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Skills, Behaviors, Expectations, and Experiences Associated with Improved Postsecondary Outcomes for Students with Significant Cognitive Disabilities

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Abstract

An in-depth literature review was conducted to identify the skills, behaviors, expectations, and experiences (SBEEs) associated with employment, further education, and independent living for students with significant cognitive disabilities following high school. Analysis of 53 quantitative and qualitative studies identified 103 specific SBEEs associated with post high school outcomes. We then clustered the SBEEs into 10 constructs. We present the constructs and representative SBEEs, discuss implications for their use, and identify next steps needed to develop a new research-based transition assessment for students with significant cognitive disabilities associated with positive post-school transition outcomes.

Keywords

students with significant cognitive disabilities, transition assessment, post-school outcomes

The Individuals with Disabilities Education Act (IDEA, 2004) mandates all students with an Individualized Education Program (IEP) have a transition plan established when the student turns 16 years old. The purpose of transition planning is to prepare students for education and training, employment, and independent living after high school. Educators are tasked with identifying current student strengths and interests and providing instruction in areas of need to ensure students leave high school equipped with skills and experiences associated with positive outcomes. Transition plans must include strengths, needs, interests, and preferences identified by age-appropriate transition assessment (Carter et al., 2014; Papay & Bambara, 2014). Naturally, many students with an IEP take an active role in their assessment by completing paper/pencil or online assessments, participating in skill assessments, and engaging in interviews; however, students with significant cognitive disabilities have more barriers and challenges to accessing appropriate transition assessments. For example, students with significant cognitive disabilities have varying disability labels and a wide range of abilities and challenges; they are often defined by their participation in alternate achievement tests (Kleinert et al., 2015). Previous to the No Child Left Behind Act (NCLB, 2002) and

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IDEA (2004), students with significant cognitive disabilities were often entirely excused from all state testing; however, both mandates required states to develop appropriate methods to assess these students, which would allow students to demonstrate their knowledge and skills (Bowen & Rude, 2006). States responded by creating alternate assessments aligned to the state's academic standards and using professional judgment to determine achievement of the standards (Browder et al., 2006).

Similar to the academic testing progression for students with significant cognitive disabilities, transition assessments need to also allow for participation of students with distinct challenges. While multiple definitions of transition assessments specify the goal is to assess individuals with disabilities (Sitlington & Clark, 2006; Test et al., 2006; Wehman, 2011), few transition assessments have been adapted to meet the needs of students with significant cognitive disabilities. Available transition assessments for this population include Enderle-Severson Transition Rating Scales–Severe (ESTR-S, Enderle & Severson, 1991), Adaptive Behavior Evaluation Scale-3 (ABES-3, McCarney & House, 2017), and Personal Preference Indicators (Moss, 2006); however, these assessments are missing a key component of transition assessments—direct student input. In addition, current transition assessments are rooted in vocational evaluation and career assessment (Sitlington & Clark, 2006), which do not address goals related to independent living.

While Browder and colleagues (2006) credited the creation of alternate assessments as a key component to encourage access to the general curriculum for students with significant cognitive disabilities, inclusion of students with disabilities has been stressed and debated in the field of special education for decades. Even though more students with mild to moderate disabilities are taught in general education settings, some states report only 3.9% of students with significant cognitive disabilities are taught with their typically developing peers for 80% or more of the school day (Kurth et al., 2014). Regardless of the state, educators need to teach students with significant cognitive disabilities skills and provide experiences research has shown to affect their employment, further education, and independent living. Most would agree students with significant cognitive disabilities deserve a comprehensive education that includes a wide variety of skills (Dukes et al., 2017); still, little guidance is given on what these skills should be. College and career readiness skills have been established for typically developing students and those with mild to moderate disabilities, but little has been done to ensure students with significant cognitive disabilities are also college and career ready (Morningstar et al., 2017).

McConnell et al. (2013) identified nonacademic skills, behaviors, expectations, and experiences (SBEEs) associated with post-school employment and education for students with mild to moderate disabilities. These SBEEs were reviewed and grouped into constructs before being developed into items to measure student status within each construct. After numerous validation and reliability studies and revisions, the Transition Assessment and Goal Generator (TAGG; Martin et al., 2015) became an online transition assessment that produced a profile listing student strengths, needs, present levels of proficiency, and example potential annual goals based on the individualized results. No assessment like this is currently available for students with significant cognitive disabilities; one cannot assume the SBEEs that apply to students with mild to moderate disabilities will also apply to students with significant cognitive disabilities. It is reported that students with significant cognitive disabilities have poorer outcomes as adults when compared with other students with disabilities (Richter & Test, 2011). It is vitally important to identify SBEEs research has identified as contributing to post-school employment, education, and independent living specifically for students with significant cognitive disabilities and to use the information to inform development of a transition assessment designed for this population. The purpose of this article is to identify and describe the SBEEs and associated constructs that apply specifically to students with significant cognitive disabilities.

