every DES service.**
- **Commence the six monthly publication of SLES open employment outcome data by type of disability for every SLES service.**
- **Encourage employers and people with a disability to use outcome data to make an informed choice between DES and SLES services.**
- **Use DES and SLES outcome data to identify and investigate the best performing services in Australia by type of disability.**
 - **Detailed information should be distributed describing how the best performing services operate. Technical assistance with implementation would also be desirable.**
 - **The DES and SLES policy environment should be checked to ensure that it supports the practices that work for different types of disability.**

17/8/2020

NSW Transition To Work - 2004 - 2013 School Leavers			
Provider	Open Employment Outcomes	School Leavers	Outcome Rate
Jobsupport	331	508	65.2%
NOVA Transition	234	416	56.3%
Break Thru People Solutions / Syd-West	112	485	23.1%
Job Centre Australia	96	308	31.2%
Disability Services Australia	82	264	31.1%
Essential Employment & Training	63	232	27.2%
Northcott Society	61	237	25.7%
On-Q Human Resources	57	125	45.6%
Greenacres Disability Services	53	292	18.2%
Cerebral Palsy Alliance	52	159	32.7%
Castle Personnel Services	48	207	23.2%
The Disability Trust	37	93	39.8%
CatholicCare / Centacare	31	180	17.2%
Mai-Wel	27	111	24.3%
House With No Steps	22	127	17.3%
Macarthur Disability Services	22	156	14.1%
R.E.D.	21	68	30.9%
Ability Options	15	100	15.0%
AFFORD	15	166	9.0%
Kurrajong-Waratah	15	115	13.0%
Youth Connections	15	51	29.4%
Northside Enterprises	12	57	21.1%
Challenge Community Services	11	74	14.9%
Lifestyle Solutions	11	79	13.9%
Response Services	9	98	9.2%
Central Coast Post School Options	8	73	11.0%
Housing Connection	7	42	16.7%
North West Disability Services	7	65	10.8%
Valmar Support Services	7	36	19.4%
Life Without Barriers	6	80	7.5%
On Track Community Programs	6	26	23.1%
Studio ARTES	6	49	12.2%
Cowra Special Needs Services	4	16	25.0%
Flintwood Disability Services	4	27	14.8%
Lambing Flat Enterprises	4	29	13.8%
Mercy Centre	4	11	36.4%
Achieve	3	44	6.8%
Community Options Brokerage Service	3	21	14.3%
Glenray Industries	3	16	18.8%
Griffith Post School Options	3	26	11.5%
Hawkesbury Transition to Work	3	10	30.0%
Junction Works	3	43	7.0%
Lithgow Uniting Church	3	31	9.7%
Lorna Hodgkinson	3	8	37.5%
Sunnyfield	3	85	3.5%
The Ascent Group	3	13	23.1%
The Lelsure Company	3	20	15.0%
Uniting Church (Ella Community Centre)	3	27	11.1%
ACES	2	9	22.2%
Broken Hill Council	2	14	14.3%
Bucketts Way Neighbourhood Group	2	11	18.2%
Casino Neighbourhood Centre	2	6	33.3%
Community First Step	2	11	18.2%
Cooma Challenge	2	6	33.3%
Currajong Disability Services	2	17	11.8%
Endeavour Industries	2	33	6.1%
Life Skills Plus	2	15	13.3%
Third Sector Australia	2	5	40.0%
Accommodation Network	1	14	7.1%
Aspire Support Services	1	6	16.7%
CareWest	1	14	7.1%
Coffs Harbour Challenge	1	9	11.1%
Community Programs	1	13	7.7%
CRANES Community Support Programs	1	3	33.3%
Creativity Centre	1	15	6.7%
Enterprise and Training	1	5	20.0%
Inala / Miroma	1	15	6.7%
Inverell Council (Connections)	1	24	4.2%
Kempsey Workpool	1	2	50.0%
New Lake Peer Support	1	4	25.0%
Ningana Enterprises	1	11	9.1%
On-Focus	1	2	50.0%
Orange Community Resource Organisation	1	7	14.3%
Peckys	1	11	9.1%
Verto	1	4	25.0%
Yarrabin Outreach	1	11	9.1%
Yawarra Aboriginal Corporation	1	1	100.0%
Blue Mountains Disability Services	0	10	0.0%
Caringa Enterprises	0	13	0.0%
Civic Industries	0	7	0.0%
Coastal Disability Services	0	4	0.0%
DARE Disability Support	0	1	0.0%
Elouera	0	2	0.0%
Eurella Community Services Group	0	3	0.0%
Hume Employment Services	0	1	0.0%
Integrated Living Australia	0	2	0.0%
Interaction Disability Services	0	1	0.0%
Joblink Plus	0	7	0.0%
Kalianna Enterprises	0	13	0.0%
Macleay Options	0	3	0.0%
Mudgee Disability Support Service	0	3	0.0%
Multitask Human Resource Foundation	0	3	0.0%
Nambucca Valley Phoenix	0	2	0.0%
New Horizons Enterprises	0	8	0.0%
New IDAFE	0	8	0.0%
Newtrain	0	9	0.0%
REAL (Richmond Employment Access & Services)	0	4	0.0%
St George & Sutherland Community College	0	22	0.0%
Sunraysia Residential Services	0	1	0.0%
Sylvanvale Disability Services	0	5	0.0%
Temora Shire Council	0	1	0.0%
The Personnel Group	0	3	0.0%
Valley Industries	0	21	0.0%
Vision Australia (Royal Blind Society)	0	2	0.0%
Warrah Society	0	2	0.0%
Wesley Life Skills	0	8	0.0%
Windgap Foundation	0	27	0.0%
Wiltmore Enterprises	0	10	0.0%
Woodville Community Services	0	25	0.0%
Totals	1590	6035	26.3%

**A Comprehensive Review of Evidence-Based Employment
Practices for Youth and Adults with Intellectual and
Other Developmental Disabilities**

Final Report

July 1, 2020

Kregel, J., Wehman, P., Taylor, J., Avellone, L., Riches, V., Rodrigues, R., & Taylor, D.
(2020).

Research Team

This research synthesis is a collaborative report developed by researchers from the Centre for Disability Studies, affiliated with the University of Sydney (Vivienne Riches, Renell Rodrigues, and David Taylor), the Rehabilitation Research and Training Center at Virginia Commonwealth University in Richmond, Virginia (Paul Wehman, Josh Taylor, Lauren Avellone, and John Kregel). The analyses and conclusions presented in the report are solely those of the authors.

Acknowledgements

This report was commissioned and funded by JobSupport
Website: jobsupport.org.au

Suggested Citation

Kregel, J., Wehman, P., Taylor, J., Avellone, L., Riches, V., Rodrigues, R., & Taylor, D. (2020). A Comprehensive Review of Evidence-Based Employment Practices for Youth and Adults with Intellectual and Other Developmental Disabilities: Final report. Rehabilitation Research and Training Center at Virginia Commonwealth University in Richmond, Virginia and Centre for Disability Studies, affiliated with the University of Sydney, Australia.

Summary

Australia has a long history of recognizing the importance of open employment (OE) for individuals with an intellectual disability (ID) (including people with an intellectual disability and co-occurring autism). Beginning with demonstration projects in the 1980s, and continuing through the current Disability Employment Services (DES) program for adults with disabilities, the nation has committed to providing high quality, effective services to individuals with ID to enable them to achieve their employment and self-sufficiency goals. The success of these programs over time has raised expectations regarding the capabilities and competence of persons with significant disabilities and has led to a paradigm shift with OE now the preferred outcome for individuals with ID.

The current DES program focuses on the use of employment placement and retention measures to determine the effectiveness and efficiency of employment services and supports provided to individuals with ID. People with intellectual disability, advocates and family members have questioned whether the program has served a sufficient number of beneficiaries, identified an adequate supply of provider organizations capable of meeting the unique needs of persons with intellectual abilities, and ensured that provider agencies are using state of the art, evidence-based practices to provide high quality services to individuals and employers.

To aid in future policy and program development, researchers from the Centre for Disability Studies, affiliated with the University of Sydney and the Rehabilitation Research and Training Center at Virginia Commonwealth University conducted a comprehensive review of international research on employment programs and practices that purport to promote successful employment outcomes for individuals with ID. Using a rigorous, structured approach for research reviews, we examined the scientific validity and strength of evidence for research-based practices to support the employment of people with ID (Armstrong, Hall, Doyle, & Waters, 2011).

We developed three research questions to guide the study and identify current evidence-based employment services and supports that have been proven to lead to meaningful employment outcomes for individuals with ID.

1. What evidenced-based employment practices lead to successful outcomes on key performance indicators of OE for individuals with ID?
2. What particular components of intervention packages emerge as specific predictors of high quality employment outcomes?
3. To what extent are the evidenced-based practices identified in the review supported by methodologically rigorous research?

We began the review by identifying over 600 individual studies or research reports. After reviewing the studies for relevance, we identified 92 articles that examine employment interventions for individuals with ID. We rated each study based on its methodological rigor in order to bolster the validity and usefulness of the report findings. In addition to published literature, we also reviewed a large quantity of government documents, evaluation studies and reports published outside of traditional academic databases, often conducted by governments for their own purposes.

This summary is deliberately limited to evidence-based practices for people with ID. Much of the literature reports findings for mixed populations that contain some people with ID. Reports that analyze practices used with a mixed population without an outcome measure confirming the effectiveness of these practices for people with ID are noted in the report.

Major Findings

This section summarizes the key findings of the review. First, we describe the evidence-based practices in the area of employment services for individuals with ID, similar to the types of services delivered through the DES program and the NDIS School Leaver Employment Supports (SLES). Second, we identify several common practices often found in employment service programs that lack a sound empirical research base that would justify their large scale application.

While the primary purpose of this review was to identify the strength of evidence documenting the effectiveness of various employment practices related to promoting high quality employment outcomes for individuals with ID, we also were able to identify current practices that lack limited supporting evidence in the empirical literature. Where frequently used practices were notably absent from the research literature, we identified those practices within the report.

Summary of Findings: Evidence-Based Practices

Major practices discussed in this section include open employment, staff training and technical assistance for provider agencies, and work experience for transition aged youth.

There is an abundance of evidence indicating that the OE model is an effective, evidence-based practice that leads to measurably greater employment outcomes when compared to alternative service approaches. The open employment service model is characterized by four major components: (1) Personalized client assessment; (2) Individualized job development and placement; (3) Intensive job site training and support; and (4) Ongoing support throughout the course of the individual's employment. Each component is briefly described below.

Personalized client assessment – Assessment is individualized and is based on individuals' employment goals, skills, strengths, and support needs. Most assessment activities occur in local job sites and other community settings. The assessment process helps individuals to become confident in their ability to succeed in employment, refine their employment preferences, and identify the training and support necessary for success.

Job Development and Placement – An employment specialist implements an individualized job search plan on behalf of a single client. Job search strategies are based on effective marketing strategies. Job placements reflect a match between an individual's preferences and choices and a customized job rather than readily available jobs in the local market.

Intensive Job Site Training – Job site instruction is based on the principles of learning theory and applied behavior analysis. The employment specialist provides training and support to ensure that all work tasks are completed to the satisfaction of the employer.

Ongoing Support – Open employment services are not time-limited. Ongoing support services are provided to both the individual and the employer throughout the employment process. Specific services are based on each individual's needs and requests, and fluctuate over time in frequency and intensity, while continuing as long as the individual remains employed.

Findings from the systematic review clearly indicate that the effectiveness of open employment is not the product of a single strategy, but rather a comprehensive evidence-based process in which the four components are implemented as a comprehensive service package. When the four components are applied in combination to serve individuals with ID, the open employment model results in client employment rates, earnings, and employment retention far superior to Australian Disability Enterprises programs, group employment options in which groups of individuals with ID work in a supervised setting in the community, often earning less than award wages, or traditional job placement programs in which persons with ID are placed into employment with little follow-up training or support.

Experimental evidence documents a direct relationship between the delivery of training and technical assistance provided to staff in open employment programs and improved client outcomes for persons with ID in OE. The quality of employment services provided to individuals with ID is in large part dependent on the level of training received by staff implementing those services. Findings from our review indicate that staff training programs on the key components of the open employment model and the provision of ongoing technical assistance to providers resulted in significantly improved placement rates, higher wages, and more hours worked per week for clients. Staff providing employment services should be fluent in the overall process for implementing the multiple stages of OE, along with knowledge of instructional training techniques that are supported by empirical research, such as individualized assessment and training strategies based on learning theory principles.

Work Experience for Transition-Age Students. There are numerous studies that report participation in work experience correlates with subsequent open employment. However, few of these studies focus exclusively on individuals with ID and don't provide data demonstrating that work experience alone, in the absence of other services, leads to people with ID achieving open employment.

Jobsupport, a specialist service for people with ID, recently reported that the number of school leavers willing to attempt open employment more than doubled after it introduced extended work experiences (Tuckerman, 2015). Similarly, a recent five-year national demonstration funded by four U.S. federal agencies found that transition age youth who participated in community-based work experience were significantly more likely to subsequently apply for vocational rehabilitation services, including OE services (Mamun, et al., 2019).

It is not enough to simply supply work experience opportunities to transition-age students with ID. To be effective, the work experience must be combined with the evidence based practices outlined above, including personalized assessment, job development and placement, intensive job site training, and ongoing support services to assist individuals with ID to obtain and maintain employment.

Summary of Findings: Current Practices Lacking Empirical Evidence

The review identified several commonly used practices that were notably absent from the empirical literature. There is extremely limited evidence (or in some cases, no evidence) within the scientific research bases that justifies the use of these programs or policies over the clearly established, evidenced-based methods reviewed.

Participation in Segregated, Facility-Based Supported Employment does not lead to Open Employment - We found clear evidence that placement of individuals with ID into segregated employment settings, such as Australian Disability Enterprises (ADEs), rarely leads to subsequent community integrated employment. A major study by Siperstein, Heyman, and Stokes (2014) found that in a large nationwide sample in the U.S. only 10% of the sample ever moved from segregated employment facilities to competitive employment. They further found that very few individuals in OE had ever been in segregated employment settings for any length of time. Similarly, the Australian Department of Social Services (2015) reported that 20,000 people were in supported employment (ADEs) in 2014 and that 159 (1%) moved to open employment. Consequently, Australian Disability Enterprises should not be viewed as a “stepping stone” service leading to OE.

No evidence was uncovered to document that starting transition services for transition age youth at a younger age was itself an evidence-based practice for youth with ID. While we were able to document evidence-based practices and predictors for youth transitioning to adulthood (i.e., community-based work experience), we did not find that early intervention itself in the absence of other evidenced based techniques directly leads to improved employment outcomes.

No evidence supported the effectiveness of classroom-based pre-vocational training and vocational education in leading to high quality employment outcomes for individuals with ID. We found clear evidence that community-based work experiences for youth in school-to-work transition programs is a proven evidence-based practice for ID. While pre-vocational training and vocational education in classroom settings may be effective for other populations, the overall lack of evidence behind pre-employment and classroom-based training and education for youth with ID in terms of measurable employment outcomes should serve as a caution to policymakers and practitioners against making these practices required prerequisites to proven community-based work experience and open employment services.

Implications

The results of the review have multiple implications for the design and operation of employment services for individuals with ID. We briefly describe three important implications below.

Use of Evidence-Based Practices within DES services - The finding that the open employment model is an evidence-based practice that generally leads to high quality employment outcomes offers the opportunity to refine the current DES open employment program. Client employment outcomes (placement rate and 26 week retention) are less than what might be expected if the provider agencies were implementing all the major program components with a high degree of treatment fidelity. While many factors may affect the outcomes generated by a single program over a specific time period, policymakers and practitioners should examine whether: (1) the provider agencies are actually implementing evidence-based practices; and (2) whether individuals with ID are receiving the high quality employment services and supports that will enable them to achieve their employment goals.

The Australian government has the tools to undertake this type of review. It publishes employment outcomes achieved by individuals with ID (and other types of disabilities) for every DES service in Australia. Random sample audits are conducted on every service to verify the reported outcomes, specifically the proportion of all funded participants who are placed into OE, and the proportion of placements still employed after 12 months. These data provide a unique basis for empirically identifying the highest outcome services for people with ID in Australia. The peak Australian body representing people with an intellectual disability, Inclusion Australia (2018), recently calculated an indicative 12 month employment outcome rate. The best performing DES service in Australia Jobsupport had a 12 month employment outcome rate for people with ID nearly twice the next best service (67.2%, next best 37.6%). Similarly, the Australian Department of Employment and Workplace Relations 2010-2013 evaluation of DES services confirmed that Jobsupport had the highest employment outcome rates and that the achievement of these outcomes is based on utilizing the four evidence based practice components listed above.

Jobsupport has a long record of delivering OE services with rigorous fidelity to the evidence-based components of the model. Client assessment is individualized, based on an assessment plan, and conducted primarily in the community. Job development activities are based on sound marketing principles and are personalized to each client's employment goals and work preferences. Job site customization and training is based on the proven principles of learning theory and delivered by staff who have received extensive training. Ongoing support services are delivered proactively and designed to meet the needs of both the client and the employer. It can be reasonably hypothesized that if other DES provider services were to rigorously adopt and implement the same evidence-based program components as Jobsupport, the results would be better quality program outcomes for individuals with ID, greater employer satisfaction and willingness to hire individuals with disabilities, and significant financial savings to the government.

Staff Training and Technical Assistance - Second, the finding that staff training and technical assistance leads to improved OE service delivery (i.e. greater use of evidence-based practices)

has direct implications for the future structure and funding of the DES open employment system. The current system relies on a performance framework that consists of a managed, performance oriented, data driven approach to the governance of disability employment practice by Commonwealth open employment provider agencies. Based on the results of this study, future program management approaches should ensure that clients with ID receive services based on effective, evidence-based employment services delivered by highly trained open employment staff members.

Effectiveness of Classroom-Based Services - Third, the finding that we did not identify any research evidence supporting the effectiveness of classroom-based pre-vocational and vocational education in leading to high quality employment outcomes for individuals with ID should be examined in relation to the services provided to youth with ID in transition to work programs. While these services may be effective for individuals with other types of disabilities, their use with youth with ID should be carefully considered and evaluated. We found that a strong reliance on classroom based services, at the expense of work experience programs and other community-based activities may not be of sufficient scope and intensity to lead to desired outcomes for youth with ID in the NDIS SLES programs.

References

- Allison, R., Hyatt, J., Owens, L., Clark, K. A., & Test, D. W. (2017). *Competitive Integrated Employment Toolkit*. Charlotte, N.C.: National Technical Assistance Center on Transition, University of North Carolina.
- Armstrong, R., Hall, B. J., Doyle, J., & Waters, E. (2011). Cochrane update. "Scoping the scope" of a Cochrane review. *Journal of Public Health*, 33(1), 147–150.
- Butterworth, J., Migliore, A., Nord, D., & Gelb, A. (2012). Improving the employment outcomes of job seekers with intellectual and developmental disabilities: A training and mentoring intervention for employment consultants. *Journal of Rehabilitation*, 78(2).
- Inclusion Australia (2018). Outcomes by Disability Type December 2017 LMR.
- Mamun, A., Patnaik, A., Levere, M., Livermore, G., Honeycutt, T., Kauff, J. Katz, K., McCutcheon, A., Mastrianni, A., & Gionfriddo, B. (2019). *Promoting Readiness of Minors in SSI (PROMISE) Evaluation: Interim Services and Impact Report*. Washington, DC: Mathematical Policy Research.
- Siperstein, G. N., Heyman, M., & Stokes, J. E. (2014). Pathways to employment: A national survey of adults with intellectual disabilities. *Journal of Vocational Rehabilitation*, 41(3), 165–178. <https://doi.org/10.3233/JVR-140711>
- Tuckerman, P. (2018). *Jobsupport*. Inclusion Australia National Forum on Open Employment

Table of Contents

Acknowledgements	<i>Error! Bookmark not defined.</i>
Summary.....	<i>ii</i>
Introduction	<i>1</i>
Background	1
Scoping Review on International CIE Evidenced-Based Practices for IDD	<i>4</i>
Research Questions	5
Location of Relevant Studies.....	5
Screening Findings.....	6
Results of the Scoping Review	6
Themes at Levels I and II.....	9
Themes at Level III.....	12
Themes at Levels IV	15
Themes at Level V.....	15
Summary.....	16
Limitations	16
Review of the Grey Literature.....	17
Transition Predictors of Employment.....	<i>21</i>
Transition Predictors of Employment with Moderate Evidence for Youth with IDD.....	21
Transition Predictors of Employment with Potential Evidence for Youth with IDD	21
Transition Predictors of Employment with Emerging Evidence for Youth with IDD.....	22
Transition Predictors of Employment without Evidence for Youth with IDD.....	22
Negative Correlational Findings	22
Practices with Limited Empirical Evidence	22
Policies and Practices That Are Ineffective	24
Summary and Conclusion	<i>25</i>
Summary of Recommended Evidenced-Based Employment Practices.....	25
Summary of Current Practices with Limited Empirical Evidence	27
References.....	<i>30</i>
Appendix.....	<i>1</i>
List of Key Terms	<i>1</i>

Introduction

In order to promote improved employment outcomes for individuals with intellectual and developmental disabilities (IDD), a better understanding of what research has shown to be effective practice and policy is necessary. This paper examines the strength of evidence for research-based practices to support the employment of people with IDD internationally. To aid in future policy and program development, researchers from the Centre for Disability Studies, an affiliate of the University of Sydney, Australia, and the Rehabilitation Research and Training Center at Virginia Commonwealth University conducted a comprehensive review of international research on employment programs and practices that promote successful employment outcomes for individuals with IDD. We examined the scientific validity and strength of evidence for research-based practices that support the employment of people with IDD through a scoping review of internationally-published research articles and grey literature, as well as a parallel targeted review of Australian research and practice in this area.

The purpose of a scoping review is to synthesize available research on a given topic in order to better understand the breadth, type and quality of empirical research that exists within the current literature base (Armstrong, Hall, Doyle, & Waters, 2011). For this review, we examined pertinent research databases containing peer-reviewed journals and also grey literature sources, which include unpublished data and reports produced by government entities, advocacy groups, research centers, and academic organizations with the potential to inform findings. We analyzed study components and methodological rigor to determine their strength of evidence, and summarized the findings in the following narrative.

Background

Over the past 40 years, legislative, policy, and program changes have led to the inclusion of individuals with IDD into the competitive workforce and have enabled thousands of persons worldwide to lead more productive and independent lives. Beginning in the late 1970s, the experiences of adults with IDD changed dramatically as individuals exited institutions and moved into communities. For many of those individuals with IDD, however, work-related integration into communities was limited to participation in segregated employment (e.g., sheltered workshops, facility-based, and center-based employment) where work responsibilities consisted of menial tasks for meager wages (Brown et al., 1984; Gold, 1973). Although the employment options for adults with IDD were largely restricted to highly segregated employment, there was significant progress made in research and practice showing increasing efficacy for structured, behavioral approaches to employment services for individuals with the most significant disabilities (Brown et al., 1983; Gold, 1978).

Wehman (1981) initially articulated the philosophical and programmatic basis of what came to be known as the supported employment (SE)¹ model of employment services for individuals with IDD. The model emerged in the U.S. in the 1970s and '80s as an alternative to segregated work (Rusch, 1985; Vogelsburg, 1986, Wehman & Hill, 1985) and led to the development of

¹ Supported Employment (SE) was first defined in US Public Law 99-506 as “*competitive work in an integrated work setting for individuals who, because of their handicaps, need ongoing support services to perform that work*” (Federal Register, 1987, p.30546).

service delivery models widely used by employment support organizations today. SE, referred to in Australia as open employment (OE)², relied on the use of on-site employment specialists who provide training, support, and advocacy for individuals with significant disabilities while employed (Wehman & Kregel, 1985). SE/OE program components include individualized assessment and job development activities, intensive on-site systematic training based on the principles of applied behavior analysis (ABA), and ongoing support services throughout the course of an individual's employment.

The SE/OE model challenged the effectiveness and necessity of segregated, facility-based, or center-based service programs for individuals with ID. These programs traditionally followed a “train then place” model of service delivery in which individuals received training in a segregated environment and after acquiring a set of skills were gradually moved through a continuum of settings until reaching the goal of competitive employment in a real job in the community. Proponents of this approach argued that individuals with ID had “skill deficits” in areas such as the independent living, communication, and employment domains that must be addressed before an individual was exposed to a more integrated community employment setting. In reality, the “train then place” approach rarely worked. Few individuals ever obtained competitive employment and obtained CIE. The overwhelming majority remained in segregated settings that did not provide opportunities to work side by side with other members of their communities, paid negligible wages, and prevented individuals from achieving their employment and economic self-sufficiency goals.

In contrast, SE/OE espoused a “place then train” philosophy that enabled individuals with ID to quickly move into a CIE setting. Training and support was delivered in these “real world” environments that allowed them to rapidly acquire the necessary skills; develop relationships and interact with employers, coworkers and community members; and earn significant wages that enabled them to contribute to their economic self-sufficiency (Wehman & Kregel, 1989).

The large-scale adoption of the “place then train” SE/OE model in the 1980s was highly controversial. Criticisms focused on concerns that those individuals with ID placed into integrated community settings would quickly fail, employers would not hire them, they would be mistreated or taken advantage of by coworkers or community members, or they would not be safe in community environments. In short, low expectations for the employment potential of individuals with moderate or severe ID led to their exclusion from work opportunities and limited their access to community supports.

Research in SE/OE expanded over the next two decades from smaller case studies and single subject designs (SSD) to larger scale group comparisons and efficacy studies (Wehman, Revell, & Kregel, 1998). As results from these studies disseminated, SE/OE began to shift policy and practice first in the United States, followed by Canada and Australia, and then in other countries around the world (Corbière, Bond, Goldner, & Ptasiński, 2005; Parmenter, 1999).

These changes in policy and practice raised expectations about the capabilities and competence of persons with significant disabilities and led to a paradigm shift from segregated employment

² Australia uses the term Open Employment (OE) as supported employment occurs in Australian Disability Enterprises (ADEs), which are segregated settings.

to competitive integrated employment (CIE)³ as the preferred outcome for all individuals. The SE approach has subsequently been used with several different populations, including people with intellectual disability (ID) (Wehman, Chan, Ditchman, & Kang, 2014a), psychiatric disability (Bond, Drake, & Becker, 2008), traumatic brain injury (Dillahun-Aspillaga et al., 2018), spinal cord injury (Ottomanelli, et al., 2012) and autism spectrum disorder ([ASD]; Wehman et al., 2016).

Internationally, CIE has also been adopted as a preferred outcome for all people with disabilities. The International Labor Office (ILO) of the United Nations first passed Convention No. 159 in 1983 to ensure that member states provide vocational services to individuals with disabilities to support their employment opportunities in the open labour market. The guidelines from Convention No. 159, along with recommendations outlined in ILO Convention No. 168, formed provisions for states to adopt in establishing vocational support for adults with IDD (United Nations, 2006). These outlined specific targets in such areas as the work setting (i.e., integrated where possible and segregated where necessary), wages (i.e., conforming to standards of general workers), and the training and expertise of vocational staff. In 2008, the United Nations General Assembly passed the Convention on the Rights of Persons with Disabilities, which has been ratified by 177 member states. While its scope covers many areas of the inclusion of people with disabilities into society, employment provisions include a commitment to equal access to employment opportunities on the open labour market with support from trained and competent staff and vocational training programmes.

International policy has shifted more toward CIE following the legislative actions of the United Nations and several national governments. For example, in the United States, the Partnerships in Employment state projects emerged as a systems change policy approach that enhanced the ability of states and organizations to build greater opportunities for CIE for individuals with disabilities. Funded by the US Federal Administration on Community Living in the Department of Health and Human Services, this initiative proliferated systems change efforts designed to provide long-term impact on employment opportunities for individuals with disabilities across states and communities, including coordinated state agency policies, training for service providers, and enhanced internship/work experience programs (Butterworth et al., 2017). Similar international systems change models promoting CIE globally through national and regionally-sponsored SE systems change efforts have reported similarly positive outcomes (e.g., Owen et al., 2015; Suibhne & Finnerty, 2014).

Australia has a long history of recognizing the importance of CIE for individuals with IDD. Beginning with demonstrations and pilot projects in the 1970s and 1980s, and continuing through the current Disability Employment Services (DES) program for adults with disabilities, the nation has committed to providing high quality, effective services to individuals with IDD to enable them to achieve their employment and self-sufficiency goals (Baume & Kay, 1995; Grimes, 1985; McClure, 2000). The success of these programs over time has raised expectations regarding the capabilities and competence of persons with significant disabilities (Inclusion

³ Competitive Integrated Employment (CIE) was defined as “*Real work for real pay with commensurate benefits. The job is aligned to the person’s employment goals as well as the labour market needs and involves working 20 hours or more per week (US)*” (Allison, Hyatt, Owens, Clark, & Test, 2017) or eight hours or more (Australia).

Australia, 2015; NSW Department of Family and Community Services, 2009; Parmenter, 1993, 2002).

