

Topical Manuscript

# A Scoping Review on Internship Programs and Employment Outcomes for Youth and Young Adults With Intellectual and Developmental Disabilities

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Keywords: internships, employment, intellectual and developmental disabilities, scoping review, work-based learning

<https://doi.org/10.52017/001c.38785>

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## Rehabilitation Counselors and Educators Journal

Vol. 12, Issue 1, 2023

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Transition policy in the United States has endorsed work-based learning experiences, including internships, for students with intellectual and developmental disabilities (IDD) in order to combat poor rates of post-school employment. Workforce Innovation and Opportunity Act (WIOA) state plans have reported use of internships as a way to provide Pre-Employment Transition Services (Pre-ETS). Internships are complex programs that vary in terms of length, payment, funding, and collaborative partnerships, and are intended to provide an educational experience for students to develop vocational skills. The purpose of this scoping review was to examine the impact of internship participation on employment for youth and young adults (aged 16 to late 20s) with IDD. Systematic searches of electronic databases containing peer-reviewed sources were conducted. Nineteen articles were included in the final sample. Findings identified specific internship programs that have been examined within the peer-reviewed literature base, the level of evidence each provides concerning the impact on employment outcomes, and pertinent internship characteristics observed across studies. Implications for future research and practice are discussed.

One of the first major milestones for young adults exiting secondary school is the acquisition of employment. There are several benefits associated with work for individuals with intellectual and developmental disabilities (IDD), including financial independence, community inclusion, opportunities for socialization, and a sense of identity (Akkerman et al., 2016; Saunders & Nedelec, 2014). Despite these outcomes, the prospect of securing competitive integrated employment (CIE) remains unattainable for many individuals with IDD. According to a recent national report, only 20.3% of those receiving support through state IDD agencies in 2017 were in integrated employment settings (Winsor et al., 2019). Other estimates of employment are similarly low, with only 14.7% of adults with IDD in paid community work (Butterworth et al., 2015) and 18% competitively employed among a representative U.S. sample (Siperstein et al., 2013). Those who do not secure CIE often end up in segregated work facilities earning substantially low wages (typically below minimum wage) or participating in non-work alternatives for no pay, such as volunteer work (Winsor et al., 2019).

Legislative efforts within the United States have attempted to improve transition services for students with

disabilities over the past three decades. Efforts have concentrated on increasing the use of evidence-based practices (EBP) in transition planning, expanding opportunities for applied work experience prior to school exit, and prioritizing CIE as the employment goal over segregated or non-work alternatives (Association for People Supporting Employment First [APSE], 2019; Cook et al., 2008). In 1990, the Individuals with Disabilities Education Act (IDEA) initiated the individual transition plan to help strategically guide students with disabilities to better post-school outcomes. Congress mandated this as a part of the student's individualized education program (IEP). More recent efforts include provisions mandated by the Workforce Innovation and Opportunity Act (WIOA) of 2014 that direct state vocational rehabilitation (VR) agencies to distribute at least 15% of funding toward Pre-Employment Transition Services (Pre-ETS) activities, such as work-based learning experiences, for transition-age youth with disabilities (Workforce Innovation Technical Assistance Center [WINTAC], 2016). Work-based learning experiences are implemented in integrated community business settings and include various educational activities like job shadowing, service learning, prac-

tica, informational interviewing, student-led enterprises, and both paid and unpaid internships (WINTAC, 2016).

## Work-Based Learning and Internships

Work-based learning opportunities for transition-age youth are important because numerous studies have demonstrated a positive relationship between work experience in high school and post-school employment. Among these, Wehman et al. (2015), Siperstein et al. (2014), and Carter et al. (2012) all found that community-based work during high school was a significant predictor of later employment for individuals with IDD and other disabilities. A significant finding from the 2015 National Autism Indicators Report revealed that nearly 90% of youth with autism spectrum disorder (ASD) who were employed in secondary school later secured paid work compared to only 40% of those who did not have a job in high school (Roux et al., 2015). In general, students with disabilities who are already employed before exiting high school are nearly 3.8 times more likely to be employed one year later (Rabren et al., 2002). Providing these opportunities early, specifically prior to school exit, is key because CIE outcomes are higher for individuals who participate in paid work experience prior to age 21 (Siperstein et al., 2014).

## Internships

Internships are a particular type of work-based learning experience for transition-age youth. The U.S. Department of Labor (2018) defines *internship* as a temporary position that includes the following characteristics: (a) job-site training, (b) paid or unpaid, (c) educational, (d) benefits the intern, (e) does not displace other employees, and (f) does not guarantee employment at the host business upon conclusion. Support for the positive impact of internships on post-school outcomes has been reported within the literature (Carter et al., 2011; Leahy et al., 2018; Rowe et al., 2021; Shandra & Hogan, 2008). Compared to other work-based learning activities (e.g., mentoring, cooperative education, job shadowing, school-sponsored enterprise, technical preparation, and majoring in a career), internship participation is linked to increased wages after exiting secondary school (Schall et al., 2015; Shandra & Hogan, 2008). Carter et al. (2011) found that students who had participated in internships, tech prep, or entrepreneurship had the highest likelihood of paid employment after high school compared to other transition-related activities (e.g., in-school work experience, pre-vocational activities, and employment IEP goals).