Method

The Research Team

A research team collaboratively determined the process to identify research studies that met inclusion and exclusion criteria for the literature review. They reviewed the studies, identified key components, arranged the key components into constructs, and created associated lists of SBEEs within each construct. The team consisted of researchers from two organizations specializing in special education research, transition, and

assessment. Members included those who were former special educators and/or had direct service experience with students with significant cognitive disabilities.

Identification of Research Studies

The research team established a process to identify research studies to include in the literature review. First, a group of doctoral students conducted an extensive online search via "EBSCOhost," using the terms "students with significant cognitive disabilities," "intellectual disability," "mental retardation," "severe disability," "significant support needs," "complex support needs," "follow-up," "education," "employment," "independent living," and "post-school." In addition, a list of secondary analyses of the National Longitudinal Transition Study-2 (NLTS2) data prepared by the National Technical Assistance Center on Transition (Mazzotti et al., 2016) was reviewed to identify additional studies including students with significant cognitive disabilities. The team conducted an additional search of articles that cited the already identified articles to ensure a vast search. This process resulted in a total of 161 possible studies for review. All identified studies were entered into a spreadsheet to report authors and date; title; name of journal; population included in the study; study design; whether the study included employment, education, or independent living indicators; and a brief synopsis of the relevant SBEE identified in the article and the relationship to the associated outcome. The research team reviewed each study and applied the inclusion and exclusion criteria to determine the relevance of the information in the article to the postsecondary needs of students with significant cognitive disabilities.

Inclusion and Exclusion Criteria

The research team included studies that (a) clearly identified SBEEs associated with post high school employment, education, or independent living; (b) identified either academic or nonacademic indicators associated with improved post-school outcomes; (c) included individuals identified by the study's author(s) as having significant cognitive disabilities via explicit statement or specification of a disability category primarily associated with significant cognitive disabilities (e.g., intellectual disability, mental retardation); and (d) were published between 1975 and 2018. Excluded studies (a) only included individuals with mild disabilities and high incidence disabilities, (b) only identified in-school student success indicators, or (c) only specified a disability category without providing information related to the significance or level of severity of the disability (e.g., students with intellectual disability) or specified a disability category without also specifying "significant cognitive disabilities" (e.g., students with autism spectrum disorder). To identify the most comprehensive list possible, the research team did not make any decisions based on a study's design; however, the inclusion criteria specified there must be a relationship between indicators and improved outcomes. After the literature review process was completed, there were 53 articles that identified SBEEs associated with positive post-school outcomes for students with significant cognitive disabilities. To help identify the most relevant research, the research team divided the final set of articles into two groups. Primary articles were defined as meeting the full inclusion criteria set by the research team, whereas associated articles included individuals identified as having significant cognitive disabilities but met only one of the two other inclusion criteria. The team sent the list to five expert advisors across the nation to confirm all relevant studies dating back to 1975 were included.

Construct Development and Organization

The SBEEs identified in the literature review were grouped into constructs by the research team based on their conceptual similarities (e.g., academics, social skills) or the context in which they would be addressed (e.g., school, work, home). A few identical or similar SBEEs occurred in more than one construct, which was expected as some SBEEs occur in multiple environments or situations. The constructs and SBEEs were then sent to the expert advisors for feedback; this feedback was used to reexamine the initial constructs and SBEEs. Next, the research team reworded each SBEE into an observable and measurable format and

categorized each SBEE as one of three types: (a) experience/service delivery, (b) individual skill, or (c) support need.

Summary Description of Constructs

Ten constructs emerged from the literature review: (a) academics, (b) agency assistance, (c) employment, (d) family home expectations and support, (e) personal experiences, (f) school experiences, (g) self-determination, (h) self-care, (i) social, and (j) technology. A description of each construct is provided in the following sections and in Table 1.

Academics

Students with significant cognitive disabilities who can read, are integrated with similarly aged typically developing peers, are included in general education, have higher functional academic skills, and are able to complete 3-step tasks are more likely to experience employment and education after high school (Baer et al., 2011; Foley et al., 2012; Heal & Rusch, 1995; Lemaire & Mallik, 2008; Papay & Bambara, 2014; White & Weiner, 2004). Reading (Lemaire & Malik, 2008), being included in school settings that provide high degrees of integration with similarly aged typical peers (White & Weiner, 2004), and ability to complete 3-step tasks (Foley et al., 2012) are associated with improved employment outcomes. Receiving instruction in the general education classroom more than 80% of the school day predicts further education for students with significant cognitive disabilities (Baer et al., 2011). Secondary analyses of NLTS and NLTS-2 data included telling time on a clock, reading and understanding common signs, counting change, and looking up telephone numbers in a phonebook as academic skills students with significant cognitive disabilities need for better post-school outcomes in both education and employment (Heal & Rusch, 1995; Papay & Bambara, 2014).

