

Effective Secondary Services in Transition-Age Youth With Disabilities: A Systematic Review of the Literature

Deborah Lee,^a May Ramírez,^b Yazmin Castruita-Rios,^b
Xiangli Chen,^c and Timothy Tansey^b

Background: Youth with disabilities who have at least one paid work experience during high school are more than twice as likely to be employed after high school. However, barriers exist that limit work opportunities for youth with disabilities and subsequent entry to work as part of their adult lives.

Objective: The study identified secondary education services that have been found to be scientifically valid and effective in improving transition to work of youth with disabilities.

Methods: A scoping review was conducted of secondary services provided to transition-age youth with disabilities associated with employment outcomes. The final full-text review consisted of 30 articles.

Findings: Findings describe five major themes related to secondary education services associated with employment. These themes are work experience, independence and autonomy, IEP and transition planning process, student characteristics, and medical restoration services.

Conclusions: These findings suggest that secondary education services are effective in improving the transition to work for transition-age youth with disabilities. Recommendations are made for educators, rehabilitation professionals, and school administrators to enhance the rates of youth with disabilities in finding and maintaining meaningful employment.

Keywords: Transition-age youth; secondary education services; youth with disabilities; employment

Youth with disabilities are more likely to be unemployed and have fewer work experiences as compared to youth without disabilities (U.S. Senate Committee on Health, Education, Labor, and Pensions [SCHELP], 2012). Having work experiences in high school is one of the best predictors of employment in adulthood; youth with disabilities who have at least one paid work experience during high school are more than twice as likely to be employed after high school (Carter et al., 2011; Test & Cease-Cook, 2012). The Workforce Innovation and Opportunity Act (WIOA) of 2014 included a focus on providing employment services to youth with disabilities in collaboration with

the state vocational rehabilitation agencies (SVRA). However, even before the passing of the WIOA, legislation was in place that mentioned this important topic of transition. In one example the Individuals with Disabilities Education Improvement Act (IDEA) of 2004 mandated that Individualized Education Programs (IEPs) include measurable

^aMarquette University Milwaukee, Wisconsin, USA.

^bUniversity of Wisconsin – Madison, Madison, Wisconsin, USA

^cKessler Foundation and Rutgers University, New Jersey, USA

postsecondary goals and identify appropriate transition services and this was to be completed by the time students turned 16, if not earlier, as determined by the individual state.

In a more recent example, with the goals of addressing barriers and improving outcomes of transition-age youth with disabilities, the U.S. Department of Education, the U.S. Department of Health and Human Services, the U.S. Department of Labor, and the Social Security Administration collaborated to form six joint federal research demonstration projects called Promoting the Readiness of Minors in Supplemental Security Income (PROMISE) (Hartman et al., 2019). The youth were all SSI recipients. One of the six demonstration projects was Wisconsin PROMISE and took place through Wisconsin's Division of Vocational Rehabilitation (DVR). Wisconsin PROMISE counselors provided case management to help youth and families navigate through services and connect with needed supports (Hartman et al., 2019). Research informed multiple aspects of PROMISE. For example, since having work experiences increasing the likelihood of future employment, PROMISE worked to connect participants to integrated and competitive paid-work experiences. Another example is related to how research has found that self-advocacy and self-determination are predictors of postschool education and employment (Deci & Ryan, 2000; Geenen et al., 2013; Test et al., 2009). As a result, PROMISE included social skills training for participants with the "Skills to Pay the Bills" curriculum developed by the Office of Disability Employment Policy at the US Department of Labor. Other services included work incentive benefits counseling and financial coaching (Hartman et al., 2019). One study found that youth who met with a financial coach had five times the employment rates and earnings compared to youth who did not meet with a financial coach (Schlegelmilch et al., 2019). They also used rapid engagement, motivational interviewing, and trauma-informed care to improve counselor case management (Hartman et al., 2019). Research shows that Wisconsin PROMISE youth had significantly improved engagement, employment, and earnings outcomes. Employment rates went from 1% in 2013 to 67% in 2018, which is 10% points higher than observed with the control group (Hartman et al., 2019). Research about Wisconsin PROMISE has also suggested that one way to

promote connections to academic career planning at school and post-secondary transition planning is with targeted outreach through postcards, e-mails, and text messaging to youth on a quarterly basis starting at age 14 (Anderson et al., 2019).

Throughout the transition process, there is not just one stakeholder or service provider involved in the provision of transition to work services. Stakeholders can include family members, general education teachers, vocational rehabilitation (VR) counselors, postsecondary education partners, and other professionals. Service providers include public VR programs, secondary education, and others as needed for the student to successfully transition to employment. Community conversations can also be a school-led inventive idea to bring various stakeholders together to brainstorm ways of increasing school and employment opportunities for youth with disabilities (Molfenter et al., 2018). In one study, between 2011 and 2016, 20 community conversations on this topic took place with over 700 participants including teachers, school administrators, VR counselors, policy makers, and employers (Molfenter et al., 2018). The researchers found higher employment expectations, rapid engagement of employers, students, teachers, and family members, and the development of some new employment opportunities, which demonstrated the importance of community and involving various stakeholders in the lives of youth with disabilities (Molfenter et al., 2018).

Another large project that worked toward improving employment outcomes of youth with disabilities is Let's Get to Work. The project specifically worked toward improving transition practices and policy initiatives related to the employment outcomes of youth with intellectual and developmental disabilities (Molfenter et al., 2017). The project involved working with schools to increase their use of evidence-based transition practices and coach school staff on how to use effective transition strategies and develop resources (Molfenter et al., 2017). It also involved quarterly stakeholder meetings and policy work (Molfenter et al., 2017). A tool developed by this project was the Transition Services Rating Scale (TSRS), which determined transition activity strengths and needs and tracked increases in those activities over time for an individual student (Molfenter et al., 2017). The TSRS has helped to identify gaps in services.