The transition-to-work internship model Project SEARCH was recently listed as one of nine evidence-based interventions emerging from the empirical literature as a special education practice for transition-age students with disabilities (Rowe et al., 2021). Findings from an expert consensus survey also established the Project SEARCH model as an evidence-based vocational rehabilitation practice according to a poll of nation-wide rehabilitation educators, counselors, and researchers (Leahy et al., 2018). Overall, these findings highlight several broad benefits of

internships on CIE outcomes. However, a variety of different internship models are implemented across the United States and little is known about how these models differ, for whom they are most effective, and the impact each has on different dimensions of employment (e.g., hours worked, wage, type of work).

## Current Review

To date, this research team could not locate any comprehensive systematic or scoping reviews on transition-to-work internships for students with IDD. As federal and state initiatives continue to promote and fund internships as a strategic transition activity, it is important to determine which specific internship models have been investigated within the peer-reviewed literature, how these models differ, what impact different internship models have on employment outcomes, and for whom the internship models are effective in terms of achieving CIE. To address this gap in research, the authors conducted a scoping review to broadly map the existing peer-reviewed literature on the impact of internship participation on employment outcomes for individuals with IDD. Scoping reviews offer a general synopsis of a topic that has not been previously systematically reviewed (Arksey & O'Malley, 2005). Thus, the purpose of this scoping review was to map the existing literature and add credence to the evidence base supporting the use of internships for transition to employment. The following research questions were developed to guide the review:

1. What level of evidence exists for the impact of internships on employment outcomes for individuals with IDD?
2. What specific internship characteristics are associated with employment outcomes for individuals with IDD?
3. Which groups of individuals with IDD can benefit more from internship participation in terms of employment outcomes?

## Method

A strict protocol was followed by using The Preferred Reporting Items for Systematic Reviews and Meta-Analyses for Scoping Reviews (PRISMA-ScR) framework developed by Tricco et al. (2018). This scoping review specifically examined peer-reviewed sources. Candidate articles were collected via the following empirical databases: *ERIC*, *Education Research Complete*, *PsychNET*, *Academic Search Complete*, *PubMed*, *CINHAL*, *Psychology and Behavioral Sciences Collection*, and *SocINDEX*. Ancestral searches of reference lists for studies included in the final sample were also performed. Articles published between 1990 and present were included to capture publications since IDEA (1990) first included provisions for transition-focused services. While this review focused on application to U.S. policy and practice, international sources were also included to ensure the most comprehensive collection of information regarding the efficacy of internships on employment for IDD was analyzed.

**Table 1. Search Terms**

Construct	Search terms
Population	"intellectual disab*" OR "developmental disab*" OR "mental retardation" OR "autis*" OR "autism spectrum disorder*" OR "asperger*" OR "ASD" OR "high functioning autis*"
Intervention	"Internship" OR "transition to work program" OR "practicum" OR "traineeship" OR "work-based learning" OR "mentorship" OR "paid work experience" OR "apprenticeship" OR "externship"
Outcome	"Employment" OR "work" OR "job" OR "competitive integrated employment"

## Inclusion/ Exclusion Criteria

Inclusion criteria was organized by population, intervention, and outcome. Specific search terms are provided in [Table 1](#). The target population was defined as youth and young adults with IDD. However, mixed samples (e.g., participants with severe disabilities including individuals with IDD) and individuals with IDD and co-occurring conditions were also included. Samples that included interns slightly older than the traditional transition age of 22 (i.e., individuals in their mid to late 20's) were also included. The term internship was defined using the criteria set forth by the U.S. Department of Labor (2018). In addition to describing internships for individuals with IDD, all articles in the final sample also reported information on employment outcomes (e.g., securing a job, hours worked, wage, or type of work).

Excluded articles were published before 1990, were non-English translated, did not include individuals with IDD, did not examine internships, or focused on other information pertaining to internships besides employment outcomes (e.g., employer satisfaction, program descriptions, collaboration recommendations, communication training). It should be noted that internships implemented within the context of postsecondary education programs for students with IDD were also excluded from this review. Examples of excluded internship programs comprised those embedded within programs such as Transition and Postsecondary Programs for Students with Intellectual Disability (TPSIDs) or Comprehensive Transition Programs (CTP) associated with college enrollment (Grigal & Papay, 2018). These programs occur within a complex educational framework that contain advanced training above what transition from secondary school-to-work programs provide and therefore are more appropriately analyzed as a separate construct.

## Procedure

The screening process consisted of multiple steps. First, candidate articles collected from peer-reviewed sources were organized in Zotero, a reference management software program where duplicate articles across databases were identified and removed. Next, two authors applied inclusion and exclusion criteria to candidate articles by reviewing titles and abstracts. Articles identified during the title/abstract review were then subject to a full-text review. Inter-observer agreement was calculated at or above 91% for both phases. Disagreement among included and excluded articles were then discussed until agreement was

achieved. [Figure 1](#) illustrates the screening process at each stage.

## Results

The final sample consisted of 19 peer-reviewed articles on internships and employment for individuals with IDD; because of the peer review required to complete a dissertation, they were included as peer-reviewed literature. Of these, four specific internship models were identified including Project SEARCH (PS), Project SEARCH plus ASD Support (PS+ASD), Marriott Bridges (Bridges), and Start on Success. The PS+ASD model is an extension of the traditional Project SEARCH model and includes specialized additive components for individuals with a diagnosis of ASD. It was thus determined to be conceptually different from the traditional Project SEARCH program, and these two models were therefore analyzed separately for the purpose of this review. A description of each of these models is presented in [Table 2](#) along with a list of the full sample of 19 articles under "level of evidence." Despite conducting an international search, nearly all articles in the final sample were from the United States ( $n = 18$ ) with one from the United Kingdom (i.e., Kaehne, 2016).