Agency Assistance

Students with significant cognitive disabilities who receive services from outside agencies early in their secondary school education have better employment outcomes than those who apply later (Brigman, 2014). In fact, Kaya and colleagues (2016) found individuals who received more vocational rehabilitation services at higher expenditure levels were more likely to obtain competitive employment. Agencies can provide a wide variety of services and training beneficial to students with significant cognitive disabilities, including job readiness training (Kaya et al., 2016), job search and placement assistance (Heal et al., 1990; Kaya et al., 2016), personal guidance assistance (Kaya et al., 2016), on-site employment coaching (Kaya et al., 2016), and community-based training in nonschool natural environments (Heal et al., 1990; Hood et al., 1996; Kaya et al., 2016; Reid et al., 1998; Wehman et al., 2014; White & Weiner, 2004). Agencies can involve supportive employers and paid and unpaid coworkers to provide authentic job training experiences (Hagner et al., 1995; Hood et al., 1996). Agencies may also seek input to identify family and friends who could provide employment (Hagner et al., 1995). In addition, agencies can provide equipment, supplies, and medical care, depending on the specific situation of the student (Kaya et al., 2016). Supported employment and job coach training for job coaches have also increased the likelihood for post-school employment for students with significant cognitive disabilities (Hood et al., 1996; Wehman et al., 2014). A collaboration of professionals, agencies, and family members can affect post-school outcomes more than each group working alone (Isakson et al., 2006; Papay & Bambara, 2014).

Employment

Students with significant cognitive disabilities need employment SBEEs inclusive of the application process and beyond to obtain and maintain employment (Molina & Demchak, 2016). Employees need to be efficient, dependable, interested in the job, and flexible enough to adapt to new situations (Chamberlain,

Table 1. Constructs: Research-Identified SBEEs.

Representative SBEEs	Studies	Type	Associated outcome(s)
Construct 1: Academics			
Inclusion in general education at least 80% of the school day	Baer et al. (2011)[a]	Experience/Service Delivery	Education
High academic skills—tell time on a clock; read and understand common signs; count change; look up telephone numbers in a phonebook	Heal & Rusch (1995)[a] Papay & Bambara (2014)[b]	Individual Skill	Employment, Education
Included in school settings that provide high degrees of integration with similar age typical peers	White & Weiner (2004)[a]	Experience/Service Delivery	Employment
Ability to read	Lemaire & Malik (2008)[a]	Individual Skill	Employment
Ability to follow a 3-step task	Foley et al. (2012)[b]	Individual Skill	Employment
Construct 2: Agency Assistance			
Community- and/or school-based job readiness training (e.g., appropriate work behaviors, methods to get to work on time, appropriate dress/grooming, methods for increasing productivity, social skills, domestic skills, accessing public transportation, on-the-job training)	Kaya et al. (2016)[a] White & Weiner (2004)[a]	Experience/Service Delivery	Employment
On-site support services including coaching, follow-up, follow along	Kaya et al. (2016)[a]	Experience/Service Delivery	Employment
Job search assistance (preparing resumes, identifying job opportunities, developing interview skills, making contacts with companies)	Kaya et al. (2016)[a]	Experience/Service Delivery	Employment
Job placement assistance (referral to a specific job resulting in an interview)	Kaya et al. (2016)[a]	Experience/Service Delivery	Employment
Community-based supported employment (e.g., competitive work in an integrated setting with ongoing support services)	Reid et al. (1998)[b] Wehman et al. (2014)[a]	Experience/Service Delivery	Employment
Involving employers/coworkers in job training and support	Hagner et al.(1995)[b]	Experience/Service Delivery	Employment
Placement specialist support	Heal et al.(1990)[b]	Experience/Service Delivery	Employment
Paid coworker who has received training in providing support to an individual with intellectual disability (ID)	Hood et al.(1996)[b]	Experience/Service Delivery	Employment
Job coach training for the job coach	Hood et al.(1996)[b]	Experience/Service Delivery	Employment

(continued)

Table 1. (continued)

Representative SBEEs	Studies	Type	Associated outcome(s)
Collaboration of professionals and family members	Isakson et al. (2006)[b]	Experience/Service Delivery	Employment
Interagency involvement (Adult service agency representative participated in transition planning)	Papay & Bambara (2014)[b]	Experience/Service Delivery	Employment
Vocational rehabilitation counseling and guidance services (e.g., personal adjustment counseling; counseling addressing medical, family, or social issues, and vocational counseling), including expenditure levels over time and when services began	Kaya et al. (2016)[a] Brigman (2014)[a]	Experience/Service Delivery	Employment
Works with agencies that involve family/friends in job development and supportive employers	Hagner et al. (1995)[b]	Experience/Service Delivery	Employment
Construct 3: Employment			
Knows where to look for jobs or find employers with experience hiring individuals with severe disabilities	Brolin et al. (1975)[a] Levy et al. (1992)[b]	Individual Skill	Employment
Uses social networks to obtain employment (e.g., pursues potential career advantages related to social networks, uses self-family-friend network to find jobs, and maintains strong professional support network)	Carey et al. (2004)[b] Hasazi et al. (1985)[b] Isakson et al. (2006)[b] Eisenman (2007)[b] Hagner et al. (1995)[b]	Individual Skill	Employment
Knows how to apply for jobs (e.g., the application process, resumes)	Molina & Demchak (2016)[b]	Individual Skill	Employment
Demonstrates interest in the job	Chamberlain (1998)[a]	Individual Skill	Employment
Demonstrates ability to work efficiently (e.g., completes tasks in a timely manner)	Chamberlain (1998)[a] Martin et al. (1986)[a] Hanley-Maxwell et al. (1986)[b]	Individual Skill	Employment
Displays adequate quality of work and demonstrates ability to maintain adequate work quality	Lemaire & Malik (2008)[a] Hanley-Maxwell et al. (1986)[b]	Individual Skill	Employment
Demonstrates ability to adapt to new work situations (e.g., demonstrates flexibility at work)	Chamberlain (1998)[a] Hanley-Maxwell et al. (1986)[b]	Individual Skill	Employment
Demonstrates ability to maintain reasonable work attendance (e.g., leaves job site at appropriate times, consistently calls in to report absences, shows up for work with low absence rate, shows up for work on time, understands the importance of job attendance)	Lemaire & Malik (2008)[a] Hanley-Maxwell et al. (1986)[b] Molina & Demchak (2016)[b]	Individual Skill	Employment