PURPOSE OF THE STUDY

The projects and research discussed above have informed stakeholders on how to improve transition outcomes for youth with disabilities. There has also been some research specifically done on evidence-based practices in transition and predictors of improved postschool outcomes (Test et al., 2009; Test & Cook, 2012). However, this article hopes to expand on this topic by taking on a comprehensive scoping review of the literature in order to identify which secondary education services have been found to be scientifically valid and effective for improving the transition to work of youth with disability over the past 15 years. This article also looks at which contextual factors mediate the efficacy of secondary education services in the transition to work of youth with disability. This study was guided by the following research questions:

1. What are secondary education services found to be scientifically valid and effective for improving transition to work of youth with a disability?
2. What contextual factors mediate the efficacy of secondary education services in the transition to work of youth with a disability?

METHODS

Research Design and Procedure

Arksey & O'Malley (2005) list several advantages of a scoping review. Despite the fast pace of a scoping review, it is a great mechanism to visualize the landscape of literature and whether it is worth continuing onward toward a full systematic review after the preliminary results (Arksey & O'Malley, 2005). A scoping review is also beneficial to summarize the research findings and the implications for stakeholders and to see if there are research gaps within the scoping review and landscape of literature (Arksey & O'Malley, 2005; Plow et al., 2011). In summary, the benefit of utilizing a scoping review approach is that it allows for a wider range of research questions and topics to be investigated while still being an effective way to determine gaps in research or areas for future research (Arksey & O'Malley, 2005; Plow et al., 2011).

In conducting an in-depth scoping review, Arksey and O'Malley (2005) have given a framework

that includes five stages that were utilized in our research process. The first stage is to identify the research question that will be used at the onset of the study, the second stage is to identify relevant studies that utilize various sources including databases and reference lists, the third stage is the selection process where studies are only included that are relevant to the research question and noting the interrater reliability, the fourth stage is to organize the data and to synthesize the data, and the final stage is to summarize and report the results of the scoping study (Arksey & O'Malley, 2005).

Research Team

The research team included two professors with expertise in youth with disabilities in transition and secondary services and two project assistants (graduate students in the rehabilitation counselor education program). At the beginning of the scoping review, after identifying the research questions, the professors provided training on the basics of scoping reviews and also gave feedback on concept maps and search terms with the scoping review team.

Conceptual Mapping

The concept map was created with the intention of helping to develop and create search terms that would be appropriate and helpful for the database search (see Figure 1). The concept map for this specific question looked at the transitional and vocational elements of the IDEA and included elements of the IEP and the transition planning, age-appropriate transition assessments (including both informal and formal assessments that look at students' strengths, preferences, and interests), services for the least restrictive environment (such as assistive technology [AT], OT, PT, and SLP services), and additional IDEA requirements including family and teacher partnership, transfer of rights, a summary of performance, and functional skills that are necessary for work and should be included in postsecondary goals. The concept map was reviewed and edited by the professors, and feedback was given on what terms would be included in the next step.

Database Search

Database. The databases used in this scoping review included: (a) Education Research Complete,