Nevertheless, despite decades of advocacy, research, and policy directed at addressing the issue of employing adults with IDD in their communities, more work is required (Wehman et al., 2018). For example, policy changes associated with the Australian Welfare to Work reform introduced from 2006 moved the Disability Employment Service (DES) program away from a values-base towards a more economic aspirational rationale focused on a single objective – employment outcomes (Cocks & Harvey, 2008, p.187), with a performance framework of efficiency and effectiveness reflected in a managed, performance oriented, data-based approach to the governance of disability employment practice by the Commonwealth. The focus on outcomes is commendable. However, insufficient emphasis has been put on understanding the practices and processes that contribute to successful outcomes. The result is highly variable job placement and retention outcomes being achieved among Specialist Disability Employment Services (DES-ESS) that provide assistance to job seekers with IDD who need regular, ongoing support in the workplace to find and keep a job (Department of Social Services, 2014a; Inclusion Australia, 2015).

In order to more precisely delineate the evidence in support of various employment practices, we conducted three parallel reviews: a) a scoping review of the empirical international research (i.e., peer reviewed journals published in academic databases), b) a review of international grey literature (i.e., policy documents, white papers, and government reports published outside of traditional academic databases), and c) a targeted review specific to Australia inclusive of both peer-reviewed and grey literature information. A summary of each is presented consecutively in this paper. The purpose of this review is to document evidence that supports various practices, as well as identify others that are not currently supported by research findings. In the following sections, we describe the methodology used for the scoping review, a summary of findings organized by strength of research evidence, a discussion of the grey literature findings and a review of transition predictors. Finally, we synthesize common findings across all three reviews to inform service provision.

Scoping Review on International CIE Evidenced-Based Practices for IDD

A scoping review was conducted to map the existing literature on evidence-based employment practices related to CIE outcomes for individuals with IDD. For the purpose of this review, we identified studies using a sample of participants with IDD or IDD subgroups, such as ASD, ID, developmental disability (DD), cognitive disability, and IDD with comorbid disorders. The term “mental retardation” (MR) was also included in searches to capture relevant research prior to the replacement of the term MR with ID. A targeted Australian literature review was also conducted that used similar search terms.

The protocol we used for this review followed recommended procedures for conducting a scoping review; identifying research questions, locating relevant studies, charting findings, and summarizing results (Arksey & O’Malley, 2005; Armstrong et al., 2011). Three databases—PubMed, Education Research Complete, and Web of Science—were used in this review in order to ensure a wide review of intervention literature in vocational rehabilitation, education,

medicine, and related social science fields. A description of each stage in the review protocol is presented below.

Research Questions

When conducting a scoping review, research questions are intentionally left broad with the explicit purpose of allowing the bigger picture of a topic to emerge via findings (Armstrong et al., 2011). The following research questions were used to guide study selection:

- What evidence-based employment practices lead to successful outcomes on key performance indicators of CIE for individuals with IDD?
- What particular components of intervention packages emerge as specific predictors of high quality employment outcomes?
- To what extent are the evidenced-based practices identified in the review supported by methodologically rigorous research?

Location of Relevant Studies

Two reviewers searched empirical databases to locate international articles (excluding Australia) pertinent to the aforementioned research questions. Reviewers assessed articles yielded by search terms against stringent inclusion criteria. Studies included in the final sample were analyzed by study design, methodological rigor, participant and intervention characteristics, country, and employment outcomes. Both researchers had educational and applied experience in research methodology and disciplines related to the intersection of disability and employment. An inter-rater agreement of 95% regarding inclusion/exclusion criteria was achieved prior to abstract review. Table 1 depicts criteria used for study selection.

Table 1

Search Criteria for Study Selection

Criteria	Description
<i>Databases</i>	PubMed, Education Research Complete, Web of Science
<i>Years</i>	To keep literature contemporary, only articles from the 21 st century were included; 2000-2019
<i>Key Search Term Parameters</i>	<p>Concept terms related to the main topic, organization of terms using Boolean operations (AND/OR/NOT), and truncation symbols by population x intervention;</p> <p><u>Population</u>: autism* OR intellectual disab* OR developmental disab* OR mental retardation</p> <p><u>Intervention</u>: employment practices OR supported employment OR customized employment OR transition to employment OR competitive integrated employment OR employment internships OR evidence-based employment practice OR vocational rehabilitation</p>
<i>Inclusion Criteria</i>	Target population diagnosis, English or English-translated, published on or after 2000, peer reviewed or white paper, U.S. or abroad (excluding Australia),

Criteria	Description
	examining interventions for target population resulting in employment outcomes.
<i>Exclusion Criteria</i>	Non-English/translated, published before 2000, conducted in Australia, pertaining to non-target diagnoses, examining dependent variables other than employment outcomes, focused primarily on post-secondary education programs and experiences, and individual-level characteristic factors. A supplementary paper summarizing the relevant literature outside Australia for the period 1970 to 1999 has also been produced.

Screening Findings

A detailed account of the source of all records and decisions made during the screening process was documented. The number of total articles included and excluded at each stage of the review are identified below.

- Initially 624 records were identified through database searching, an additional 23 records were found through other sources;
- A total of 647 records were initially reviewed – 136 duplicate records were identified and removed;
- 511 Abstracts were screened using initial screening criteria, 303 were excluded due to failure to meet specified inclusion criteria;
- The remaining 208 full text articles were reviewed against the selection criteria, a total of 145 of the articles were eliminated for failure to meet inclusion criteria; and
- The final 62 articles were included in the synthesis.

The Australian review used Ovid, Medline and Scopus databases. Grey literature also included published and unpublished reports by Federal and State Government departments, research centres, academic organisations, advocacy groups and peak bodies representing the voice of people with intellectual disability but included articles and reports dating back to 1978. Sources using keyword combinations included the Australian Institute for Health Welfare (AIHW), National Centre for Vocational Education Research (NCVER), Database of Abstracts and Reviews of Effects (DARE), Citation and related article searching on key articles using Google Scholar and Grey literature searching. This resulted in a total of 106 articles and reports that were reviewed.

Results of the Scoping Review

Assessing the quality of research methodology is a key feature of scoping reviews (Armstrong et al, 2011). Therefore, we included an indication of methodological rigor for each research study to bolster support for findings in our synthesis. We ranked research rigor using the basic evidence guidelines published by Johns Hopkins Hospital in terms of a hierarchy from most (I) to least (V) strength of evidence (Newhouse, Dearholt, Poe, Pugh, & White, 2005). Table 2 shows the coding system used to define research rigor.

Table 2

Research Methodology Rigor Coding System

Category	Rank	Description	Examples
<i>Experimental</i>	I	<ul style="list-style-type: none"> • Random assignment to groups • IV Manipulation • Optimal control of confounding variables • Tested for causality 	Randomized control designs, classic experimental designs that include randomization
<i>Quasi-Experimental</i>	II	<ul style="list-style-type: none"> • NO random assignment (but similar to experimental in all other ways) <ul style="list-style-type: none"> ○ IV Manipulation ○ Suboptimal control of confounding variables • Tested for causality 	Classic experimental designs that do <i>not</i> include randomization, pre-posttest designs, post-test only designs, interrupted time series designs
<i>Secondary Data Analysis</i>	III	<ul style="list-style-type: none"> • No random assignment • No control of extraneous variables • Examined relationship between variables 	Correlational studies, predictive designs, model testing designs, regression analyses
<i>Single Subject Design</i>	IV	<ul style="list-style-type: none"> • Limited <i>n</i> • Single subject/group serves as own control • Experimental manipulation • Control of extraneous variables 	AB design, multiple baseline, reversal designs
<i>Qualitative Design/ Mixed Methods/ Case Study</i>	V	<ul style="list-style-type: none"> • Use of coding techniques for themes • Description of case example • Combination of qualitative and quantitative methods 	Case study using interview, documents, or reports, demonstration projects, pilot projects

To organize interventions, employment practices were sorted into six intervention code categories. We developed these categories based largely on the chronological phases of support needed during the open employment process, including creating a job seeker profile, job development, job site training, and long term support (Schall et al., 2015). We added two additional coding categories to encompass service provider strategies and any additional pertinent practices (i.e., “other” category). A description of each category (IV #) with associated services is presented in Table 3.

In total, we identified 62 articles reporting on employment interventions for individuals with IDD diagnoses, though some studies included a mixed sample with other disabilities or comorbid diagnoses. For each sample that was not comprised entirely of the target population (i.e., IDD), the total amount of individuals with IDD diagnoses is specified in the appendix. Studies were conducted mainly in the United States ($n = 55$; 88.7%) but also the United Kingdom ($n = 2$; 3.2%), Spain ($n = 2$; 3.2%), Brazil ($n = 1$; 1.6%), China ($n = 1$; 1.6%), and Canada ($n = 1$; 1.6%).

Table 3

Intervention Component Coding System

Employment Practice Category	IV Code #	Description	Examples
<i>Creating a Job Seeker Profile</i>	1	Pre-employment activities aimed at determining a job seeker's personal strengths, vocational interests, concerns related to employment and desired employment outcome.	Assessments, person-centered career planning, resume/portfolio development, attention to job choice, structured work experience (paid or unpaid), seamless transition from school to work, family involvement, classroom instruction (secondary or postsecondary), life skills (e.g., travel training or assistance, social skills), self-determination training, etc.
<i>Job Development</i>	2	Activities related to securing a proper job match, which include networking with businesses and evaluating potential businesses for fit.	Individualized job search strategies, rapid job search, job analysis, job matching, disability disclosure, job customization, informational interviews, networking, and business partnership strategies, etc.
<i>On-the-Job Training</i>	3	Activities related to teaching direct job skills, identifying workplace supports, or making environmental arrangements for success in the workplace.	Place and train model, job coach supports, job support plan, workplace modifications, individualized supports, peer mentoring, internships, and communication between stakeholders, etc.
<i>Long-term Support</i>	4	Activities related to the identification and installation of extended supports necessary for vocational success	Follow-along services, continued communication among stakeholders, family involvement, monitoring, etc.
<i>Service Provider Practices</i>	5	Activities related to improved service provider training or practices	Training initiatives, referral information, knowledge translation, interagency collaboration, etc.
<i>Other</i>	6	All other services	Diagnostic or medical evaluation, collaboration with medical staff or other service providers, etc.

Concerning methodology, the vast majority of articles met level III on the established coding system ($n = 29$), followed by level V ($n = 15$), levels I and II ($n = 5$ each), and level IV ($n = 8$). Many of the Australian specific articles and reports comprised mixed samples but only studies where the majority were people with IDD were included. Following application of stringent

inclusion criteria, 9 Australian peer reviewed articles were included in the scoping review, with some at level V ($n = 4$) followed by level II ($n=3$) and level III ($n=2$). Additionally, findings from grey literature are also reported.

Themes at Levels I and II.

Levels I and II, which targeted randomized control trial (RCT) and quasi-experimental methods represent the strongest level of evidence produced by research designs (Newhouse, Dearholt, Poe, Pugh, & White, 2005). A total of 10 international studies were identified across these 2 levels (i.e., $n = 5$ at Level I and $n = 5$ at Level II). The following findings emerged from a review of these studies: (1) A high degree of support for the Project SEARCH Plus Autism Spectrum Disorder (PS+ASD) Supports model exists at the strongest level of methodological testing; and (2) an RCT demonstrated the importance of staff training in producing better employment outcomes for clients. We will review each of these findings in more detail.

PS+ASD Supports Model. The traditional Project SEARCH model is a transition-to-work internship program designed to help high school students ages 18 to 22 build vocational skills by participating in a series of individualized unpaid internships in applied business settings using an SE approach (Daston, Riehle, & Rutkowski, 2012). The traditional model was developed at the Cincinnati Children's Hospital Medical Center in 1996 and includes total immersion in a workplace, a business-led approach, customized internships based on student's interests, strengths and needs, highly trained staff and collaboration with supported employment service provider agencies that placed graduates not employed by the intern host employer and provided follow-along services to both the individuals employed by the host employer and those placed elsewhere (Daston, Riehle, & Rutkowski, 2012).

Wehman and colleagues (2014b) extended the traditional Project SEARCH model by including diagnosis specific supports for ASD to address the vocational, social communication and learning needs of a sample of individuals with ASD and co-occurring ID. Examples of ASD specific supports used in the PS+ASD model include visual cues, behavior support training, social and communication skills training, and self-regulation strategies (Wehman et al., 2019). Research on the PS+ASD model included in this review were conducted at the Level I rigor using RCT designs and yielded highly successful CIE outcomes ranging from 73.4% to 90% for graduating interns (Wehman et al., 2014b; Wehman et al., 2017; Wehman et al., 2019). Five key components of the PS +ASD supports model were identified as contributing to such a high CIE success rate (Wehman et al., 2019).

- *Internships:* Students participate in three internship rotations, each approximately 10 to 12 weeks long accruing a high dosage of over 700 hours of internship hours during the school year (Schall et al., 2015). Internships are individually designed for each student accounting for personalized long-term career goals and built-in opportunities to develop and refine social communication and employment skills in an applied work setting. During the course of the internship rotations, staff identify each student's strengths, preferences, interests and support needs, and use this information to modify training in order to prepare the student to be career ready by the completion of the third, and final, internship.

- *Instructional strategies during internships:* Instruction during internship rotations centers on repeated practice opportunities in naturalistic environments to build vocational and social skills. Staff use Applied Behavior Analysis (ABA) to instruct students in the acquisition, fluency and maintenance of employment relevant skills.
- *Personalized vocational assessment and training:* By design, the program is totally immersed within a work setting which enables personalized internships to serve as both assessment and training opportunities.
- *Seamless transition to adult services:* PS+ASD students receive vocational support during the intervention from job coaches and a Vocational Rehabilitation (VR) counselor. Upon graduating from the PS+ASD program, students immediately begin the job search process with the job coaches and VR counselor already familiar with their strengths, needs, interests and career goals rather than delaying the employment process by entering a wait list at an adult service agency and ultimately working with service providers who are unfamiliar with their work abilities and preferences.
- *Focus on meeting business needs:* In addition to providing personalized vocational training for students, internships are also customized to meet the needs of a business. PS+ASD staff do not expect the business to create internships where open positions are not conducive to the business or a customization of job tasks for a new position does not also benefit the business as well as the intern. Therefore, interns are fulfilling a real need within the business and so the business holds high expectations regarding work performance. This sets a high standard for the quality of work students in the PS+ASD program are required to learn.

Staff Training. Research indicates that service provider training can substantially affect CIE outcomes. Using an RCT design, Butterworth and colleagues (2012) assigned employment consultants across 25 SE programs in two U.S. states to a specific training curriculum compared to a control condition (i.e., training as usual). The intervention group, which received 24 seminar hours of instruction in SE and customized employment (CE) demonstrated three times more placements within the next 12 months along with higher wages and more hours worked per week for clients. These findings reinforce an important point that employment services are only as effective as the staff trained to provide them.

To summarize, there are several common themes to be gleaned from Levels I and II studies. These include an emphasis on specific transition-to-employment techniques, such as intensive, integrated work experience for youth and young adults before leaving school or immediately post school⁴. Further, these intervention services must be highly individualized, accounting for distinct differences in vocational strengths, preferences, interests and needs. The PS+ASD Supports model installed specific supports for individuals with ASD, including highly structured learning experiences, reliance on evidence-based ABA techniques for teaching and addressing challenging behavior, and a focus on developing social communication skills pertinent to a work setting (Wehman et al., 2014b; Wehman et al., 2017; Wehman et al., 2019).

⁴ In the U.S., students with moderate or severe ID often attend school to the age of 22. In Australia, school typically finishes at age 18 and Student Leaver Employment Supports is offered immediately post school.

The importance of including specialized supports for students with ASD should be emphasized as CIE success rates for PS+ASD supports at the Level I rigor were as high as 73.4% to 90%.

Traditional Project SEARCH. Comparatively, studies identified in this review adhering to the traditional Project SEARCH model without diagnosis specific supports were conducted at the Level II rigor and reported a slightly lower range (51.5%- 83%) of successful CIE outcomes for students (Christensen & Richardson, 2017; Christensen, Hetherington, Daston, & Riehle, 2015). These studies did not focus specifically on individuals with IDD. It should be noted that the results of an independent evaluation of the traditional Project SEARCH model is presented later in the grey literature section of this document.

When examining the effectiveness of the traditional Project SEARCH models, we must consider the limitations in current study designs. First, most studies of Project SEARCH do not focus specifically on individuals with ID. For example, in the Christensen et al. (2015) study, individuals with ID comprised only 37.9% of the study sample. Without the ability to specifically examine the experiences of participants with ID, the ability of the Project SEARCH model to meet the needs of these individuals is not fully confirmed.

Second, the study designs employed in most traditional Project SEARCH evaluations make it difficult to assess the effectiveness of the internship component of the model. The Christensen et al. (2015) article reported an extremely high 83% employment outcome rate. However, well over half (58%) of all positive employment outcomes occurred when individuals were placed in jobs outside the host company. Without a control or comparison group study design, it is not clear whether or not the participants with ID actually require the intensive work experience activities provided in Project SEARCH, or if the same employment outcomes could be achieved through the basic SE/OE service model of assessment, job development, job site training, and ongoing support.

Australian Place and Train Models. The three level II Australian studies related to a work preparation/vocational training model for youth with mild ID and learning difficulties (IQ \geq 65) that was the forerunner of the current DES system (Black, 1984; Hauritz, Riches, Parmenter & Ward, 1980). Systematic data driven assessment and vocational instruction (using task analyses, goal setting and reinforcement strategies etc.) were provided in an industrial setting. Additional instruction was provided in functional work related life skills, and individualized assistance was provided by vocational counsellors for job search and job interviews. The service provider was responsible for job analysis and job matching and short term on the job support post placement. Graduates of this model consistently obtained full time CIE placement rates of 60% at a time of high youth unemployment, in addition to 4% undertaking apprenticeships, as well as intermittent employment rates at approximately 11% (Black, 1984). The work preparation/vocational training model evolved into a place and train model when this approach was found to be more effective.

Lastly, all interventions identified at Levels I and II shared a common focal point of ultimately achieving competitive employment outcomes within the community for pay rather than volunteer or other non-paid work. Supplementary Tables 1 and 2 in the appendix show the IV components of studies identified at levels I and II.

Themes at Level III

While Levels I and II studies were primarily multi-element interventions, those included in Level III examined more specific intervention components. These studies employed mainly correlational, as opposed to causal, research approaches and included disability populations with diagnoses other than just IDD. Results are depicted in Supplementary Table 3 in the appendix.

Level III research predominately focused on receipt of eligibility-based VR services from agencies in the United States, which exist to help individuals with disabilities achieve positive employment outcomes. These agencies offer a wide range of services based on each individual's need. Findings indicated that some specific services emerged as particularly impactful on CIE outcomes across multiple studies. Most notably, job placement services, which refer to assistance with actions related to securing an interview with an employer (Chen, Sung & Pi, 2015) were reported as a positive predictor of employment outcomes across multiple studies. Also, on-the-job support and job training all emerged as important services associated with positive employment outcomes across three or more studies. To organize findings, a summary of studies supporting or opposing use of identified intervention components at level III methodological rigor is presented in Table 4.

Two key findings emerged from the review. First, multiple studies reported that receiving *more VR services was associated with better employment outcomes* (Alverson & Yamamoto, 2017; Alverson & Yamamoto, 2018). Ditchman, Miller, and Easton (2018) reported that having a greater amount of six specific services resulted in better CIE outcomes, though findings indicate it is not the quantity but the combination of services that led to successful outcomes; assessment, counseling, job placement, on-the-job training, job search support, and transportation services. Second, *individualized job support placements, using supported employment techniques* yield better pay outcomes. Boeltzig, Timmons, and Butterworth (2008) reported higher wages for those in individualized support jobs compared to those in group support settings within matched job sectors (e.g., sales, administration, food service, etc.).

Tuckerman, Smith & Borland (1999) analysed 10 years of data from JobSupport, an Australian DES-ESS provider that only caters for people with moderate ID (average IQ=51.2), is data driven but also documents its practices. Practices comprised a functional/situational assessment which culminates in an agreed plan signed by both the provider and the client; a formal job-client matching process; a detailed job analysis including job redesign, task analysis, and agreed rate, quality and supervision requirements (average time per client 108 hours); one-to-one onsite training until the client reaches the agreed standards and is integrated into the workplace with daily supervision transferred to the supervisor/co-worker (average time per client 72 hours or 6.9 weeks for onsite training); and ongoing follow-up support for the client and employer (average of 9.6 hours per month follow-up after the first twelve months of employment). Using customized employment, 50% jobs were created by JobSupport. Over the 10 year period analysed, these combined practices resulted in 81% job placements in workplaces with over 20 employees, an average annual job retention rate of 82%; and good to high client and employer satisfaction levels at comparatively less cost and better open employment outcomes than a state funded Post school options program. The contribution and significance of individual practices was unknown.

An evaluation of the moderate ID loading (defined as an $IQ \leq 60$) found Jobsupport was responsible for 72% of all 26-week 15+ hours per week employment outcomes across Australia for people with a moderate intellectual disability (59% of all 26-week employment outcomes for MID). The report noted that Jobsupports results were two to three times the national average. A summary of Jobsupports approach was included in the report (Department of Education, Employment and Workplace Relations (DEEWR) (2013).

Furthermore, DES Outcomes by type of disability data for every service in Australia is subject to sample audit checks by government and government data are readily available and provide a unique opportunity to identify, investigate and disseminate what works for people with ID or other populations. The late Paul Cain⁵ produced a user-friendly spreadsheet version of these data while the original government data are still available at <http://lmip.gov.au/default.aspx?LMIP/Downloads/DisabilityEmploymentServicesData/DESOutcomeRatesbyDisabilityType>

Table 4

Support by Number Study for All Identified Evidenced-based Practices

Service	General Description	Supports vs Opposes	# Studies indicating Support	References
<i>Job Placement</i>	Activities leading to a referral to a specific job resulting in an interview	Supports	9	Bolton; Bellini & Brookings, 2000; Chen, Sung & Pi, 2015; Ditchman, Miller, & Easton, 2018; Kaya, 2018; Kaya et al., 2018; Migliore, Timmons, Butterworth, & Lugas, 2012; Moore, Harley, & Gamble, 2004; Nord, 2016, Tuckerman, Smith & Borland, 1999
<i>Job Training</i>	Training of the particular tasks and duties related to an individual's employment position	Supports	4	Ditchman, Miller, & Easton, 2018; Kaya, 2018; Kaya et al., 2018, Tuckerman, Smith & Borland, 1999
<i>Long Term Support/Maintenance</i>	Installation of supports for on-going success	Supports	6	Brooke et al., 2018; Kaya, 2018; Kaya et al., 2018; Lawer, Brusilovskiy, Salzer, & Mandell,

⁵ Vale Paul Cain - CEO Inclusion Australia, and advocate for the rights of people with disability, particularly in the areas of inclusive education and employment

Service	General Description	Supports vs Opposes	# Studies indicating Support	References
				2009, Tuckerman, Smith & Borland, 1999; Tuckerman, et al., 2012
<i>Counseling/ Job Guidance</i>	Direction provided to help individual obtain employment, including addressing vocational needs or determining vocational interests	Supports	3	Chen, Sung & Pi, 2015; Chiang, Ditchman, Miller, & Easton, 2018; Moore, Harley, & Gamble, 2004
<i>On-the-job Support</i>	Support provided after an individual obtains a job (e.g., job coach for teaching and monitoring)	Supports	6	Chen, Sung & Pi, 2015; Kaya, 2018; Kaya et al., 2018; Lawer, Brusilovskiy, Salzer, & Mandell, 2009; Nord, 2016, Tuckerman, Smith & Borland, 1999
<i>Diagnosis/ Evaluation</i>	Assistance getting a diagnosis and subsequent supports or medical treatment to manage symptoms	Supports	2	Kaya, 2018; Kaya et al., 2018
<i>Job Search Support</i>	Help with finding a job; design resume, practice interviews, look for employment opportunities	Supports	3	Ditchman, Miller, & Easton, 2018; Nord, 2016, Tuckerman, Smith & Borland, 1999
<i>Transportation</i>	Assistance with learning, securing or funding transportation services for work purposes	Supports	2	Ditchman, Miller, & Easton, 2018, Tuckerman, Smith & Borland, 1999

Overall, an analysis of Level III data corroborate findings from Levels I and II which indicate that increasing the use of higher quality SE services (Alverson & Yamamoto, 2017; Alverson & Yamamoto, 2018), such as those found in intervention packages that comprehensively cover all parts of the employment process (i.e., support with creating a profile, job development, on-the-job training, and follow-along) lead to better CIE outcomes (Tuckerman, Smith & Borland, 1999; Wehman et al., 2014b; Wehman et al., 2017; Wehman et al., 2019).

Themes at Levels IV

While Level IV is placed comparatively lower on the methodical hierarchy, it should be stated that all of these studies identified in the matrix incorporated single subject design (SSD). Although SSD does not use large sample sizes, it does serve an applied purpose by allowing for an analysis of individually-designed interventions while exercising experimental manipulation and control, and using highly-structured interpretation methods of collected data (Kazdin, 2011). As is typical for SSD research, results for this search returned primarily granular intervention-based techniques. In this case, the collection of articles offers support for specific instructional strategies related to successful employment in local businesses. These include the positive effect of video modeling job tasks (Burke et al., 2013), video feedback by viewing work performance and discussing with a coach (Mackey & Nelson, 2015), audio prompts provided discreetly during job training (Bennett, Ramasamy & Honsberger, 2013a; 2013b), a simultaneous prompting procedure in a work setting (Collin, Terrell, & Test, 2017), and a vocational self-management strategy utilizing a wearable watch alarm (DiPipi-Hoy, Jitendra, & Kern, 2009).

Together, these findings illuminate contemporary themes surrounding the usefulness of technology in both teaching job tasks and fading job support to increase independence on-the-job and maximize job support resources. A full inclusion of instructional strategies at the SSD level was likely not captured given the narrow search parameters used while analyzing the empirical databases used in this review. Included Level IV studies were identified specifically due to their applied vocational focus. However, a greater need for incorporating technology within employment support services is recognized. Chen, Sung and Pi (2015), who reviewed case files for 5,681 individuals with ASD receiving VR services expressed concern over a continued lack of funding for, and availability of, rehabilitation technology (e.g., iPad, JobTips, etc.) through VR agencies when so much empirical evidence exists supporting the use of these approaches to promote employment performance for individuals with IDD. Supplementary Table 4 in the appendix presents results of studies with Level IV methodological designs.

Themes at Level V

Articles meeting a Level V methodological rigor varied greatly in terms of design and scope. A range of qualitative, mixed-methods, and case study data were reviewed, which are summarized in Supplementary Table 5 in the appendix. Mainly, level V research substantiated the findings from the aforementioned more rigorous studies. Most studies effectively yielded employment outcomes by following an SE or CE approach (Baker-Ericzén et al., 2018; Banks, Jahoda, Dagnan, Kemp, & Williams 2010; Becerra, Montanero, & Lucero; 2018; Coleman & Adams, 2018; dos Santos Rodrigues, Luecking, Glat, & Daquer, 2013; Ham et al., 2014; Lindstrom., Hirano, McCarthy, & Alverson, 2014; McLaren et al., 2017; Wehman, Schall, McDonough, et al., 2012b). While not explicitly stating the use of SE or CE, several additional studies reported

success using techniques commonly incorporated into SE and CE approaches including job coach assistance and job modification (Mautz, Storey, & Certo, 2001), job matching (McCabe & Suxing, 2009), job customization and job development strategies (Smith McVilly, Rhodes & Pavlidis, 2018), and on the job training (Vilà, Pallisera, & Fullana, 2007).

Additional findings included studies that documented the effective use of visual supports (Mautz, Storey, & Certo, 2001) and positive behavior support (Ham et al., 2014) to increase independence and fade job coach support. Lastly, the importance of job retention services emerged in the Level IV data. For individuals who are already employed, job retention is a major concern. One case study identified reasons for job loss or separation while receiving SE services, which included lack of acclimation to workplace changes, behavioral problems in the workplace, inability to manage job stress, and job dissatisfaction (Banks, Jahoda, Dagnan, Kemp & Williams, 2010). These issues could all arguably be prevented with proper proactive follow-along services, and highlight the need for productive communication between rehabilitation and vocational service providers, the employees with IDD, and the business.

Summary

In summary, the overall results of this scoping review support the efficacy of the “place, then train” model that enables an individual to learn work skills while immersed in real work environments (Christensen & Richardson, 2017; Christensen, Hetherington, Daston, & Riehle, 2015; Kaehne, 2016; Wehman et al., 2014a Wehman et al., 2017). Supports should be provided based on individual need during the entire employment process, beginning with job searching and continuing with proper follow-along services (Banks et al., 2010). Failure to install supports at any point can ultimately lead to job loss. All teaching strategies should be evidenced-based, individualized (Schall et al., 2015), and implemented by highly trained staff (Butterworth, Migliore, Nord, & Gelb, 2012). On a broader note, findings from this scoping review also elucidate a need for the research community to initiate greater efforts to use the highest levels of methodological rigor when investigating employment interventions for individuals with IDD. Currently, very few studies met the most stringent methodological criteria.