(continued)

Table 1. (continued)

Representative SBEEs	Studies	Type	Associated outcome(s)
Demonstrates compliance and ability to follow instructions (e.g., follows directions on the job)	Hanley-Maxwell et al. (1986)[b] Molina & Demchak (2016)[b]	Individual Skill	Employment
Demonstrates truthfulness/ honesty at work (e.g., does not steal)	Hanley-Maxwell et al. (1986)[b] Molina & Demchak (2016)[b]	Individual Skill	Employment
Asks for assistance when needed	Molina & Demchak (2016)[b]	Individual Skill	Employment
Demonstrates ability to show initiative (i.e., complete tasks and/or moves from one task to another without being told)	Hanley-Maxwell et al. (1986)[b]	Individual Skill	Employment
Construct 4: Family Home Expectations & Support			
Engages in household responsibilities (e.g., fixes own breakfast, does laundry, cleans room, goes to store)	Carter et al. (2012)[a] Carter et al. (2011)[b] Spreat & Conroy (2015)[a]	Individual Skill	Employment
Expectations from family of being self-supporting after high school	Carter et al. (2012)[a] Heal et al. (1990)[b]	Experience/Service Delivery	Employment
Practices independent behaviors away from home	Isakson et al. (2006)[b]	Individual Skill	Employment, Independent Living
Interacts with peers who have goals and aspirations for career and independent living	Isakson et al. (2006)[b]	Experience/Service Delivery	Employment, Independent Living
Expectations from family of paid work experience during high school	Carter et al. (2011)[b]	Experience/Service Delivery	Employment
Expectations from family of paid employment	Carter et al. (2012)[a] Doren et al. (2012)[a] Simonsen & Neubert (2012)[a] Martinez et al. (2012)[b]	Experience/Service Delivery	Education, Employment
Expectations/desires from family of postsecondary education	Doren et al. (2012)[a] Martinez et al. (2012)[b]	Experience/Service Delivery	Education
Attends a school that provides families with employment information	Blustein et al. (2016)[b]	Experience/Service Delivery	Employment
Has family members that are familiar with vocational supports	Blustein et al. (2016)[b]	Experience/Service Delivery	Employment
Has family members that encourage and support engagement in social networks and community acquaintances separate from families	Eisenman (2007)[b]	Experience/Service Delivery	Employment
Has family/home support for independent living	Isakson et al. (2006)[b]	Experience/Service Delivery	Employment, Independent Living

(continued)

Table 1. (continued)

Representative SBEEs	Studies	Type	Associated outcome(s)
Has family that gets information about postsecondary education options from a variety of resources (e.g., family/friends, journals/newsletters, school staff, and support organization meetings)	Martinez et al. (2012)[b]	Experience/Service Delivery	Education
Has family that participates in school-sponsored or nonschool-sponsored activity regarding postsecondary education (e.g., transition workshops, parent workshops)	Martinez et al. (2012)[b]	Experience/Service Delivery	Education
Has family involved in transition planning with school staff	Papay & Bambara (2014)[b]	Experience/Service Delivery	Education
Has siblings that advocate for disability rights (e.g., better services, statewide legislative advocacy)	Kramer et al. (2013)[b]	Experience/Service Delivery	Employment, Independent Living
Has siblings that plan to provide support (e.g., financial, social) for independent living	Kramer et al. (2013)[b]	Experience/Service Delivery	Employment, Independent Living
Has career-related experiences at home and in the community (e.g., chores at home, volunteering)	Blustein et al. (2016)[b]	Experience/Service Delivery	Employment
Construct 5: Personal Experiences			
Has work experience (i.e., paid, full- or part-time, or summer work)	Brolin et al. (1975)[a] Simonsen & Neubert (2012)[a] Blustein et al. (2016) [b] Hasazi et al. (1985)[b] Carter et al. (2010)[b] Papay & Bambara (2014)[b] Rossetti et al. (2015)[b]	Experience/Service Delivery	Employment
Does not and has not received Social Security disability	Kaya et al. (2016)[a]	Experience/Service Delivery	Employment
Participated in occupational/ vocational training (e.g., job skill training provided by community college and/or a business, vocational trade, or technical school to prepare student for employment—does not lead to a degree or higher certification)	Kaya et al. (2016)[a] Kaehne (2016)[a]	Experience/Service Delivery	Employment
Has no history of illegal activity	Lemaire & Mallik (2008)[a]	Experience/Service Delivery	Employment
Attending postsecondary education experience program	E. J. Moore & Schelling (2015)[b]	Experience/Service Delivery	Employment
Has college or university training	O'Neill et al. (2015)[b]	Experience/Service Delivery	Employment