Internship models identified through database searches were coded for level of evidence. Research designs were ranked from highest to lowest in terms of methodological rigor. Each category is considered more methodologically robust than those on a lower tier creating levels of evidence for an intervention from highest to lowest quality (Concato et al., 2000). Methodologies with higher rigor produce stronger levels of evidence for the effectiveness of a particular intervention. The framework set forth Odom et al. (2005), based on guidelines established by the Oxford Centre for Evidence-Based Medicine, was used to assign levels of evidence presented in [Table 2](#):

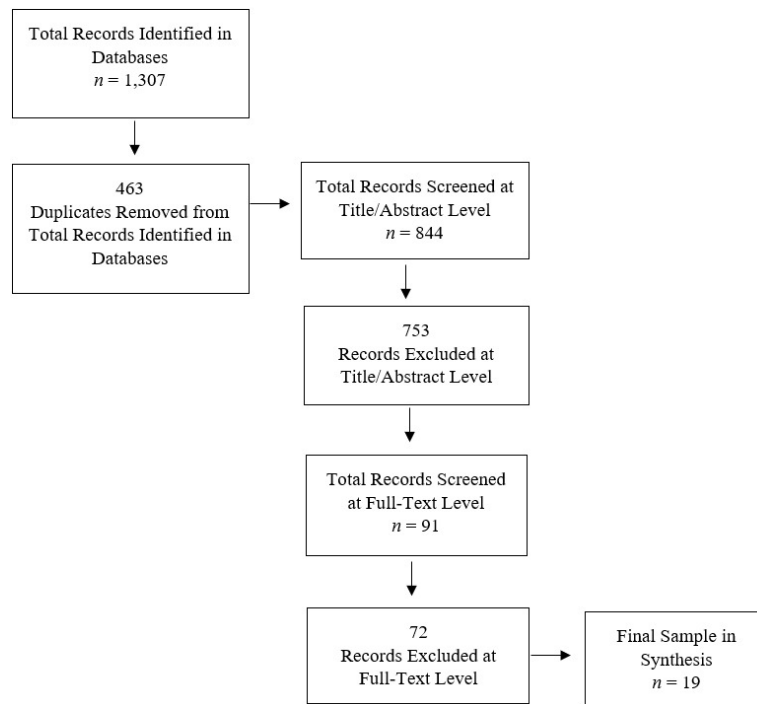
- (a) Level I – meta-analysis and randomized control trials (RCT)
- (b) Level II – quasi-experimental, pre-experimental, and non-randomized control designs
- (c) Level III – non-experimental, correlation, and case study designs
- (d) Level IV – expert committee report and consensus

Level of evidence is used to guide interpretation of findings regarding the impact of internships on employment in subsequent sections of this review.

**Table 2. Summary of Internship Models & Level of Evidence**

Model	Internship Components	Length	Dosage	Host Business	Collab. Partners	Paid vs unpaid		Level of Evidence: Full Sample
PS+ASD	Project SEARCH with ASD specific supports (social-communication, behavioral, educational), workplace immersion, job development, job-site training, follow-along support, demand-side approach	9 months (3 internships)	900 hours (720 intern, 180 class)	Healthcare; military base	LEA, VR, CRP, Business	Unpaid	I, II, III	4 RCT (Wehman et al., 2014, 2017, 2020; Whittenburg et al., 2020); 1 non-exp. (Schall et al., 2015); 2 case study (Ham et al., 2014; Wehman et al., 2012)
Project SEARCH	Workplace immersion, job development, job-site training, follow-along support, demand-side approach	9-12 months (3-4 internships)	900 hours (720 intern, 180 class)	Healthcare, retail, government, university	LEA, VR, CRP, Business	Unpaid	II, III	3 pre-exp. (Christensen et al., 2015; Christensen & Richardson, 2017; Müller & VanGilder, 2014); 1 non-exp. (Kaehne, 2016); 3 case study (Green, 2013; Gross et al., 2018; Wittig et al., 2014)
Bridges	Integrated work experience, job placement, on-the-job training, follow-along support	18 weeks - 24 months	3-week goal setting, 12 week internship	Retail, food, hotel, government, education, utilities	LEA, VR, Business	Paid	III	4 non-exp. (Fabian, 2007; Gold et al., 2013; Hemmeter et al., 2015; Luecking & Fabian, 2000)
Start on Success	Integrated work experience, job development, workplace supports	9 months (possible 2 <sup>nd</sup> year)	18-week class, 240 intern hours	University; hospital	LEA, local university, VR, Business	Paid	III	1 case study (Sabbatino & Macrine, 2007)

Note. Basic model components are described. Collab = collaborative, LEA = local education agency, Non-exp. = non-experimental, CRP = community rehabilitation provider, Pre-exp. = pre-experimental, RCT = randomized controlled trial, VR = vocational rehabilitation



**Figure 1. Article Selection Process by Stage**

### Research Question One – Employment Outcomes

To answer the first research question on evaluating employment outcomes, we analyzed articles from the final collection that specified the following: (a) the amount of participants within a population or sample who became employed, (b) the type of employment acquired (CIE or other), (c) hours worked per week, (d) wages earned per hour, and (e) the number of interns from the sample hired by the host business. Twelve of the 19 articles included this level of description concerning outcomes, allowing for comparisons to be made across studies. This subset of 12 articles is listed in [Table 3](#). All findings in [Table 3](#) refer to work obtained after internship exit—not employment, wage, or hours held during internship participation.