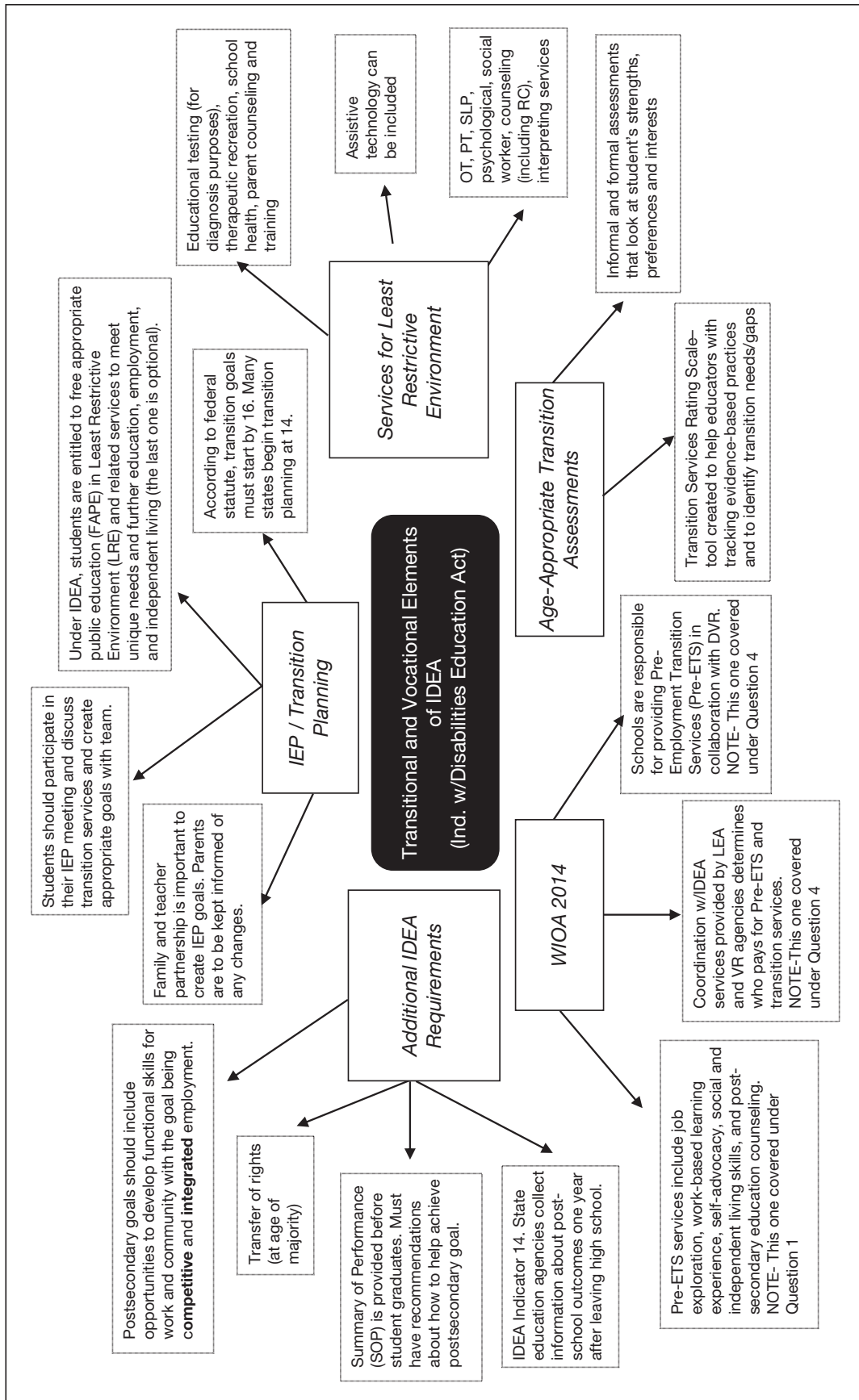


FIGURE 1. Concept map of transitional elements of IDEA.

(b) ERIC, (c) Family and Society Studies Worldwide, (d) Family Studies Abstracts, (e) Social Work Abstracts, (f) APA PsycInfo, (g) APA PsycArticles, and (h) CINAHL Plus with Full Text. The article criteria were limited to those articles that (a) include a title, an abstract, and full-text for reviewing process, (b) are peer reviewed, (c) published between 2005 and May 2020, and (d) written in the English language.

Keywords. Keywords consisted of five structures that included disability keywords (Disab* OR handicap* OR impair* OR behavior disorder OR behavioral disorder OR autism OR emotional disorder OR learning disorder OR developmental disorder OR mental ill* or intellectual disorder), youth in transition keywords (Youth OR transition* OR teenag* OR adoles* OR “high school” OR student), employment keywords (Job OR work OR employ* OR hire OR hiring OR career OR intern*), secondary services (Assistive Technology OR Therapeutic Recreation OR School Health OR Parent Counseling OR IEP OR Education Plan OR Family Partnership OR Functional Skills OR Transfer of Rights OR Indicator 14 OR Post-school outcomes OR Summary of Performance OR Soft Skills OR Inclusive Education) and separate from vocational services (Not vocational rehab*).

Reviewing Process

The filtering out of articles that did not meet the inclusion criteria was conducted in three phases. Those phases included: (a) title review, (b) abstract review, and (c) full text review. Inclusion criteria for title review required that articles must relate to “youth in transition with disabilities” and “secondary services” and “work” or “employment” and the scoping team eliminated articles that were not related to “youth,” “work,” “employment,” and “disability.” These criteria were also implemented in the abstract review as well as the full-text review where the scoping team kept only the articles related to (a) youth with disabilities and (b) secondary services that were assisting in the employment process. In the first two phases, each article was reviewed by two members of the research team who were trained on how to determine inter-rater reliability using Cohen’s Kappa statistic, and articles were removed when both raters agreed that the article did not meet the inclusion criteria. If a disagreement between raters occurred, the additional reviewer (the faculty member) reviewed

the article. If this additional reviewer believed that the article did not fit into the inclusion criteria, then the article was dropped from further analysis.

For the full-text reviews, due to the high inter-rater agreement during the title and abstract review process, only one reviewer assessed if the article met the inclusion criteria. Throughout the process, the reviewers were in contact with one another and the faculty member to improve their knowledge in identifying articles that should be included in the final article review for the scoping review. Therefore, the researchers determined that a single reviewer for the full-text portion would be sufficient and productive for this process. Lastly, after determining the number of articles that would be included for the scoping review and as a final step, a research expert in the area of secondary services, youth in transition, and employment was asked to review the references to ensure that all articles were appropriate and that no critical article was missing from the scoping review literature.

Synthesizing

The remaining articles from the full text review were then analyzed by the scoping team to determine emerging themes, recurrent themes, and recommendations for future educators and superintendents. The two reviewers and the faculty member continued the data synthesis process by submitting a summary of each theme by providing evidence from the articles in the scoping review database.

RESULTS AND DISCUSSION

The database searches generated a total of 474 articles and removing the duplicates (72 articles) resulted in 402 articles. Title review resulted in excluding 331 of these articles with 71 articles remaining after this level of review; the inter-rater reliability (using Cohen’s Kappa) between reviewers was 70.4%. Abstracts review resulted in 35 articles after excluding 36 articles with an inter-rater reliability (using Cohen’s Kappa) of 57.6%. The final full-text review after consulting with the experts in the field and the research team resulted in 30 articles after excluding five that were unrelated to youth, employment, disability, and question-specific concepts in the abstract screening (see Figure 2).