(continued)

Table 1. (continued)

Representative SBEEs	Studies	Type	Associated outcome(s)
Participates in community setting and job training (i.e., 1:1 behavior support plan, staff training, and ecological impact of the job placement)	West & Patton (2010)[b]	Experience/Service Delivery	Employment, Independent Living
Has a positive attitude	Lemaire & Mallik (2008)[a] Isakson et al. (2006) [b]	Individual Skill	Employment, Independent Living
Has community mobility skills	Simonsen & Neubert (2012)[a]	Individual Skill	Employment
Has access to transportation	Lemaire & Mallik (2008)[a]	Experience/Service Delivery	Employment
Construct 6: School Experiences			
Participates in vocational/ training/work study experiences (during her/his secondary program)	Brolin et al. (1975)[a] Hasazi et al. (1985)[b]	Experience/Service Delivery	Employment
Participates in paid work (i.e., both paid school-sponsored work and paid community employment)	Carter et al. (2012)[a]	Experience/Service Delivery	Employment
Participates in school-supervised work experiences in the community during high school	Daviso et al. (2016)[a]	Experience/Service Delivery	Employment
Participates in a specialized vocational program (i.e., within a private business- for example, Project SEARCH)	Kaehne (2016)[a]	Experience/Service Delivery	Employment
Has a teacher that holds high expectations for youth to be employed	Blustein et al. (2016)[b] Carter et al. (2010)[b]	Experience/Service Delivery	Employment
Collaboration of professionals and family members	Isakson et al. (2006)[b]	Experience/Service Delivery	Employment
Has a vocational goal in their IEP (not pre-vocational)	Carter et al. (2011)[b]	Experience/Service Delivery	Employment
Engages in the community and participates in personally meaningful activities	Rossetti et al. (2015)[b]	Experience/Service Delivery	Independent Living
Participates in a vocational program that includes family involvement, work experiences, life skills, and interagency involvement	Luecking & Certo (2002)[b]	Experience/Service Delivery	Employment
Receives life skills instruction (life skills not defined)	Papay & Bambara (2014)[b]	Experience/Service Delivery	Employment
Construct 7: Self-Determination			
Demonstrates empowerment (defined as people who see themselves as in control of outcomes in their lives, have an internal locus of control)	Berry et al. (2012)[a]	Individual Skill	Education

(continued)

Table 1. (continued)

Representative SBEEs	Studies	Type	Associated outcome(s)
Demonstrates autonomy (from dependence to self-care; in control of one's life; has had the opportunity for choice making and turn taking)	Berry et al. (2012)[a] Sigafoos et al. (1993)[b]	Individual Skill	Education, Independent Living
Not afraid of looking for work	Brolin et al. (1975)[a]	Individual Skill	Employment
Has self- advocacy skills (e.g., running their own meetings, actively involved in planning process)	Mazzotti et al. (2015)[b]	Individual Skill	Education
Has self-advocacy skills (e.g., asks for what he or she needs to do his or her best in class like asking for enlarged print or pictures of tasks)	Carter et al. (2012)[a] Molina & Demchak (2016)[b]	Individual Skill	Employment
Demonstrates self-management (e.g., ability to self-evaluate; goal setting, self-evaluation of work productivity, ability to self-reinforce, self-instruct)	Grossi & Heward (1998)[b] S. C. Moore et al. (1989)[b]	Individual Skill	Employment
Demonstrates self-determination	Isakson et al. (2006)[b]	Individual Skill	Employment, Independent Living
Construct 8: Self-Care			
Has independence in living (e.g., feeding and dressing independently, ability to take care of personal self-care needs and activities of daily living) and functional skills (e.g., reading/ understanding common signs, telling time on a clock with hands, counting change, looking up phone numbers, and using the telephone)	Carter et al. (2012)[a] Poppen et al. (2017)[a] Carter et al. (2011)[b] Foley et al. (2012)[b] Blustein et al. (2016)[b] Heal & Rusch (1995)[a]	Individual Skill	Employment, Independent Living
Travel skills	Gruber et al. (1979)[b]	Individual Skill	Education
Has ability to take care of health issues	Rossetti et al. (2015)[b] Heal & Rusch (1994)[b]	Individual Skill	Independent Living
Demonstrates ability to find staff (hire habilitation and training center staff (HTC))	Rossetti et al. (2015)[b]	Individual Skill	Independent Living
Construct 9: Social			
Has appropriate classroom social skills (i.e., gets along with peers, follows directions, and acts appropriately in class)	Carter et al. (2012)[a] Foley et al. (2012)[b] Heal & Rusch (1994)[b] Miller & Chan (2008)[b]	Individual Skill	Employment, Independent Living
Has appropriate classroom behavior (i.e., completes homework on time, participates in class discussion, stays focused on work, and engages in class activities)	Carter et al. (2012)[a] Heal & Rusch (1994)[b]	Individual Skill	Employment, Independent Living