Limitations

Although efforts were made to collect a representative international sample of studies, most that met inclusion criteria came from the United States, and therefore findings may not account for societal factors impacting work outcomes in other parts of the world. Many studies, particularly those at the Level III rigor, did not limit samples to exclusively IDD, thus some included studies comprising a mixed sample with individuals with IDD along with other diagnoses. With this in mind, the total percent of individuals with IDD were identified in each table in the appendix to provide transparency and help the reader make accurate interpretations regarding generalization of results. In general, most studies did not target a specific intervention component (e.g., situational assessments, job matching tools, etc.) as part of their design. Rather, most studies investigated the effect of a combination of intervention techniques, making it difficult to isolate specific strategies and evaluate their solitary worth. However, this may reflect the overall notion that services are best delivered as a combination of effective practices (Ditchman, Miller, & Easton, 2018). Further, many studies explained intervention components in vague terms, reporting processes like “on-the-job training” rather than specific methods like “discrete trial training” or “systematic instruction” with the exception of Level IV studies. As a result, the

combined effect of multiple interventions, as opposed to specific practices, directed the analyses of results. The findings of this scoping review of peer reviewed literature can be combined with the following review of the grey literature to guide evidenced-based practices.

Review of the Grey Literature

A review of the grey literature was also conducted as part of this scoping review. This analysis of non-peer-reviewed policy literature revealed various US federally-funded, and Australian federally and state funded, private, and non-profit grant-based programs aimed at improving employment outcomes for individuals with IDD. Documentation in this area ranged from extensive program evaluation reports and white papers (e.g., Centre for International Economics, 2017, Department of Social Services, 2014a; Fraker, Mamum, Honeycutt, Thompkins, & Valentine, 2014), to more informal articles disseminated through mainstream magazines and online publications (e.g., Wasmer Andrews, 2005). The vast majority of grey literature reviewed consisted of descriptive policy and program recommendations that highlighted potential employment models through specific funding sources (Thompson, Schalock, & Tassé, 2018), results of private foundation employment grants (Kessler Foundation, 2018), social enterprises (Kanady & Missimer, 2018), and demand-side strategies to promote the business case for hiring people with disabilities (Australian Chamber of Commerce and Industry, 2014;). Several government policy documents were also analyzed in this review. These reports emphasized the importance of funding programs to address the needs of both potential employers and employees (Australian Institute of Health and Welfare, 2017; Great Britain Department for Work and Pensions, 2017; Scottish Government Fair Work Employability, and Skills Directorate, 2018). While these documents outlined broad policy commitments of national governments to engage in improving domestic employment outcomes for individuals with disabilities, they omitted more granular descriptions and evaluation of specific practices.

In reviewing the grey literature, there are several rigorous, systematic evaluations of employment programmes that provide useful evidence of effective practices.

Importance of Training and Technical Assistance. Hall, Butterworth, Gilmore, and Metzel (2003) analyzed data across all U.S. states to identify those that had the highest rates of integrated employment of people with IDD. The authors then interviewed key informants from 13 of these high-performing states to identify best practices for promoting employment of individuals with IDD. Their findings include the following themes: (1) strong agency leadership and interagency collaboration; (2) ongoing training and technical assistance; (3) local control of service delivery, and (4) data collection and program evaluation (Hall, Butterworth, Gilmore, & Metzel, 2003). Many of the states included in this sample overcame systemic barriers to CIE by identifying statewide goals and key indicators to incentivize service providers. Several other states reported engaging leadership within the state and across organizations to promote collaboration on target initiatives. While state-wide commitment to driving innovation through shared leadership was a consistent theme, so too was local community autonomy over funding decisions. Finally, one of the most important factors identified was the strong need for ongoing training and technical assistance to all stakeholders involved in the employment of people with disabilities (Hall, Butterworth, Gilmore, & Metzel, 2003).

Youth Transition Demonstration. The Youth Transition Demonstration (YTD) was a national RCT demonstration undertaken by the U.S. Social Security Administration to maximize the economic self-sufficiency of youth transitioning into adulthood by identifying and testing best practices for service delivery and work incentive funding (Fraker, Mamun, Honeycutt, Thompkins, & Valentine, 2014). Six project sites across the U.S. were counted in the evaluation sample with approximately 800-900 youth at each site. The YTD program incorporated individualized work experiences, supports for youth and family, interagency service support, and incentives and benefits counseling to overcome widely-diagnosed barriers to CIE (Fraker et al., 2014). While the programming specifics as well as the goals and outcomes of each project site varied within the general focus of transition-age youth with disabilities, several key findings emerged from the evaluation. Five of the six project sites reported statistically significant positive impacts on increased earnings, reduction in pension benefits, or both (Fraker et al., 2014). Of particular note is the fact that technical assistance was provided to these projects, which led to significantly positive results in the following year of this intervention (Fraker et al., 2014).

Social Security Promise Demonstration. The PROMISE programme (U.S. Department of Education, 2014) was a national, multi-site RCT demonstration project aimed at validating employment services and supports that lead to successful employment outcomes for adolescents with disabilities who receive Supplemental Security Income (SSI) from the U.S. Social Security Administration. The demonstration operated from 2013-2018 in six sites and enrolled over 12,000 adolescents into the study sample (Hartman, Schlegelmilch, Roskowski, Anderson, & Tansey, 2019). (Golden, Karpur, & Podolec, 2019). Participants in the experimental group were provided a core set of services, including training in self-determination, benefits counseling, work experience placements, family training, and employment supports (job development and job site training). Individuals with ID comprised approximately 30% of the study sample, which limited the generalizability of the study results.

A recent preliminary impact analysis (Mamun, et al., 2019) described the initial service and employment outcomes across the six Promise demonstration sites. The projects' impact on employment was generally limited to short term work experiences as opposed to permanent paid employment, although the report indicated that greater impacts may be shown if services are improved and delivered for a longer period of time.

A potentially important finding was that in four of the projects the receipt of transition services led to a considerable increase in the likelihood that participants would subsequently apply for vocational rehabilitation services. The finding that receipt of work experience opportunities and other transition services might ultimately lead participants to apply for formal adult vocational rehabilitation services (open employment, job placement, etc.) would have significant implications for future service delivery, particularly for individuals with ID.

Federal Supported Employment Study. Chan and Kregel (2019), reviewed a propensity-score matched analysis of 108,000 individuals with ID served by state vocational rehabilitation agencies in the U.S. The results of the study documented the effectiveness of SE as an effective intervention for individuals with intellectual disabilities served by the state-federal vocational rehabilitation program. Individuals receiving SE were significantly more likely to become

employed after receiving services. Notably, the effect was strongest for individuals with intellectual disabilities, transition age youth (mean age 19), and persons receiving federal disability benefits, three groups that traditionally have been unemployed or underemployed.

Additional Project SEARCH Evaluation. Finally, in addition to studies evaluating the efficacy of Project SEARCH in the peer-reviewed literature, Kaehne (2014) produced an independent evaluation of Project SEARCH across 17 sites in the UK. Sites included in the evaluation adhered to the *traditional* Project SEARCH model rather than specialized components integrated into the PS+ASD Supports model used in studies included in the Level I evidence section (e.g., Wehman et al., 2019). Similar findings were also later published in the peer-reviewed literature (Kaehne, 2016), which was included in our analysis under Level II evidence. Despite significant methodological limitations to generalizing evaluation results based on a significant amount of inconsistent data, Kaehne's (2014) findings are largely in keeping with the peer reviewed literature reporting positive employment outcomes with both the host employer and post graduation from the *traditional* Project SEARCH model, though with a smaller effect size than those reported in PS+ASD Supports studies (e.g., Wehman et al., 2019).

Raised employability expectations

In the Australian context, several studies concluded the presumption of employability among parents, educators and employment services was integral to the success of employment for young people with ID, and was associated with increased job confidence and job retention (ARTD Consultants, 2016; Black, 1984; Riches & MacDonald, 2016; Tuckerman, 2015). A comparative data analysis by Jobsupport found the introduction of the TTW service increased the number of school leavers willing to attempt employment by 120%. Over half of the school leavers who entered Jobsupport's TTW/SLES⁶ were unable to use public transport at the end of school, had low self-fulfilling expectations regarding employment and would not attempt employment without a bridging TTW/SLES service. Customised work experience and systematic training allowed participants to experience success and gain confidence (Tuckerman, 2015).

Several reports identified that successful DES providers concentrate on developing profile data regarding the strengths, interests, preferences and abilities of jobseekers with ID, use functional work assessment data and identify employment goals to assist in job placement (Department of Social Services, 2017; Riches & MacDonald, 2016; Tuckerman, Smith & Borland, 1999).

Marketing

Job search and targeted marketing strategies were identified as effective practices associated with improved job placements for people with IDD (Department of Social Services, 2014b; Marsh, Tuckerman, Cain & Kregel, 2012). Jobsupport uses an evidence-based job search process based on a comprehensive market survey to achieve consistently high placement rates (Centre for International Economics, 2017; Tuckerman, 2015). Nova Employment, another successful DES-ESS provider has a strong marketing approach involving staff training in marketing for all employment consultants, regular marketing to local employers, use of a repeat business strategy and a range of promotion activities (Department of Social Services, 2017; Riches & MacDonald,

⁶ Transition to Work (TTW) services are now called School Leaver Employment Supports (SLES) in Australia.

2016). The Autism and Agriculture Pilot Program, a CRC Autism collaborator has replaced the normal recruitment interview process with online applications, use of photographs and a practical demonstration of skills to enable candidates with ID/ASD to successfully show their skills and strengths and gain employment (van Barneveld, 2017).

On the job versus Classroom-based instruction

While pre-vocational training and vocational education in classroom settings may be effective for other populations, there is a lack of evidence for such pre-employment and classroom-based training and education for youth with ID. Cavallaro, Foley, Bowman (2005) reported that within the equity groups, people with a disability had the lowest educational achievement and employment outcomes from VET, and that for many students with disability their reasons for study were non vocational. Ticket to Work programs in Australia as yet lack empirical evaluation, but Wakeford & Waugh, (2014) reported that students with autism and ID can struggle with the Ticket to Work program that includes classroom based instruction, as they do not easily transfer generic skills development from classroom training into the workplace. Instead, students with ID learn better through practical, hands-on experience, and require customisation, adaptation, task breakdown, and the provision of ongoing disability support. In another VET study, Fossey, Chaffey, Venville et al., (2015) also recognised learners with ID struggle with classroom learning and identified best practice supports required involve strengthening teacher knowledge about the ways in which to adapt tasks and spaces to support individual students; recognising and respecting differences in student needs; and establishing inclusive curriculum design and practice across the educational institution. These conclusions are supported by course entry, course completion rates and employment outcomes that are collected for all Nationally Accredited Vocational Education and Training (VET) courses from Certificate level 1 through to University Diploma by the Commonwealth of Australia. VET data from 2014-2017 revealed course completion rates for people with ID were extremely low, ranging from 5.7% to 9.1%. The employment outcome rates for these graduate cohorts with ID 2015-2018 ranged from 20.5% to 55.8% (NCVER, 2019).

In contrast, skills based vocational instruction and work experience occurring in real work environments has consistently been associated with better employment outcomes post school (ARTD Consultants, 2016; Department of Family and Community Services, 2009; Riches & MacDonald, 2016; Riches, Parmenter, Fegent & Bailey, 1993; Riches, Parmenter & Robertson, 1996; Watters, Riches & Parmenter, 1993; Wirth, 1979).

Staff training and technical assistance has the potential to enhance performance of individual agencies and improve outcomes for clients with IDD, but the issue can be complex. Marsh, Tuckerman, Cain & Kregel, (2012) found successful organisational change requires four necessary and sufficient elements - recognition of need for change among management, direct commitment to change from top management, a plan of action, and follow through training and reporting systems; and evidence was that offering offering technical assistance to services that were not ready to change was unlikely to be successful.

Transition Predictors of Employment

Although the main purpose of this scoping review focused on interventions directly impacting employment outcomes for adults with IDD, it is also important to consider additional evidence examining the experiences of transition-age youth prior to exiting school. Fortunately, recent systematic review and meta-analyses research in this area have revealed several key transition predictors and practices linked to post-secondary success for students with disabilities (Haber et al., 2016; Mazzotti et al., 2016). Many of the studies in these reviews include, but are not specific to, individuals with IDD, so conclusions should be interpreted with caution for individuals with IDD. Mazzotti et al. (2016) synthesized the results of studies using data from the US National Longitudinal Transition Study – 2 (NLTS2) that examined predictive factors leading to positive postsecondary outcomes for transition-age students with disabilities. Their study expanded findings from a previous literature review conducted by Test et al. (2009) that established a framework for organizing evidence-based in-school predictors of postsecondary outcomes by levels of strength of evidence (i.e., none, potential, emerging evidence, and moderate) in the areas of employment as well as postsecondary education and independent living. Haber et al. (2016) conducted a meta-analysis of studies included in Test et al. (2009), further refining contexts and populations where transition predictors and practices are effective at promoting positive postsecondary outcomes. Findings from these studies form the foundation for training efforts through NTACT (National Technical Assistance Center on Transition, 2019) to prepare transition practitioners with effective practices for improving post school outcomes for students. This section summarizes general findings from these correlational transition studies that include students with IDD, organizing them by levels of evidence and using predictor terms used in the systematic review by Mazzotti et al. (2016).

Transition Predictors of Employment with Moderate Evidence for Youth with IDD

It should be noted that limitations of correlational designs used predominately in research on predictors of transition-age students mean that no factors carry more than moderate levels of evidence for promoting employment for youth with IDD (Test et al., 2009). Among those with moderate evidence (i.e., with at least two *a priori* studies, per Test et al., 2009), *work experience* is one of the most well-documented factors identified in the research literature (Carter, Austin, Trainor, 2012; McDonnall & O'Mally, 2012; Wagner et al., 2014). Other moderately predictive school factors include participation in *vocational education* (Baer et al., 2003; Chiang et al., 2013; Harvey, 2002). However, it should also be noted that while vocational education was generally found to predict better work outcomes, context likely is a significant moderator in intervention efficacy. For example, Baer, Daviso, Flexer, McMahan Queen, and Meindl (2011) found that students who received three or more semesters of career and technical education classes in non-community-based high school settings were not significantly more likely to achieve post-school employment.

Transition Predictors of Employment with Potential Evidence for Youth with IDD

A potential level of evidence means that predictors have at least one *a priori* study and two or more exploratory studies (Test et al., 2009). Additionally, several aspects of student programming were identified as potential predictors, including *transition programming* (Benz, Lindstrom, & Yovanoff, 2000) and *community experiences* (White & Weiner, 2004). Several malleable student characteristic factors also emerged in this level of evidence including *self-determination* (Wehmeyer & Schwartz, 1997), and *youth autonomy/decision making* (Doren et al., 2012;), Chiang, Cheung, Hickson, Xiang, & Tsai, 2012). Finally, *parental expectations* were associated in several studies with moderate to large effect sizes in predicting employment (Doren et al., 2012; Papay & Bambara, 2014).

Transition Predictors of Employment with Emerging Evidence for Youth with IDD

Factors that did not meet criteria for potential predictors, but presented some positive exploratory findings were classified as having emerging evidence. Two predictors were incorporated into Mazzotti et al.'s (2016) review under this level of evidence. Carter et al. (2012) found that both *goal setting* and *travel skills* led to improved employment outcomes for youth in their study. Both of these areas may also have been considered under other areas as *travel skills* are often included as a component of *self-care* and *independent living*, and *goal setting* as a component of *self-determination*. However, Mazzotti et al. (2016) found emerging evidence for these as standalone factors.

Transition Predictors of Employment without Evidence for Youth with IDD

There were two predictors included in reviews to support the evidence base for students with disabilities as a whole, but no studies involving individuals with IDD were included in the sample, and so—based on these systematic reviews—these factors do not have evidence for youth with IDD. These factors include *interagency collaboration* and *parental involvement* (not to be confused with *parental expectations*). The sole study supporting *interagency collaboration* as a predictor of employment outcomes was focused on deaf students (Bullis et al., 1995). Likewise, only one study was identified to support *parental involvement* as a predictor of employment, but the sample was limited to students with learning disabilities (Fourqurean, Meisgeier, Swank, & Williams, 1991).

Negative Correlational Findings

Finally, several studies included in these reviews reported negative correlational findings, or practices that contradicted evidence for various predictors (Mazzotti et al., 2016). Among these findings, Chiang et al. (2013) reported that schools contacting vocational training programs and potential employers decreased likelihood of employment. Papay and Bambara (2014) also found that family involvement during high school was negatively correlated with employment. Though, this finding should be interpreted with caution as this predictor was defined by parent reports of whether teachers contacted them to develop post-school goals.

Practices with Limited Empirical Evidence

While the primary purpose of this review is to identify the breadth of evidence supporting various employment practices related to promoting CIE for individuals with IDD, it is also important to highlight those practices with limited evidence in the empirical literature. Several common practices were notably absent from the research literature. First, while previous sections have identified several evidence-based practices and predictors for youth transitioning to adulthood (i.e., community-based work experience), it should be clarified that early intervention itself did not emerge as a salient factor in this review. Instead, the combination of *early intervention* and *quality services* is an important determinant. Accordingly, Cimera, Burgess, and Bedesem (2014) reported that earlier service delivery improved outcomes when using evidence-based practices. No studies were identified that found that beginning engagement at an earlier age led to better outcomes in the absence of evidenced-based techniques.

Additionally, no studies were found that supported the generalization of skills from specifically classroom-based vocational education and training to improved CIE in adulthood for individuals with IDD. This paucity of research may be partially explained by previous research demonstrating that over-specificity of repetitive learning opportunities leads to decreased ability to generalize skills for individuals with ASD (Harris et al., 2015). While the strength of evidence behind several community-based work experiences for youth offer encouraging signs of potential future research in this area, the overall lack of evidence behind early intervention and classroom-based approaches to improving employment outcomes should serve as a caution to policymakers against less nuanced approaches to transition intervention.

A number of Australian studies and reports identified effective transition practices correlated with successful employment outcomes for students with ID. Effective school-based transition practices involved individualised, person-centered transition plans with student chosen goals, and goals to guide curriculum planning that were strength-based and collaborative (Department of Family and Community Services, 2009; Riches, Parmenter & Robertson, 1996); and a substantial amount of vocational training/work experience in community-based or real worksites and job coaching using employment related technologies in the later school years (Department of Family and Community Services, 2009; Ling, Morris, & Riches, 1993; Riches, 1997; Riches, Parmenter, Fegent and Bailey, 1993; Riches, Parmenter & Robertson, 1996).

Effective post school transition programs were conceptually strong in their vocational orientation, flexible around clients' needs and aspirations, and provided substantial work experience in community and real work sites, tailored to participants' interests and strengths (ARTD, 2005; Department of Family and Community Services, 2009; Marsh, Tuckerman, Cain & Kregel, 2012; NCID, 2009; Riches, Knox & O'Brien, 2014; Wakeford & Waugh, 2014). Transition programs can raise expectations regarding CIE, as Tuckerman (2018) reported the number of school leavers entering Jobsupport (Transition or DES program) increased by 120% after the establishment of a transition program. Nevertheless, involvement in the transition program did not appear to have any impact on reducing onsite training time once placed in a job (Tuckerman, 2018).

Successful post school transition programs resulting in employment outcomes were also strong in building and sustaining relationships with employers when employed staff were skilled in job

placement, and had expertise with instructional technology and behavior management strategies, along with experience providing disability support and inclusion in the workplace (Riches & Parmenter, 1990; Riches & Parmenter, 1993; Riches et al, 1993; Watters, Riches & Parmenter, 1993).

Policies and Practices That Are Ineffective

Building off of several decades' worth of research, advocacy, and policy evaluation, a great deal is now known about the service delivery practices that increase CIE outcomes for people with IDD. While it is important to understand those practices that do lead to better outcomes, it is also important to isolate those that do not.

The NSW TTW and DES outcome data demonstrate a large tail of services that lack knowledge of evidence-based practices and competence in achieving employment outcomes for people with an intellectual disability. The MIDL⁷ review stated “*peak organisations recognise that few DES providers have the specialist skill sets and competencies required to support MIDL participants*” (Department of Education, Employment and Workplace Relations (DEEWR), 2013 p. 24).

In the U.S., a significant portion of individuals with IDD continue to be ‘employed’ in segregated employment settings (Siperstein, Parker, & Drascher, 2013). These persistently high rates of segregated employment settings continue despite policies like the Workforce Innovation and Opportunity Act of 2014 (PL 113–128) in the U.S. and the Convention on the Rights of Persons with Disabilities (United Nations, 2006) internationally that emphasize the commitment to CIE as the priority outcomes for all individuals. Siperstein, Heyman, and Stokes (2014) found that those who entered segregated employment settings rarely became competitively employed later (only 10% of the sample). Australian figures are even lower, the Australian Department of Social Services (2015) reported that 20,000 people were in supported employment in 2014 and that 159 (1%) moved to open employment. Furthermore, individuals engaged in segregated work were almost half as likely to have had previous work experience or job training and were almost four times less likely to ever be competitively employed. Other analyses of segregated and competitive employment found that segregated work settings were a significantly less efficient use of public funding (Cimera, 2007), while inclusive employment delivers better quality of life outcomes for young people with Down syndrome and their families than either segregated employment or day programs (Foley, Girdler, S., Downs, et al., 2014.) These studies overwhelmingly show that segregated employment settings do not work as a means for improving CIE.

⁷ MIDL Moderate Intellectual Disability Loading – a funding loading For DES providers on job placement and outcome fees where an eligible participant with moderate ID achieves employment for at least 15 hours per week

Summary and Conclusion

The objective of this review was to identify evidenced-based employment practices and document the associated strength of research for each identified practice related to CIE for individuals with IDD. The information presented below is a synthesis of all three review initiatives; a) a scoping review of the international peer reviewed literature base, b) a review of international empirical grey literature, and c) a concentrated review of both the peer-reviewed literature and grey literature pertaining specifically to Australia. Several major themes were consistent across all three reviews. In the following sections, we summarize the common findings that emerged as evidenced-based employment practices. Further, we discuss several current practices for which little evidence materialized during the course of our review. Findings have implications for informing policy and practice initiatives that promote competitive employment for individuals with IDD.

Summary of Recommended Evidenced-Based Employment Practices

The major findings from these three review efforts point to the following as evidenced-based practices for achieving competitive employment outcomes for individuals with IDD within community settings.

- Combined Stages of the Supported Employment Model.*** Findings from the systematic and grey literature reviews highlight the following point: successful employment outcomes are not typically the product of a single service, but rather the product of a comprehensive evidenced-based process implemented at multiple chronological stages consistent with the SE model. To reiterate, the SE model includes 1) personalized assessments to build a job seeker profile, 2) individualized job development, 3) on-the-job training provided by qualified staff, and 4) on-going support that is needs-based rather than time-based. These combined services lead to measurably greater outcomes than traditional employment services. There is a plethora of evidence demonstrating the efficacy of the combined 4-stage model of SE on multiple measurable outcomes, including a *significantly higher likelihood of becoming employed* (Alverson & Yamamoto, 2017; Alverson & Yamamoto, 2018; Cimera, 2017; Christensen & Richardson, 2017; Christensen, Hetherington, Daston, & Riehle, 2015; Kaehne, 2016; Kaya, 2018; Kaya et al., 2018; Wehman, Chan, Ditchman, & Kang, 2014a; Wehman, Lau, et al., 2012b; Wehman, Schall, McDonough, et al., 2017; Wehman, Schall, McDonough, et al., 2014b; Wehman et al., 2019), *greater hourly earnings at or above minimum wage* (Cimera, 2017; Schall et al., 2015; Wehman, Schall, McDonough, et al., 2017; Wehman et al., 2019; Wehman, Lau, et al., 2012b) and *greater job retention over time* (Brooke et al., 2018; Schall et al., 2015) as compared to traditional employment service alternatives.
- Place, then Train Approach.*** While not in and of itself a step, the overarching philosophy of SE is a “place, then train” approach to employment. Importantly, this

method eliminates wasted time in pre-vocational preparatory activities that delay transition to employment. Individuals should be placed in a job using information about their strengths, interests, preferences and needs, followed by the installation of personalized supports that will ultimately foster independence. The efficacy of “place, then train” is clearly demonstrated by the successful CIE outcomes reported by SE/OE programs that have already utilized this model.

Successful examples include multiple VR service success cases that point to on-the-job training and support as a predictor of CIE (Chen, Sung & Pi, 2015; Kaya, 2018; Kaya et al., 2018; Lawer, Brusilovskiy, Salzer, & Mandell, 2009; Nord, 2016), the results of a recent large scale study including 108,819 individuals with ASD and 182,719 individuals with ID indicating a positive effect of the SE intervention on CIE outcomes (Chan & Kregel, 2019), and numerous studies and reports on Jobsupport regarding individuals who have achieved successful placement and retention outcomes using the place and train model (Tuckerman, 1993; Tuckerman, Smith & Borland, 1999; Department of Education, Employment and Workplace Relations, 2013).

- ***Effect of Dosage.*** Receiving a higher number of quality services for a substantial amount of time is associated with better employment outcomes. To illustrate, findings from this review indicated that individuals with IDD were five times more likely to become employed with each additional VR service received (Alverson & Yamamoto, 2017) and those who were competitively employed used twice as many VR services as those who were not competitively employed (Alverson & Yamamoto, 2018). Similarly, Ditchman, Miller, and Easton (2018) found that a greater combination of the following specific services was associated with greater CIE outcomes; assessments, counseling, job placement, on-the-job training, job search support, and transportation services. Top performing Australian DES-ESS providers Jobsupport and Nova Employment also use a similar combination of services and achieve high job placement and retention rates (Department of Social Services, 2017; Riches & MacDonald, 2016; Tuckerman, 2015; Tuckerman, Smith & Borland, 1999). In addition to the number and combination of different services provided within the multicomponent PS+ASD Supports model, the Project SEARCH internship program also utilizes markedly high doses of time spent receiving individual services, with over 700 hours of internship experiences accrued during a single 9-month program per intern (Schall et al., 2015). It is important for service providers to determine an appropriate combination and amount of time for services depending upon the needs and strengths of each individual client.
- ***Quality of Staff Training/Services.*** The quality of employment services provided to individuals with IDD is in large part dependent on the level of training received by staff implementing those services. Therefore, properly trained staff are paramount to successful employment outcomes. Findings from our review indicate that staff who are properly trained on how to effectively implement the stages of SE secure more CIE outcomes for clients, secure clients higher paying work per hour, and negotiate more hours of work weekly than staff who do not receive targeted training in this area (Butterworth, Migliore, Nord, & Gelb, 2012; Marsh, Tuckerman, Cain & Kregel, 2012). Staff providing employment services should be fluent in the overall process for implementing the chronological stages of SE along with knowledge of instructional

training techniques that are supported by empirical research, such as ABA strategies used for the on-the-job training (Wehman, Schall, McDonough, et al., 2017; Wehman, Schall, McDonough, et al., 2014b; Wehman et al., 2019).

- ***Work Experience for Transition-age Students.*** Participation in work experience before graduating high school or shortly thereafter is a known predictor of later community employment. Numerous studies establish clear links between early work experience and later employment (Lindstrom, Hirano, McCarthy, & Alverson, 2014; Carter, Austin, & Trainor, 2012; Mamun, Carter, Fraker, & Timmins, 2018; Riches, Knox & O'Brien, 2014; Riches, Parmenter, Fegent & Bailey, 1993; Riches, Parmenter & Robinson, 1996; Wehman, Schall, McDonough, et al., 2017; Wehman et al., 2019).

However, it is not enough to simply provide work opportunities to transition-age students. For individuals with moderate or severe ID, it cannot be assumed that work experience alone will necessarily lead to CIE in the absence of additional OE services. These individuals traditionally have had limited exposure to integrated community environments and may have received much of their education in segregated classrooms or other settings. They and their families may have been told repeatedly that competitive employment was not a realistic option for them. For individuals with moderate or severe ID, the benefit of work experience may be to raise the employment expectations of youth and their families. For individuals with mild ID, work experience across several industries often results in more realistic employment goals and better job matches (Riches & MacDonald, 2017).

- ***Need for Further Research.*** Further research is need to confirm Jobsupports report (Tuckerman 2015) and the U.S. PROMISES data (Mamun, et al., 2019) that a primary benefit of work experience for people with ID is to overcome low expectations and result in more people willing to attempt open employment.
- ***Personalized Rather than Universal Assessment and Training.*** Individuals with IDD vary in terms of strengths, interests, preferences, and needs. Employment support services that emphasize personalization of supports at every phase of the employment process are significantly more likely to assist individuals in securing and retaining a job. For example, DES providers that focused on developing profile data on clients to guide the open employment process had better job placement outcomes. A 70% placement rate for individuals with moderate ID between 2012 and 2017 by the DES-ESS Jobsupport was achieved using detailed assessments to determine strengths and weaknesses that informed good job matches (Department of Social Services, 2017). Personalized assessment-based processes used by NOVA contributed to an 80% job placement rate between 2012 and 2017 (Department of Social Services, 2017). Tapping into individual needs rather than applying a generalized template of service allows service providers to really understand the individual with IDD, develop an appropriate job match within a preferred context and subsequently anticipate challenges that that might thwart successful employment outcomes.

Summary of Current Practices with Limited Empirical Evidence

Finally, our team identified several commonly used practices that were notably absent from the empirical literature. There is extremely limited evidence (or in some cases, no evidence) within the scientific body of literature that justify selection of these techniques over the clearly established, evidenced-based methods already reviewed.