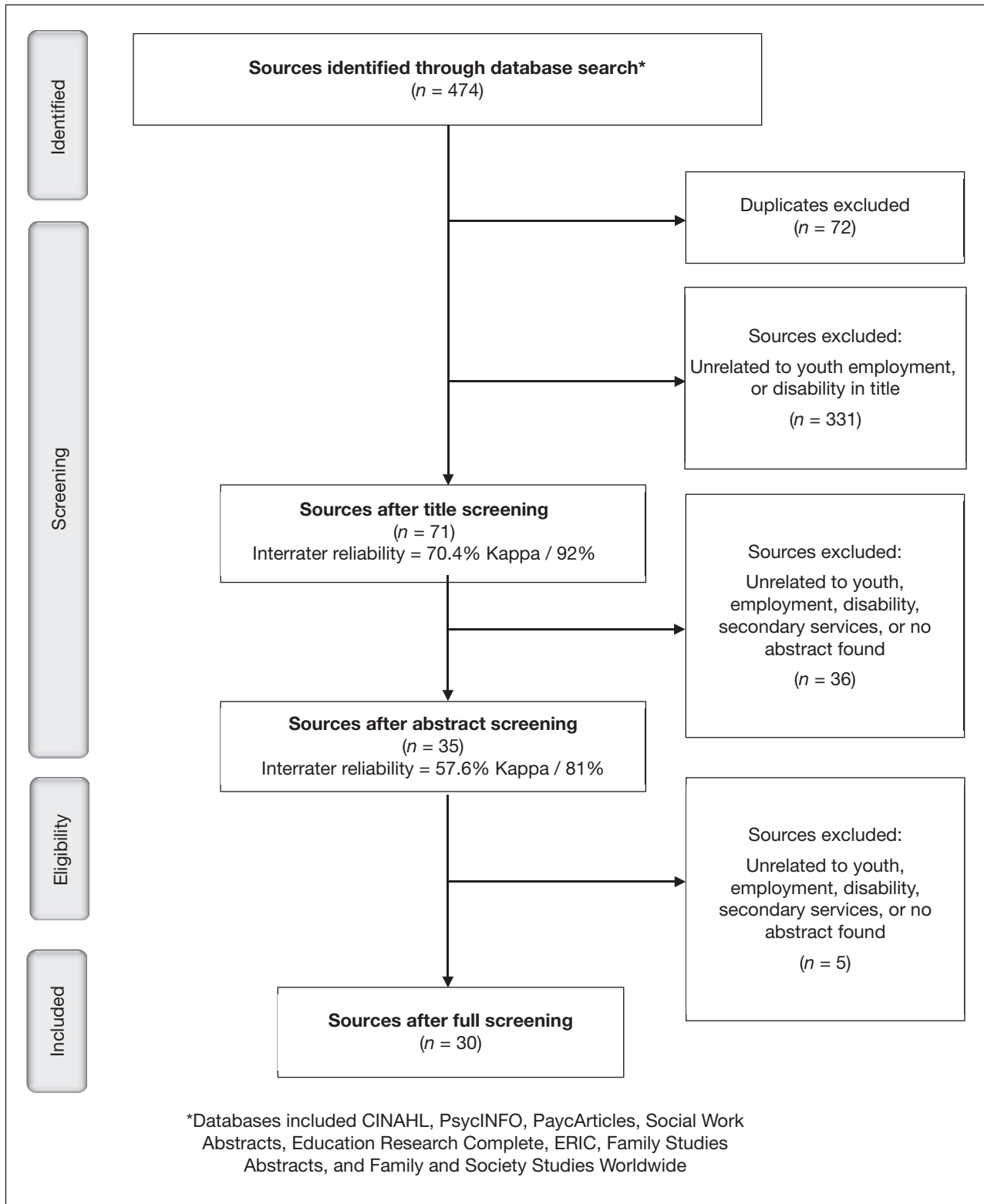


FIGURE 2. Flow diagram of article selection process.

A review of the years indicates that the number on secondary services increased over the years and especially with the passage of WIOA in 2014. In all, six articles were published between 2005 and 2010, nine articles were published between 2010 and 2014, and 15 studies were published between 2015 and 2020. In terms of research design, there were few studies that included interventions (five studies) and the majority of studies included quantitative research design (19 studies). The remainder were qualitative research designs (seven studies), mixed methods (two studies), and systematic review (two studies).

Major Themes Related to Secondary Services

Our full-text review of the 30 articles demonstrated five major themes related to secondary education services that have been found to be effective improving transition to work for youth with disabilities and the contextual factors that mediate the efficacy of these services. It is important to note that some of these articles fell under multiple categories. These themes are (a) Work experience, (b) Independence and autonomy, (c) IEP and Transition Planning Process, (d) Student characteristics, and (e) Medical restoration services.

Work Experience

A total of five articles were identified that addressed how work experience has an impact on employment outcomes among youth with disabilities. Work experience refers to youth that have had former work experience, participated in school-to-work (STW) programs, or service learning. According to McDonnall (2010, 2011), having prior work experience is a predictor of employment for youths with visual impairments, with the more jobs they had in the past the greater the likelihood of them obtaining employment. Effectiveness of STW programs seems to vary; for example, STW programs for youth with disabilities living in a welfare receiving household demonstrated to increase the opportunities for obtaining competitive employment; however, it was observed that the jobs obtained were of low wages (Enayati & Karpur, 2019). Another study explored the effectiveness of the Adolescent Employment Readiness Center program, which is focused on

provide support to enhance youth's employment readiness outcomes and concluded that youth participating in program experienced higher career readiness than compared to age norms (Wolf-Branign et al., 2007). Despite those previous studies successful outcomes in relation to STW programs and employment outcomes, McDonnall (2010) determined that such programs do not have an impact on youth with visual impairments employment outcomes. Service learning, a community-based educational practice, was identified as another facilitator of transition-related goals (e.g., employment) for youth with disabilities (O'Connor, 2009).

Independence and Autonomy

A total of seven studies were identified that addressed how youth with disabilities independence and autonomy has an impact on employment outcomes. Independence and autonomy will also be referring to items such as transportation, social skills, youth's outcome expectations, and use of AT services. Johnson et al. (2019) developed a video activity schedule (VidAS) intervention for youth with cognitive disabilities that resulted in an increase in youth's independence in completing novel vocational-related tasks within three different settings: cafeteria, office, and library. Autonomy was noted to be a predictor of employment along with other variables (e.g., social relationships) in youth with high incidence disabilities (Shogren & Shaw, 2016). For youth with visual impairments, it was observed that having experience traveling independently (e.g., anywhere outside of home, arranging trip via plane or train), social skills, and no issues with public transportation increased their likelihood of obtaining employment (Cmar, 2015; McDonnall, 2011). Another predictor of employment was youth's positive outcome expectations (e.g., living independently) in youth with visual impairments (Cmar, 2015).