(continued)

Table 1. (continued)

Representative SBEEs	Studies	Type	Associated outcome(s)
Gets along well with coworkers, customers, and supervisors (in an employment setting)	Lemaire & Malik (2008)[a] Heal et al. (1990)[b] Molina & Demchak (2016)[b] Heal & Rusch (1994)[b] Miller & Chan (2008)[b]	Individual Skill	Employment, Independent Living
Maintains an appropriate personal appearance (in an employment setting)	Chamberlain (1998)[a] Hanley-Maxwell et al. (1986)[b]	Individual Skill	Employment
Positive social behavior (in an employment setting)—Temperament (affective quality of worker's behavior on the job): Stays on task; refrains from outbursts; behaves appropriately toward coworkers	Martin et al. (1986)[a] Greenspan & Shoultz (1981)[b] Heal & Rusch (1994)[b] Hanley-Maxwell et al. (1986)[b]	Individual Skill	Employment, Independent Living
Positive social behavior (in an employment setting)—Character (moral quality of subjects' behavior in the workplace): maintains adequate attendance, is reliable and dependable, not antisocial or irresponsible, does not steal or assault coworkers	Martin et al. (1986)[a] Greenspan & Shoultz (1981)[b] Heal et al. (1990)[b] Heal & Rusch (1994)[b]	Individual Skill	Employment, Independent Living
Positive social behavior (in an employment setting)—Awareness (social awareness—understanding of people: coworkers, supervisors, customers; and understanding of work settings: appropriate conversations, appropriate inquisitiveness): understands social cues, follows the rules, respects workplace norms (e.g., talks an appropriate amount, does not disturb other employees, does not complain about duties, good attitude, and willing to follow directions)	Martin et al. (1986)[a] Greenspan & Shoultz (1981)[b] Heal & Rusch (1994)[b] Miller & Chan (2008)[b]	Individual Skill	Employment, Independent Living
Feels close to someone who makes them feel supported/secure	Miller & Chan (2008)[b]	Experience/Service Delivery	Independent Living
Has ability to communicate well with others (in general)	Carter et al. (2012)[a] Chamberlain (1998)[a] Carter et al. (2011)[b] Foley et al. (2012)[b]	Individual Skill	Employment

(continued)

Table 1. (continued)

Representative SBEEs	Studies	Type	Associated outcome(s)
Active participation in community and political life: (e.g., paid membership in an association; participates in community-based organization such as faith-based congregation or community service organization); participates in governmental/non-governmental based organizations	Puumalainen (2011)[a]	Experience/Service Delivery	Independent Living
Construct 10: Technology			
Needs assistive technology devices to communicate, complete tasks, learn new things, and/or follow a schedule	Kaya et al. (2016)[a] Isakson et al. (2006)[b] Green et al. (2011)[b]	Support Need	Employment, Education
Has access to assistive technology devices	Kaya et al. (2016)[a] Isakson et al. (2006)[b]	Experience/Service Delivery	Employment
Uses assistive technology devices to communicate	Puumalainen (2011)[a] Green et al. (2011)[b]	Individual Skill	Education, Independent Living
Uses assistive technology devices to complete tasks, learn new things, and/or follow a schedule	Bouck & Flanagan (2015) [a] Collins et al. (2014)[b]	Individual Skill	Education, Employment

Note. SBEEs = Skills, Behaviors, Expectations, or Experiences; IEP = Individualized Education Program.
[a]Primary article.
[b]Associated article.

1998; Hanley-Maxwell et al., 1986; Martin et al., 1986). Employers want employees who have reasonable work attendance, adequate work quality, and acceptable productivity levels (Hanley-Maxwell et al., 1986; Lemaire & Mallik, 2008 ; Martin et al., 1986; Molina & Demchak, 2016). When seeking employment, students with significant cognitive disabilities need more than work experience alone (Brolin et al., 1975). They need to use social and professional networks to know where to look for jobs and employers who will hire them (Brolin et al., 1975; Carey et al., 2004; Eisenman, 2007; Hagner et al., 1995; Hasazi et al., 1985; Isakson et al., 2006). Employers need to witness students with significant cognitive disabilities working to visualize the possibilities; therefore, seeking work environments with companies that have previous experience employing individuals with severe disabilities is important (Levy et al., 1992). Employers have reported the requirements for keeping jobs after becoming employed include leaving the job site in an acceptable condition, staying on task, finishing tasks, being on time, calling ahead to report absences, low absentee rate, following instructions, being truthful, and not stealing (Hanley-Maxwell et al., 1986; Molina & Demchak, 2016). Students with significant cognitive disabilities need to understand the importance of honesty on the job, appropriate work attire, acceptable reasons to miss work, and asking for assistance when needed (Molina & Demchak, 2016).