#### *Employment Rates After Internship Exit*

To avoid confusion, the umbrella term “employment” is used in this review to describe both CIE and work outcomes collectively, but articles in [Table 3](#) are labeled individually. Articles are marked “CIE” if specified by the publishing authors. CIE refers to jobs obtained in an integrated work setting among other individuals without disabilities earning competitive wages and benefits. Articles are marked “work” if CIE was not explicitly stated and thus these articles provided less clarity on level of community integration, but all paid at least minimum wage. Eight of the 12 subset articles analyzed for research question one specified outcomes as being CIE for intern participants, while four articles did not define the type of work obtained. [Table 3](#) shows the percent of interns from each article who secured CIE or work. In instances where articles reported multiple data points measuring employment rates over time, the highest percent

employed was recorded in [Table 3](#) to demonstrate maximum outcomes possible. Not all articles reported the point when data collection occurred after internship exit, but this information is documented as “months” post-internship for those studies that did report a timeframe.

With respect to articles reporting CIE outcomes only, the PS+ASD model demonstrated the highest rates of transition to competitive employment ranging from 73 to 90% among participants at three months after exiting the internship (Wehman et al., 2014, 2017, 2020; Whittenburg et al., 2020). These findings occurred at the highest level of evidence (I), were derived from all RCT designs including one multi-site study, and demonstrated a stark contrast to the 0-17% employment rates reported for control participants who received transition supports as usual. The highest employment rate reported by the control group (17%) does not reflect full CIE outcomes since Wehman et al. (2020) reported that at least one participant was in segregated or volunteer work.

Three of five Project SEARCH articles reported CIE rather than work outcomes at tier II and III levels of evidence. Tier II research does not involve true randomization and is therefore more sensitive to threats of validity than a tier I design; it does examine independent and dependent variables under experimental conditions, and therefore provides evidence of the impact of the internship intervention on employment outcomes (Odom et al., 2005). Given the lack of control conditions, tier II and III research is more sensitive to methodological differences. To wit, wide variation in CIE outcomes from 33% to 83% was observed across studies (Christensen et al., 2015; Christensen & Richardson, 2017; Green, 2013). There was only one article specifying CIE outcomes for the Bridges model. This study used a Tier III correlational design and a high rate of CIE (77%)

**Table 3. Employment Outcomes by Internship Model for Subsample of Articles**

Internship	Study	Sample	% Emp.	Type	Months After exit	Hr/week Mean (Range)	Wage/ hr Mean (Range)	≥ Min Wage
PS+ASD	Wehman et al., 2014	24 treat.	87.5	CIE	3	18 (-)	\$8.25 (0-9.63)**	Y
		16 cont.	6.3					
	Wehman et al., 2017	31 treat.	90.2	CIE	3	19 (0-30)	\$8.61 (0-10.66)**	Y
		18 cont.	6.0					
	Wehman et al., 2020	79 treat.	73.4	CIE	12	21 (4-40)	\$9.67 (7.25-12.07)	Y
25 cont.		17.0	Work					
Whittenburg et al., 2020	6 treat.	83.3	CIE	12	27 (20-40)	\$8.87 (8.31-11.00)	Y	
	8 cont.	0						0
PS	Christensen et al., 2015	124	83.0*	CIE	6	23 (20-24)	\$9.00 (-)	Y
	Christensen & Richardson, 2017	8	63.0	CIE	-	18 (2-40)	\$9.25 (9.00-10.00)	
	Green, 2013	6	33.0	CIE	4	≥ 20	≥ \$7.25 (-)	Y
	Kaehne, 2016	315	51.5*	Work	10	23 (6-38)	£7.68 (5.85-11.50)	Y
	Müller & VanGilder, 2014	10	60.0	Work	3	-(20-40)	-	-
Bridges	Fabian, 2007	4,571	68.0*	Work	-	22 (-)	\$6.91 (-)	Y
	Gold et al., 2013	5,847	77.2	CIE	-	19 (-)	\$8.29 (-)	Y
	Luecking & Fabian, 2000	733	68.0	Work	6	23 (-)	\$5.71 (-)	Y

Note. \*Mean percent reported for multiple cohorts, \*\*includes unemployed, - not reported, CIE = competitive integrated employment, cont. = control, emp. = employed, hr = hours, treat. = treatment, Y = yes.



was reported (Gold et al., 2013). This data should be viewed somewhat cautiously though due to the limits of the correlational design.

When analyzing employment outcomes more generally (i.e., CIE and work), 10 of the 12 articles reported employment outcomes for 60% or more of internship participants. The only exceptions were two Project SEARCH models (i.e., Green, 2013; Kaehne, 2016). The reason rates for these two studies fell below the majority of the other articles in the subset cannot be definitively concluded based on the information provided. Timing of data collection may have led to the wide range of outcomes. Findings may also be explained by low sample sizes (e.g., Green, 2013) and reporting styles that reflected an average across cohorts rather than a total percent by cohort or across cohorts (e.g., Kaehne, 2016).