AT was the most commonly researched topic on this theme, with three studies focusing on this topic (Bouck et al., 2012; Hill et al., 2013; Johnson et al., 2019; Kelly, 2011). Bouck et al. (2012) study identified AT being a predictor of paid employment and wages for youth with high incidence disabilities, where 80% of students that received AT at school obtained paid employment and 54.6% were employed full-time. Additionally, this study determined that

AT was only a predictor of wages for youth with mild intellectual disabilities; thus, those not receiving AT had a greater likelihood of earning less than minimum wage. Though there are various forms of AT, a study examined the effectiveness of an iPad as a form of AT and discovered that such support increased independence, job placement, and job retention for youth with autism and other developmental disabilities (Hill et al., 2013). However, the need for active engagement was still emphasized for it is a critical component in the employment-related success of youth with autism and other developmental disabilities. Youth with visual impairments have also demonstrated to benefit from AT by having a greater likelihood of obtaining a paid job (Kelly, 2011).

IEP and Transition Planning Process

A total of ten articles were identified that addressed how development and compliance with the IEP process has an impact on employment outcomes among youth with disabilities. Items that were categorized into this theme involved student involvement with IEP and transition planning process, barriers in youth and parental involvement, parental support, and IEP goals and predictors of process. Two of the selected studies related to youth with autism and indicated that they are not actively involved in the IEP process (Chandroo et al., 2018), and if they also identify as part of a racial/ethnic minority group and are low income they experience farther less opportunity to be involved in the IEP process (Eilenberg et al., 2019).

Barriers in Youth and Parent Involvement.

Barriers students identified as contributing to their lack of involvement in the IEP process included attendance of IEP meetings not being mandatory (i.e., school's having informal policies) and when attended meetings, their opinions were not asked for or heard (Cavendish & Connor, 2018). Barriers for parent's lack of attendance on IEP process were also identified in such study, items relating to transportation issues, scheduling conflicts with parent's work schedule, and language barriers (e.g., material only being available in English, jargon terminology) were discussed. Hence, similar barriers students and parents faced involved experiencing scheduling issues, their opinions not being considered, and focus of IEPs being too much on deficits resulting in the overall experience being very draining as well as

it being too focused on ensuring student passes state exams rather than on college preparation (Cavendish & Connor, 2018).

Hirano et al. (2018) identified systemic barriers in transition planning in the areas of family, school, and adult services. Family-related barriers involved having limited support from other family members, meeting the daily needs of their child with a disability, lack of cultural capital, and low self-efficacy. School-related barriers involved families experiencing racism and discrimination, school staff disempowering families, and poor transition programs. Lastly, adult service-related barriers involved difficulty in navigating services, providers being unwelcoming to families and not responsive to youth's strengths and needs.

Parental Support.

Cawthon and Caemmerer (2014) explored the perspectives on the transition planning process of parents with children who are deaf or hard of hearing where majority demonstrated having positive experiences with the IEP process; however, such positive perspectives were noted to be associated with parents having a child with a co-occurring disability or/and parent identifying as having a deafness-related condition. Additionally, the majority of parents in the study had a positive perspective on youth's employment, for they had expectations of them being employed full time post-school and being well prepared for employment, yet some did express their child would need help with obtaining and maintaining employment and communication needs.

IEP Goals and Predictors of Process.

Five articles were identified that address compliance with IEP goals, IEP goals development, and predictors of the IEP process. Gaumer Erickson et al. (2014) identified that compliance with IEP (i.e., state performance plan indicator 13) was not associated with students obtaining competitive employment (i.e., component in state performance plan indicator 14). However, Lombardi et al. (2017) identified that transition competencies were among the most mentioned college and career readiness domains in IEP goals, with career culture being the most common subdomain in relation to postsecondary goals; thus, indicating the prioritization of employment. Hence, as Park and Bouck (2018) explained students that have "competitive employment" as part of their IEP plan are 3.71 times more likely to obtain employment, along with in-school services of job readiness vocational services,

job search guidance, and job placement services being predictors of employment post high school for youth with intellectual disabilities (7.36, 7.95, and 5.37 times more likely, respectively). Thus, explaining why there may be differences of employment outcomes despite the compliance with IEP goals.

Predictors of IEP progress, particularly with postsecondary goals, included student IQ and adaptive behavior, high quality of transition planning, and greater alliance between teachers and parents (Ruble et al., 2019). Rubenstein et al. (2014) also identified that students with IEP that are using personal protective equipment (PPE) have resulted in 36% of them getting in body parts PPE aims to protect (e.g., burns). This then emphasizes the need for more job-related training with a greater focus on adequately selecting and wearing PPE.

Student Characteristics

A total of 11 articles were identified that addressed how student characteristics have an impact on employment outcomes among youth with disabilities. Items that were categorized into this theme involve gender, race/ethnicity, socioeconomic status, disability type, age of beginning vocational services, among others.

Gender, Race/Ethnicity, and Socioeconomic Status. Family's income of youth with autism demonstrated to be a predictor of employment, with those with the highest annual income having the greatest likelihood of obtaining employment (Bouck & Joshi, 2015). Moreover, Eilenberg et al. (2019) discovered that youth with autism that were racial/ethnic minority and low-income youth were less likely to obtain competitive employment post high school. For youth with learning disabilities, those that identified as White and male have greater post-school outcomes than youth of color, female, and with developmental or emotional/behavior condition (Johnson, 2008).

Disability Type. Employment predictors for youth with visual impairments include self-reported health, math and verbal aptitude, and parental support (McDonnall, 2010). Although majority of youth with cancer return to work full time 15–35 months post diagnosis (72%), factors of treatment intensity, being uninsured, and quitting work after diagnosis can influence their employment outcomes

(Parsons et al., 2012). For youth with autism predictors of employment involved schools implementing a functional curriculum (i.e., curriculums focused on life skills; Bouck & Joshi, 2015), parent activation (i.e., ability to manage health condition), and youth's externalizing behavior (Ruble et al., 2019).

There were no disability type differences among transition experiences between youth with and without disabilities, for both groups reported being employed after graduating from high school and a year after having graduated (Chambers et al., 2009). Disability type differences were observed among youth with visual impairments, where youth with low vision had a greater likelihood of obtaining employment than those with total blindness (Cmar, 2015). Park & Bouck (2018) also identified a disability type difference, with youth with moderate and severe intellectual disabilities being 0.28 times less likely to obtain paid employment than those with mild intellectual disabilities.