Family Home Expectations and Support

Family expectations and involvement have a significant impact on post-school outcomes of students with significant cognitive disabilities. Family expectations of paid employment and becoming self-supporting predict employment outcomes for students with significant cognitive disabilities (Carter et al., 2012; Doren et al., 2012; Martinez et al., 2012; Simonsen & Neubert, 2012). When family members believe an individual can hold a job, the individual is more likely to acquire a job (Heal et al., 1990). Likewise, when families support goals for independent living and provide opportunities to interact with peers who also have career and independent living aspirations, the individual is more likely to hold a job and live independently

(Isakson et al., 2006). Household responsibilities and opportunities to practice independence away from home increase the likelihood of post-school employment (Carter et al., 2011, 2012; Isakson et al., 2006; Spreat & Conroy, 2015). Having family members who are familiar with vocational supports needed, receive employment information from the school, and encourage and support engagement in social networks separate from the family also increase the likelihood of employment (Blustein et al., 2016; Eisenman, 2007). Siblings can provide advocacy support for disability rights, services, and legislation, and independent living support after parents are no longer able (Kramer et al., 2013). Family involvement, desires, and expectations of the individual attending postsecondary education predict enrollment in a postsecondary education program (Doren et al., 2012; Martinez et al., 2012; Papay & Bambara, 2014). It is important that families receive information regarding postsecondary programs for students with significant cognitive disabilities and attend school-sponsored and nonschool-sponsored activities, such as parent and transition workshops and disability support organizations (Martinez et al., 2012).

Personal Experiences

Personal experiences are the SBEEs that students have outside of a school setting. Students with significant cognitive disabilities who experience paid work, full or part time, summer or annual, are more likely to be employed after high school (Blustein et al., 2016; Brolin et al., 1975; Carter et al., 2010; Hasazi et al., 1985; Papay & Bambara, 2014; Rossetti et al., 2015; Simonsen & Neubert, 2012). The same is true for students with significant cognitive disabilities who participate in vocational training or postsecondary education programs, abide by laws, do not rely on supplemental security income (SSI), and have a positive attitude (Heal et al., 1990; Isakson et al., 2006; Kaehne, 2016; Kaya et al., 2016; Lemaire & Mallik, 2008; E. J. Moore & Schelling, 2015; O'Neill et al., 2015). Students with significant cognitive disabilities benefit from career-related experiences at home and in the community (Blustein et al., 2016), which have been shown to decrease problem behaviors (West & Patton, 2010). Students with significant cognitive disabilities need access to transportation to effectively navigate the community and obtain employment (Lemaire & Mallik, 2008; Simonsen & Neubert, 2012)

School Experiences

In-school experiences affect the post-school outcomes of students with significant cognitive disabilities, including school supervised, paid community-based jobs, and the completion of vocational programs (Carter et al., 2012; Daviso et al., 2016; Kaehne, 2016). Teacher expectations for student employment can significantly affect the post-school employment outcomes for students with significant cognitive disabilities (Blustein et al., 2016; Carter et al., 2010). School personnel need to collaborate with family members and other organizations (Isakson et al., 2006; Luecking & Certo, 2002) to provide quality work study experiences (Brolin et al., 1975) and employment goals for early work experience in the IEP (Carter et al., 2011; Hasazi et al., 1985). Students with significant cognitive disabilities need meaningful activities that provide services and basic life skills to live and work independently after high school (Papay & Bambara, 2014; Rossetti et al., 2015). Participation in a program that combines school resources with agency resources, community-based involvement, paid employment, and coordinated activities also results in post-school employment (Luecking & Certo, 2002).

Self-Determination

Self-determination skills including self-advocacy, self-confidence, and empowerment are vital for access to employment and education for students with significant cognitive disabilities (Berry et al., 2012; Brolin et al., 1975; Carter et al., 2012). Students with significant cognitive disabilities need self-advocacy skills to ask for what is needed to be successful (Carter et al., 2012). They also need to view themselves as in control of their own lives and not be afraid to seek employment (Berry et al., 2012; Brolin et al., 1975). Self-advocacy skills can be taught through students running their own IEP meetings and being actively involved in the planning process (Mazzotti et al., 2015). Additional supporting self-determination skills needed for

employment and independent living include persistence, goal setting, ability to self-instruct, self-reinforcement, self-evaluation, and the ability to make choices (Grossi & Heward, 1998; Isakson et al., 2006; Molina & Demchak, 2016; S. C. Moore et al., 1989; Sigafoos et al., 1993).

Self-Care

Individuals with higher self-care skills are more likely to be employed, attend postsecondary education, and live independently. Independence in living (e.g., feeding, dressing, preparing meals, cleaning, and mobility) and functional skills (e.g., reading and understanding common signs, telling time on a clock with hands, counting change, and looking up phone numbers and using the telephone) are associated with paid and unpaid work experience (Blustein et al., 2016; Carter et al., 2011, 2012; Foley et al., 2012; Heal & Rusch, 1995; Poppen et al., 2017). Developing travel skills to increase movement from place to place is associated with further education after high school for students with significant cognitive disabilities (Gruber et al., 1979). Individuals need independent living skills and the ability to take care of their own health issues to live independently (Heal & Rusch, 1994; Rossetti et al., 2015). As young adults, students with significant cognitive disabilities need experience finding and hiring personal care attendants and staff to increase independence (Rossetti et al., 2015).