- **Segregated Employment.** Participation in segregated employment was not cited as a predictor of CIE outcomes in any study reviewed. Rather, many studies indicated that segregated employment hindered individuals with IDD's ability to later obtain community integrated jobs. For example, Siperstein, Heyman, and Stokes (2014) found that only 10% of a large, nationally representative U.S. sample was able to successfully move from segregated employment to CIE. Christensen and Richardson (2017) found that no participants who had been in a segregated workshop setting for longer than five years were able to transition to a community job. Individuals in segregated employment also earn significantly less than those in community-based employment (Cimera, 2017). In summary, there is no contemporary evidence that segregated employment leads to community employment. Correspondingly, the Australian Department of Social Services (2015) reported that 20,000 people were in supported employment in 2014 and that 159 (1%) moved to open employment.
- **Classroom-based Pre-vocational Training.** While pre-employment training in the form of applied internships and other work experience in real work settings emerged as a significant predictor of CIE for individuals with IDD (Carter, Austin, & Trainor, 2012; Wehman, Schall, McDonough, et al., 2017; Wehman, Schall, McDonough, et al., 2014b; Wehman et al., 2019), preparatory activities conducted in a classroom or simulated setting (as opposed to a real work environment) did *not* yield empirical support as an evidenced-based practice. Such preparatory activities range in scope but include pre-employment training programs and classroom-based vocational coursework where the student does not have access to natural opportunities to develop and refine employment skills. While several studies have described classroom-based techniques with aims at better generalization to real world settings, such as the Ticket to Work program (Wakeford & Waugh, 2014, p.18-19) and the Vocational Education and Training (VET) study (Fossey, Chaffey, Venville et al., 2015; NCVER, 2019), none provide outcome data to support efficacy. Therefore, at present, classroom-based pre-vocational training simply cannot be identified as an evidenced-practice linked to real CIE outcomes.
- **Transition Services in the Absence of Evidenced-Based Practices.** Lastly, there is no evidence to suggest that the provision of earlier transition services is in and of itself an evidenced-based practice. Earlier transition services, provided at age 14 rather than 16, were found to be effective in promoting CIE outcomes for youth with IDD (Cimera, Burgess, and Bedesem, 2014) but *only* when combined with the implementation of other evidenced-based practices. Simply providing transition services at earlier ages in the absence of other empirically backed techniques does not lead to improved employment outcomes for youth and young adults with IDD.

In summary, clear themes separating evidence-based employment practices for individuals with IDD from those lacking empirical evidence emerged across our three reviews. Employment service agencies have a responsibility to provide services that hold scientific merit in order to maximize each client's likelihood of achieving a job within their community, in an employment field of their interest, and with the supports needed to succeed. Use of non-evidenced based teaching strategies or allowing poorly trained staff to provide services runs several risks including jeopardizing employment, damaging relationships with businesses, and causing undue stress and frustration to the individual with IDD. Supports must comprehensively address needs at all stages of the employment process, beginning with job search activities and continuing through follow-along. Greater use of these evidence-based practices can be achieved through staff training, technical assistance, and policy change. Collaborative efforts from government entities, agencies, employers, individuals with IDD and their families can substantially improve CIE opportunities for individuals with IDD.

References

- Allen, K. D., Burke, R. V., Howard, M. R., Wallace, D. P., & Bowen, S. L. (2012). Use of audio cuing to expand employment opportunities for adolescents with autism spectrum disorders and intellectual disabilities. *Journal of Autism and Developmental Disorders*, 42(11), 2410-2419.
- Alverson, C. Y., & Yamamoto, S. H. (2018). VR employment outcomes of individuals with autism spectrum disorders: A decade in the making. *Journal of Autism and Developmental Disorders*, 48(1), 151-162.
- Alverson, C. Y., & Yamamoto, S. H. (2017). Employment outcomes of vocational rehabilitation clients with autism spectrum disorders. *Career Development and Transition for Exceptional Individuals*, 40(3), 144-155.
- Arksey, H., & O'Malley, L. (2005). Scoping studies: Towards a methodological framework. *International Journal of Social Research Methodology*, 8(1), 19–32.
<https://doi.org/10.1080/1364557032000119616>
- Armstrong, R., Hall, B. J., Doyle, J., & Waters, E. (2011). Cochrane update. “Scoping the scope” of a Cochrane review. *Journal of Public Health*, 33(1), 147–150.
<https://doi.org/10.1093/pubmed/fdr015>
- ARTD Management & Research Consultants, (2005). *Outcomes of the Transition to Employment Pilots. Final Report*. Author. www.artd.com.au
- ARTD Consultants (2016). *Ticket to Work pilot outcomes study. A quasi-experimental evaluation of pathways from school to economic and social inclusion*. Report for National Disability Services, Sydney, Australia: ARTD Consultants.
- Australian Chamber of Commerce and Industry (ACCI) (2014). *Employ Outside the Box: The Business Case for Employing People with Disability*. www.acci.asn.au/Research-and-Publications/Publications/Employ-outside-the-Box Retrieved 8th July 2018.
- Australian Institute of Health and Welfare (2017). *Disability support services: services provided under the National Disability Agreement 2015-16. Bulletin 140*. Canberra: AIHW.
- Baer, R. M., Daviso, A. W., Flexer, R. W., McMahan Queen, R., & Meindl, R. S. (2011). Students with intellectual disabilities: Predictors of transition outcomes. *Career Development for Exceptional Individuals*, 34(3), 132–141.
<https://doi.org/10.1177/0885728811399090>
- Baer, R. M., Flexer, R. W., Beck, S., Amstutz, N., Hoffman, L., Brothers, J., et al. (2003). A collaborative follow-up study on transition service utilization and post-school outcomes. *Career Development for Exceptional Individuals*, 26, 7–25.

- Baker-Ericzén, M. J., Fitch, M. A., Kinnear, M., Jenkins, M. M., Twamley, E. W., Smith, L., ... & Leon, J. (2018). Development of the supported employment, comprehensive cognitive enhancement, and social skills program for adults on the autism spectrum: Results of initial study. *Autism*, 22(1), 6-19.
- Banks, P., Jahoda, A., Dagnan, D., Kemp, J., & Williams, V. (2010). Supported employment for people with intellectual disability: The effects of job breakdown on psychological well-being. *Journal of Applied Research in Intellectual Disabilities*, 23(4), 344-354.
- Baume, P. & Kay, K. (1995). Working Solution: Report on the Strategic review of the Commonwealth Disability Services Program. Canberra, ACT: Commonwealth of Australia.
- Becerra, M. T., Montanero, M., & Lucero, M. (2018). Graphic support resources for workers with intellectual disability engaged in office tasks: A comparison with verbal instructions from a work mate. *Disability and Rehabilitation*, 40(4), 435-443.
- Bennett, K. D., Ramasamy, R., & Honsberger, T. (2013a). The effects of covert audio coaching on teaching clerical skills to adolescents with autism spectrum disorder. *Journal of Autism and Developmental Disorders*, 43(3), 585-593.
- Bennett, K. D., Ramasamy, R., & Honsberger, T. (2013b). Further examination of covert audio coaching on improving employment skills among secondary students with autism. *Journal of Behavioral Education*, 22(2), 103-119.
- Benz, M. R., Lindstrom, L., & Yovanoff, P. (2000). Improving graduation and employment outcomes of students with disabilities: Predictive factors and student perspectives. *Exceptional Children*, 66, 509-541.
- Black, S. (1984). Employment outcomes for mildly intellectually handicapped youth from a work preparation centre. *Today*, 4, (2), 23 -31.
- Block, S. R., Athens, K., & Brandenburg, G. (2002). Using performance-based contracts and incentive payments with managed care: Increasing supported employment opportunities for people with developmental disabilities. *Journal of Vocational Rehabilitation*, 17(3), 165-174.
- Boeltzig, H., Timmons, J. C., & Butterworth, J. (2008). Entering work: Employment outcomes of people with developmental disabilities. *International Journal of Rehabilitation Research*, 31(3), 217-223.
- Bolton, B. F., Bellini, J. L., & Brookings, J. B. (2000). Predicting client employment outcomes from personal history, functional limitations, and rehabilitation services. *Rehabilitation Counseling Bulletin*, 44(1), 10-21.

- Bond, G. R., Drake, R. E., & Becker, D. R. (2008). An update on randomized controlled trials of evidence-based supported employment. *Psychiatric Rehabilitation Journal*, 31, 280-290. doi:10.2975/31.4.2008.280.290
- Brooke, V., Brooke, A. M., Schall, C., Wehman, P., McDonough, J., Thompson, K., & Smith, J. (2018). Employees with autism spectrum disorder achieving long-term employment success: A retrospective review of employment retention and intervention. *Research and Practice for Persons with Severe Disabilities*, 43(3), 181-193.
- Brown, L., Nisbet, J., Ford, A., Sweet, M., Shiraga, B., York, J., & Loomis, R. (1983). The critical need for nonschool instruction in educational programs for severely handicapped students. *Research and Practice for Persons with Severe Disabilities*, 8(3), 71-77. <https://doi.org/10.1177/154079698300800309>
- Brown, L., Shiraga, B., York, J., Kessler, K., Strohm, B., Rogan, P., ... Loomis, R. (1984). Integrated work opportunities for adults with severe handicaps: The extended training option. *Journal of the Association for Persons with Severe Handicaps*, 9(4), 262-269. <https://doi.org/10.1177/154079698400900403>
- Bullis, M., Davis, C., Bull, B., & Johnson, B. (1995). Transition achievement among young adults with deafness: What variables relate to success? *Rehabilitation Counseling Bulletin*, 39, 130-150.
- Burgess, S., & Cimera, R. E. (2014). Employment outcomes of transition-aged adults with autism spectrum disorders: A state of the states report. *American journal on intellectual and developmental disabilities*, 119(1), 64-83.
- Burke, R. V., Allen, K. D., Howard, M. R., Downey, D., Matz, M. G., & Bowen, S. L. (2013). Tablet-based video modeling and prompting in the workplace for individuals with autism. *Journal of Vocational Rehabilitation*, 38(1), 1-14.
- Butterworth, J. Christensen, J., & Flippo, K. (2017). Partnerships in employment: Building strong coalitions to facilitate systems change for youth and young adults. *Journal of Vocational Rehabilitation*, 47, 265-276. doi:10.3233/JVR-170901
- Butterworth, J., Migliore, A., Nord, D., & Gelb, A. (2012). Improving the employment outcomes of job seekers with intellectual and developmental disabilities: A training and mentoring intervention for employment consultants. *Journal of Rehabilitation*, 78(2).
- Carter, E. W., Austin, D., & Trainor, A. A. (2012). Predictors of postschool employment outcomes for young adults with severe disabilities. *Journal of Disability Policy Studies*, 23(1), 50-63. <https://doi.org/10.1177/1044207311414680>

- Cavallaro, T., Foley, P., & Bowman, K. (2005). *People with a disability in vocational education and training*. Adelaide, SA: National Centre for Vocational Education Research
- Centre for International Economics. (2017). *Commonwealth of Australia, Evaluation of Disability Employment Services. 2010-2013. Final Report. Securing savings from open employment. The case of persons with moderate intellectual disability*. Author.
- Chan, F. & Kregel, J. (2019). *Supported employment for people with intellectual disabilities, autism spectrum disorder, and schizophrenia: A propensity matched comparison of vocational rehabilitation outcomes*. Washington, DC: Mathematica Policy Research, Disability Research Consortium.
- Chen, J. L., Sung, C., & Pi, S. (2015). Vocational rehabilitation service patterns and outcomes for individuals with autism of different ages. *Journal of Autism and Developmental Disorders*, 45(9), 3015-3029.
- Chiang, H., Cheung, Y., Hickson, L., Xiang, R., & Tsai, L. Y. (2012). Predictive factors of participation in postsecondary education for high school leavers with autism. *Journal of Autism and Developmental Disorders*, 42, 685–696. doi:10.1007/s10803-011-1297-7
- Chiang, H., Cheung, Y. K., Li, H., & Tsai, L. Y. (2013). Factors associated with participation in employment for high school leavers with autism. *Journal of Autism and Developmental Disorders*, 43, 1832–1842.
- Christensen, J. J., & Richardson, K. (2017). Project SEARCH workshop to work: Participant reflections on the journey through career discovery. *Journal of Vocational Rehabilitation*, 46(3), 341-354.
- Christensen, J., Hetherington, S., Daston, M., & Riehle, E. (2015). Longitudinal outcomes of Project SEARCH in upstate New York. *Journal of Vocational Rehabilitation*, 42(3), 247-255.
- Cimera, R. E. (2007). The cumulative cost-effectiveness of supported and sheltered employees with mental retardation. *Research and Practice for Persons with Severe Disabilities*, 32(4), 247–252. <https://doi.org/10.2511/rpsd.32.4.247>
- Cimera, R. E. (2017). The percentage of supported employees with significant disabilities who would earn more in sheltered workshops. *Research and Practice for Persons with Severe Disabilities*, 42(2), 108-120.
- Cimera, R. E., Burgess, S., & Bedesem, P. L. (2014). Does providing transition services by age 14 produce better vocational outcomes for students with intellectual disability?. *Research and Practice for Persons with Severe Disabilities*, 39(1), 47-54.

- Cocks, E. & Harvey, T. (2008). *Employment/Day Options Interface Research Project- Final report*. Perth: Curtin University, School of Occupational Therapy and Social Work Centre for Research into Disability and Society.
- Coleman, D. M., & Adams, J. B. (2018). Survey of vocational experiences of adults with autism spectrum disorders, and recommendations on improving their employment. *Journal of Vocational Rehabilitation*, 49(1), 67-78.
- Collins, B. C., Terrell, M., & Test, D. W. (2017). Using a simultaneous prompting procedure to embed core content when teaching a potential employment skill. *Career Development and Transition for Exceptional Individuals*, 40(1), 36-44.
- Corbière, M., Bond, G. R., Goldner, E. M., & Ptasiński, T. (2005). Brief reports: The fidelity of supported employment implementation in Canada and the United States. *Psychiatric Services*, 56(11), 1444–1447. <https://doi.org/10.1176/appi.ps.56.11.1444>
- Daston, M., Riehle, J.E., & Rutkowski, S. (2012). *High school transition that works*. Paul H Brookes Publishing, Baltimore MD.
- Department of Education, Employment and Workplace Relations (DEEWR) (2013). *Evaluation of the moderate intellectual disability loading*. Canberra, Australia: Author.
- Department of Family and Community Services (2009). *From protection to productivity: An evaluation of the Transition to Work Program*. Prepared by Miles Morgan Australia Ltd with assistance from Innov8 Consulting Group for Ageing, Disability and Home Care, NS, November 2009.
- Department of Social Services, (2014a). *DES Evaluation 2010-2013. Final Report*. https://d3n8a8pro7vhmx.cloudfront.net/wecanwork/pages/38/.../DES_Evaluation.pdf?...
- Department of Social Services, (2014b). *Evaluation of Disability Employment Services 2010-2013: Lessons and opportunities*. Presentation by Lydia Ross, Director Data and Performance Section, Department of Social Services.
- Department of Social Services (2017). *Disability Employment Services Reform 2018 Industry Information paper*. DSS2143.05.17 Canberra: Australian Government, Department of Social Services.
- Dillahunt-Aspillaga, C., Pugh, M. J., Cotner, B. A., Silva, M. A., Haskin, A., Tang, X., ... Nakase-Richardson, R. (2018). Employment stability in veterans and service members with traumatic brain injury: A veteran's administration traumatic brain injury model systems study. *Archives of Physical Medicine and Rehabilitation*, 99(2, Supplement), S23–S32. <https://doi.org/10.1016/j.apmr.2017.05.012>

- DiPipi-Hoy, C., Jitendra, A. K., & Kern, L. (2009). Effects of time management instruction on adolescents' ability to self-manage time in a vocational setting. *The Journal of Special Education, 43*(3), 145-159.
- Ditchman, N. M., Miller, J. L., & Easton, A. B. (2018). Vocational rehabilitation service patterns: An application of social network analysis to examine employment outcomes of transition-age individuals with autism. *Rehabilitation Counseling Bulletin, 61*(3), 143-153.
- Doren, B., Gau, J. M., & Lindstrom, L. E. (2012). The relationship between parent expectations and postschool outcomes of adolescents with disabilities. *Exceptional Children, 79*, 7-23.
- dos Santos Rodrigues, P., Luecking, R. G., Glat, R., & Daquer, A. F. C. (2013). Improving workforce outcomes among persons with disabilities in Brazil through youth apprenticeships and customized employment. *Journal of Vocational Rehabilitation, 38*(3), 185-194.
- Federal Register. (1987). The state supported employment services program, *Federal Register, 52* (157), 30546-30552.
- Foley, K. R., Girdler, S., Downs, J., Jacoby, P., Bourke, J., Lennox, N., ... & Leonard, H. (2014). Relationship between family quality of life and day occupations of young people with Down syndrome. *Social psychiatry and psychiatric epidemiology, 49*(9), 1455-1465
- Fossey, E., Chaffey, L., Venville, A., Ennals, P., Douglas, J., & Bigby, C. (2015). *Supporting tertiary students with disabilities: individualised and institution-level approaches in practice*. NCVER, Adelaide.
- Fourqurean, J. M., Meisgeier, C., Swank, P. R., & Williams, R. E. (1991). Correlates of postsecondary employment outcomes for young adults with learning disabilities. *Journal of Learning Disabilities, 24*, 400-405.
- Fraker, T., Mamun, A. A., Honeycutt, T. C., Thompkins, A., & Valentine, E. J. (2014). *Final Report on the Youth Transition Demonstration Evaluation* (p. 251). Washington, DC: Mathematica.
- Gold, M. W. (1973). Factors Affecting Production. *Mental Retardation, 11*(6).
- Gold, M. (1978). *Try Another Way. Training Manual*. Austin, TX: Marc Gold & Associates.
- Golden, T.P., Karpur, A., & Podolec, M. (2019). Centering communities, constellations and networks of practice to improve youth post-school outcomes through PROMISE. *Journal of Vocational Rehabilitation, 51*(2). Online in advance of press.
- Great Britain Department for Work and Pensions. (2017). *Improving Lives: the future of work, health and disability*. London: Great Britain Department of Health.

- Haber, M. G., Mazzotti, V. L., Mustian, A. L., Rowe, D. A., Bartholomew, A. L., Test, D. W., & Fowler, C. H. (2016). What works, when, for whom, and with whom: A meta-analytic review of predictors of postsecondary success for students with disabilities. *Review of Educational Research*, 86(1), 123–162. <https://doi.org/10.3102/0034654315583135>
- Hall, A. C., Butterworth, J., Gilmore, D. S., & Metzel, D. (2003). *High-Performing States in Integrated Employment*. Retrieved from Institute for Community Inclusion website: https://www.communityinclusion.org/article.php?article_id=121
- Ham, W., McDonough, J., Molinelli, A., Schall, C., & Wehman, P. (2014). Employment supports for young adults with autism spectrum disorder: Two case studies. *Journal of Vocational Rehabilitation*, 40(2), 117-124.
- Harris, H., Israeli, D., Minshew, N., Bonne, Y., Heeger, D. J., Behrmann, M., & Sagi, D. (2015). Perceptual learning in autism: over-specificity and possible remedies. *Nature Neuroscience*, 18(11), 1574–1576. <https://doi.org/10.1038/nn.4129>
- Hartman, E., Schlegelmilch, A., Roskowski, M., Anderson, C.A., & Tansey, T.N. (2019). Impact of Wisconsin PROMISE on educational attainment and employment of teenagers receiving supplemental security income and their families. *Journal of Vocational Rehabilitation*, 51(2). Online in advance of press.
- Harvey, M. W. (2002). Comparison and postsecondary transitional outcomes between students with and without disabilities by secondary vocational education participation: Findings from the National Education Longitudinal Study. *Career Development for Exceptional Individuals*, 25, 99–122.
- Hauritz, M., Riches, V., Parmenter, T.R., & Ward, J. (1980). Program development for the acquisition of work and social skills. *Australian Journal of Developmental Disabilities*, 6 (1), 11-16.
- Honeycutt, T. C., & Livermore, G. (2018). *Promoting Readiness of Minors in Supplemental Security Income (PROMISE): The Role of PROMISE in the Landscape of Federal Programs Targeting Youth with Disabilities*. Washington, DC: Mathematica.
- Inclusion Australia, (2015). *Designing evidence based transition-to-work and open employment support for people with intellectual disability*. Inclusion Australia.
- Joshi, G. S., Bouck, E. C., & Maeda, Y. (2012). Exploring employment preparation and postschool outcomes for students with mild intellectual disability. *Career Development and Transition for Exceptional Individuals*, 35(2), 97-107.
- Kaehne, A. (2014). *Final Report: Evaluation of Employment Outcomes of Project SEARCH UK*. Liverpool, UK: South West Employment Institute.

- Kaehne, A. (2016). Project SEARCH UK—evaluating its employment outcomes. *Journal of Applied Research in Intellectual Disabilities*, 29(6), 519-530.
- Kanady, S., & Missimer, K. (2018). *Social Enterprises of the Future: A Collective Response*. Vienna, VA: SourceAmerica.
- Kaya, C. (2018). Demographic variables, vocational rehabilitation services, and employment outcomes for transition-age youth with intellectual disabilities. *Journal of Policy and Practice in Intellectual Disabilities*, 15(3), 226-236.
- Kaya, C., Hanley-Maxwell, C., Chan, F., & Tansey, T. (2018). Differential vocational rehabilitation service patterns and outcomes for transition-age youth with autism. *Journal of Applied Research in Intellectual Disabilities*, 31(5), 862-872.
- Kazdin, A. E. (2011). *Single-case research designs: Methods for clinical and applied settings* (2nd ed.). New York, NY, US: Oxford University Press.
- Kessler Foundation. (2018). *Employing People with Disabilities: Lessons from Kessler Foundation's Signature Employment Grants*. East Hanover, NJ: Kessler Foundation.
- Langi, F. F. G., Oberoi, A., Balcazar, F. E., & Awsumb, J. (2017). Vocational rehabilitation of transition-age youth with disabilities: a Propensity-Score Matched Study. *Journal of Occupational Rehabilitation*, 27(1), 15-23.
- Lawer, L., Brusilovskiy, E., Salzer, M. S., & Mandell, D. S. (2009). Use of vocational rehabilitative services among adults with autism. *Journal of Autism and Developmental Disorders*, 39(3), 487-494.
- Lindstrom, L., Hirano, K. A., McCarthy, C., & Alverson, C. Y. (2014). “Just having a job” career advancement for low-wage workers with intellectual and developmental disabilities. *Career Development and Transition for Exceptional Individuals*, 37(1), 40-49.
- Ling, A., Morris, C. & Riches, V.C. (1993). Transition for students with disabilities: The first five years. *Quality and Equality in Intellectual Disability: Proceedings of the 29th ASSID National Conference* November 30 - December 5, 1993, Newcastle, NSW. pp 209 – 228.
- Mackey, M., & Nelson, G. (2015). Twins with autism: Utilising video feedback to improve job-related behaviours. *British Journal of Special Education*, 42(4), 390-410.
- Mamun, A. A., Carter, E. W., Fraker, T. M., & Timmins, L. L. (2018). Impact of early work experiences on subsequent paid employment for young adults with disabilities. *Career Development and Transition for Exceptional Individuals*, 41(4), 212-222.

- Mamun, A., Patnaik, A., Levere, M., Livermore, G., Honeycutt, T., Kauff, J. Katz, K., McCutcheon, A., Mastrianni, A., & Gionfriddo, B. (2019). *Promoting Readiness of Minors in SSI (PROMISE) Evaluation: Interim Services and Impact Report*. Washington, DC: Mathematical Policy Research.
- Marsh, I., Tuckerman, P., Cain, P. & Kregel, J (2012). Commonwealth Innovation Fund Project. Training and Technical Assistance in Disability Employment: Summary Evaluation report. Ref #NATR1070.
- Mautz, D., Storey, K., & Certo, N. (2001). Increasing integrated workplace social interactions: The effects of job modification, natural supports, adaptive communication instruction, and job coach training. *Journal of the Association for Persons with Severe Handicaps*, 26(4), 257-269.
- Mazzotti, V. L., Rowe, D. A., Sinclair, J., Poppen, M., Woods, W. E., & Shearer, M. L. (2016). Predictors of post-school success: A systematic review of NLTS2 secondary analyses. *Career Development and Transition for Exceptional Individuals*, 39(4), 196–215. <https://doi.org/10.1177/2165143415588047>
- McCabe, H., & Suxing Wu. (2009). Helping each other, helping ourselves: A case of employment for an adult with autism in Nanjing, China. *Journal of Vocational Rehabilitation*, 30(1), 57–66. <https://doi.org/10.3233/JVR-2009-0453>
- McClure, P. (2000). *Final report: Participation support for a more equitable society*. Canberra: Reference Group on Welfare Reform, Department of Family and Community Services.
- McDonnall, M. C., & O'Mally, J. (2012). Characteristics of early work experiences and their association with future employment. *Journal of Visual Impairment & Blindness*, 106, 133–144.
- McLaren, J., Lichtenstein, J. D., Lynch, D., Becker, D., & Drake, R. (2017). Individual placement and support for people with autism spectrum disorders: A pilot program. *Administration and Policy in Mental Health and Mental Health Services Research*, 44(3), 365–373. <https://doi.org/10.1007/s10488-017-0792-3>
- Migliore, A., Timmons, J., Butterworth, J., & Lugas, J. (2012). Predictors of employment and postsecondary education of youth with autism. *Rehabilitation Counseling Bulletin*, 55(3), 176–184.
- Minarovic, T. J., & Bambara, L. M. (2007). Teaching employees with intellectual disabilities to manage changing work routines using varied sight-word checklists. *Research & Practice for Persons with Severe Disabilities*, 32(1), 31–42. <https://doi.org/10.2511/rpsd.32.1.31>

- Moore, C. L., Harley, D. A., & Gamble, D. (2004). Ex-post-facto analysis of competitive employment outcomes for individuals with mental retardation: national perspective. *Mental Retardation*, 42(4), 253–262.
- Molina, L., & Demchak, M. (2016). The right to a better life: Using a work camp to create customized employment opportunities for rural high school students with severe disabilities. *Rural Special Education Quarterly*, 35(2), 24–32.
- Morgan McInnes, M., Demet Ozturk, O., McDermott, S., & Mann, J. R. (2010). Does supported employment work? *Journal of Policy Analysis & Management*, 29(3), 506–525.
- National Council on Intellectual Disability (NCID), (2009). From school to real work: A social inclusion initiative. *Interaction v 22/3/09*. The Australian Institute on Intellectual Disability.
- National Technical Assistance Center on Transition. (2019). Retrieved February 26, 2019, from <https://transitionta.org/>
- NCVER, (2019). Australian vocational education and training statistics: Total VET students and courses 2017. *National VET Provider Collection*. Commonwealth of Australia.
- Newhouse, R., Dearholt, S., Poe S., Pugh, LC., & White K. (2005). *The Johns Hopkins Nursing Evidence-based Practice Rating Scale*. Baltimore, MD, The Johns Hopkins Hospital; Johns Hopkins University School of Nursing.
- Nord, D. (2016). More job services-better employment outcomes: Increasing job attainment for people with IDD. *Intellectual and Developmental Disabilities*, 54(6), 402–411.
- NSW Department of Family and Community Services (2009). *From protection to productivity: An evaluation of the Transition to Work Program*. Prepared by Miles Morgan Australia Ltd with assistance from Innov8 Consulting Group for Ageing, Disability and Home Care, NS, November 2009.
- Nye-Lengerman, K. (2017). Vocational rehabilitation service usage and outcomes for individuals with Autism Spectrum Disorder. *Research in Autism Spectrum Disorders*, 41–42, 39–50. <https://doi.org/10.1016/j.rasd.2017.08.003>
- Ottomanelli, L., Goetz, L. L., Suris, A., McGeough, C., Sinnott, P. L., Toscano, R., . . . Thomas, F. P. (2012). Effectiveness of supported employment for veterans with spinal cord injuries: Results from a randomized multisite study. *Archives of Physical Medicine and Rehabilitation*, 93, 740-747. doi:10.1016/j.apmr.2012.01.002
- Owen, F., Li, J., Whittingham, L., Hope, J., Bishop, C., Readhead, A., & Mook, L. (2015). Social return on investment of an innovative employment option for persons with developmental disabilities: Common ground co-operative SROI common ground co-operative. *Nonprofit Management and Leadership*.