### **Hours Worked per Week**

When analyzing the reported hours worked per week, the ranges are difficult to compare due to varying methodology. For example, in tier I RCT designs, the “intent to treat” standard requires that means and ranges be reported across all participants, employed or not, while tier II quasi-experimental and tier III correlational studies may be reporting means and ranges only for those who are employed (Xi et al., 2018). [Table 3](#) identifies studies where the intent to treat standard was applied to reported results.

The Project SEARCH internship model considers a successful employment outcome to include at least 16 hours or more per week (Project SEARCH, 2018). By that metric, average hours for participants across all studies for all internship models in the subset exceeded 16 hours, with the lowest average hours per week at 18 and the highest at 27. However, the range of hours reported across articles clearly depict that some interns were working far less, as few as no hours (Wehman et al., 2017) and some far more, as many as 40 hours per week (Christensen et al., 2015; Müller & VanGilder, 2014; Whittenburg et al., 2020). Data for three control group comparisons revealed higher mean hours worked for PS+ASD participants versus those receiving high school services as usual (Wehman et al., 2017, 2020; Whittenburg et al., 2020).

### **Wage per Hour**

The U.S. federal minimum wage has been \$7.25 since 2009 (U.S. Department of Labor, 2009). [Table 3](#) provides mean wage per hour and range of hours worked by article. The base range of each study was cross-referenced with data from The U.S. Department of Labor (2009) for the year data was collected in each article. Wages in [Table 3](#) were then coded as being equal to or greater than minimum wage. The only international article included in this sample indicated reported wages met national minimum requirements (Kaehne, 2018). Results indicated that all wages earned by all participants from internships across studies in the subset were either at or above federal minimum wage, including those marked as work rather than CIE. Intern participants from PS+ASD held a higher mean wage per hour than control participants (Wehman et al., 2017, 2020; Whit-

tenburg et al., 2020). These findings are informative because, while not all studies specified CIE as the outcome, above or below minimum wage earnings is an important indicator of quality employment outcomes.

### **Employed by Host Business**

Interns are not considered an employee of the business, but rather a recipient of a vocational training experience, and are therefore not guaranteed employment within a host business upon conclusion of the internship (U.S. Department of Labor, 2018). However, host businesses do end up hiring interns in some instances. Only six of the 12 articles in the subset reported the total number of interns who were ultimately hired by the host business. Results are discussed by internship model.

Of those articles reporting this information, nearly half of Project SEARCH interns found permanent employment with the host business. A range of 40% to 51% was reported across three studies (Christensen et al., 2015; Christensen & Richardson, 2017; Müller & VanGilder, 2014). Interns who were hired on by the host business had better job retention over time compared to those who found employment at other businesses (Christensen et al., 2015). One PS+ASD article reported the number of interns hired by the host business and it reflected the highest percent across all internships (80%), but the sample size was extremely small (four of six interns; Christensen & Richardson, 2017). Findings from the Bridges model included substantially larger sample sizes than both the Project SEARCH and PS+ASD models but returned mixed findings, with Fabian (2007) reporting 20% and Luecking & Fabian (2000) reporting 75% across two studies. Overall, whether or not employment was secured within the host business remains underreported in the literature.

## **Research Question Two – Internships Characteristics**

Internships are complex and multifaceted programs that include many operational components, multiple stakeholders, formal and informal agreements, and financial resources to sustain (Christensen et al., 2015). The purpose of research question two was to investigate individual internship characteristics in relation to employment outcomes. The full sample of 19 articles was used to analyze research question two ([Table 2](#)). Of the articles examined, none conducted a component analysis. Thus, this review was not able to pinpoint specific internship characteristics as having a causal effect on employment outcomes. However, several consistent components were shared by all four internship models.

Internship models described a full *work immersion* approach where students received on-site training in an integrated community business. Project SEARCH even embeds required classroom hours in a dedicated space within the host business (Wehman et al., 2014). Internships also described using a *demand-side approach*, which focuses on being sensitive to the needs of the business and developing internships that are meaningful and mutually beneficial to

both the business and the intern (Christensen et al., 2015; Wehman et al., 2014, 2017, 2020; Whittenburg et al., 2020). *Fidelity of implementation* was another theme that emerged across studies. Strict protocols were put in place by internship programs to establish and monitor adherence to the established model's guidelines. The Project SEARCH model is licensed through Cincinnati Children's Hospital Medical Center and provides training for implementation sites (Christensen et al., 2015). Bridges assigns project directors to oversee programs (Fabian, 2007). The Start on Success model, which was originally developed by the National Organization on Disability, does not oversee program sites but detailed replication guidelines are available via other expert organizations (Center on Transition Innovations, 2020).

All four internship models were *time* and *resource-intensive*. Internship length spanned anywhere from one semester (approximately 18 weeks) to 12 months (Fabian, 2007; Whittenburg et al., 2020), with Start on Success offering a possible second year to students for whom it was considered beneficial (Sabbatino & Macrine, 2007). Students amassed as many as 720 applied hours in Project SEARCH (Wehman et al., 2014) and 240 hours in the Start on Success Model (Center on Transition Innovations, 2020). Project SEARCH and PS+ASD also incorporated a classroom vocational training component along with the required applied work, which totaled about 180 hours. Start on Success requires classroom hours for a one to two-semester duration though specific hours were not specified (Center on Transition Innovations, 2020).