Other Characteristics. Age of beginning VR services was also a predictor of employment outcomes among youth with disabilities with youth that began services at 14 being more likely to be employed at the time their cases would close (58.8%) than those who began services at 16 years (45.6%; Cimera et al., 2014). Youth in urban schools awareness of post-school options, postschool aspirations, and steps involved in achieving their aspirations were not affected by disability status (Scanlon et al., 2008).

Medical Restoration Services

A total of two articles were identified that addressed how medical restoration services have an impact on employment outcomes among youth with disabilities. Medical restoration services are referred to services provided or in relation to occupational or physical therapists. Pierce et al. (2020) study revealed that peer-group-based occupational therapy transition readiness services positively impacted youth with disabilities, functional life skills, which are essential in a successful transition to adulthood. Johnson and Rose (2017) implemented a work capacity/work-hardening model, physical therapy-related intervention, among youth with intellectual disabilities that demonstrated an improvement on youth's physical functionality thus enhancing their work capacity through them being able to complete specific work tasks.

Limitations

There are several limitations within this study. First, the researchers acknowledge the limitations in looking at specific populations by disability type such as students with disabilities receiving IEP services for categories of speech-language, deaf-blindness, orthopedic impairments, and hearing impairments as many of the articles contained large data sets that did not always make a distinction as to what type of disability categories were part of the study. In addition, the severity of disability was not discussed in the sources and a limitation is acknowledged to whether severity of the disability makes a difference in secondary service and transition outcomes. In addition, specific search terms and eight databases were chosen, which may have limited the selection to find other studies that would assist in finding other secondary services that may be helpful to improve transition outcomes. However, these databases selected are the most popular databases in the rehabilitation counseling field. In addition, only studies between 2005 and 2020, peer reviewed, and published in English were selected so there may have been some publications that were not relevant, but not included in our search.

Implications and Future Directions

The findings of this scoping review demonstrate the need for more research to be conducted on the topic of secondary education services that improve transition to work that is not secondary analysis or quantitative research design as the majority of the research articles used a quantitative research design, and a need for future research to include interventions as there were very few interventions found within the scoping review. Five interventions were identified from the comprehensive scoping review. Two of the interventions were AST (sessions on iPad were used as employment supports in 2013 and sessions where VidAS was used to complete tasks independently in 2018), two interventions were on medical restoration services (OT/PT) – to assist with work capacity, and one intervention was specifically on transition services as the article discussed adolescence employment readiness center as a program model. These interventions suggest that educators and rehabilitation professionals can

work more closely with medical restoration services professionals, such as occupational therapists and physical therapists, to improve students' transition outcomes.

Student's personal factors and environmental factors in school districts (such as lack of financial resources, access to technology, and parent involvement) should be considered when looking at improving transition to work for youth with disabilities (such as improving participation and looking at service learning opportunities within the community) with contextual planning being critical for the team as well as the importance of addressing immediate needs of student and their families to increase IEP involvement. Research on the quality-of-life measures and looking at self-determination for youth with adolescents can be worthwhile as students demonstrate interest in pre-career services and students who receive SSI may feel pressured to find meaningful employment. Looking at student and family attitudes toward disability and work is critical in order to improve student outcomes from STW. Our findings give school districts and SVRAS a better overview on the secondary services that have been effective for youth with disabilities in transition. The WIOA requires that SVRAS set aside 15% of funding for pre-employment transition services for youth with disabilities, and this scoping review can help educators and rehabilitation professionals engage their efforts to improve employment outcomes for youth with disabilities. For example, rehabilitation professionals and educators can collaborate with medical restoration services staff to look at the ATS that may assist students in being more independent at work and in the community.

Based on our scoping review, the following recommendations are made for educators, rehabilitation professionals, and school administrators to increase the rates of youth with disabilities in transition in finding and maintaining successful and meaningful employment.

For educators and rehabilitation professionals:

1. Start student-centered transition planning and services as early as 13–14.
2. Look to provide opportunities for work experience (e.g., service learning) opportunities and paid internships for young adults with disabilities.

3. Encourage family involvement in IEP process specifically in the transition plan.
4. Consider the importance of writing IEPs that include transition goals that are meaningful, strengths based, and incorporate independence, autonomy, and self-determination into goals and services.
5. Promote positive student and family attitudes toward disability and work within the secondary school.
6. Work to incorporate technology into transition services (e.g., VidASs) and provide educators with professional learning opportunities to keep current with the latest interventions related to transition and AST as this is constantly changing.
7. Develop close relationships with other collaborative services such as VR agencies, OTs, and PTs in the community.

For superintendents and administrators:

1. Recognize and remember the role of student personal factors and environmental factors in school districts on employment outcomes of students.
2. Fund technology (e.g., tablets and smart pens) that students can use both in the classroom and at home.
3. Fund transportation of students to job sites (if there is no free, easily accessible transportation available).
4. Reach out to community businesses and organizations that might be interested in having student volunteers, interns, and/or employees and connect them to educators.
5. Fund regular meetings where parents can meet to share information about transition, ask questions of other parents, teachers, and other related professionals, and listen to speakers (such as adults with disabilities and their work experience). Funding should go to food for events, pay for speakers and other educators attending, and childcare.

CONCLUSION

Through this scoping review, we have identified potential barriers (lack of work experience and support throughout the IEP process) and facilitators (AT and

medical restoration services) that can assist secondary students in improving postsecondary outcomes. Findings of this scoping review provide essential information on the importance of this transition stage for youth with disabilities for the many stakeholders that are involved in this process including educators, administrators, and rehabilitation professionals. Finally, the findings of this study can help to develop additional interventions that may demonstrate the effectiveness of specific secondary services and examine contextual factors that may mediate the efficacy of these services in order to assist youth with disabilities in the transition from school to the workforce.