- Papay, C. K., & Bambara, L. M. (2014). Best practices in transition to adult life for youth with intellectual disability. *Career Development and Transition for Exceptional Individuals*, 37, 136–148. doi:10.1177/2165143413486693
- Parmenter, T. R. (1993). International Perspective of Vocational Options for People with Mental Retardation: The Promise and the Reality. *Mental Retardation* 31, 359-67.
- Parmenter, T. R. (1999). Implications of social policy for service delivery: The promise and the reality “Are we getting real?” *Journal of Intellectual & Developmental Disability*, 24(4), 321–331. <https://doi.org/10.1080/13668259900034081>
- Parmenter, T.R. (2002). An Australian Perspective on Quality Outcomes of Inclusive Employment. *Disability Studies Quarterly*. 22 (2) 73-101.
- Riches, V.C. (1997) Transition in transition: Implications of Follow along studies for future development. In *Developing the Transition Process for students with disabilities through the key competencies Supplementary Readings Individual Educational Practices 1 EPG* 887, Sydney: Macquarie University.
- Riches, V. C., Knox, M. & O’Brien, B. (2014). *Nova Transition to Work (TTW) Program Evaluation Report*, 2014. Sydney: Centre for Disability Studies, The University of Sydney.
- Riches, V.C. & MacDonald. J. (2016). *Enhanced Employment Outcomes Study: A Report for NOVA Employment*. Sydney: Centre for Disability Studies & The University of Sydney.
- Riches, V.C. & Parmenter, T.R. (1990). *Evaluation 1989 TAFE Transition Courses*. UCIS, Sydney: School of Education, Macquarie University.
- Riches, V.C. & Parmenter, T.R. (1993). *NSW TAFE Transition Courses for Students with Disabilities: A Research and Development Report*. UCIS, Sydney: School of Education, Macquarie University.
- Riches, V.C., Parmenter, T.R., Fegent, M. & Bailey, P. (1993). *Secondary Education: A Follow-Along Study of Students with Disabilities in Transition in NSW*. A research and development report. Sydney: UCIS, School of Education, Macquarie University.
- Riches, V.C., Parmenter, T.R., & Robertson, G. (1996). *Youth Disabilities in Transition from school to community*. Report of a follow-along of students with disabilities involved in the NSW transition initiative 1989-1994. Sydney: UCIS, School of Education, Macquarie University.
- Riches, V.C., Riches, T.N, Taylor, D., & Müller, A. (2019). Improving employment outcomes among people with Autism Spectrum Disorder (ASD). *A Report for NOVA Employment*. Sydney: Centre for Disability Studies, An affiliate of The University of Sydney.

- Rusch, F.R. (1986) *Competitive employment issues and strategies*. Baltimore: Paul H. Brookes.
- Saleh, M.C., Shaw, L., Malzer, V., & Podolec, M. (2019). Interagency collaboration in transition to adulthood: A mixed methods approach to identifying promising practices and processes in the NYS PROMISE project. *Journal of Vocational Rehabilitation*, 51(2). Online in advance of press.
- Schall, C. M., Wehman, P., Brooke, V., Graham, C., McDonough, J., Brooke, A., & Allen, J. (2015). Employment interventions for individuals with ASD: The relative efficacy of supported employment with or without prior Project SEARCH training. *Journal of Autism and Developmental Disorders*, 45(12), 3990-4001.
- Scottish Government Fair Work Employability, and Skills Directorate. (2018). *A Fairer Scotland for Disabled People: Employment Action Plan*. Retrieved from Scottish Government website: <https://www.gov.scot/publications/fairer-scotland-disabled-people-employment-action-plan/pages/2/>
- Smith, P., McVilly, K., Rhodes, P., Pavlidis, L., (2018). Customised Employment: building workforce capacity for and establishing an evidence-based means of achieving the social and economic participation of people with disability. Final Report to the Innovative Workforce Fund. Sydney: Innovative Workforce Fund (IWF)
- Siperstein, G. N., Heyman, M., & Stokes, J. E. (2014). Pathways to employment: A national survey of adults with intellectual disabilities. *Journal of Vocational Rehabilitation*, 41(3), 165–178. <https://doi.org/10.3233/JVR-140711>
- Siperstein, G. N., Parker, R. C., & Drascher, M. (2013). National snapshot of adults with intellectual disabilities in the labor force. *Journal of Vocational Rehabilitation*, 39(3), 157–165. <https://doi.org/10.3233/JVR-130658>
- Suibhne, O. N., & Finnerty, K. (2014). The Irish association of supported employment job shadow initiative: A tool for supported employment. *Journal of Vocational Rehabilitation*, 41(1), 3–11.
- Test, D. W., Mazzotti, V. L., Mustian, A. L., Fowler, C. H., Kortering, L., & Kohler, P. (2009). Evidence-based secondary transition predictors for improving postschool outcomes for students with disabilities. *Career Development for Exceptional Individuals*, 32(3), 160–181. <https://doi.org/10.1177/0885728809346960>
- Thompson, J. R., Schalock, R. L., & Tassé, M. J. (2018). *How Support Needs Can Be Used to Inform the Allocation of Resources and Funding Decisions*. Silver Spring, MD: American Association on Intellectual and Developmental Disabilities.

- Tuckerman, P. (1993). Jobsupport Inc. *Achieving employment for people with an intellectual disability. The skills to place, train and maintain people with an intellectual disability in individual supported jobs*. Canberra Australian Government Publishing Service.
- Tuckerman, P. (2015). *Using data to determine what works and achieve better employment outcomes*. Paper presented at Disability Employment Australia Conference 2015.
- Tuckerman, P. (2018). *Jobsupport*. Inclusion Australia National Forum on Open Employment.
- Tuckerman, P., Cain, P., Long, B. & Klarkowski, J. (2012). An exploration of trends in open employment in Australia since 1986, *Journal of Vocational Rehabilitation*, 37,173–183.
- Tuckerman, P., Smith, R., & Borland, J. (1999). The relative cost of employment for people with a significant intellectual disability: the Australian experience. *Journal of Vocational Rehabilitation*, 13, 109-116.
- United Nations. (2006). *Convention on the Rights of Persons with Disabilities*. UN General Assembly adopted by consensus the Convention on the Rights of Persons with Disabilities and its Optional Protocol 13 Dec. 2006 (New York), at <http://www2.ohchr.org/english/law/disabilities-convention.htm>
- U.S. Department of Education. (2019) Promoting the Readiness of Minors in Supplemental Security Income (PROMISE). Retrieved from <https://www.ed.gov/>
- van Barneveld, R. (2017). *Autism and Agriculture: Diverse people exceptional care*. Paper presented at Autism@Work Forum, Sydney, 6 September 2017. <https://www.autismcrc.com.au/news/latest-news/autismwork-forum-workforce-diversity-employment-programs>
- Vilà, M., Pallisera, M., & Fullana, J. (2007). Work integration of people with disabilities in the regular labour market: What can we do to improve these processes? *Journal of Intellectual & Developmental Disability*, 32(1), 10–18. <https://doi.org/10.1080/13668250701196807>
- Vogelsburg, T.R. (1986). Competitive employment in Vermont. In F.R. Rusch (Ed.). *Competitive employment issues and strategies* pp 35-49. Baltimore: Paul H. Brookes.
- Wagner, M. M., Newman, L. A., & Javitz, H. S. (2014). The influence of family socioeconomic status on the post- high school outcomes of youth with disabilities. *Career Development and Transition for Exceptional Individuals*, 37, 5–17. doi:10.1177/2165143414523980
- Wakeford, M. and Waugh, F. (2014). *Transitions to Employment of Australian Young People with Disability and the Ticket to Work Initiative*. National Ticket to Work Network. <http://www.tickettowork.org.au/wp-content/uploads/2016/03/Transitions-to-Employment-of-Australian-Young-People-with-Disability-Full-Report.pdf>

- Wasmer Andrews, L. (2005, July 1). Hiring People with Intellectual Disabilities. *HR Magazine*. Retrieved from <https://www.shrm.org/hr-today/news/hr-magazine/pages/0705andrews.aspx>
- Watters, M., Riches, V. & Parmenter, T.R. (1993). *NSW Transition Project: Secondary Vocational Education Job Coach Service*. A Research and Development Report. Monograph. Sydney: School of Education, Macquarie University.
- Wehman, P. (1981). *Competitive employment: New horizons for severely disabled individuals*. Baltimore, MD: Brookes.
- Wehman, P., Brooke, V., Brooke, A., Ham, W., Schall, C., McDonough, J., . . . Avellone, L. (2016). Employment for adults with autism spectrum disorders: A retrospective review of a customized employment approach. *Research in Developmental Disabilities*, 53(54), 61-72. doi:10.1016/j.ridd.2016.01.015
- Wehman, P., Chan, F., Ditchman, N., & Kang, H. J. (2014a). Effect of supported employment on vocational rehabilitation outcomes of transition-age youth with intellectual and developmental disabilities: A case control study. *Intellectual and Developmental Disabilities*, 52, 296-310. doi:10.1352/1934-9556-52.4.296.
- Wehman, P. & Hill, J. (1981). Competitive employment for moderately and severely handicapped individuals. *Exceptional Children*, 47(5), 338-345.
- Wehman, P., & Kregel, J. (1985). A supported work approach to competitive employment of individuals with moderate and severe handicaps. *Journal of the Association for Persons with Severe Handicaps*, 10(1), 3-11. <https://doi.org/10.1177/154079698501000101>
- Wehman, P. & Kregel, J. (1989). *Supported employment for persons with disabilities: Focus on excellence*. New York: Human Sciences Press.
- Wehman, P., Lau, S., Molinelli, A., Brooke, V., Thompson, K., Moore, C., & West, M. (2012b). Supported employment for young adults with autism spectrum disorder: Preliminary data. *Research and Practice for Persons with Severe Disabilities*, 37(3), 160-169. <https://doi.org/10.2511/027494812804153606>
- Wehman, P., Revell, G., & Kregel, J. (1998). Supported employment: A decade of rapid growth and impact. *American Rehabilitation*, 24(1), 31-43.
- Wehman, P., Schall, C. M., McDonough, J., Graham, C., Brooke, V., Riehle, J. E., . . . Avellone, L. (2017). Effects of an employer-based intervention on employment outcomes for youth with significant support needs due to autism. *Autism*, 21(3), 276-290. <https://doi.org/10.1177/1362361316635826>
- Wehman, P. H., Schall, C. M., McDonough, J., Kregel, J., Brooke, V., Molinelli, A., . . . Thiss, W. (2014b). Competitive employment for youth with autism spectrum disorders: Early

- results from a randomized clinical trial. *Journal of Autism and Developmental Disorders*, 44(3), 487–500. <https://doi.org/10.1007/s10803-013-1892-x>
- Wehman, P., Schall, C., McDonough, J., Molinelli, A., Riehle, E., Ham, W., & Thiss, W. R. (2012a). Project SEARCH for youth with autism spectrum disorders: Increasing competitive employment on transition from high school. *Journal of Positive Behavior Interventions*, 15(3), 144-155.
- Wehman, P., Schall, C., McDonough, J., Sima, A., Brooke, A., Ham, W., Whittenburg, H., Brooke, V., Avellone, L., & Riehle, E. (2019). Competitive employment for transition-aged youth with significant impact from autism: A multi-site randomized clinical trial. *Journal of Autism and Developmental Disorders*. Advance online publication. doi: 10.1007/s10803-019-03940-2
- Wehman, P., Taylor, J., Brooke, V., Avellone, L., Whittenburg, H., Ham, W., ... Carr, S. (2018). Toward competitive employment for persons with intellectual and developmental disabilities: What progress have we made and where do we need to go. *Research and Practice for Persons with Severe Disabilities*, 43(3), 131–144. <https://doi.org/10.1177/1540796918777730>
- Wehmeyer, M. L., & Schwartz, M. (1997). Self-determination and positive adult outcomes: A follow-up study of youth with mental retardation or learning disabilities. *Exceptional Children*, 63, 245–255.
- White, J., & Weiner, J. S. (2004). Influence of least restrictive environment and community based training on integrated employment outcomes for transitioning students with severe disabilities. *Journal of Vocational Rehabilitation*, 21, 149–156.
- Wirth, J.A. (1979). A Survey of school leavers- 1974 -1976. In G. Searl & T.R. Parmenter (Eds.) *Developing Independent Living through Work Preparation. An Augmented Evaluation of Innovations Program Project (76/6040)*, Australian Schools Commission, 1979, pp 192 - 205.
- Workforce Innovation and Opportunity Act of 2014.* , Pub. L. No. 113–128 (2014)

Appendix

Supplementary Table 1

Included Studies with Level I Evidence

Citation	Study Design	Category	Participants & <i>n</i>	Independent Variable	Intervention Component(s)	DV & Outcomes	Country
Butterworth, Migliore, Nord, & Gelb, 2012	RCT	1	<i>n</i> = 84 Employment consultants across 25 programs assisting job seekers with IDD	Training curriculum for employment consultants	<u>IV Code: 5</u> 24- hour face-to -face seminar on supported and customized employment practices over three days	<ul style="list-style-type: none"> Intervention group secured an average of 3.4 more placements within in the next year, approximately \$1 more earnings hourly for clients, and an average of 6.7 more hours per week for clients compared to employment consultants in the control group not receiving the training. 	USA
Ipsen, Kurth, McCormick, Hall, & Chambless, 2019	RCT	1	<i>n</i> = 1,429 SSI Recipients between 12-14 years of age with mental and physical disabilities including ID (8.2%) and ASD (13.9%)	Achieving Success by Prompting Readiness for Education and Employment Program (ASPIRE)	<u>IV Code: 1</u> Case management, self-determination training, transition training, financial literacy, benefits counseling, pre-employment services	<ul style="list-style-type: none"> Intervention participants significantly more likely to become employed compared to control participants. More case meetings and self-determination training early during intervention associated with better employment outcomes. 	USA
Wehman, Schall, McDonough, et al., 2017	RCT	1	<i>n</i> = 49 Youth with ASD ages 18-	Project SEARCH with ASD	<u>IV Codes: 1-5</u> Integrated work internship program	<ul style="list-style-type: none"> 90% of participants achieved CIE within 3 months post-graduation, 	USA

Citation	Study Design	Category	Participants & <i>n</i>	Independent Variable	Intervention Component(s)	DV & Outcomes	Country
			21	Supports	using an SE approach; job profile, job development, on-the-job training and follow-along activities. Individualized supports tailored to individuals with ASD; social communication training, systematic instruction, visual cues, behavior supports, self-regulation strategies, and staff training, etc.	with 87% still employed 12 months later compared to 6% of control participants employed at 3 months post-graduation and 12% at 12 months. <ul style="list-style-type: none"> All employed SEARCH graduates were earning above U.S. federal minimum wage. 	
Wehman, Schall, McDonough, et al., 2014b	RCT	1	<i>n</i> = 40 Youth with ASD ages 18-21	Project SEARCH with ASD Supports	IV Codes: 1-5 Integrated work internship program using an SE approach; job profile, job development, on-the-job training and follow-along activities. Individualized supports tailored to individuals with ASD; social communication training, systematic instruction, visual	<ul style="list-style-type: none"> 87.5% of participants achieved CIE compared to only 6.25% of the control group who received typical high school transition services. 	USA

Citation	Study Design	Category	Participants & <i>n</i>	Independent Variable	Intervention Component(s)	DV & Outcomes	Country
					cues, behavior supports, self-regulation strategies, and staff training, etc.		
Wehman et al., 2019	RCT	1	<i>n</i> = 156 Individuals with ASD age 18-21	Project SEARCH with ASD Supports	<p><u>IV Codes: 1-5</u></p> <p>Integrated work internship program using an SE approach; job profile, job development, on-the-job training and follow-along activities.</p> <p>Individualized supports tailored to individuals with ASD; social communication training, systematic instruction, visual cues, behavior supports, self-regulation strategies, and staff training, etc.</p>	<ul style="list-style-type: none"> 73.4% of the intervention group was competitively employed at a one year follow-up compared to 17% of control participants who received typical high school transition services. Employed SEARCH graduates earned at or above U.S. federal minimum wage and worked an average of 20 hours per week. 	USA

Supplementary Table 2

Included Studies with Level II Evidence

Citation	Study Design	Category	Participants & <i>n</i>	Independent Variable	Intervention Component(s)	DV & Outcomes	Country
Black (1984)	Follow up study	2	<i>N</i> = ? youth aged 15-19 years, Mild ID	Work preparation program in industrial setting to employment	<u>IV Codes: 1-3</u> <u>Data based assessment and systematic vocational instruction and life skills training,</u> <u>simulated work setting,</u> <u>individualized job search and placement</u>	<ul style="list-style-type: none"> • 60 % full time open competitive employment, • 4% apprenticeship training, • 15% sheltered employment • 21% unemployed at a time of high youth unemployment 	Australia
Christensen & Richardson, 2017	Quasi-Experimental	2	<i>n</i> =10 Adults (ages 25-51) with ID targeted for community employment after being in a segregated workshop between 2 and 10 years	Project SEARCH - sheltered workshop to community employment model	<u>IV Codes: 1-5</u> Integrated internship program utilizing supported employment (e.g., on-the-job training, job matching for internships, job placement assistance, and follow-along)	<ul style="list-style-type: none"> • 63% of participants in Project SEARCH transitioned to competitive employment from the sheltered workshop. • Participants who had been in the sheltered workshop for more than 5 years did <i>not</i> successfully transition to community employment. 	USA
Christensen, Hetherington, Daston, & Riehle, 2015	Quasi-Experimental	2	<i>n</i> =124 Young adults with IDD who participated in New York Project SEARCH	Project SEARCH	<u>IV Codes: 1-5</u> Integrated internship program utilizing supported employment (e.g., on-the-job training, job matching for	<ul style="list-style-type: none"> • 83% of participants of individuals who completed SEARCH exited into competitive employment. 	USA

Evidence-Based Employment Practices for Persons with IDD

			programs between 2009- 2014		internships, job placement assistance, and follow-along)		
Hauritz, Riches, Parmenter & James, (1980)	Pre-post experimental designs)	2	Youth aged 15-19 years, Mild ID	Work preparation program in industrial setting to employment)	<u>IV Code 3</u> <u>systematic instruction</u> <u>-vocational and life</u> <u>skills (social skills,</u> <u>hygiene and</u> <u>grooming, assertion,</u> <u>conceptual tempo..)</u>	<ul style="list-style-type: none"> • Improved performance job skills and social skills • Linked to other outcome studies e.g. Black, 1984 	Australia
Kaehne, 2016	Quasi Experimental	2	<i>n</i> =315 Youth/young adults with ID	Project SEARCH (17 sites)	<u>IV Codes: 1-5</u> Integrated internship program using SE (e.g., career exploration, applied classroom instruction, on-the- job training, job match for internships, etc).	<ul style="list-style-type: none"> • 51.5% of SEARCH graduates transitioned to competitive employment. • Full-time vs Part-time outcomes varied across sites. 	United Kingdom
Langi, Oberoi, Balcazar, & Awsumb, 2017	Quasi- Experimental (non- randomized control group)	2	<i>n</i> =4,422 Youth with cognitive and physical disabilities ages 14-21 at application for VR services; 24.5% of the intervention and 20.4% of the control sample had ID	START Program	<u>IV Code: 1</u> Concentrated VR services during transition. A VR counselor with START helped develop IEP and IPE for transition youth.	<ul style="list-style-type: none"> • START was more effective in transitioning youth to employment than regular VR transition services. The rehabilitation rate was 61% for START recipients compared to 53% for non-START recipients who received services through normal curriculum or by education trainings coordinated by a VR agency. 	USA

Ward, Parmenter, Debenham & Miller, (1977)	Comparative study	2	<i>n</i> =131 youth 15-18 yrs Mild ID <i>n</i> = 96 youth no ID, no WP	<i>n</i> =46 Work preparation (WP) model <i>n</i> =91 no WP, <i>n</i> = 96 youth no ID, no WP	<u>IV Codes: 1-3</u> <u>WP model Data based assessment, systematic vocational instruction and life skills training, simulated work setting, individualized job search and placement</u>	<ul style="list-style-type: none"> 60.9% WP participants full time employment 12-18 months after leaving school compared to 28% graduates of special schools and 24% special classes with ID but no WP, and 19.8% regular high school graduates no ID 	Australia
Wehman, Lau, et al., 2012b	Quasi-Experimental	2	<i>n</i> =33 Adults with ASD	Individualized combination of SE activities	<u>IV Codes: 1-5</u> Supported employment activities; situational assessments, job discovery, job development, job customization, on-site training, positive behavior supports, and job retention services.	<ul style="list-style-type: none"> 27 of 33 participants (82%) gained CIE. Participants were employed on average for 22.5 hours per week with a range of 8 to 40 hours across participants. All participants earned above U.S. federal minimum wage and acquired commensurate benefits to coworkers performing similar work. 	USA

Supplementary Table 3

Included Studies with Level III Evidence

Citation	Study Design	Category	Participants & n	Independent Variable	Intervention Component(s)	DV & Outcomes	Country
Alverson & Yamamoto, 2018	Secondary Data Analysis RSA-911	3	n =47,312 Youth and adult VR clients with ASD as primary diagnosis	State VR services	<u>IV Codes: 1-6</u> Services vary per client; assessment activities, (1), job placement and job search assistance (2), on-the-job training (3), maintenance services (4), collaboration with interdisciplinary teams (6)	<ul style="list-style-type: none"> Total number of VR services was a significant predictor of VR closure with an employment outcome across all 10 years. “VR clients with ASD increased their odds of becoming employed nearly five-fold with each additional service.” 	USA
Alverson & Yamamoto, 2017	Secondary Data Analysis RSA-911	3	n =49,623 Youth and adult VR clients with ASD as primary diagnosis	State VR services	<u>IV Codes: 1-6</u> Services vary per client; assessment, career counseling, job readiness training, travel assistance (1), job placement and job search assistance (2), on-the-job training (3), maintenance services (4), collaboration with medical teams, diagnostic services (6)	<ul style="list-style-type: none"> Average of 37% of VR recipients with ASD secured CIE (successful case closure) over 10 years; range of 33% to 42% across years. More services associated with better outcomes; VR clients achieving competitive employment utilized twice as many services as those who did not obtain employment. 	USA
Boeltzig,	Secondary	3	n =195 CRPs	Type of work	<u>IV Code: 3</u>	<ul style="list-style-type: none"> Majority (81%) of 	USA

Citation	Study Design	Category	Participants & <i>n</i>	Independent Variable	Intervention Component(s)	DV & Outcomes	Country
Timmons, & Butterworth, 2008	Data Analysis National Survey of CRPs		reported on a 869 adults with DD	support service; individual SE or group supports/enclave work	Work experience included facility based work, individual employment, or competitive employment	<p>individuals with DD using a CRP obtained individually supported jobs (rather than group support jobs/enclaves).</p> <ul style="list-style-type: none"> • Individual and Group support worked part-time (mean of 23 hours per week for both groups) • Weekly earnings higher for those in individual (\$163) than group (\$103) • Participants with individual supports earned more than those in the group support within the same job sector (e.g., individual support person earned more in sales than group support person in sales). 	
Bolton, Bellini & Brookings, 2000	Secondary Data Analysis Arkansas Case Files	3	<i>n</i> =4,063 Adults with any disability including MR (10.5%) with closed VR cases	VR services	<u>IV Codes: 1 & 2</u> Vocational training or preparation (1) & Job placement services (2)	<ul style="list-style-type: none"> • Job placement was identified as the most important single variable contributing to the prediction of competitive employment in the overall sample. • Time in rehabilitation negatively predicted employment for individuals with MR. 	USA

Citation	Study Design	Category	Participants & <i>n</i>	Independent Variable	Intervention Component(s)	DV & Outcomes	Country
Brooke et al., 2018	Secondary Data Analysis Employment Support Organization Records	3	<i>n</i> =139 records of adults with ASD referred for CIE services	Extended services	<u>IV Code: 4</u> During long term extended support services (LTESS), individual supports provided such as job customization, lateral and advancement moves within a business	<ul style="list-style-type: none"> 104 participants became employed. 74.3% job retention at 18 months. Most participants with moderate to high levels of support needs were able to move to minimal levels of support needs within 18 months of employment. 	USA
Burgess & Cimera, 2014	Secondary Data Analysis RSA-911	3	<i>n</i> =34,501 Youth and young adults (under age 22) with ASD and a VR case closure	VR services	<u>IV Codes: 1-6</u> VR services vary per client.	<ul style="list-style-type: none"> Overall, the number of individuals with ASD seeking VR services increased over time but employment outcomes did <i>not</i> improve over time in the U.S. as a whole. An average of 36% of transition-aged adults with ASD were successfully employed through VR services. Transition-age students with ASD were more likely to be employed via VR services than the overall population of individuals using VR services. 	USA
Carter, Austin, & Trainor, 2012	Secondary Data Analysis NLTS2	3	<i>n</i> =450 Youth and young adults with severe	Type of work experience during high school	<u>IV Code: 3</u> Work experience (divided into 4 categories;	<ul style="list-style-type: none"> Paid community employment and paid school sponsored work were associated with 	USA

Citation	Study Design	Category	Participants & <i>n</i>	Independent Variable	Intervention Component(s)	DV & Outcomes	Country
			disabilities including autism (36%) and ID (26%)		no work experience, unpaid school work/work study, paid school sponsored work, and paid community employment)	competitive employment post-school while unpaid school work and no work experience were not associated with CIE outcomes.	
Chen, Sung, & Pi, 2015	Secondary Data Analysis RSA-911	3	<i>n</i> =5,681 Adult recipients for VR services with ASD	VR services	<u>IV Codes: 1-6</u> Services vary per client; assessments, transportation assistance, job readiness training, career counseling, (1), job placement assistance, job search assistance (2), on-the-job training and support (3), maintenance services (4), collaboration with medical teams, diagnostic and evaluations services (6)	<ul style="list-style-type: none"> Majority of VR recipients with ASD who obtained a job were actually underemployed. Counseling/job guidance, job placement assistance, and on-the-job support had central roles in predicting successful employment across all age groups. Postsecondary education, occupational/vocational training, and on-the-job training positively predicted likelihood of obtaining a job for transition-age young adults. Information and referral services were found to be negatively associated with transition-age students chances of being employed. 	USA
Chiang, Cheung, K., Li, & Tsai,	Secondary Data Analysis	3	<i>n</i> =830 Youth and young adults with	Supports received during high	<u>IV Codes: 1 & 5</u> Services vary per client; career	<ul style="list-style-type: none"> Receiving career counselling during high school associated with 	USA

Citation	Study Design	Category	Participants & <i>n</i>	Independent Variable	Intervention Component(s)	DV & Outcomes	Country
2013	NLTS2		ASD	school related to employment transition	counseling (1) and secondary schools networking with institutions of higher education (5)	higher likelihood of being employed post-school	
Cimera, 2017	Secondary Data Analysis RSA-911	3	<i>n</i> =21,257 Adults with significant cognitive disabilities (55.6%) including ASD, ID and other diagnoses) who selected SE as their vocational goal on their IPE	SE through a VR agency	<u>IV Codes: 1,2,3,& 4</u> Steps of SE; Job profile (1), job development (2), job training (3) and follow-along support (4)	<ul style="list-style-type: none"> SE provided higher wages at all comparison points than sheltered workshops 	USA
Cimera, Burgess, Bedesem, 2014	Secondary Data Analysis RSA-911	3	<i>n</i> =30,017 Youth and young adults with ID from two U.S. states	Age at which IEP transition services are provided	<u>IV Code: 1</u> Transition IEP services provided in some states at age 14 vs other states age 16	<ul style="list-style-type: none"> Earlier transition services linked to better employment outcomes; 58.8% with earlier transition services become employed compared to 45.6% of those from later transition states. 	USA
Ditchman, Miller, & Easton, 2018	Secondary Data Analysis RSA-911	3	<i>n</i> =2,219 Young adults (ages 16-24) with ASD	VR services	<u>IV Codes: 1-6</u> Services vary per client; assessment, counseling and	<ul style="list-style-type: none"> Six core services were identified as predictors; assessments, counseling, job placement, on-the-job 	USA

Citation	Study Design	Category	Participants & <i>n</i>	Independent Variable	Intervention Component(s)	DV & Outcomes	Country
			using VR services		guidance, vocational training, transportation services (1), job placement assistance (2), on-the-job supports, rehabilitation technology, personal attendant, technical assistance (3), information and referral services (5), diagnostic services (6)	training, job search support, transportation services. <ul style="list-style-type: none"> Greater number of these 6 that were used the better odds of a positive employment outcome. 	
Joshi, Bouck, & Maeda, 2012	Secondary Data Analysis NLTS2	3	<i>n</i> =62,513 Youth and young adults with ID	Transition services related to employment	IV Codes: 1,2, &3 Transition services related to employment defined as any “activities that would help the student engage in employment post- school” such as vocational assessment, career counseling, prevocational training, instruction in looking for jobs, job shadowing (1), job placement support (2) and	<ul style="list-style-type: none"> Employment related “transition activities” while in school was related to post-school employment status. “Participation in one additional transition activity represented within the employment activities summation variable resulted in students being 1.2 times more likely to be currently employed post school.” 	USA

Citation	Study Design	Category	Participants & <i>n</i>	Independent Variable	Intervention Component(s)	DV & Outcomes	Country
					internship/ apprenticeship (3)		
Kaya, 2018	Secondary Data Analysis RSA-911	3	<i>n</i> =8,320 Young adults (ages 19-25) with ID	VR services	<u>IV Codes: 1-6</u> Services vary per client; assessment, vocational counseling, postsecondary training, literacy training, transportation, job readiness training (1), job placement assistance, job search (2), on-the-job support, rehabilitation technology (3), maintenance services (4), and diagnostic services (6)	<ul style="list-style-type: none"> Of the VR services used, the following were significantly associated with competitive employment outcomes; job placement, on-the-job support, on-the-job training, maintenance, other services, technical assistance, and diagnostic and treatment services. 	USA
Kaya, Hanley□ Maxwell, Chan & Tansey, 2018	Secondary Data Analysis RSA-911	3	<i>n</i> =3,243 Young adults (ages 19-25) with ASD	VR services	<u>IV Codes: 1-6</u> Services vary per client; assessment, vocational counseling, postsecondary training, literacy training, transportation, job readiness training (1), job placement	<ul style="list-style-type: none"> The following VR services were associated with competitive employment outcomes; job placement, on- the- job support, on- the- job training, maintenance, information referral, and diagnostic and treatment services 	USA

