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

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Research Team

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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 on-going 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 on-going 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 from 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 positons 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 though SE, the following question remains; why the 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.

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APPENDIX

Table 1

Annotated Analysis of Key Studies and their Findings

Citation/ Country	Study Design	Participants & *n*	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	• 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	• 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	• 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 though community programs	Four models categorized by individual vs group. Individual placement: individualized process, job site training, fading of supports, installation of on-going support Enclave/ Work crew/ Small business: All provided group services to individuals in a community based location.	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	• 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)
Lagomarc-ino (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.	• 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	• 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		• 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) USA	Interview/ Record Review	34 individuals were interviewed about employment outcomes for 55 individuals with a variety of disabilities in supported employment (85% with ID) Records from the county developmental disabilities program were also reviewed.	Supported employment provided by county develop-mental 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	• 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

Moss et al. (1986) USA	Demonstration	Individuals (aged in their 20s) with ID Total number not provided.	Employ-ment 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	• 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).
Nietupski et al. (1993) USA	Case study	8 individuals with mild to severe ID; severe/ profound disabilities	Dispersed hetero-genous placement model	Assessment of consumer skills, interests, and needs, job development, place then train	None	• 100% job placement in integrated positions paid at subminimum wages • 50% job retention
Park et al. (1991) USA	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	• Social skills training increased social interaction between participants and co-workers, as well as initiation and duration of exchanges
Revell et al. (1994) USA	National survey of state/territory vocational rehabilitation agencies in	42 representatives from vocational rehabilitation agencies across	Supported employment services through vocational rehabilitatio	Supported employment services via different models; individual placement model, enclave, work crews, small business, and	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%

	1991	the U.S.	n	other		meeting severe ID diagnostic criteria • Individual placement model used most often (79.7%) • Mean wage of $4.45 (1994 USD; above US federal minimum wage)
Riddell & Wilson (1999) Scotland	Case study	3 adults with ID	Supported employment	Job development, on-the-job training using systematic instruction and use of natural supports	None	• All 3 participants were competitively employed in integrated workplaces but dissatisfied with hours and working conditions
Shafer, Revell, & Isbister (1991) USA	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	• 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)
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	• 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) Spain	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	• 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) USA	Demonstration	145 individuals with mean intelligence of 48	Supported employment approach	Job Development, job-site training, on-going assessment, ongoing support procedures	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	• 100% of participants secured integrated employment with

Koehler (1979) USA		severe ID; one with multiple disabilities)	ability	training		competitive wages • 2 participants earned full benefits
Wehman et al. (1998) USA	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	• Both individuals competitively employment • Job stability with gradually faded long-term support
Wehman & Kregel (1988) USA	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	• Both individuals competitively employment • Wages: $4.00-4.80 per hour (1988 USD) • Hours: 20-32 hours per week
Wehman & Kregel (1990) USA	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	• 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
Wehman et al.	Program data collected	34 transition-age students;	Supported employment	Job placement, job site training, on-going	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		without any prior work or earnings. • 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	• 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	• None	• Participant's most job-threatening behavior was diminished • Co-workers reported high levels of satisfaction with participant work behavior