REFERENCES

- Anderson, C., Schlegelmilch, A., & Hartman, E. (2019). Wisconsin PROMISE cost-benefit analysis and sustainability framework. *Journal of Vocational Rehabilitation, 51*, 253–261. <https://doi.org/10.3233/JVR-191043>
- Arksey, H., & O'Malley, L. (2005). Scoping studies: Towards a methodological framework. *International Journal of Social Research Methodology, 8*(1), 19–32. <https://doi.org/10.1080/1364557032000119616>
- Bouck, E., & Joshi, G. (2015). Does curriculum matter for secondary students with autism spectrum disorders: Analyzing the NLTS2. *Journal of Autism & Developmental Disorders, 45*(5), 1204–1212. <https://doi.org/10.1007/s10803-014-2281-9>
- Bouck, E. C., Maeda, Y., & Flanagan, S. M. (2012). Assistive technology and students with high-incidence disabilities: Understanding the relationship through the NLTS2. *Remedial & Special Education, 33*(5), 298–308. <https://doi.org/10.1177/0741932511401037>
- Carter, E. W., Austin, D., & Trainor, A. A. (2011). Predictors of postschool employment outcomes for young adults with severe disabilities. *Journal of Disability Policy Studies, 23*, 50–63. <https://doi.org/10.1177/1044207311414680>
- Cavendish, W., & Connor, D. (2018). Toward authentic IEPs and transition plans: Student, parent, and teacher perspectives. *Learning Disability Quarterly, 41*(1), 32–43. <https://doi.org/10.1177/0731948716684680>
- Cawthon, S. W., & Caemmerer, J. M. (2014). Parents' perspectives on transition and postsecondary outcomes for their children who are D/deaf or hard of hearing. *American Annals of the Deaf, 159*(1), 7–21. <https://doi.org/10.1353/aad.2014.0013>

- Chambers, D., Rabren, K., & Dunn, C. (2009). A comparison of transition from high school to adult life of students with and without disabilities. *Career Development for Exceptional Individuals*, 32(1), 42–52. <https://doi.org/10.1177/0885728808323944>
- Chandroo, R., Strnadová, I., & Cumming, T. M. (2018). A systematic review of the involvement of students with autism spectrum disorder in the transition planning process: Need for voice and empowerment. *Research in Developmental Disabilities*, 83, 8–17. <https://doi.org/10.1016/j.ridd.2018.07.011>
- Cimera, R. E., Burgess, S., & Bedesem, P. L. (2014). Does providing transition services by age 14 produce better vocational outcomes for students with intellectual disability? *Research & Practice for Persons with Severe Disabilities*, 39(1), 47–54. <https://doi.org/10.1177/1540796914534633>
- Cmar, J. L. (2015). Orientation and mobility skills and outcome expectations as predictors of employment for young adults with visual impairments. *Journal of Visual Impairment & Blindness*, 109(2), 95–106. <https://doi.org/10.1177/0145482X1510900205>
- Deci, E. L., & Ryan, R. M. (2000). The “what” and “why” of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, 11, 227–268. https://doi.org/10.1207/S15327965PLI1104_0
- Eilenberg, J. S., Paff, M., Harrison, A. J., & Long, K. A. (2019). Disparities based on race, ethnicity, and socioeconomic status over the transition to adulthood among adolescents and young adults on the autism spectrum: A systematic review. *Current Psychiatry Reports*, 21(5), N.PAG-N.PAG. <https://doi.org/10.1007/s11920-019-1016-1>
- Enayati, H., & Karpur, A. (2019). Impact of participation in school-to-work programs on postsecondary outcomes for youth with disabilities from low-income families. *Journal of Disability Policy Studies*, 29(4), 235–244. <https://doi.org/10.1177/1044207318789419>
- Gaumer Erickson, A. S., Noonan, P. M., Brussow, J. A., & Gilpin, B. J. (2014). The impact of IDEA indicator 13 compliance on postsecondary outcomes. *Career Development for Exceptional Individuals*, 37(3), 161–167. <https://doi.org/10.1177/2165143413481497>
- Hill, D. A., Belcher, L., Brigman, H. E., Renner, S., & Stephens, B. (2013). The Apple iPad™ as an innovative employment support for young adults with autism spectrum disorder and other developmental disabilities. *Journal of Applied Rehabilitation Counseling*, 44(1), 28–37. <https://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,uid&db=rz&AN=104273740&site=ehost-live&scope=site>
- Hirano, K. A., Rowe, D., Lindstrom, L., & Chan, P. (2018). Systemic barriers to family involvement in transition planning for youth with disabilities: A qualitative metasynthesis. *Journal of Child & Family Studies*, 27(11), 3440–3456. <https://doi.org/10.1007/s10826-018-1189-y>
- Johnson, C. (2008). Post-school outcomes for students in the state of Washington, USA, receiving special education services. *Journal of the International Association of Special Education*, 9(1), 78–88.
- Johnson, C. C., & Rose, D. S. (2017). School-based work capacity evaluation in young people with intellectual disabilities: Two case reports. *Pediatric Physical Therapy*, 29(2), 166–172. <https://doi.org/10.1097/PEP.0000000000000367>
- Johnson, M., Spriggs, A. D., Shepley, S. B., Allan Allday, R., & Samudre, M. (2019). Video activity schedules to increase independence for students with disabilities. *Journal of Developmental & Physical Disabilities*, 31(1), 73–88. <https://doi.org/10.1007/s10882-018-9631-z>
- Kelly, S. M. (2011). The use of assistive technology by high school students with visual impairments: A second look at the current problem. *Journal of Visual Impairment & Blindness*, 105(4), 235–239. <https://doi.org/10.1177/0145482X1110500405>
- Lombardi, A. R., Kern, L., Flannery, K. B., & Doren, B. (2017). Is college and career readiness adequately addressed in annual and postsecondary goals? *Journal of Disability Policy Studies*, 28(3), 150–161. <https://doi.org/10.1177/1044207317716147>
- McDonnall, M. C. (2010). Factors predicting post-high school employment for young adults with visual impairments. *Rehabilitation Counseling Bulletin*, 54(1), 36–45. <https://doi.org/10.1177/0034355210373806>
- McDonnall, M. C. (2011). Predictors of employment for youths with visual impairments: Findings from the Second National Longitudinal Transition Study. *Journal of Visual Impairment & Blindness*, 105(8), 453–466. <https://doi.org/10.1177/0145482X1110500802>
- Hartman, E., Schlegelmich, A., Roskowski, M., Anderson, C.A., & Tansey, T. N. (2019). Early findings from the Wisconsin PROMISE project: Implications for policy and practice. *Journal of Vocational Rehabilitation*, 51, 167–181. <https://doi.org/10.3233/JVR-191036>
- Molfenter, N., Hartman, E., Neugart, J., Swedeen, B., Webb, S., Roskowski, M., & Schlegelmilch, A. (2018). Harnessing the power of community conversations to improve transition outcomes for youth with