Citation	Study Design	Category	Participants & <i>n</i>	Independent Variable	Intervention Component(s)	DV & Outcomes	Country
					assistance, job search (2), on-the-job support, rehabilitation technology (3), maintenance services (4), and diagnostic services (6)		
Lawer, Brusilovskiy, Salzer, & Mandell, 2009	Secondary Data Analysis RSA-911	3	<i>n</i> =382,221 Adults with disabilities including MR (<i>n</i> =30,278 of sample) and ASD (<i>n</i> =1,707 of sample) receiving VR services	VR services	<u>IV Codes: 1-6</u> Services vary per client; assessment, vocational counseling, postsecondary training, literacy training, transportation, job readiness training (1), job placement assistance, job search (2), on-the-job support, rehabilitation technology (3), maintenance services (4), and diagnostic services (6)	<ul style="list-style-type: none"> For individuals with ASD and MR, on-the-job supports was highly associated with competitive employment. “On-the-job supports” included job coaching, follow-along, and job retention services. 	USA
Mamun, Carter, Fraker, & Timmins, 2018	Secondary Data Analysis YTD	3	<i>n</i> =1,053 Youth (ages 18-20) with disabilities	Early employment	<u>IV Code: 3</u> Employment experience (e.g., after school job, summer	<ul style="list-style-type: none"> Participation in early work increased the probability of being employed 2 years later by 17 percentage 	USA

Citation	Study Design	Category	Participants & <i>n</i>	Independent Variable	Intervention Component(s)	DV & Outcomes	Country
			including DD (42.6%)		internship, etc.)	points.	
Migliore, Timmons, Butterworth, & Lugas, 2012	Secondary Data Analysis RSA-911	3	<i>n</i> =2,913 Youth and young adults (ages 16-26) with ASD	VR services	<u>IV Codes: 1,2,3,&4</u> Services vary per client; assessment (1), job search and placement support (2), on-the-job support and training (3), and maintenance (4)	<ul style="list-style-type: none"> Receiving job placements services was the strongest predictor of CIE (odds ratio of 4x) although only 48% of participants received this service 	USA
Moore, Harley, & Gamble, 2004	Secondary Data Analysis RSA-911	3	<i>n</i> =28,565 Adults with MR	VR services	<u>IV Codes: 1-6</u> Services vary per client	<ul style="list-style-type: none"> Individuals receiving job placement services, business/vocational training, and counseling were twice as likely to achieve CIE outcomes. 	USA
Morgan McInnes, Demet Ozturk, McDermott, & Mann, 2010	Secondary Data Analysis South Carolina Case Files	3	<i>n</i> =57,979 Adults with MR in South Carolina	SE services	<u>IV Codes: 1,2,3,&4</u> Assessing skills and developing a plan for achieving competitive employment (1), identifying a job suitable for the individual, placement (2), job-site training (3), and follow-up (4)	<ul style="list-style-type: none"> After controlling for other factors, individuals who received job coaching were over three times more likely to be employed. 	USA
Nord, 2016	Secondary Data Analysis	3	<i>n</i> =39,277 Adults with	VR Services	<u>IV Codes: 1-6</u> Services vary per	<ul style="list-style-type: none"> Service types associated with better employment 	USA

Citation	Study Design	Category	Participants & <i>n</i>	Independent Variable	Intervention Component(s)	DV & Outcomes	Country
	RSA-911		IDD receiving VR services		client	outcomes; individuals receiving job placement, and on-the-job support experienced outcomes <ul style="list-style-type: none"> Effect sizes grew in magnitude for those receiving two or three job-related services. 	
Nye-Lengerman, 2017	Secondary Data Analysis RSA-911	3	<i>n</i> =15,679 Adults with ASD receiving VR services	VR services	<u>IV Codes: 1-6</u> Services vary per client included; assessment, counseling, transportation services (1), job search, job placement (2), on-the-job support, technology support (3)	<ul style="list-style-type: none"> Individuals who received administrative supports were less likely to be employed at closure than those who received community-based supports 	USA
Papay & Bambara, 2014	Secondary Data Analysis NLTS-2	3	<i>n</i> =490 Youth and young adults with ID	Seamless transition practices	<u>IV Codes: 1 & 5</u> Work experiences, life skills instruction (1), and interagency collaboration (5)	<ul style="list-style-type: none"> Work experience, life skills instruction, and interagency collaboration were significant predictors of employment outcomes 	USA
Schall et al., 2015	Secondary Data Analysis Employment Support Organization	3	<i>n</i> =45 Adults with ASD	SE with or without Project SEARCH plus ASD Supports	<u>IV Codes: 1-6</u> Steps of SE; Job profile (1), job development (2), job training (3) and follow-along support	<ul style="list-style-type: none"> Project SEARCH plus ASD supports group required fewer intervention hours, earned more and had higher job retention rates than those with ASD receiving 	USA

Citation	Study Design	Category	Participants & <i>n</i>	Independent Variable	Intervention Component(s)	DV & Outcomes	Country
	Records				(4) and individualized supports for ASD	SE without ASD specific supports	
Tuckerman, Cain, Long & Klarkowski, (2012)	secondary data analyses 1998-99, 2009-10	3	8,516 service users with ID in May 2012	DES-ESS Moderate ID funding loading to fund long term support	IV Code 4 <u>Long-term support post 26 weeks in job placement</u>	<ul style="list-style-type: none"> Number of people with ID in open employment programs stable 2008-2012 Drop in proportion of participants receiving and assessed eligible for long term support (27.2% in 2008, 16.3% in 2012) Low 26 week outcome rates (27.8% all disabilities, 30.0% people with ID) 	Australia
Tuckerman Smith & Borland (1999)	secondary data analyses 10 years data, mixed methods	3	<i>n</i> =446 youth and adults moderate ID (IQ= 60 or less)	DES-ESS Jobsupport	IV Codes 1-5 <u>functional/situational assessment, agreed support plan, job matching, job analysis /redesign, task analyses, 1:1 onsite training ongoing follow-up support for the client and employer</u>	<ul style="list-style-type: none"> Average job retention rate 82%; 81% placements in workplaces over 20 employees; 50% jobs created by JobSupport good/ high client and employer satisfaction levels; Comparatively less costly and better open employment outcomes than state funded Post school options program 	Australia
Wehman, Chan, Ditchman, & Kang, 2014a	Secondary Data Analysis RSA-911	3	<i>n</i> =23,298 Youth with IDD (ages 16-25) aged	VR Services	IV Codes: 1-6 Services vary per client	<ul style="list-style-type: none"> SE significantly increased rates of CIE for all subgroups, including SSI beneficiaries 	USA
White &	Secondary	3	<i>n</i> =104 Youth	High school	IV Codes: 1 & 3	<ul style="list-style-type: none"> Time spent in CBT 	USA

Citation	Study Design	Category	Participants & <i>n</i>	Independent Variable	Intervention Component(s)	DV & Outcomes	Country
Weiner, 2004	Data Analysis California School Records		and young adults (ages 18-22) with ID	community- based training (CBT)	CBT (1) with on-the- job training (3) and integration with non- disabled peers.	<p>positively correlated with employment outcomes after transitioning out of HS.</p> <ul style="list-style-type: none"> • More integrated CBT settings correlated positively with better employment outcomes after transitioning out of HS. 	

Supplementary Table 4

Included Studies with Level IV Evidence

Citation	Study Design	Category	Participants & n	Independent Variable	Intervention Component(s)	DV & Outcomes	Country
Allen, Burke, Howard, Wallace, & Bowen, 2012	Single Subject Design	4	n =3 Adolescents (ages 16-18) with ASD and ID	Video modeling and audio cueing	IV Code: 3 Naturalistic and scripted videos of job tasks Audio cuing involved ear phones and a transreciever with instructions from an attendant	<ul style="list-style-type: none"> Audio cueing helped individuals exceed job performance criteria. Video modeling did <i>not</i> increase job task performance. 	USA
Bennett, Ramasamy, & Honsberger, 2013a	Single Subject Design	4	n =3 Youth and young adults (ages 13-22) with ASD	Covert audio coaching	IV Code: 3 Two way radio with earbud used to provide performance feedback during a copier task	<ul style="list-style-type: none"> Lead to increased accuracy on target job tasks. 	USA
Bennett, Ramasamy, & Honsberger, 2013b	Single Subject Design	4	n =3 Youth and young adults (ages 15 and 18) with ASD	Covert audio coaching	IV Code: 3 Two way radio with earbud used to provide performance feedback during a copier task	<ul style="list-style-type: none"> Lead to 100% accuracy of the vocational task of folding t-shirts compared to baseline and maintained at probe points for all three participants. 	USA
Burke, Allen, Howard, Downey, Matz, & Bowen, 2013	Single Subject Design	4	n =4 Adults (ages 19 -28 with ASD or Asperger's	Video modeling with prompting using the software	IV Code: 3 13 minute video showing in individual completed a complex 104-step shipping	<ul style="list-style-type: none"> All four participants showed increased consistency performing the 104 –step shipping 	USA

Citation	Study Design	Category	Participants & <i>n</i>	Independent Variable	Intervention Component(s)	DV & Outcomes	Country
				system “Video Tote” on a tablet	task	task after intervention compared to baseline.	
Collins, Terrell, & Test, 2017	Single Subject Design	4	<i>n</i> =4 Youth with ID	Simultaneous prompting procedure	IV Code: 3 Controlling prompts during instructional followed by no prompt probe trials	<ul style="list-style-type: none"> All four participants met criterion for employment tasks at a green house. 	USA
DiPipi-Hoy, Jitendra, & Kern, 2009	Single Subject Design	4	<i>n</i> =4 Youth with MR	Time Management using an alarm watch	IV Code: 3 Preset watch would sound and pre-determined intervals as a prompt to manage time	<ul style="list-style-type: none"> Increase in time management across all four participants in a work setting along with generalization to a new environment. 	USA
Mackey & Nelson, 2015	Single Subject Design	4	<i>n</i> =2 19-year old twins with ASD	Video Feedback	IV Code: 3 Participants watched a video of themselves and discussed with coach for evaluative purposes. In this case, target behaviors were transition, hygiene, responding to others, engagement, and decision-making while at vocational sites (i.e., food bank, warehouse, computer shop)	<ul style="list-style-type: none"> Significant improvements in hygiene, engagement, transition, and responding to others, but <u>not</u> decision-making 	USA
Minarovic &	Single	4	<i>n</i> =3		IV Code: 3	<ul style="list-style-type: none"> Self-initiation of task 	USA

Citation	Study Design	Category	Participants & <i>n</i>	Independent Variable	Intervention Component(s)	DV & Outcomes	Country
Bambara, 2007	subject design		Adults with ID		Participants were taught to recognize sight words that were used on checklists	completion increased in all three participants	

Supplementary Table 5

Included Studies with Level V Evidence

Citation	Study Design	Category	Participants & n	Independent Variable	Intervention Component(s)	DV & Outcomes	Country
Baker-Ericzén et al., 2018	Pilot Study	5	n =8 Young adults with ASD (without ID)	SUCCESS Intervention; a supported employment, comprehensive cognitive enhancement and social skills intervention package	IV Code: 1 Integrated curriculum that focuses on social thinking and cognitive compensatory training used within community supported employment programs	<ul style="list-style-type: none"> Enhancement in vocational outcomes; employment rates doubled post-intervention (22% to 56% of participants employed). Mean hours worked per week increased (from 6 to 20 h a week) Work was for competitive wages (US\$10–US\$18 an hour). 	USA
Banks, Jahoda, Dagnan, Kemp, & Williams, 2010	Qualitative (mixed methods but only qualitative relevant for this matrix)	5	n =49 Youth and young adults with ID already employed via SE services experienced job breakdown	SE services for job retention	IV Code: 4 Follow-along services for those already employed.	<ul style="list-style-type: none"> 13 of 49 had job break down within 12 months 4 of the 13 secured a second job within the 12 months leaving 9 unemployed at the one-year point. Of those who experienced job breakdown; most said they were pleased with the initial support they received on the job from support workers and other employees. 	United Kingdom
Becerra,	Case Study	5	n =5	Natural	IV Code: 3	<ul style="list-style-type: none"> Use of graphic supports 	Spain

Citation	Study Design	Category	Participants & <i>n</i>	Independent Variable	Intervention Component(s)	DV & Outcomes	Country
Montanero, & Lucero, 2018			Adults with ASD	supports within an SE context	Natural Supports vs supports that do not require a job coach; Graphic supports materials, verbal instruction, without help from a job mate	lead to an increase in quality of work compared to support in which the participants received verbal instructions (VIs) from a work mate and compared to receiving no help.	
Block, Athens & Brandenburg, 2002	Case Study	5	<i>n</i> =1 Managed Care Organization Staff serving individuals with DD	Performance based funding systems for SE services	<u>IV Code: 5</u> Monetary incentives provided for reaching certain SE milestones like job placement or job maintenance	<ul style="list-style-type: none"> 37% increase in number of community job placements over a 3 year period with incentive system. 	USA
Coleman & Adams, 2018	Survey / Qualitative	5	<i>n</i> =172 Adults with ASD	VR vs all alternatives (sample of individual in Arizona regardless of receiving supports)	<u>IV Code: 6</u> VR services	<ul style="list-style-type: none"> Low levels of feeling that VR was helpful; 9% felt VR services helped them find a job and 11% felt VR services somewhat helped them find a job. 	USA
dos Santos Rodrigues, Luecking, Glat, & Daquer, 2013	Case Study	5	<i>n</i> =1 18 year old with ID	Customized Employment	<u>IV Codes: 1,2,3,&4</u> Discovery, personal profile (1), job/task negotiation (2), on-the-job training (3), and follow-along	<ul style="list-style-type: none"> Individual became independent and stable on-the-job. 	Brazil
Farris & Stancliffe,	Pilot study mixed	5	<i>n</i> = 19 KFC Staff; <i>n</i> = 10	Co-worker training model	<u>IV Code: 3</u> <u>On-the-job training</u>	<ul style="list-style-type: none"> • Co-workers and managers placed 	Australia

Citation	Study Design	Category	Participants & <i>n</i>	Independent Variable	Intervention Component(s)	DV & Outcomes	Country
(2001)	methods design		co-worker training group, M age = 17.34 years; <i>n</i> = 6 place & train model, M age = 18.68 years	for people with ID versus job coach		significantly higher value on persons with ID in the workplace post course. <ul style="list-style-type: none"> • High co-workers satisfaction of the model and higher job satisfaction after becoming a co-worker trainer. • 89% of people with disability employed under the co-worker training model. 	
Ham et al., 2014	Case study	5	<i>n</i> = 2 Young adults with ASD	Provision of Positive Behavior Support in a work setting with in an SE context	<u>IV Code: 3</u> Individualized behavior plan using Applied Behavior Analysis (behavior assessments, self-monitoring plan) to address on-the-job challenging behaviors (3)	<ul style="list-style-type: none"> • Supports were successfully faded. Both participants were independent and stable on the job 24 months after intervention. 	USA
Lindstrom, Hirano, McCarthy, & Alverson, 2014	Multiple Method/Multiple Case Study (Qualitative)	5	<i>n</i> = 4 Young adults with IDD	SE services	<u>IV Code: 3</u> Work experience	<ul style="list-style-type: none"> • School based work experiences associated with later employment • Job development and work environments associated with employment outcomes 	USA
Mautz, Storey, & Certo, 2001	Case Study	5	<i>n</i> = 1 A 40 year old man with MR	Individualized 4-phase employment	<u>IV Code: 3</u> Job modification, Natural supports	<ul style="list-style-type: none"> • Success on the job was linked to job coach social facilitation training, and 	USA

Citation	Study Design	Category	Participants & <i>n</i>	Independent Variable	Intervention Component(s)	DV & Outcomes	Country
			and other disabilities	intervention	instruction to co-workers, communication device installation and training, social facilitation by job coach	installation of a communication device.	
McCabe & Suxing, 2009	Qualitative Case study	5	<i>n</i> = 1 A 20-year-old woman with ASD	Job matching	<u>IV Code: 2</u> Collaboration between parent and local government in job matching	<ul style="list-style-type: none"> Individual successfully employed at a community library 	China
McLaren et al., 2017	Case study	5	<i>n</i> = 5 Youth with ASD and comorbid psychiatric disorders	Multiple-Individual Placement & Support (IPS) Model	<u>IV Code: 1,2,3,4 & 6</u> SE approach; Rapid job search (1), attention to client preferences (2), job training (3), follow-along (4), integration of mental health and employment services (6)	<ul style="list-style-type: none"> Each participant secured employment in target career field, maintained employment and increased wages and hours over intervention. 	USA
Molina & Demchak, 2016	Case study	5	<i>n</i> = 18 Youth and young adults (ages 14-22) with IDD	Customized employment	<u>IV Code: 1, 2</u> Job skills summer camp (1) with job customization (2) to transition-to-work	<ul style="list-style-type: none"> Of the 18 participants, 3 gained paid internships and one pursued self-employment. 	USA
Owen et al., 2015	Qualitative case study	5	<i>n</i> = 17 Adults with DD	Common Ground Co-operative	<u>IV Code: 3</u> One-the-job training (3), & social	<ul style="list-style-type: none"> Participants earned only C\$754 per year Social return on 	Canada

Citation	Study Design	Category	Participants & <i>n</i>	Independent Variable	Intervention Component(s)	DV & Outcomes	Country
					enterprise development (6)	investment of program estimated at \$889,274	
Smith, McVilly, Rhodes,& Pavlidis (2018)	Qualitative design-thematic analyses	5	4 service providers, <i>n</i> =12 disability support staff supporting <i>n</i> =29 people with ID/DD	Disability employment workforce training project using The Work First™ curriculum	<u>IV Codes 1,2</u> <u>Discovery (1)</u> <u>Customised employment & job development strategies (2)</u>	<ul style="list-style-type: none"> <i>n</i>= 2 (6.9%) offered employment, <i>n</i>= 5 (17%) active discussion with employers , <i>n</i>= 18 (62%) in job development phase (Total <i>n</i>= 25/29 = 86%) positive outcomes 	Australia
Vilà, Pallisera, & Fullana, 2007	Qualitative	5	<i>n</i> =60 Support professionals in various roles	Vocational Support Services	<u>IV Codes: 3,4 & 5</u> Workplace monitoring (3 & 4), communication between supervisor and service provider, family support, prior and current training (5)	<ul style="list-style-type: none"> Information to families supports their participation Social participation and technical skills valued by employers Coordination between “job trainer” and “natural supervisor” critical to work success 	Spain
Wehman, Schall, McDonough, et al., 2012a	Single subject	5	<i>n</i> =2 Young adults with ASD (ages 19 & 20)	Project SEARCH internship with ASD supports	<u>IV Codes: 1-5</u> Integrated 9-month work internship program with individualized supports. Additional components included behavioral consultation, consistent internship structure, social skills, visual	<ul style="list-style-type: none"> Both participants successfully transitioned into CIE from internships Following intervention, increased job performance and target behavior 	USA

Citation	Study Design	Category	Participants & <i>n</i>	Independent Variable	Intervention Component(s)	DV & Outcomes	Country
					supports, self-monitoring, role playing, intensive instruction and monitoring		

List of Key Terms

Term	Abbreviation
Applied Behavior Analysis	ABA
Australian Institute for Health Welfare	AIHW
Australian Network on Disability	AND
Autism Spectrum Disorder	ASD
Achieving Success by Prompting Readiness for Education and Employment	ASPIRE
Database of Abstracts and Reviews of Effects	DARE
Department of Social Services	DSS
Disability Employment Australia	DEA
Disability Employment Services	DES
Disability Service Program	DSP
Developmental Disability	DD
Employment and Workplace Relations	DEEWR
Customized Employment	CE
Competitive Integrated Employment	CIE
Community Rehabilitation Providers	CRP
Individualized Education Program	IEP
Individualized Plan for Employment	IPE
Intellectual Disability	ID
Intellectual/Developmental Disabilities	IDD
Independent Variable/Intervention Codes	IV#
National Centre for Vocational Education Research	NCVER
National Disability Insurance Scheme	NDIS
National Longitudinal Transition Study-2	NLTS2
National Technical Assistance Center on Transition	NTACT
Transition to Work	TTW
Promoting Readiness of Minors in Supplemental Security Income Initiative	PROMISE

Evidence-Based Employment Practices for Persons with IDD

Randomized Control Trial	RCT
Rehabilitation Services Administration- 911	RSA911
Single Subject Design	SSD
Supported Employment	SE
Supplemental Security Income	SSI
Work Preparation Centres	WPC
Youth Transition Demonstration	YTD
Vocational Rehabilitation	VR
Term	Abbreviation
Applied Behavior Analysis	ABA
Autism Spectrum Disorder	ASD
Achieving Success by Prompting Readiness for Education and Employment	ASPIRE
Disability Employment Services	DES
Developmental Disability	DD
Customized Employment	CE
Competitive Integrated Employment	CIE
Community Rehabilitation Providers	CRP
Individualized Education Program	IEP
Individualized Plan for Employment	IPE
Intellectual Disability	ID
Intellectual/Developmental Disabilities	IDD
Independent Variable/Intervention Codes	IV#
National Longitudinal Transition Study-2	NLTS2
National Technical Assistance Center on Transition	NTACT
Promoting Readiness of Minors in Supplemental Security Income Initiative	PROMISE
Randomized Control Trial	RCT
Rehabilitation Services Administration- 911	RSA911
Single Subject Design	SSD
Supported Employment	SE
Supplemental Security Income	SSI
Youth Transition Demonstration	YTD
Vocational Rehabilitation	VR

Supported Employment:
Evidence of Success for Adults with Intellectual Disabilities

Paul Wehman, Ph.D.
Lauren Avellone, Ph.D.
Joshua Taylor, Ph.D.
John Kregel, Ed.D.

Rehabilitation Research and Training Center
Virginia Commonwealth University
Richmond, VA

July 9, 2020

Research Team

This research synthesis was developed by researchers from the Rehabilitation Research and Training Center at Virginia Commonwealth University in Richmond, Virginia (Paul Wehman, Josh Taylor, Lauren Avellone, and John Kregel). The analyses and conclusions presented in the report are solely those of the authors.

Acknowledgements

This report was commissioned and funded by JobSupport
Website: jobsupport.org.au

Suggested Citation

Wehman, P., Taylor, J., Avellone, L., & Kregel, J. (2020). Supported Employment: Evidence of Success for Adults with Intellectual Disabilities. Rehabilitation Research and Training Center at Virginia Commonwealth University in Richmond, Virginia.

Supported Employment: Evidence of Success for Adults with Intellectual Disabilities

Following the period of deinstitutionalization of people with disabilities in the mid-20th century, individuals with the most significant intellectual disabilities remained segregated, disenfranchised, and omitted from most social functions—including work. People with intellectual (ID) were largely deemed unable to be employed in the community, and thus segregated to training or pre-vocational facilities where they were given only menial tasks. Supported employment (SE)¹ emerged in the 1970s from a broader inclusion movement that sought to integrate people with more significant disabilities in school, work, and other aspects of society through use of applied behavioral analytic principles. Employment agencies used these evidence-based strategies were used to teach individuals with ID to perform multiple job duties in actual jobs in their local communities (e.g., Wehman & Kregel, 1988; West et al., 1994). Relying on this behavior analytic approach, SE rejected the premise of previous vocational rehabilitation models which held individuals with disabilities in perpetual cycles of prerequisite skill training prior to being considered ‘employable.’ SE established the standard of “place, then train” for individuals with ID by first placing clients in community-integrated jobs and then providing robust evidence-based training within that integrated setting (Wehman, Gibson, Brooke, & Unger, 1998). This fundamental model of SE persists as best practice today, composed of four basic components—assessment, job development, on-the-job training, and ongoing support (Nietupski et al., 1993).

Early Demonstrations of Supported Employment

Research investigating the efficacy of SE as a sustainable workplace intervention for people with the most significant disabilities began with early demonstration research largely

¹ Australia uses the term Open Employment (OE) as supported employment occurs in Australian Disability Enterprises (ADEs), which are segregated settings.

conducted in the 1970s and 1980s. Many of the early supported employment demonstration projects were described in Rusch's (1986) seminal text, *Competitive Employment Issues and Strategies*. Before providing an in-depth analysis of the research literature supporting SE, we will describe five model programs from Rusch's text implemented in Virginia, Washington, Vermont, and Illinois. These programs documented the effectiveness of many services that later formed the basis of legislation and employment policies that drove the national implementation of what was systematized as the SE model.

Competitive Employment in Virginia

Wehman (1986) presented a description of how the SE approach was successfully implemented to secure 206 competitive employment positions for 145 individuals with disabilities in Virginia between 1978 and 1983. These individuals ranged in age from 17 to 61 and had a median intelligence measure of 48. Clients using SE services retained employment on average for 15.5 months, which is notable when compared to the average length of time a sample of individuals without disabilities typically stayed in an industry before changing jobs or stopping (five months). Jobs were secured in a variety of industries including hospitals, hotels, restaurants, and janitorial services.

Key program components responsible for competitive employment outcomes included the following a). *Job development*, which focused on job matching, facilitating communication with employers, and identifying job barriers, b). *Job-site training*, which entailed teaching job specific tasks and advocacy skills to the individuals in the job setting, c). *Ongoing assessment*, which emphasized continual evaluation of the individual's progress and the employer's satisfaction, and d). *Ongoing Support*, which focused on job retention strategies. From these findings, Wehman et al. (1986) concluded that not only are individuals with more severe

intellectual disabilities able and willing to work, but if they are ever going to become less dependent on government disability benefits then successfully achieving competitive employment positions via evidenced-based practices such as the SE approach are necessary.

University of Washington Employment Training Program

At the University of Washington, Moss and colleagues (1986) illustrated the effect of the Employment Training Program (ETP) on competitive employment outcomes for individuals with ID. The ETP model reduced the risk to a business by eliminating job task training provided by an employer and instead installed on-the-job training support from ETP staff. Staff coached the individual with a disability until they could perform to the employer's productivity and quality standards. In the example provided by Moss and colleagues (1986), the ETP model focused on a specific industry (i.e., food service) because it was a field with high turn-over rates and thus plentiful job opportunities. Food services was also selected because it entailed "continuity of skills" which meant employment across food service jobs was easy to attain once a general repertoire of restaurant related skills was built.

Individuals with ID worked at one of two on-campus cafeterias in a 1:4 ratio for up to 6 hours per day to master industry tasks based on criteria covering accuracy, speed, and independence on-the-job. Once criterion was achieved, trainees transitioned to employment in the community. Job development was used to match an individual's interests with a specific restaurant job, then on-site training and ongoing support services are put into place to promote job retention. A total of 66% of those completing ETP were competitively employed with 46% of all those completing ETP in 1975 still employed by 1984. On average, individuals with ID completing ETP worked 26 hours per week (range of 6-40). Moss and colleagues (1986) pointed

out that the main factors contributing to these outcomes were the strategic pre-employment training offered at the “in-house” cafeterias, on-the-job training, and ongoing support.

Competitive Employment in Vermont

In Vermont, Vogelsburg (1986) described the service delivery model and program outcomes of a competitive employment demonstration program that used state Vocational Rehabilitation funds to provide SE services to individuals with ID in three different sites spread geographically across the state. Service delivery consisted of client evaluation/assessment, job development and placement, on-the-job training, and ongoing follow-up. While there were small variations in program activities across the three sites, all sites adhered to standardized service delivery protocols. No pre-employment training was provided. All clients were administered the same skill inventories and vocational assessment. The projects used both specific job development approaches that relied on standardized job analysis strategies, task analysis, prompting and reinforcement procedures, and performance criteria developed in conjunction with the employer. Follow-up activities involved the gradual fading of the job trainer, increased employer supervision, and ongoing data collection. The projects placed 73 individuals with ID into competitive employment. The individuals received on average 50 training hours per placement, with some individuals with severe ID receiving over 100 training hours. Job retention data showed that over 66% remained employed 36 months after placement.

Competitive Employment in Southern Illinois

In Illinois, Bates (1986) described a program called Project EARN (Employment and Rehabilitation = Normalization), which was designed to address the lack of employment or community integration of public school graduates with ID. The model was structured around principles of rigorous transition planning and programming, early start (beginning in elementary

and middle school) for vocational training, and finally placement and training in a competitive work environment. The primary focus of the program was on gaining competitive employment outcomes and this was achieved through integration, a commitment to zero exclusion, and normalization of participants. Job development within the community was reported as a key indicator to program success. Additionally, a community-referenced curriculum was developed that structured training based on guidance from community employers. A longitudinal curriculum model was employed that instituted initial pre-vocational training in elementary schools covering career awareness and exploration activities. The author concluded that although a school based vocational training program can help students acquire useful skills, it cannot be assumed that students will use these skills in actual settings. Bates further emphasized that Project EARN utilized many core components of the SE model, such as instruction using behavior analytic principles and approaches, as well as the placement and training of individuals with ID in competitive employment with follow-up support.

Community Services Using the Supported Work Model

The Supported Work Training Model described by Lagomarcino (1986) was a program established by the University of Illinois and a local adult service agency to promote competitive employment outcomes for individuals with ID and more significant disabilities who would otherwise be unemployed. Lagomarcino (1986) pointed out that 91% of individuals with ID were identified as “inconsequential producers” by the segregated work and non-work centers they had been placed in, earning an average of \$0.43 per hour (1986 USD). Thus, the Supported Work Training Model was funded by Illinois Department of Rehabilitation Services and the Job Training Partnership Act, which resulted in the training of 108 individuals who were placed into community jobs between 1978 and 1986.