Similar *vocational training strategies* were reported across models. These included career planning and counseling (Fabian, 2007; Hemmeter et al., 2015), job development procedures for creating individualized internships (Sabbatino & Macrine, 2007; Wehman et al., 2014, 2017, 2020; Whittenburg et al., 2020), behavior management strategies (Ham et al., 2014; Wehman et al., 2014, 2017, 2020; Whittenburg et al., 2020), on-the-job training to help interns learn specific vocational skills (Christensen & Richardson, 2017; Gross et al., 2018; Müller & VanGilder, 2014; Sabbatino & Macrine, 2007; Wehman et al., 2014, 2017, 2020; Whittenburg et al., 2020; Wittig et al., 2014), and travel training (Christensen & Richardson, 2017; Wittig et al., 2014). Three of the four internship models (i.e., PS+ASD, Project SEARCH, and Bridges) also described some process for installing follow-along services to help students find and maintain paid employment after the internship concluded (Fabian, 2007; Green, 2013; Hemmeter et al., 2015; Wehman et al., 2014, 2017, 2020; Whittenburg et al., 2020).

Finally, all studies described *collaborative relationships* that facilitated the internship program. By and large, these included an educational partner from local education agencies (LEAs) or universities, adult service agencies such as state VR or community rehabilitation providers (CRPs), and representatives from a host business (Table 2). Connection to adult services as an intern was identified as being particularly important by a number of studies because it ensured students exited high school with immediate support (Wehman et al., 2014, 2020). While a range of industries

was reported, health care was the most predominant business profile to serve as a host business (Christensen et al., 2015; Green, 2013; Gross et al., 2018; Ham et al., 2014; Luecking & Fabian, 2000; Müller & VanGilder, 2014; Sabbatino & Macrine, 2007; Schall et al., 2015; Wehman et al., 2012, 2014, 2017). In general, host businesses tended to be large organizations and corporations (e.g., hospitals, military bases, universities) with varying branches within the business (e.g., food service, lodging, retail stores), which maximizes opportunities within one organization to develop many different types of internships. Although more targeted research is needed to identify which specific internship components are linked to better postsecondary outcomes, these common characteristics across internships highlight particular areas for further inquiry.

### Research Question Three – Application to Specific Populations

The purpose of research question three was to investigate specific populations or individual characteristics of individuals with IDD who benefited from participation in an internship program with respect to employment outcomes. The full sample of 19 articles was used to answer research question three (Table 2). Across studies that reported gender, participants were predominantly male (Christensen et al., 2015; Christensen & Richardson, 2017; Fabian, 2007; Gold et al., 2013; Green, 2013; Hemmeter et al., 2015; Kaehne, 2016; Luecking & Fabian, 2000; Müller & VanGilder, 2014; Schall et al., 2015; Wehman et al., 2014, 2017, 2020; Whittenburg et al., 2020). Age of participants ranged from 16 to 22 (Fabian, 2007; Gold et al., 2013), 16 to 23 (Hemmeter et al., 2015), 16 to 27 (Kaehne, 2016), 17 to 20 (Sabbatino & Macrine, 2007), 17 to 21 (Green, 2013), 17 to 24 (Müller & VanGilder, 2014), and 18-21 (Christensen et al., 2015; Luecking & Fabian, 2000; Wehman et al., 2014, 2017, 2020; Whittenburg et al., 2020). Though an age range was not reported, Schall et al. (2015) indicated most participants were under age 30. Only one study included an older range of participants (aged 25 to 51), but half of this sample were in their 20s (Christensen & Richardson, 2017). Concerning case studies, Ham et al. (2014) reported an age of 23 for one case study, but no age for a second case study; Wehman et al. (2012) reported two case studies ages 19 and 20; and Wittig et al. (2014) reported ages 18, 18, and 21 across three case studies.

Concerning race and ethnicity, a fairly even distribution was observed between treatment and control conditions for two of the four RCT studies (Wehman et al., 2014, 2020). One RCT study reported the highest race/ethnic participation among Black youth and young adults (50%) in PS+ASD compared to White (43%) and Hispanic (7%) participants (Whittenburg et al., 2020). The traditional PS model research conducted by Christensen et al. (2015) and Christensen & Richardson (2017) reported the majority of participants were White (66%, 70% respectively), followed by Black (32 %, 20% respectively) and Asian (1.6%, 10% respectively). For SOS, all participants described were Black, while for Bridges, the majority of participants were non-



White across studies (Fabian, 2007; Gold et al., 2013; Luecking & Fabian, 2000).

Results from this review revealed both strong and emerging evidence for the application of internships to specific populations. The results of seven studies indicated that the PS+ASD model was highly effective in achieving CIE for *youth with an ASD diagnosis*, a group who notoriously have poorer employment outcomes than other disability categories (Burgess & Cimera, 2014; Roux et al., 2013). One of these studies provided emerging evidence for the efficacy of the PS+ASD model with *military-connected youth* with a diagnosis of ASD, a group who is under-researched in the literature and who face additional challenges to employment, such as frequent relocation, breaks in continuity of services, and inadequate transfer of vocational or educational records (Davis & Finke, 2015; Whitenburg et al., 2020).