Social

Students with significant cognitive disabilities need to learn many social concepts to adjust well to post-school life, beginning with adequate communication skills (Carter et al., 2011, 2012; Chamberlain, 1998; Foley et al., 2012). Appropriate in-school classroom behaviors, including getting along with others, acting appropriately, interacting appropriately with coworkers and customers, participating in class discussions, and engaging in class activities can lead to better post-school adjustment (Carter et al., 2012; Chamberlain, 1998; Molina & Demchak, 2016). Displaying appropriate social skills and behaviors in the workplace also results in positive post-school employment outcomes. Students with significant cognitive disabilities need to be able to get along with supervisors, maintain an appropriate personal appearance, and handle frustration appropriately (Chamberlain, 1998; Hanley-Maxwell et al., 1986; Lemaire & Mallik, 2008). Employers want employees with social character including reliability and dependability; an appropriate workplace temperament without outbursts or aggression toward others; and an awareness of social cues in the workplace including appropriate conversational skills (Greenspan & Shoultz, 1981; Heal et al., 1990; Martin et al., 1986; Miller & Chan, 2008).

Independent living outcomes can be influenced by appropriate social behaviors or lack thereof (Heal & Rusch, 1994). Students with significant cognitive disabilities may benefit from training in interpersonal skills to foster meaningful interactions with other people (Miller & Chan, 2008). Students with significant cognitive disabilities experience increases in quality of life when they actively seek social memberships in groups with like-minded people, such as active participation in a local congregation, membership in an association, becoming involved in political activities, and voting in public elections (Puumalainen, 2011).

Technology

Access to and use of technology are becoming important factors in the postsecondary employment, education, and independent living outcomes for students with significant cognitive disabilities (Bouck & Flanagan, 2015; Isakson et al., 2006; Puumalainen, 2011). Technology utilized by students with significant cognitive disabilities can include specific rehabilitation technology, such as rehabilitation engineering services, assistive technology devices and services (Kaya et al., 2016), or multipurpose technology devices such as a tablet to operate copiers, scanners, and fax machines (Collins et al., 2014). Individuals may also use technology to arrive places on time (Green et al., 2011). To effectively use technology, support staff and students with significant cognitive disabilities must first determine whether technology is needed to communicate or to complete tasks. Then, it is important to know whether the individual has access to the needed technology

(Isakson et al., 2006; Kaya et al., 2016). Finally, if they do have access, is the technology being used properly (Bouck & Flanagan, 2015).

Discussion

This literature review identified 103 SBEEs associated with positive post-school outcomes arranged into 10 constructs that can be used to identify gaps in the transition planning of students with significant cognitive disabilities. These constructs are different than those identified in the original TAGG. The two primary differences are the original TAGG focused on skills that could be taught in a school setting and did not include SBEEs related to service delivery or independent living. It is important to make educators and family members aware of the SBEEs that are known to increase participation in further education, employment, and independent living for students with significant cognitive disabilities.

Improving the post high school outcomes of students with significant cognitive disabilities is dependent on identifying the areas of greatest strength and need throughout the transition planning process, which, in turn, is dependent on having students and families provide input. A valid assessment, specifically designed for students with significant cognitive disabilities, is vital to identifying these strengths and needs. This is especially important when considering the independent living needs of students with significant cognitive disabilities, which is not addressed by other transition assessments (e.g., TAGG). The literature review process mentioned in this article was the first step in developing such an assessment. Due to the extensiveness of the literature review, it was not possible to include a full description of the 53 articles identified in this article (e.g., participant characteristics and study design). Another limitation of this review is the evolving terminology used to describe students with significant cognitive disabilities. To be inclusive, we had to search for terms no longer used in the field of special education. In addition, some SBEEs are identified in multiple environments and situations, which resulted in some overlap across constructs. Also, older studies were included in the literature review that reference outdated SBEEs (e.g., looking up numbers in a phonebook).

Construct identification is only the first stage in the assessment development process. The next step will be to create student, family, and teacher assessment items aligned to each SBEE. Some items will need to be written in a way that modernizes an identified SBEE. Once items are developed, the research team will obtain feedback from a panel of researchers who are experts in transition planning and/or students with significant cognitive disabilities. After revising items based on the feedback, a series of pilot and field tests will be conducted to help determine the validity of the items and structure of the constructs. Finally, associated goals and activities will be developed to connect assessment results to classroom instruction and guidance for family members. The final product will be a research-based assessment developed specifically for students with significant cognitive disabilities and validated for use, as one component of a multifaceted process, in developing transition plans that empower students and their families to work toward positive post-school outcomes similar to those of their peers—further education, employment, and independent living.

Authors' Note

A summary table of the articles in Table 1 of this article is available upon request. University of Oklahoma doctoral students Tracy Sinclair, Andrea Suk, Joshua Pulos, and Malarie Deardorff assisted in conducting the extensive literature review and building the table of constructs.

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