The Supported Work Training Model was composed of four parts: 1) surveying potential employers to determine important skills, 2) training individuals to perform those skills, 3) placing clients in competitive employment positions, and 4) providing long-term supports. Social and vocational skills were taught in pre-employment training programs based on assessment information gathered from the community regarding general work skills needed on-the-job. Interviews were used to assess the skills and interests of job seekers, which were taken into account during job placement. Individuals participated in their own job search with differential support provided through an employment specialist. Follow-up services then assisted an individual to maintain employment status “beyond sheltered employment.” These follow-up services were aimed at promoting job retention and included retraining or training of new skills, advocacy support, or problem-solving with unfamiliar supervisors and co-workers. Program graduates were primarily placed in food service jobs, worked from 5 to 40 hours per week, with a majority averaging between 20-25 hours per week, and earned from minimum wage to \$7.00 (USD) per hour.

Widespread Adoption of Supported Employment

In the 1980s, SE became a paradigm for best practice in vocational rehabilitation for individuals with ID (e.g., Hill, Wehman, Kregel, Banks, & Metzler, 1987; Wehman et al., 1998). The emphasis on community integrated employment and the “place then train” approach to intervention was adopted into policy, which directed funding to SE services. The two main funding streams for SE in the United States are Vocational Rehabilitation (VR) and state Medicaid Programs. The Rehabilitation Act Amendments of 1984 facilitated local VR agencies in receiving federal funding to provide SE services to eligible individuals with disabilities, including persons with ID. The Medicaid Home and Community Based Services (HCBS) Waiver

Program (1981) enabled Medicaid funds to be applied toward employment services (West et al., 1999). Soon, other funding avenues emerged. States have been able to successfully provide ongoing support after placement for individuals with ID through local and state cooperative planning efforts that included state revenue funds, local community agency contributions, and private funding (Shafer, Revell, Kregel et al. 1991). Policy continued to evolve in recent decades to allocate funding toward SE services—most notably with the recent passage of the Workforce Innovation and Opportunity Act of 2014 in the United States (which replaced the preceding Rehabilitation Act of 1973 and Workforce Investment Act of 1998). WIOA authorizes SE as one of the key interventions for achieving the preferred outcome of successful and sustainable competitive integrated employment not only for VR service recipients, but also for transition-age students moving from school to employment (Taylor et al., 2019).

Purpose of Current Review

Despite proven efficacy in the research literature and attempts to adopt SE best practices into policy, employment outcomes for individuals with ID remain low worldwide, indicating a significant breakdown in the research-to-policy-to-practice pipeline. Thus, the purpose of this document is to outline the foundational research establishing the efficacy of SE, its components, and its implementation in practice. First, a summary of the research evidence validating specific components of the SE process will be provided. Next, large-scale model demonstration projects evaluating SE implementation and its efficacy will be presented. Finally, critical issues in SE research and practice will be outlined, and a summary of evidence-based recommendations given. A description of key studies and associated findings is presented in Table 1. It should be noted that when describing the literature, the current term intellectual disability (ID) is used

when referring to study participants who may have been previously classified as having a diagnosis of mental retardation.

Evidence for Specific Components of Supported Employment

While SE is widely researched as a single intervention package, it is important to note a significant body of evidence exists that support its specific components—assessment, job development, on-the-job training, and ongoing support. Although these four parts operate within the framework of a complete service delivery model, many studies have shown that the quality, fidelity, and individualization of each of these components is crucial to the efficacy SE (Wehman et al., 1998). Specifically, much of the case study and single-subject research closely examining the adoption of successful employment placements and specific workplace behaviors in individuals with ID place great emphasis in describing how employment specialists managed each phase of SE to lead to a successful, stable employment outcome for a client. In the following sections, research evidence offering support for these four specific components of SE will be described.

Assessment

One of the distinguishing characteristics of the SE model, and one that sets it apart from other vocational rehabilitation models, is the emphasis on a well-executed assessment process which emphasizes the strengths of an individual. Integration of a robust, customer-driven, strength-based assessment phase completed by highly-trained employment specialists allows for a positive job match, which is integral to the long-term success and retention of that employment position (e.g., Brooke, Wehman, Inge, & Parent, 1995; Nietupski et al., 1993; Wehman et al., 1998). Given that SE originated as a model to meet the needs of individuals with significant disabilities who had been deemed unable to work based on previous rehabilitation models (e.g.,

Wehman, Hill, & Koehler, 1979), the use of assessments that reveal strengths, preferences, and interests in relation to work are paramount in achieving high-quality outcomes, client satisfaction, and thus long-term job retention.

This emphasis on the process of discovering an individual's strengths, interests, skills, and conditions necessary for employment success contrasts starkly with traditional vocational models. These traditional vocational assessments use normative measures that serve to define job seekers with ID in terms of relative deficits and subsequently limit their potential work prospects (O'Brien & Callahan, 2010). Not only is the strength-based assessment model used in SE person-centered and empowering, it also contributes to a clearer identification of the work interests of a job seeker that lead to more successful matches during job development (Wehman et al., 2016). Furthermore, deficit-oriented skill assessments may contribute to a higher likelihood of nonrandom selection of participants—sometimes referred to as “creaming”. Without sufficient policy countermeasures, this combination of job placement incentives and normative assessments can result in those with more significant support needs being systematically excluded from service options (Anderson, Burkhauser, & Raymond, 1993).

Job Development

Following thorough analysis of the results of a person-centered assessment, information collected must be aligned with the characteristics and needs of local businesses for employment to be successful. Once again, this process requires a high level of training and competence on the part of the employment specialist to use the assessment profile to develop potential job leads in the community before guiding the client through considering prospective positions (Wehman et al., 1998). While a highly-trained employment specialist is needed to guide the process, it is critical that the client ultimately decide which jobs to apply for and pursue. In many cases, this

may involve in-person visits in the work environment and working interviews in which the client completes a short-term work trial to determine whether the job match is ideal. Wehman et al. (1998) also reported that effective customer-driven assessment necessitates not only the initial job match but also development of a long-term plan to sustain employment that is carried out over the subsequent two phases of SE. During job development, the employment specialist also plays a valuable advocate role in building a network of businesses that see the benefits of employing people with disabilities (Nietupski et al., 1993). Previous studies have shown that systems change within institutions to adopt more inclusive employment policies for people with disabilities rely primarily on a shift in internal values rather than any external factor (Butterworth, Fesko, & Ma, 2000).

On-the-Job Training

Robust job coaching from well-trained employment specialists using evidence-based applied behavioral analytic principles (e.g., systematic instruction) lie at the core of the SE intervention (Wehman & Kregel, 1988; Wehman et al., 1998; West et al., 1994). The concept of highly qualified job coaches using evidenced-based practices were foundational in establishing an initial proof of concept for SE as a means to successfully sustain competitive employment for individuals who were previously disengaged from meaningful work (Wehman, Hill, & Kohler, 1979; Wehman & Kregel, 1988). Effective key components of on-the-job training identified by previous research include systematic instruction, community and workplace supports, compensatory strategies, orientation training, and workplace accommodations (Wehman et al., 1998; Wehman et al., 1999). As with all components of SE, the success of overall outcomes rely heavily on the ability to employment specialists to use effective teaching strategies for individuals with ID with sufficient intensity and duration (Kregel, Hill, & Banks, 1988).

Ongoing Support

Long-term support is a critical feature of SE that ensures successful employment outcomes are sustained over time. Research has shown that fading initial support to a continued level of ongoing support produces better outcomes for supported employees (Brooke et al., 2018; Flynn, Wacker, Berg, Green, & Hurd, 1991). While natural supports provided by co-workers or supervisors are sometimes included in an overall support plan (Storey & Garff, 1997), there is no evidence supporting it as an alternative to robust training and support from a qualified employment specialist (Park et al., 1991; Test & Wood, 1996). In fact, rather than interfering with a client's integration in a workplace, customer-centered long-term support can enhance an employee's position by providing extended assistance as they take on additional duties, adjust to changes in protocol, and seek out advancement within the organization (Riddell, Wilson, & Baron, 1999; Wehman et al., 1998).

When these components are put together (i.e., assessment, job development, on-the-job training, following along) in the SE model, the result is a highly individualized set of supports and services which promote success during all phases of the employment process (e.g., seeking, securing, and maintaining employment). The effect of SE is widely documented (Lynch & Walsh, 1996; Revell, Wehman, Kregel, West, & Rayfield, 1994; Verdugo, Urries, Bellver, & Martínez, 1998). Pertinent examples within the research which demonstrate the efficacy of the SE model in large-scale project implementation will be discussed in the following section.

Large Scale Implementation of Supported Employment

Beginning in the early 1980s, university-based demonstration projects began to form a rich collection of evidence showcasing the efficacy of SE for individuals with ID. In the U.S., the profound success of these demonstration projects resulted in SE being incorporated into the

Rehabilitation Act Amendments of 1986, thus creating a nationwide adoption of local SE service delivery systems (Kregel, Wehman, & Bank, 1989). The success of SE in the U.S. encouraged international use throughout the 1980s and 1990s (Lynch & Walsh, 1996; Revell et al., 1994; Verdugo et al., 1998). Consequently, international findings from demonstration projects during this period illustrate the clear impact of SE on employment outcomes. A review of key demonstration projects and subsequent findings on a wide variety of employment variables (e.g., *employment status, type of SE model, wage, hours, and job retention*) along with additional employment characteristics (e.g., *fringe benefits, industry type, and level of integration*) are discussed below.

Employment Status

On the heels of the Rehabilitation Act Amendments of 1986, provision of SE rose dramatically in the United States. Results of a 50-state, three-year longitudinal study found that the number of individuals in SE increased from 9,876 in 1986 to 32,342 in 1988, marking a 226% increase over 3 years (Shafer, Revell, & Isbister, 1991). By 1990, U.S. state VR agencies reported a total of 74,657 individuals participating in SE and 2,647 provider agencies in operation (West, Revell, Wehman, 1992). The number of participants in SE continued to climb even higher with over 105,000 reported across the U.S. in 1993 (Wehman & Revell, 1996). Success from demonstration projects was observed in rural and suburban settings, in a wide range of business industries and organizational structures, and for a variety of physical and intellectual disability types (Mank, O'Neill, & Jensen, 1998). However, ID was overall the most frequently served diagnosis (Revell et al., 1994; Shafer, Revell, & Isbister, 1991; Verdugo et al., 1998; Wehman & Revell, 1996). A survey of 54 U.S. states and territories revealed that between 1989 and 1993, over half of all individuals in SE had an ID diagnosis, hovering consistently

between a range of 64.3% in 1989 and 70.3% of SE participants in 1993 across all years (Wehman & Revell, 1996).

While the majority of SE agencies reported serving more individuals with mild/moderate ID (Hill et al., 1987; Kregel, 1995; Revell, Wehman, Kregel, West, & Rayfield, 1994), Wehman and Kregel (1990) also found SE to be a highly effective pathway to competitive employment for individuals with more severe ID. Data from 109 people with severe ID from over 90 community programs across the U.S. revealed that 93% were competitively employed through SE earning meaningful wages (Wehman & Kregel, 1990). This was a particularly seminal study since individuals with severe ID had a history of erroneously being seen as “unemployable” (Wehman & Kregel, 1990). Other demonstration project findings yielded similar conclusions; severity of disability did not define employability. In a study by Wehman et al. (1982), 75 competitive employment positions were obtained across 63 individuals with disabilities (mainly ID), the majority of whom had been considered “unemployable” by rehabilitation counselors, teachers, families, or psychologists. Kregel (1995) found that more than two-thirds of a population of 161 individuals with severe ID retained their competitive employment position through SE for at least one year. Using a smaller sample of individuals with severe ID in Ireland, Lynch and Walsh (1996) found that participants in OPEN ROAD, a project using the SE model was effective in assisting 24/36 participants (66.67%) in achieving gainful employment.

Systems change at the federal level also enabled other notable advancements such as the expansion of successful competitive employment outcomes to previously untapped industries. For example, Mank and colleagues (1998) described success using SE for 55 individuals with disabilities (mild to severe ID and developmental disabilities) who attained public sector jobs within a county government. Public sector work was recognized as an area with ideal

employment opportunities for job development because it was often accompanied by long-term stability and fringe benefits. However, public sector jobs were also historically seen as being difficult for individuals with intellectual disabilities to access due to a myriad of reasons like civil service examinations, budget and union issues, and job classification systems. Despite these challenges, 64 positions were developed using the SE model across 15 different departments employing 55 people with ID (Mank et al., 1998). The implications of this study are significant because they offer insight into the level of employment opportunity a single business structure can effectively provide successful job placements across multiple departments.

Type of SE Model

There is a long history of confusion regarding viable SE approaches (Brooke, Wehman, Inge, & Parent, 1995). In the 1980s, SE was thought to include different models that could best be distinguished as the individual placement model versus group approaches (e.g., mobile work crews, enclaves, and small business). The individual placement model is a personalized approach to matching an individual's strengths and preferences to a job within the community that offers a competitive wage paid directly by the employer. In contrast, group models do not tailor services and supports to individual characteristics, level of integration is low, and while the objective is to ultimately attain minimum wage, most group models fall short of this goal (Kregel, Wehman, & Banks, 1989). As a result, a call to move the field toward the "customer-driven approach" was made in the 1990s in order to maximize individuals' control and choice over the services they received (Brooke et al., 1995). Aside from the obvious need to provide individuals with say over the direction of their own futures, doing so alleviates the far reaching negative implications of providing unnecessary oversight. As Brooke et al. (1995) pointed out, when professionals treat

individuals with a disability as “helpless” then prospective employers are likely to view them the same the way.

Findings from numerous studies indicate that an individualized approach is used more commonly than other models (Revell et al., 1994; Shafer, Revell, & Isbister, 1991; Wehman & Revell, 1996). Revell and colleagues (1994) reported that 80% of individuals with a variety of disabilities (mostly ID) used the individual placement model, in contrast to group employment options. The individualized approach is also superior to group models because it promotes higher earnings and a higher level of integration with non-disabled co-workers (Kregel, Wehman, & Banks, 1989; Wehman & Kregel, 1990). In one such example, data from 1,550 participants in SE with a variety of disabilities (including moderate and severe ID) revealed that those in the individual placement model earned more than those group employment alternatives. Additionally, the individual placement model provided significantly higher amounts of opportunities for social and physical integration with employees without disabilities compared to group models (Kregel, Wehman, & Banks, 1989).

Wages

A core component of SE is *paid* work. The expectation is clear that individuals performing competent work should be paid comparably to individuals without disabilities completing similar work. Therefore, the SE model refutes the notion that volunteer work or other non-paid positions constitute a successful SE outcome. Numerous findings from demonstration project studies in the 1980s and 1990s showed that individuals with even the most severe disabilities are able to meaningfully contribute to a business when proper individualized supports are installed (Mank et al., 1998) and therefore should be entitled to the prevailing wage for such work. Generally, employers agreed by paying SE participants with ID at least federal minimum

wage at the time (Revell et al., 1994; Shafer et al., 1991; Wehman et al., 1982). SE participants with mild ID saw a 280% increase in wages after seeking SE services (Kregel et al., 1989). Individuals with severe or ID saw the highest financial gains, a 536% increase in wages from before SE compared to post-SE placement (Kregel et al., 1989). It can therefore be concluded that participation in SE notably enhances individual earnings.

Hours

Each SE participant's ideal amount of working hours may vary as a result of home or family obligations, work stamina due to underlying physical or psychological conditions, financial needs, or other personal reasons. Thus, it is important for an employment specialist to help clients develop a job that allows for the maximum number of hours desired. Demonstration projects have consistently documented the ability of the SE model to promote at least part-time employment (i.e., over 20 hours per week) among enrollees with average hours worked across samples reported at 22 hours per week (Wehman & Kregel, 1990; Wehman & Revell, 1996). Most notably, data from 21,319 supported employees across the U.S. indicated that 24.4% of this sample were employed working 20-30 hours per week while 48.4% of the sample were actually working closer to full-time at 30-40 hours per week (Shafer et al., 1991). Other accounts corroborate these findings. Mank and colleagues (1998) also reported wider work ranges (17.5-40 hours/week) and mean hours (30.6 hours/week). For individuals with the most intensive disabilities, severity was found to affect hours worked only slightly. On average, individuals with severe ID in SE only worked 5 hours less than those with more moderate ID, and this difference was found to be non-significant (Kregel, 1995).

Retention

Within the SE model, emphasis is placed not only on the supports necessary to secure a job but also on installation of personalized supports necessary for keeping a job. As the individual with a disability becomes more independent, the employment specialist will reassess the type and level of support provided but maintain appropriate presence and open lines of ongoing communication in order to proactively address problems, help the individual adjust to changes in the workplace (e.g., new routines, staff changes, emergency protocols, etc.), and ensure continued quality and productivity. When proper ongoing supports are put in place, job retention is high (Kregel, 1995; Mank et al., 1998; Wehman & Kregel, 1990; Wehman et al., 1982). Kregel (1995) reported a 68.6% employment rate for SE participants with severe ID and a 69.7% employment rate for individuals with moderate ID 12 months after job placement, which highlights two important points. First, over two-thirds of individuals with ID were able to retain employment one year after placement, and secondly, there was no significant difference in job retention between those with severe ID and those with /moderate ID.

Other studies boast similar findings with the majority of SE participants remaining employed at research check-in points. In a data sample of 63 clients in SE placed over a three year period (between Sept 1978 and March 1982), a total of 67% (42/63) were working at the end of the three year data collection interval (Wehman et al., 1982). Wider data collection windows have allowed for broader retention reports with SE participants averaging 32 month retention rates, with a range of 1-96 months (Mank et al., 1998). In some cases, individuals in SE may end up changing jobs after an initial placement, and while this can sometimes be the result of employer termination, economic restraints, or poor job matches, it can also be the result of better job opportunities or more pay.

Additional Employment Characteristics

The success of SE can also be measured in terms of other important employment characteristics often examined in less detail than the primary employment characteristics described above. Variables such as the range of industries in which individuals with ID in SE are employed, the extent to which they are integrated with other individuals without disabilities, and whether they have access to fringe benefits are important metrics for consideration. Accounting for these additional variables in the SE process elevates the quality of employment positions obtained.

SE has enabled individuals with ID to secure competitive positions in a wide variety of industrial sectors. Expanding job development to more industries allows for better job matches and breaks the long held stigma that individuals with disabilities are successful only in entry-level service industry jobs such as cleaning and food service. A demonstration project in Spain described success using SE to secure employment in non-traditional industries like carpentry, agriculture, valet services, and messengers (Verdugo et al., 1998). In Ireland, jobs were successfully developed in accounting departments, airports, libraries, garages, paint manufacturing, and horticulture (Lynch & Walsh, 1996). Receptionist, mail clerk, lab assistant, data entry, and administrative support positions have been reported via SE in the United States (Mank et al., 1998).

Moving individuals with ID into more types of jobs within a greater scope of industries has other advantages, like higher-level work that offers fringe benefits and greater integration. Mank and colleagues (1998) illustrated this prospect by targeting local government jobs and consequently securing employment for 50 individuals all working 20 hours or more a week, and receiving full employee benefits. The individual approach to SE which promotes job development in industries that align with personal interests also results in higher levels of social

and physical integration with co-workers without disabilities than group model approaches (e.g., enclave and work crews) which focus less on job matching and have a more restrictive scope of job types (Kregel, Wehman, & Banks, 1989). With the individualized supports offered by SE, individuals with even the most severe ID can achieve the same level of integration as those with moderate ID (Kregel et al., 1989).

Critical Issues in Supported Employment

As shown through demonstration and case study research, SE is supported by decades of scientific evidence demonstrating its efficacy as a vocational rehabilitation intervention for individuals with ID. As outlined in previous sections, there is significant evidence supporting each of the components of supported employment, as well as studies demonstrating the effective scalability of SE in larger samples (e.g., Hill et al., 1987; Wehman & Revell, 1996). There have also been several critical issues affecting SE over the years that also merit consideration in reviewing the literature surrounding this topic. On these points, research has provided important guidance in the implementation of SE best practice and policy.

The Validation of the Place and Train Model

The initial SE demonstration programs in the late 1970s and early 1980s began to dismantle the notion that “pre-training” was needed for employment to be successful for individuals with ID. The “place, then train” philosophy of SE showed that these individuals didn’t need to spend a significant amount of time in a segregated pre-training environment before being placed in an actual community employment setting. This directly challenged the belief that months or years of training in a segregated workshop or activity center were necessary prior to any hope of success in a competitive employment situation. In reality, pre-training programs in these work or non-work facilities led to an absence of training on skills that could be useful in a

community employment setting, poor wages or no wages earned performing menial or simulated work, and lowered expectations on the part of individuals with ID and their families.

In the five initial demonstrations described above, pre-training activities were provided in three sites. Bates (1986), in Southern Illinois, described pre-training activities for students in elementary, middle, and high schools. Lagomarcino (1986), at the University of Illinois, described teaching social and vocational skills prior to placement in food service positions. Moss and her colleagues (1986), at the University of Washington, provided work experience placements in university cafeterias prior to subsequent placements in community food service settings. However, in each situation, all individuals with ID placed into community employment received all four components of the SE model – Assessment, Job Development, On-the-Job Training, and Ongoing Support.

In contrast, neither the Virginia (Wehman, 1986) nor Vermont (Vogelsburg, 1986) demonstration reports made use of any pre-employment training activities. These programs rejected the need for any type of pre-employment training prior to initiating SE services. This allowed individuals with ID to move directly into supported employment and rapidly move into jobs after a short period of assessment. It is not possible to compare the employment outcomes across the five early demonstration projects. However, the employment outcomes achieved in Virginia and Vermont met or exceeded the demonstrations that provided pre-employment training to all participants prior to entering community employment.

There is no empirical evidence documenting that the provision of pre-employment services alone, in that absence of intensive SE services, will enable large numbers of individuals with moderate or severe ID to successfully obtain and maintain competitive employment for extended periods of time. Some individuals with ID may gain confidence through participation in

community-based work experience and become more likely to participate in an SE programs. Others may benefit from community-based instruction on the use of public transportation or the use of technology in community settings. Still others with mild ID may become successfully employed after receiving only short-term job placement services. However, individuals with moderate or severe ID overwhelmingly require the assessment, job development, on-the-job training, and ongoing support services that comprise the SE model

The implementation of the place then train model opened the door for individuals with limited prior work history or no work experience, such as the majority of transition-age students with disabilities, to more immediately enter into the workforce. A good example of this is highlighted in a 1989 study conducted by Wehman and colleagues examining the transition outcomes of 34 youth and young adults with ID. All of these transition-age students had no prior work history. Despite this, 39 competitive employment positions were secured across 34 participants using the SE model (Wehman et al., 1989). The ability to provide immediate assessment and rapid job development for individuals with ID triggered the rapid expansion of SE and allowed many individuals to leave segregated pre-employment settings for meaningful employment in their local communities.

Cost-benefit

Reviews of the research literature of cost-efficiency have determined that over time SE is cost-efficient both from the worker's perspective and that of the taxpayer (e.g., Cimera, 2000; Kregel, Wehman, Revell, Hill, & Cimera, 2000). In other words, not only does SE provide greater benefit and better overall outcomes than alternative VR interventions, it provides value to taxpayers in terms of higher wages and reduced subsidies and benefits. Cimera (2000) also found that individual placements appear to be more cost-efficient and SE services remain cost-efficient

for all groups of individuals. However, while SE is cost-efficient overall, Revell, et al. (2000) note the importance of setting meaningful outcomes when calculating cost-efficiency that rehabilitation providers will be measured against. These include; a). sustainable job retention, b). with higher hours and wages, c). in high-quality jobs that clients prefer, and e). that take into account all individuals with ID—not only those easiest to place. Federal and state agencies should establish standards of excellence based on these preferred outcome criteria and cost-efficiency measures and ensure that practices and models employed by high-performing rehabilitation agencies should be widely disseminated and adopted by other providers (Revell et al., 2000).

Long-term supports

Although the goal of SE is provision of the least restrictive support necessary to ensure the success of an employee with ID and their social integration into a workplace, long-term or ongoing supports are a crucial part of the SE model (Griffin, Test, Dalton, & Wood, 1995). These long-term supports are essential to employees' ability to achieve career goals related to maintaining and increasing their employment, pursuing job advancement opportunities, coping with workplace changes, and increasing work satisfaction (Griffin et al., 1995). For many clients with higher support needs, the provision of long-term maintenance and generalization training is necessary to sustain employment (Berg, Flynn, & Wacker, 1997). However, the execution of effective long-term support for individuals with ID across policy implementation has been met with several barriers related to funding and accountability (Dean, Slovic, & Mank, 1995). In order to improve sustainable employment outcomes, long-term support funding must be provided, but with sufficient measures to ensure customer choice and satisfaction are included as accountability mechanisms.

Social Validity of SE

The true value of an intervention is not only measured by outcomes, but also by the extent to which those affected by the intervention find it satisfying and meaningful. In SE, the construct of social validity applies to multiple stakeholders, including SE participants, families, and employers. Consumer satisfaction survey results revealed that individuals with ID using SE services largely reported that their life improved with use of SE (73%), 96% said they wouldn't be employed without it, and 85% agreed that their job coach was helpful in providing support (Parent, 1996). Individuals in competitive employment through SE tend to score higher on quality of life measures compared to individuals who are not employed or who are in segregated work (Eggleton, Robertson, Ryan, & Kober, 1999) and significant increases have been observed in functional life domains from pre to post job placement through SE related to community participation, social vocational skills, financial outcomes, and fiscal responsibility (Inge, Banks, Wehman, Hill, & Shaffer, 1988).

Most employers are accepting and supportive of the SE model. Employers hiring individuals with disabilities using the SE approach report favorable attitudes toward the process and did not perceive SE to be disruptive in any way to the work environment (Kregel & Unger, 1993). Most SE participants (82%) felt their boss was available to them when needed (Parent, 1996). Families appear satisfied with SE services, too. A study from North Carolina (Dalton, Test, Dotson, Beroth, 1995) described SE participants as earning more and living better than at any previous point in life, satisfied with their job, supervisor, and co-workers, and whose family is also satisfied with their job.

Through these critical reviews, it is apparent that SE is a cost-effective service for individuals with ID and cost-efficient for taxpayers and government agency funders (Cimera, 2000). It is also known that the maintenance of long-term supports leads to more sustainable job placements and—ultimately—better overall outcomes (Brooke et al., 2018). Finally, research has concluded that the presence of a job coach is a necessary component of SE that does not interfere with social integration (Kregel & Unger, 1993). Rather, the SE model has been repeatedly found to be socially acceptable with participants and employers, and lead to higher levels of social integration in workplaces (Kregel & Unger, 1993).

Conclusion

In reviewing the research literature over the last four decades, it is clear that SE is an effective, cost-efficient intervention with international success. However, despite the overwhelming strength of evidence showing that individuals with even the most significant disabilities can achieve competitive employment outcomes through SE, the following question remains; why do the actual rates of employment for people with ID around the world remain so dismally low? (Wehman et al., 2018). While insufficient research exists to describe the specific barriers impacting this research-to-policy-to-practice gap, only speculations can be made to answer this question. With regard to SE, any disparity between research and reported practice outcomes are likely related to one primary factor—treatment fidelity.

The *quality* and *intensity* of intervention provided throughout the four stages of the SE process are imperative. Throughout the SE research, the need for competent, well-trained employment specialists are highlighted repeatedly within each phase of implementation (e.g., Brooke et al., 1995; Nietupski et al., 1993; Wehman et al., 2018). Likewise, studies have shown that the intensity of evidence-based systematic instruction is necessary for promoting the

improved outcomes shown in the literature. However, while policy has authorized the use of SE as a means of providing employment services to individuals with ID, there is no evidence of comprehensive policy efforts to encourage and incentivize the quality and intensity of service delivery that the SE research states is so integral to its success.

Thus, as we reflect on the body of SE knowledge from the last half century, the hurdles that remain are related not to further articulating the efficacy of SE in controlled research settings, but in establishing *policies* that incentivize the robust use of SE for individuals whose disabilities require the most support in finding employment, *policies* that identify and elevate the organizations and practices that show exceptional outcomes, and *policies* that disseminate that exceptionality to other organizations through systematic training to a broad alliance of support. While there remains much to be done to achieve the full employment of people with ID internationally, it will be accomplished through policy change that fosters and encourages research-validated recommendations.

References

- Anderson, K. H., Burkhauser, R. V., & Raymond, J. E. (1993). The Effect of Creaming on Placement Rates Under the Job Training Partnership Act. *Industrial and Labor Relations Review*, 46(4), 613–624.
- Bates, P.E. (1986). Competitive employment in southern Illinois. In Rusch, F. R. (1986). *Competitive employment issues and strategies*. Brookes. 51-63.
- Berg, W. K., Flynn, T. H., & Wacker, D. P. (1997). Using hypothesis testing and generalization training to promote maintenance of supported work placements. *Journal of Vocational Rehabilitation*, 8(1), 35-42.
- Brooke, V., Brooke, A. M., Schall, C., Wehman, P., McDonough, J., Thompson, K., & Smith, J. (2018). Employees with Autism Spectrum Disorder Achieving Long-Term Employment Success: A Retrospective Review of Employment Retention and Intervention. *Research and Practice for Persons with Severe Disabilities*, 13.
- Brooke, V., Wehman, P., Inge, K., & Parent, W. (1995). Toward a customer-driven approach of supported employment. *Education and Training in Mental Retardation and Developmental Disabilities*, 308-320.
- Butterworth, J., Fesko, S. L., & Ma, V. (2000). Because it was the right thing to do: Changeover from facility based services to community employment. *Journal of Vocational Rehabilitation*, 14(1), 23-35.
- Cimera, R. E. (2000). The cost-efficiency of supported employment programs: A literature review. *Journal of Vocational Rehabilitation*, 14(1), 51-61.