The results of another study described successful use of the Project SEARCH model with *youth in rural counties* where access to transportation is difficult and the range of industries is more limited than in urban or suburban settings (Wittig et al., 2014). Three articles on Bridges' interns reflected employment outcomes for traditionally marginalized *racial and ethnic populations with IDD* (e.g., Black, Latinx, Asian) who often face disparity in employment outcomes (Oberoi et al., 2015; Sevak et al., 2015). Finally, the results of one study indicated that a *history of segregated work* may mitigate the effects of the Project SEARCH internship. Using an older sample of adults (ages 25-51), Christensen and Richardson (2017) found that none of the participants who had been in a sheltered workshop longer than 5 years successfully transitioned to employment after participation in Project SEARCH. While preliminary, these findings indicate emerging evidence of the utility of internships with specific populations who have historically faced barriers to employment. More in-depth research into who internships benefit is needed.

## Discussion

This review identified four main internship models which have been investigated within the peer-reviewed literature (i.e., Project SEARCH, PS+ASD, Bridges, Start on Success). Differing levels of evidence were observed for each by the articles included in this review. The strongest support was identified for the PS+ASD internship for individuals with ASD and the Project SEARCH model for individuals with various intellectual and developmental disabilities, including ASD. Both models were supported by the top two level of evidence tiers. Research on the Bridges model for individuals with IDD and other disabilities was limited to correlational research, but results were fairly consistent across multiple studies with regard to employment rate, wage, and hours. The Start on Success model remains the least examined of all internship models included in this review with only one article identified and only selective case study findings reported (Sabbatino & Macrine, 2008).

Overall, most studies reported employment rates either at or above 60% with the exception of only two, which re-

ported 33% (Green, 2013) and 51% (Kaehne, 2006). Still, these rates surpass previously mentioned reports of 14.7% to 20.3% employment among individuals with IDD (Butterworth et al., 2015; Siperstein et al., 2013; Winsor et al., 2019). Findings reflected a mix of CIE and work (outcomes not specified as CIE), but all internship models produced employment outcomes with wages higher than the federal minimum wage. This is important in light of the push to prioritize CIE outcomes over segregated work, which can legally pay very little due to 14(c) subminimum wage certificates (U.S. Commission on Civil Rights, 2020). Internship participants from included studies mainly worked less than the U.S. standard 40-hour week for full-time employment. It is unclear what might explain this finding. Many factors influence how much an individual may choose to work. It is certainly possible that those with less hours were still working their preferred quantity within what was possible for the individual's work stamina, schedule, and family responsibilities. Previous research also indicates that individuals with disabilities may purposefully reduce hours to maintain consistent benefit eligibility (Iwanaga et al., 2021).

Several common characteristics were observed across internship models including use of similar vocational training strategies, a need for collaborative partnerships, adopting a demand-side approach, full workplace immersion, and time and resource-intensive support. The full internship experience encompasses hundreds of hours of training, which contrasts steeply with typical work-based learning activities such as job shadowing that may last a few days or work sampling which lasts for a few weeks (Cease-Cook et al., 2015). The extent to which such a lengthy duration of training is needed, and how shortened experiences may impact employment outcomes is unknown. Such extensive training during high school did, however, result in the need for far fewer vocational intervention hours (80) than peers without internship experience (184) for Project SEARCH participants (Schall et al., 2015).

Emerging evidence related to use with specific populations was also gleaned from this review. These include benefits to populations with recognized disparities in employment outcomes (e.g., those with an ASD diagnosis, traditionally marginalized racial and ethnic groups with disabilities) or additional barriers to employment (e.g., military-connected youth, rural populations, extensive history of segregated employment). However, these themes should be interpreted with caution, as more research is needed on individual characteristics and internship participation.

## Implications for Research

Findings from this review offer a foundation upon which to base future research. This review used a scale for organizing studies based on level of evidence which was limited exclusively to research design (Odom et al., 2005). However, higher methodical designs do not inherently guarantee higher quality results, nor are they immune to threats to validity and potential for bias, particularly if other aspects of the study were conducted poorly (e.g., randomization

was not conducted properly, severe attrition, reported confidence intervals). Indicator checks for quality within each methodological design were not completed in this review, but are a suggested next step for progressing the discussion on evidence supporting internships and employment.

Greater consistency in defining and reporting outcomes is also needed in future research. Since legislative efforts continue to promote CIE outcomes over segregated alternatives (e.g., APSE, 2019; WIOA, 2014), it is important to specify whether findings pertain to CIE or aggregated work outcome types. More consistent reporting on whether employment outcomes occurred within or outside the host business is also needed. Employment through the host business offers both advantages and disadvantages. The business provides a work culture that is likely accepting of diversity, as suggested by their cooperative agreement to act as a host business, and the business gains an employee who is pre-trained on their particular workplace skills and standards. On the other hand, a business may have limited capacity to hire interns over time, so clarification regarding what extent interns secure employment at other businesses is needed.

Research investigating more specific links between particular internship characteristics (e.g., type of training strategies, internship hours, collaborative partners, host business, process for selecting specific types of internships) and employment outcomes is also suggested to provide better information on what is essential to include in these complex programs and still achieve desirable outcomes. Additionally, while all of the internship models presented described structured recruitment and application procedures, more information on who is selected is important so it can be determined if these programs are effective for those with the most significant support needs. The PS+ASD model described high levels of staff training in the use of evidence-based techniques (e.g., applied behavior analysis, behavior management, visual supports, social communication training) to promote on-the-job success for interns (Wehman et al., 2014, 2017, 2020). Further research regarding level of staff training needed to impact specific outcomes is suggested. Lastly, future research should investigate the impact of internships on long-term job retention.