- IDD. *Journal of Disability Policy Studies*, 28, 216–228. <https://doi.org/10.1177/1044207317739406>
- Molfenter, N., Hartman, E., Neugart, J., & Webb, S. (2017). Let's get to work Wisconsin: Launching youth with intellectual and developmental disabilities into the workforce. *Journal of Vocational Rehabilitation*, 47, 379–390. <https://doi.org/10.3233/JVR-170910>
- O'Connor, M. P. (2009). Service works. *Teaching Exceptional Children*, 41(6), 13–17. <https://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,uid&db=ehh&AN=42514994&site=ehost-live&scope=site>
- Park, J., & Bouck, E. (2018). In-school service predictors of employment for individuals with intellectual disability. *Research in Developmental Disabilities*, 77, 68–75. <https://doi.org/10.1016/j.ridd.2018.03.014>
- Parsons, H. M., Harlan, L. C., Lynch, C. F., Hamilton, A. S., Wu, X. C., Kato, I., Schwartz, S. M., Smith, A. W., Keel, G., Keegan, T. H., Parsons, H. M., Harlan, L. C., Lynch, C. F., Hamilton, A. S., Wu, X.-C., Kato, I., Schwartz, S. M., Smith, A. W., Keel, G., & Keegan, T. H. M. (2012). Impact of cancer on work and education among adolescent and young adult cancer survivors. *Journal of Clinical Oncology*, 30(19), 2393–2400. <https://doi.org/10.1200/JCO.2011.39.6333>
- Pierce, D., Sakemiller, L., Spence, A., & LoBianco, T. (2020). Effectiveness of transition readiness interventions by school-based occupational therapy personnel. *OTJR: Occupation, Participation & Health*, 40(1), 27–35. <https://doi.org/10.1177/1539449219850129>
- Plow, M. A., Finlayson, M., & Rezac, M. (2011). A scoping review of self-management interventions for adults with multiple sclerosis. *PM&R*, 3(3), 251–262. <https://doi.org/10.1016/j.pmrj.2010.11.011>
- Rubenstein, E., Shendell, D. G., Eggert, B. C., & Marcella, S. W. (2014). Personal protective equipment use among students with special health care needs reporting injuries in school-sponsored vocational, career, and technical education programs in New Jersey. *Workplace Health & Safety*, 62(1), 12–18. <https://doi.org/10.3928/21650799-20131220-03>
- Ruble, L., McGrew, J. H., Wong, V., Adams, M., & Yu, Y. (2019). A preliminary study of parent activation, parent-teacher alliance, transition planning quality, and IEP and postsecondary goal attainment of students with ASD. *Journal of Autism & Developmental Disorders*, 49(8), 3231–3243. <https://doi.org/10.1007/s10803-019-04047-4>
- Scanlon, D., Saxon, K., Cowell, M., Kenny, M. E., Pérez-Gualdrón, L., & Jernigan, M. (2008). Urban adolescents' postschool aspirations and awareness. *Remedial & Special Education*, 29(3), 161–174. <https://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,uid&db=rzh&AN=105760277&site=ehost-live&scope=site>
- Schlegelmilch, A., Roskowski, M., Anderson, C., Hartman, E., & Decker-Mauer, H. (2019). The impact of work incentives benefits counseling on employment outcomes of transition-age youth receiving supplemental security income (SSI) benefits. *Journal of Vocational Rehabilitation*, 51, 127–136. <https://doi.org/10.3233/JVR-191032>
- Shogren, K. A., & Shaw, L. A. (2016). The role of autonomy, self-realization, and psychological empowerment in predicting outcomes for youth with disabilities. *Remedial & Special Education*, 37(1), 55–62. <https://doi.org/10.1177/0741932515585003>
- Test, D. W. & Cease-Cook, J. (2012.) Evidence-based secondary transition practices for rehabilitation counselors. *Journal of Rehabilitation*, 78, 30–38.
- Test, D. W., Mazzotti, V. L., Mustian, A. L., Fowler, C. H., Kortering, L., & Kohler, P. (2009). Evidence-based transition predictors for improving post school outcomes for students with disabilities. *Career Development for Exceptional Individuals*, 32, 180–181. <https://doi.org/10.1177/0885728809346960>
- US Senate Committee on Health, Education, Labor and Pensions (SCHELP) (2012) *Unfinished business: Making hiring people with disabilities a national priority*. Author. <https://www.harkin.senate.gov/documents/pdf/500469b49b364.pdf>
- Wolf-Branigin, M., Schuyler, V., & White, P. (2007). Improving quality of life and career attitudes of youth with disabilities: Experiences from the adolescent employment readiness center. *Research on Social Work Practice*, 17(3), 324–333. <https://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,uid&db=rzh&AN=105902606&site=ehost-live&scope=site>

Disclosure. The authors have no relevant financial interest or affiliations with any commercial interests related to the subjects discussed within this article.

Funding. The author(s) received no specific grant or financial support for the research, authorship, and/or publication of this article.

Correspondence regarding this article should be directed to Deborah Lee, Marquette University, Milwaukee, WI, USA. E-mail: d.k.lee@marquette.edu