- Dalton, B. A., Test, D. W., Dotson, N. R., & Beroth, T. (1995). A profile of supported employees receiving long-term support services in North Carolina. *Journal of Vocational Rehabilitation, 5*(3), 195-204.
- Dean, J. A., Slovic, R., & Mank, D. (1995). Changes are needed in traditional systems and roles if supported employment is to survive. *Journal of Vocational Rehabilitation, 5*(3), 263-266.
- Eggleton, I., Robertson, S., Ryan, J., & Kober, R. (1999). The impact of employment on the quality of life of people with an intellectual disability. *Journal of Vocational Rehabilitation, 13*(2), 95-107.
- Flynn, T., Wacker, D., Berg, W., Green, K., & Hurd, R. (1991). Long-term job retention of workers placed in supported employment. *Journal of Vocational Rehabilitation, 1*(1), 25-34.
- Griffin, S. L., Test, D. W., Dalton, B. A., & Wood, W. M. (1995). Long-term supports and services: Toward definition, clarification, and implications for the future. *Journal of Vocational Rehabilitation, 5*(3), 177-185.
- Hill, M., Wehman, P., Kregel, J., Banks, P. D., & Metzler, H. (1987). Employment outcomes for people with moderate and severe disabilities: An eight-year longitudinal analysis of supported competitive employment. *Journal of Association for Persons with Severe Handicaps, 12*(3), 182-189.
- Inge, K., Banks, P., Wehman, P., Hill, J., & Shafer, M. (1988). Quality of Life for Individuals Who Are Labeled Mentally Retarded: Evaluating Competitive Employment Versus Sheltered Workshop Employment. *Education and Training in Mental Retardation, 23*(2), 97-104.

- Kregel, J. (1995). Personal and functional characteristics of supported employment participants with severe mental retardation. *Journal of Vocational Rehabilitation*, 5(3), 221-231.
- Kregel, J., Hill, M. H., & Banks, P. D. (1988). Analysis of employment specialist intervention time in supported competitive employment. *American Journal on Mental Retardation*, 93(2), 200–208.
- Kregel, J., Wehman, P., & Banks, D. (1989). Effects of consumer characteristics and type of employment model of individual outcomes in supported employment. *Journal of Applied Behavior Analysis*, 22, 407-415.
- Kregel, J., Wehman, P., Revell, G., Hill, J., & Cimera, R. (2000). Supported employment benefit-cost analysis: preliminary findings. *Journal of Vocational Rehabilitation*, 14(3), 153-161.
- Lagomarcino, T.R. (1986). Community services: Using the supported work model within an adult service agency. In Rusch, F. R. (1986). *Competitive employment issues and strategies*. Brookes. 65-75.
- Lynch, C. S., & Noonan Walsh, P. (1996). Local beginnings—global impact: the OPEN ROAD project. *Journal of Vocational Rehabilitation*, 6(1), 89-95.
- Mank, D., Q'Neill, C. T., & Jensen, R. (1998). Quality in supported employment: A new demonstration of the capabilities of people with severe disabilities. *Journal of Vocational Rehabilitation*, 11(1), 83-95.
- Moss, J.W., Dineen, J., & Ford, L.H. (1986) *University of Washington employment training program*. In Rusch, F. R. (1986). *Competitive employment issues and strategies*. Brookes. 77-85.

- Nietupski, J., Murray, J., Chappelle, S., Strang, L., Steele, P., & Egli, J. (1993). Dispersed Heterogeneous Placement. *Journal of Vocational Rehabilitation*, 3(3), 43-52.
- O'Brien, J., & Callahan, M. (2010). Employment Support as Knowledge Creation. *Research and Practice for Persons with Severe Disabilities*, 35(1-2), 31-38.
- Parent, W. (1996). Consumer choice and satisfaction in supported employment. *Journal of Vocational Rehabilitation*, 6(1), 23-30.
- Park, H. S., Simon, M., Tappe, P., Wozniak, T., Johnson, B., & Gaylord-Ross, R. (1991). Effects of a coworker advocacy program and social skills training on the social interaction of employees with mild disabilities. *Journal of Vocational Rehabilitation*, 1(4), 73-90.
- Revell, G., Kregel, J., Wehman, P., Bond, G. R. (2000). Cost effectiveness of supported employment programs: What we need to do to improve outcomes. *Journal of Vocational Rehabilitation*, 14(3), 173-178.
- Revell, W.G., Wehman, P., Kregel, J., West, M., & Rayfield, R. (1994). Supported employment for persons with severe disabilities: Positive trends in wages, models and funding. *Education and Training in Mental Retardation and Developmental Disabilities*, 29(4), 256-264.
- Riddell, S., Wilson, A., & Baron, S. (1999). Supported employment in Scotland: theory and practice. *Journal of Vocational Rehabilitation*, 12(3), 181-194.
- Rusch, F. R. (1986). *Competitive employment issues and strategies*. Brookes.
- Rusch, F. R., & Minch, K. E. (1988). Identification of co-worker involvement in supported employment: A review and analysis. *Research in Developmental Disabilities*, 9(3), 247-254.

- Shafer, M. S., Revell, W. G., & Isbister, F. (1991). The National Supported Employment Initiative. *Journal of vocational Rehabilitation*, 1(1), 9-17.
- Shafer, M. S., Revell Jr, R. G., Kregel, J., Wehman, P., & West, M. (1991). Systems Change Efforts and Supported Employment: National Strategies and Outcomes. *Journal of Disability Policy Studies*, 2(1), 75-96.
- Storey, K., & Garff, J. T. (1997). The cumulative effect of natural support strategies and social skills instruction on the integration of a worker in supported employment. *Journal of Vocational Rehabilitation*, 9(2), 143-152.
- Taylor, J. P., Whittenburg, H. N., Thoma, C. A., Gokita, T., & Pickover, G. S. (2019). Collaboration to Improve Employment Outcomes for Youth with Disabilities: Implications of the Pre-ETS Components of WIOA on IDEA Transition Requirements. *Division on Autism and Developmental Disabilities Online Journal*, 6(1), 38–47.
- Test, D. W., & Wood, W. M. (1996). Natural Supports in the Workplace: The Jury is Still Out: *Journal of the Association for Persons with Severe Handicaps*.
- Verdugo, M. A., Borja Jordan de Urries, F., Bellver, F., & Martínez, S. (1998). Supported employment in Spain. *Journal of Vocational Rehabilitation*, 11(3), 223-232.
- Vogelsberg, R.T. (1986). *Competitive employment in Vermont*. In Rusch, F. R. (1986). *Competitive employment issues and strategies*. Brookes. 35-49.
- Wehman, P. (1986). *Competitive employment in Virginia*. In Rusch, F. R. (1986). *Competitive employment issues and strategies*. Brookes. 23-33.
- Wehman, P., Brooke, V., Brooke, A. M., Ham, W., Schall, C., McDonough, J., Lau, S., Seward, H., & Avellone, L. (2016). Employment for adults with autism spectrum disorders: A

- retrospective review of a customized employment approach. *Research in Developmental Disabilities*, 53–54, 61–72.
- Wehman, P., Gibson, K., Brooke, V., & Unger, D. (1998). Transition from school to competitive employment: Illustrations of competence for two young women with severe mental retardation. *Focus on Autism and Other Developmental Disabilities*, 13(3), 130-143.
- Wehman, P., Hill, M., Goodall, P., Cleveland, P., Brooke, V., & Pentecost, J. (1982). Job placement and follow-up of moderately and severely handicapped individuals into competitive employment. *Journal of the Association for Severely handicapped*, 7, 5-16.
- Wehman, P., Hill, J., & Koehler, F. (1979). Placement of developmentally disabled individuals into competitive employment: Three case studies. *Education and Training of the Mentally Retarded*, 14(2).
- Wehman, P. & Kregel, J. (1988). Supported competitive employment for individuals with autism and severe retardation: Two case studies. *Focus on Autistic Behavior*, 3(3), 1-13.
- Wehman, P., & Kregel, J. (1990). Supported employment for persons with severe and profound mental retardation: A critical analysis. *International Journal of Rehabilitation Research*, 13(2), 93-108
- Wehman, P., Parent, W., Wood, W., Talbert, C. M., Jasper, C., Miller, S., Walker, R. (1989). From school to competitive employment for young adults with mental retardation: Transition in practice. *Career Development for Exceptional Individuals*, 12(2), 92-105.
- Wehman, P. & Revell, W. G. (1996). Supported employment from 1986-1993: A national program that works. *Focus on Autism and Other Developmental Disabilities*, 11(4), 235-242.

- Wehman, P., Targett, P., Eltzeroth, H., Green, H. Brooke, V., & Barcus, J. M. (1999). Development of business supports for persons with mental retardation in the workplace. *Journal of Vocational Rehabilitation*, 13 (3), 175-181.
- West, M. D., Kregel, J., Hernandez, A., & Hock, T. (1997). Everybody's doing it: A national study of the use of natural supports in supported employment. *Focus on Autism and Other Developmental Disabilities*, 12(3), 175-181.
- West, M. D., Rayfield, R. G., Clements, C., Unger, D., & Thornton, T. (1994). An Illustration of Positive Behavioral Support in the Workplace for Individuals with Severe Mental Retardation. *Journal of Vocational Rehabilitation*, 4(4), 265-271.
- West, M., Revell, G., Kregel, J., & Bricout, J. (1999). The Medicaid home and community-based waiver and supported employment. *American Journal on Mental Retardation*, 104(1), 78-87.
- West, M., Revell, G., Wehman, P. (1992). Achievements and Challenges I: A five-year report on consumer and system outcomes from the supported employment initiative. *Journal of Association for Persons with Severe Handicaps*, 17(24), 227-235.

APPENDIX

Table 1

Annotated Analysis of Key Studies and their Findings

Citation/ Country	Study Design	Participants & <i>n</i>	Independent Variable	Intervention Component(s)	Pre-training	DV & Outcomes
Bates (1986) USA	Demonstration	13 individuals with moderate to severe ID and autism	Project EARN	Early career awareness, pre-vocational training based on local assessment, job development, and job placement	“Longitudinal” pre-training beginning with career awareness in elementary school, followed by vocational training based on local community assessment of needs	<ul style="list-style-type: none"> • 100% were employed in the community • Average annual wages was \$1,000 (1986 USD)
Flynn et al. (1991) USA	Case study	35 adults with DD	Supported employment	Job development, job coaching, and ongoing supports	None	<ul style="list-style-type: none"> • 25 of 35 (71%) placed in community-integrated positions • 17 of 35 (49%) placed in individually-supported competitive employment • Of those in community integrated positions, 8 consumers worked 30-40 hours per week and 9 worked 2-20 hours per week

Kregel (1995) USA	Supported Employment Information Systems (SEIS) database	Data from 161 individuals with severe ID employed through supported employment services for at least 12 months (compared to individuals meeting the same criteria except having moderate ID).	Local community-based supported employment programs	Individual placement model and group models (enclaves and work crews) Assessment, job development, supervisor evaluations, and job-site training	None	<ul style="list-style-type: none"> • Individuals with severe ID benefited from supported employment services; no difference between the groups regarding vocational integration or employment retention • Most individuals with severe ID were served through the individual placement model • Individuals with severe ID earned only slightly less (5%) than those with moderate ID and required more intervention hours in the first 12 months of employment.
Kregel et al. (1989) USA	Demonstration	1,150 individuals with a variety of disabilities (including ID and DD) in supported employment through 96 community programs	Supported employment services through community programs	<p>Four models categorized by individual vs group.</p> <p>Individual placement: individualized process, job site training, fading of supports, installation of on-going support</p> <p>Enclave/ Work crew/ Small business: All provided group services to individuals in a community based location.</p>	None	<ul style="list-style-type: none"> • Individual placement model produced superior outcomes to other models • Those in the individual placement model (compared to enclave, work crew or small business) earned the most. • Small business earned significantly lowest • Individuals with severe ID saw a 536% increase in wage, mild ID saw a 280% increase from prior to after participating in supported employment • Both the individual placement model and small business models provided

						significantly higher amounts of opportunities for social and physical integration compared to enclave and work crews.
Kregel et al. (2000) USA	Cost-benefit analysis	50 U.S. states, the District of Columbia, Puerto Rico, and the U.S. Virgin Islands	Supported employment service costs	Overall costs included: 1) direct personnel services; 2) Administrative personnel services; 3) Non-personnel admin; 4) Occupancy; 5) Staff transportation; 6) Consumer transportation	None	<ul style="list-style-type: none"> Large state-level discrepancies in cost per closure (i.e., successful supported employment placement) from \$828 (2000 USD) in Wyoming to \$27,975 (2000 USD) in the U.S. Virgin Islands with a median closure cost of \$4,000 (2000 USD)
Lagomarcino (1986) USA	Demonstration	134 participants with mainly ID (74% ID) 15% mental illness; 6% learning disability; 2% visual impairment; 1% cerebral palsy; 2% other)	Supported Work Model	Surveying potential employers to determine important skills, training individuals to perform those skills, placing clients in competitive employment positions, and providing long-term supports	Participants trained on social and vocational skills identified by community employers as critical.	<ul style="list-style-type: none"> 108 of 134 (81%) participants placed in jobs in the community Program graduates worked primarily in food service Worked from 5 to 40 hours per week (majority averaged 20-25 per week) Earned from minimum wage to \$7.00 (1986 USD) per hour
Lynch et al. (1996)	Program evaluation data	36 participants with a mean	OPEN ROAD	Supported employment program; Job	None	<ul style="list-style-type: none"> 24 of 36 secured competitive employment

Ireland		age of 29 who participated in OPEN ROAD	supported employment program through a community based service provider agency	placement, job matching, job site training, fading of job coaches		<ul style="list-style-type: none"> • Those employed tended to be younger and male • Increases in daily living skills were observed (via Vineland Adaptive Behavior scale) for those employed • Industry ranged from assembly, canteen, accounts dept., horticulture, library, restaurant, coffee shop, financial dept., airport store, paint manufacturer, etc. • Hours ranged widely and up to 15 per week (lowest was 2 hours).
Mank et al. (1998)	Interview/ Record Review	34 individuals were interviewed about employment outcomes for 55 individuals with a variety of disabilities in supported employment (85% with ID)	Supported employment provided by county developmental disability division	Job development of government jobs performed by independent contractors, individualized job matches, co-worker participation as a support, connection to long-terms support agencies	None	<ul style="list-style-type: none"> • A total of 55 individuals secured jobs in the public sector • Jobs spread across 15 different government departments with 16 different job titles (e.g., receptionist, data entry, lab assistant, mail clerk, etc.) • Average hours per week was 30.6 • Average hourly wage was US \$8.93 • Months on job ranged from 1 to 96 with an average of 32 months • 50 of the 55 individuals received raises
USA		Records from the county developmental disabilities program were also reviewed.				

Moss et al. (1986)	Demonstration	Individuals (aged in their 20s) with ID	Employment Training Program (ETP)	In house training, job development with job matching, job-site training, ongoing support	“In house pre-employment training at a university cafeteria” until set criterion for speed, quality and independence was achieved	<ul style="list-style-type: none"> • 66% of ETP graduates achieved competitive employment • 46% of all those completing ETP in 1975 were still employed in 1984. • Mean of 26 hours per week (range of 6-40).
USA		Total number not provided.				
Nietupski et al. (1993)	Case study	8 individuals with mild to severe ID; severe/profound disabilities	Dispersed heterogeneous placement model	Assessment of consumer skills, interests, and needs, job development, place then train	None	<ul style="list-style-type: none"> • 100% job placement in integrated positions paid at subminimum wages • 50% job retention
USA						
Park et al. (1991)	Case study	8 youth with mild ID	Social skills training program	Skills selected during training were based on social validity assessment of supervisors, co-workers, and researchers	None	<ul style="list-style-type: none"> • Social skills training increased social interaction between participants and co-workers, as well as initiation and duration of exchanges
USA						
Revell et al. (1994)	National survey of state/territory vocational rehabilitation agencies in	42 representatives from vocational rehabilitation agencies across	Supported employment services through vocational rehabilitation	Supported employment services via different models; individual placement model, enclave, work crews, small business, and	None	<ul style="list-style-type: none"> • A total of 74,960 individuals participated in supported employment in 1991. • More than half of participants had an ID diagnosis (62.8%) with 30.4% meeting moderate ID and 8.7%
USA						

	1991	the U.S.	n	other		meeting severe ID diagnostic criteria <ul style="list-style-type: none"> • Individual placement model used most often (79.7%) • Mean wage of \$4.45 (1994 USD; above US federal minimum wage)
Riddell & Wilson (1999)	Case study	3 adults with ID	Supported employment	Job development, on-the-job training using systematic instruction and use of natural supports	None	<ul style="list-style-type: none"> • All 3 participants were competitively employed in integrated workplaces but dissatisfied with hours and working conditions
Scotland						
Shafer, Revell, & Isbister (1991)	National 3-year Longitudinal Survey	51 State Vocational Rehabilitation agencies (all 50 states plus District of Columbia) surveyed for information from Fiscal Years 1986, 1987, and 1988	Supported employment through vocational re-habilitation	Supported employment services via different models; individual placement model, enclave, mobile work crew, and entrepreneurial	None	<ul style="list-style-type: none"> • 226% increase in provision of supported employment from 1986 to 1988. • By 1998, a total of 32,342 individuals were participating in supported employment • More than 70% had an ID diagnosis • Individual placement model was commonly used (52.1%) and was associated with the higher earnings. • Data for hours was available for 31,319 supported employment participants; 76% were working more than 20 hours per week and 51.3% worked more than 30 hours per week. • Average hourly wage was \$3.90 (1991 USD)
USA						
Storey & Garff (1997)	Case study	27-year-old woman with a developmental disability	Natural supports	Three intervention phases: 1) taught skill to co-worker and co-worker taught to	None	<ul style="list-style-type: none"> • Initial use of natural supports did not result in a significant increase in social engagement with co-workers • Following direct instruction in social

USA				participant; 2) co-worker provided encouragement; 3) taught social interaction skills to participant		interaction, social engagement increased significantly
Verdugo et al. (1998)	Reported information from service provider agencies contacted by researchers	32 public and private companies providing supported employment services were contacted	Supported employment provided through national initiatives	Supported employment approach: Job development, job site training, ongoing support	None	<ul style="list-style-type: none"> • A total of 24 supported employment programs were in operation in Spain by 1995 • Over 795 jobs fully integrated and competitive jobs secured through supported employment • Most of those securing employment had cognitive disabilities (81%) • 91% of job placement were successful • Jobs secured in 15 different industries
Wehman (1986)	Demonstration	145 individuals with mean intelligence of 48	Supported employment approach	Job Development, job-site training, on-going assessment, ongoing support procedures	None	<ul style="list-style-type: none"> • 145 individuals were placed into 206 competitive employment positions between 1978 and 1983 • Average job retention was 15.5 months • Cumulative amount earned by participants was \$928,882 (1986 USD) with a cumulative tax contribution of \$213,642 (1986 USD)
Wehman, Hill, &	Case study	3 individuals (two with	Project Employ-	Job development, job placement, on-the-job	None	<ul style="list-style-type: none"> • 100% of participants secured integrated employment with

Koehler (1979)		severe ID; one with multiple disabilities)	ability	training		competitive wages <ul style="list-style-type: none"> • 2 participants earned full benefits
USA						
Wehman et al. (1998)	Case study	2 women with severe ID	Customer- driven supported employment	Service provider selection, customer profile, job development, job placement, on-the-job training, long-term support	None	<ul style="list-style-type: none"> • Both individuals competitively employment • Job stability with gradually faded long-term support
USA						
Wehman & Kregel (1988)	Case study	Two adult males with severe ID and autism	Supported competitive employment	Job development, job placement, job-site training, assessment, and long-term job retention support	None	<ul style="list-style-type: none"> • Both individuals competitively employment • Wages: \$4.00-4.80 per hour (1988 USD) • Hours: 20-32 hours per week
USA						
Wehman & Kregel (1990)	Data from 90 community programs across the U.S.	109 individuals with severe ID	Supported employment	Job development, on- the-job training and ongoing-support for job retention	None	<ul style="list-style-type: none"> • 93% were employed earning competitive wages • 81.5% were still employed after 12 months • Individual support model used most often • Average hours per week was 22 • Demonstrated that even those with the most significant disabilities could work through supported employment services
USA						
Wehman et al.	Program data collected	34 transition- age students;	Supported employment	Job placement, job site training, on-going	None	<ul style="list-style-type: none"> • All 34 individuals were employed through supported employment

(1989) USA	between 1984 and 1986	youth and young adults with ID between 17 and 22 who secured competitive employment through supported employment		support once placed		<p>without any prior work or earnings.</p> <ul style="list-style-type: none"> • 39 placements were made across 34 participants • Most students were part-time; All students who wanted to work over 20 hours were able to (some wanted to work less because they wanted to also remain in school until their age cut off • Cumulative groups earnings for all 34 participants was \$101,000 (USD) • Cost-benefit; participants in supported employment who previously earned nothing now earned 67 cents for every public US dollar spent
Wehman & Revell (1996) USA	National survey of 54 U.S. states/ territories	Supported Employment participants with disabilities (majority ID across years) between 1986 and 1993 Number varies: 1986 = 9,882 1987 = 17,915 1988 = 32,360 1989 = 52,023	Supported employment through vocational rehabilitatio n	individualized process, job site training, fading of supports, installation of on-going support	None	<ul style="list-style-type: none"> • Over 100,000 individuals were participating in supported employment by 1993 • Number of average hours worked steadily increased during the time period with a mean of 22.53 hours by 1993 • Mean wage was US \$4.53 which was above the federal minimum (\$4.25) in 1993 • Individualized Placement Model used most often (79%) by 1993

1990 = 74,657
 1991 = 90,375
 1992 =
 105,381

West et al. (1994) USA	Case study	41-year-old male with severe ID	Positive behavior support	Intervention program included differential reinforcement of low rates of behavior, prompting, and co- worker supports	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • Participant's most job-threatening behavior was diminished • Co-workers reported high levels of satisfaction with participant work behavior
----------------------------------	------------	---------------------------------------	---------------------------------	--	--	--

Programme	DES-ESS
State	(All)
LMR Name	(All)
Specialisation	(All)
Disability Type	Intellectual

Row Labels	Sum of Job Placement Count (Got a Job)	Sum of JP Denominator (Started)	Placement (%)	Sum of 13 Week Outcome Count (Job lasting at least 13 weeks)	Sum of 13 Wk Denominator (Assisted for at least 13 weeks)	13 Week Outcome	Sum of 26 Week Outcome Count (Job lasting at least 26 weeks)	Sum of 26 Wk Denominator (Assisted for at least 26 weeks)	26 Week Outcome	Sum of 52 Week Indicator Count Disability	52 week sustainability (%)	52 week Indicative 52 week (%)	Average of Percentage of Caseload
Jobsupport Incorporated	741	892	83.1%	702	819	85.7%	659	762	86.5%	327	404	80.9%	97.7
Working Communities Network (Consortium)	131	317	41.3%	101	243	41.6%	91	212	42.9%	22	29	75.9%	3.5
Barkuma Employment	107	254	42.1%	87	217	40.1%	84	179	46.9%	56	79	70.9%	50.3
EDGE Employment Solutions	220	502	43.8%	194	459	42.3%	164	396	41.4%	75	112	67.0%	17.7
Myhorizon	68	178	38.2%	68	157	43.3%	60	131	45.8%	29	45	64.4%	13.4
IDEAL Placements Assoc Inc	65	163	39.9%	52	119	43.7%	40	105	38.1%	21	33	63.6%	8.0
Bizlink Incorporated	108	216	50.0%	89	177	50.3%	78	144	54.2%	44	70	62.9%	12.7
Connect2 Employment	62	179	34.6%	50	150	33.3%	55	142	38.7%	36	59	61.0%	44.6
Mai-Wel LabourForce Solutions	92	182	50.5%	82	162	50.6%	71	129	55.0%	25	42	59.5%	7.1
Uniting (Victoria and Tasmania) Limited	146	282	51.8%	125	227	55.1%	112	191	58.6%	59	101	58.4%	5.8
Ability Options Limited	357	682	52.3%	286	523	54.7%	254	442	57.5%	111	191	58.1%	6.9
Multiple Solutions	36	138	26.1%	30	117	25.6%	31	94	33.0%	22	38	57.9%	4.2
Epic Employment Service Inc	539	1482	36.4%	710	1256	56.5%	596	1066	55.9%	297	515	57.7%	22.9
Comepass Employment Services	126	402	31.3%	188	340	55.3%	163	304	53.6%	75	134	56.0%	15.7
Options Employment	79	227	34.8%	57	192	29.7%	50	155	32.3%	20	36	55.6%	12.2
NOVA Employment	1137	1676	67.8%	944	1504	62.8%	816	1369	59.6%	347	626	55.4%	11.8
Job Prospects	85	225	37.8%	62	140	44.3%	51	118	43.2%	31	59	52.5%	9.2
Job Centre Australia Limited	368	839	43.9%	313	667	46.9%	271	566	47.9%	65	125	52.0%	6.8
STEPS Group Australia Ltd	237	531	44.6%	195	440	44.3%	164	365	44.9%	51	99	51.5%	5.9
ECHO Australia Inc	133	289	46.0%	110	224	49.1%	92	195	47.2%	36	70	51.4%	4.3
The Personnel Group Ltd	170	360	47.2%	150	307	48.9%	125	269	46.5%	39	78	50.0%	3.8
Outlook Employment	60	173	34.7%	56	125	44.8%	44	117	37.6%	20	40	50.0%	9.6
MatchWorks	332	870	38.2%	293	658	44.5%	257	612	42.0%	81	162	50.0%	4.2
Cerebral Palsy League of Queensland	546	1285	42.5%	454	1051	43.2%	384	908	42.3%	162	326	49.7%	9.9
Jobmatch Employment	106	225	47.1%	89	179	49.7%	70	139	50.4%	27	55	49.1%	9.2
Key Employment Association	128	410	31.2%	155	351	44.2%	136	308	44.2%	35	72	48.6%	4.8
CoAct	524	1390	37.7%	423	1039	40.7%	328	833	39.4%	117	246	47.6%	9.8
Advanced Personnel Management (APM)	348	918	37.9%	275	625	44.0%	234	511	45.8%	34	73	46.6%	4.4
Gold Coast Employment Support Service Inc	120	267	44.9%	112	200	56.0%	87	152	57.2%	33	71	46.5%	19.5
Forrest Personnel Ltd	187	484	38.6%	163	376	43.4%	121	247	49.0%	43	93	46.2%	9.1
Axis Employment	349	615	56.7%	299	506	59.1%	262	416	63.0%	99	216	45.8%	10.5
Castle Personnel Services Ltd	329	774	42.5%	280	639	43.8%	243	530	45.8%	89	197	45.2%	3.8
DVJS Employment Solutions	333	560	59.5%	283	465	60.9%	250	381	65.6%	81	183	44.3%	8.8
UnitingCare Community	99	183	54.1%	77	163	47.2%	63	136	46.3%	25	57	43.9%	12.0
MAX Employment	637	1629	39.1%	471	1216	38.7%	351	901	39.0%	221	526	42.0%	4.8
WISE Employment Ltd	525	1328	39.5%	425	1047	40.6%	335	885	37.9%	122	294	41.5%	4.1
CatholicCare	194	417	46.5%	140	338	41.4%	118	307	38.4%	50	121	41.3%	2.6
AFFORD Employment	146	235	62.1%	106	198	53.5%	86	172	50.0%	45	110	40.9%	7.8
WDEA Works	216	443	48.8%	221	350	63.1%	187	308	60.7%	55	137	40.1%	5.5
Community Bridging Services (CBS) Inc.	186	450	41.3%	152	364	41.8%	119	313	38.0%	21	53	39.6%	5.7
HELP ENTERPRISES LIMITED	151	401	37.7%	126	320	39.4%	92	267	34.5%	35	95	36.8%	5.5
Work Solutions Gippsland Pty Ltd	202	422	47.9%	161	320	50.3%	134	288	46.5%	36	98	36.7%	5.3
The ORS Group	272	600	45.3%	174	401	43.4%	150	364	41.2%	65	177	36.7%	4.1
Global Skills	97	306	31.7%	81	216	37.5%	62	179	34.6%	32	90	35.6%	2.0
The Bridge Employment (Victoria)	37	93	39.8%	25	77	32.5%							4.8
Sign For Work													0.9
Great Southern Personnel	39	103	37.9%	35	80	43.8%	31	68	45.6%				8.6
Darwin Skills Development Scheme	68	137	49.6%	53	108	49.1%	41	81	50.6%				11.2
St Laurence Community Services Inc.	74	164	45.1%	64	144	44.4%	46	122	37.7%				3.5
Kimberley Personnel Inc													10.9
Jobs Statewide Employment Solutions													2.6
LEAD - Live, Experience, Access and Develop.	40	64	62.5%	44	61	72.1%	40	56	71.4%				34.4

[illegible]