### Implications for Practice

The findings in this review provide strong support for internship programs as an evidence-based way for practitioners to aid transition-age young adults with IDD in gaining CIE upon exiting high school. The CIE outcomes associated with internship participation are impressive compared to non-internship comparison groups, and the programs meet many of the requirements for transition programming included in IDEA (2004) and WIOA (2014). Businesses who seek to increase the diversity of their workforce by including employees with IDD can also gain excellent employees by providing internships to transition-age youth. Internship programs can therefore provide significant benefits to all stakeholders involved.

At the same time, most programs take an extensive amount of time to implement. Thus, it would be essential

to assist transition-age youth in planning for the time commitment early in their high school careers to ensure they can meet both the academic and internship requirements within the time they have to complete their schooling. In addition, the collaborative relationships required to implement an internship program involve discussion and planning to ensure buy-in from various partners. Perhaps the most important consideration for practitioners is the need for a collaborative business that is large enough to supply multiple internships, while also providing relevant training opportunities to the interns. It is also critical to consider the staffing requirements of internship programs. Some of the programs, such as PS+ASD, emphasized particular skills of the staff (e.g., applied behavior analysis) and an understanding of business culture (Wehman et al., 2020). Such skills may require additional training to the educational and employment support staff who implement the program.

Internship programs require practitioners to consider the target population carefully prior to implementation. To date, there is sufficient evidence to conclude such programs are efficacious for individuals with ASD and other IDD, and limited evidence for the efficacy provided to military-dependent and connected youth. Additionally, none of the studies reviewed addressed the issue of cost for internship programs or program capacity. This would be very important information for practitioners seeking to implement such programs. Internship programs have a limited number of spaces available and therefore cannot serve the needs of the entire population of transition-age youth with IDD in a school district.

### Implications for Policy

Findings of this study provide several important insights related to policy. Primarily, while the included studies show definitive research evidence is still emerging, the efficacy of many of the models demonstrates the potential of internships to operate as an effective policy tool in improving employment outcomes for individuals with IDD. As such, our review provides evidence supporting recent policy and legislation such as WIOA (2014), which emphasizes internships and other work-based learning experiences as required Pre-ETS activities aimed at promoting CIE. Furthermore, our review shows that multiple stakeholder partnerships are a key factor in successful internship models, a finding which aligns strongly with the interagency partnership requirements mandated by WIOA (2014). These partnerships required by state VR agencies should provide an important means of building and implementing effective internship programs as a Pre-ETS activity within states and localities. Although this review is able to provide some initial guidance based on evidence of promise in these internship models, much more research is needed to provide for a more thorough evaluation of the efficacy of internships to promote CIE; this includes analysis of intervention dosage, intensity, and specific components that should be included to achieve policy goals related to the employment of people with IDD.

## Limitations

Several limitations were noted with this review. First, all but one of the included studies were conducted in the United States. It is quite possible that research published outside the U.S. used different terminology to refer to activities conceptually equivalent to internships or different diagnostic labels other than IDD, and as a result, those studies were not located by our search. Our search did identify more international research (e.g., O'Bryan et al., 2014), but these studies were excluded from our review since employment outcomes were not reported. This review focused exclusively on peer-reviewed sources to broadly scope existing levels of evidence that have been scrutinized by the scholarly community. However, non-peer-reviewed grey literature sources issued by expert committees, government websites, or pertinent disability organizations could provide additional insight into the efficacy of internships for students with IDD and should be considered in future research.

Database searches yielded widely used internship models (e.g., Start on Success, Project SEARCH, Bridges, PS+ASD), but it is acknowledged that many smaller scale arrangements that meet the Department of Labor (2018) definition of an internship are likely occurring within the United States and abroad though not reported on or published. It is also possible that relevant literature published prior to 1990 was excluded due to the date restriction of our sample. Lastly, internships associated with postsecondary education programs (PSE) for students with IDD were not included because this review focused specifically on transition from secondary school to work and because PSE programs include advanced training from a college or university that is fundamentally different than that received by the population in this review. However, the inclusion of vocational internships provided within the context of a PSE program for students with ID may have provided additional insight.

## Conclusion

Findings from this review offered overall general support for use of internships as a pathway to CIE for individuals with IDD with wide variation in evidence across specific models. The PS+ASD and Project SEARCH models emerged with strong levels of evidence, while that for Bridges' is still somewhat emerging according to the measurement system used in this review. All internships identified in this review are complex programs in need of investigation on a much more granular level than what is currently available within the peer-reviewed literature. As states and localities continue to implement and expand Pre-ETS programming through WIOA (2014), many more youth will participate in internships. Further research is needed to ensure the internship experience is as effective as possible in connecting transition-age youth with disabilities to better employment outcomes.

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## Authors' Note

The content of this article was developed under grants from the National Institute on Disability, Independent Living, and Rehabilitation Research (90RTEM0003), the Vocational Rehabilitation Technical Assistance Center for Quality Employment (H264K200003) from the U.S. Department of Education, and the Congressionally Directed Medical Research Programs (CDMRP) Autism Research Program (W81XWH16-1-070). Content does not necessarily represent the policy of the U.S. Department of Education, and you should not assume endorsement by the Federal government. Virginia Commonwealth University, Rehabilitation Research and Training Center (VCU-RRTC) is an equal opportunity/affirmative action institution providing access to education and employment without regard to age, race, color, national origin, gender, religion, sexual orientation, veteran's status, political affiliation, or disability.

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