Evidence-Based Practices and Predictors in Secondary Transition: What We Know and What We Still Need to Know

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Executive Summary

As a U.S. Department of Education, Office of Special Education Program federally-funded technical assistance and dissemination center, the National Secondary Transition Technical Assistance Center (NSTTAC; #H326J050004) goals are to:

- **Assist states with collecting, reporting, and using Indicator 13**[1] **data to improve transition services**

  Percent of youth with IEPs aged 16 and above with an IEP that includes appropriate measurable postsecondary goals that are annually updated and based upon an age appropriate transition assessment, transition services, including courses of study, that will reasonably enable the student to meet those postsecondary goals, and annual IEP goals related to the student's transition services needs. There also must be evidence that the student was invited to the IEP Team meeting where transition services are to be discussed and evidence that, if appropriate, a representative of any participating agency was invited to the IEP Team meeting with the prior consent of the parent or student who has reached the age of majority. (20 U.S.C. 1416(a)(3)(B))

- **Generate knowledge of evidence-based secondary transition practices** that provide a foundation for states to improve transition services that enhance post-school outcomes
- **Build state capacity to implement evidence-based secondary transition practices** that improve post-school outcomes
- **Disseminate information regarding evidence-based secondary transition practices** that improve post-school outcomes to state personnel, practitioners, researchers, parents, and students

As a result, one of the NSTTAC's tasks has been to identify the evidence-based practices for the field of secondary transition. To do this, NSTTAC conducted a two part review of literature. In Part I, evidence-based practices based on quality experimental (both group and single subject designs) studies were identified. However, while the evidence-based practices were designed to teach students specific transition-related skills, to date, the experimental literature has not attempted to measure the impact of these skills on post-school outcomes. As a result, in Part II, the review was expanded to include rigorous correlational research in secondary transition to identify evidence-based predictors that are correlated with improved post-school outcomes in education, employment, and/or independent living.

What We Know

Currently, NSTTAC has identified 33 evidence-based practices in secondary transition. While the attached article by Test, Fowler, Richter, White, Mazzotti, Walker, Kohler, & Kortering (2009) reported on 32 practices, since that review an additional practice was identified bringing the current total to 33 evidence-based practices. These 33 practices have been categorized using Kohler's Taxonomy for Transition Programming. Of the 33 evidence-based practices, 3 are in the area of Student-Focused Planning, 26 are in Student Development, 1 in Family Involvement, 3 in Program Structure. No practices have been identified in the area of Interagency Collaboration. The following Table lists each of the practices by Taxonomy category.

Kohler's Taxonomy Category	Evidence-Based Practices
Student-Focused Planning	• Involving students in the IEP process • Using the *Self-Advocacy Strategy* • Using the *Self-Directed IEP*
Student Development	• Teaching functional life skills • Teaching restaurant purchasing skills • Teaching employment skills using CAI • Teaching grocery shopping skills • Teaching home maintenance • Teaching leisure skills • Teaching personal health skills • Teaching job specific employment skills • Teaching purchasing using the "one more than" strategy • Teaching life skills using CAI • Teaching life skills using CBI • Teaching self-care skills • Teaching safety skills • Teaching self-determination skills • Teaching banking skills • Teaching self-management for life skills • Teaching self-management for employment • Teaching self-advocacy skills • Teaching functional reading skills • Teaching functional math skills • Teaching social skills • Teaching purchasing skills • Teaching completing a job application • Teaching job-related social communication skills • Teaching cooking & food prep skills • Teaching employment skills using CBI
Family Involvement	• Training parents about transition issues
Program Structure	• Providing community-based instruction • Extending services beyond secondary school • Using *Check and Connect*
Interagency Collaboration	• None

Additionally, NSTTAC has identified 16 evidence-based predictors of post-school employment, education, and independent living success from the correlational research (Test, Mazzotti, Mustian, Fowler, Kortering, & Kohler, 2009). These predictors include:

Predictors/Outcomes	Education	Employment	Independent Living
Career Awareness	X	X	
Community Experiences		X	
Exit Exam Requirements/ High School Diploma Status		X	
Inclusion in General Education	X	X	X
Interagency Collaboration	X	X	
Occupational Courses	X	X	
Paid Employment/ Work Experience	X	X	X
Parental Involvement		X	
Program of Study		X	
Self-Advocacy/ Self-Determination	X	X	
Self-Care/Independent Living	X	X	X
Social Skills	X	X	
Student Support	X	X	X
Transition Program	X	X	
Vocational Education	X	X	
Work Study		X	

What We Still Need to Know

Although these evidence-based practices and predictors have been identified based on high quality research, there continues to be a need for rigorous research to identify additional secondary transition evidence-based practices and predictors of improved post-school success.

For example:

1. There is a need for high quality group and/or single-subject experimental research that:
    - Builds on NSTTAC's levels of evidence. Currently, only two evidence-based practices have a strong level of evidence (i.e., teaching life skills, teaching purchasing skills). High quality research is needed to move the remaining evidence-based practices from moderate or potential to strong.
    - Focuses on the Taxonomy areas of Family Involvement, Program Structure, and Interagency Collaboration.
    - Includes students representing all disability categories and various ethnicities. NSTTAC has included disability and ethnicity in reporting its findings when available in the studies reviewed.
    - Collects longitudinal data on the effects of secondary transition practices on in-school and post-school outcomes.
    - Investigates the effects of published secondary transition curricula on student in-school and post-school outcomes.
2. There is a need for high-quality multivariate correlational research that:
    - Disaggregates data by disability category to identify predictors of post-school success for specific disability groups.
    - Provides a more comprehensive understanding of in-school predictors of post-school success for students with disabilities.
    - Can determine if predictor variables identified by NSTTAC hold up over multiple points in time.
    - Uses National Longitudinal Transition Study-2 (NLTS2) data files as a resource.

For more detail on each of the literature reviews, see Appendices A and B of this report which contains the two publications, as well as the NSTTAC website at www.nsttac.org

[1] IDEA required that states have Part B State Performance Plans (SPPs) in place in December 2005, which evaluated their efforts to implement the requirements and purposes of IDEA Part B, and described how they would improve such implementation. States were also required to report in an Annual Performance Report (APR) to the public on the performance of each local educational agency located in the state on the targets in the state's SPP and to the Secretary on the performance of the state under the state's SPP. Indicator 13 is one of twenty Part B indicators for which states are required to collect data and set targets for improved performance with regard to SPPs and APRs. The following Web site provides more information on the SPP, APR and Part B indicators: http://www.ed.gov/policy/speced/guid/idea/bapr/index.html

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A Final Note

The *What Works Transition Research Synthesis Project* (Grant # H324W010005) was funded prior to 2005 by the Office of Special Education Programs (OSEP) to review and synthesize the past 20 years of research and advancements in the area of transition for youth with disabilities. The project office was located at the School of Education at Colorado State University.

Five syntheses were conducted that identified effective practices for increasing academic performance for secondary-level students with disabilities. To date, only one study has been published.

1. Wolgemuth, J. R., Cobb, B., & Alwell, M. (2008). The effects of mnemonic interventions on academic outcomes for youth with disabilities: A systematic review. *Learning Disabilities Research and Practice, 23,* 1-10.

The relationship between mnemonic instruction and academic performance for secondary aged youth with disabilities was explored in this systematic review. A total of 19 studies intervening with 621 youth with learning disabilities, emotional and behavioral disorders, and mild developmental disabilities were reviewed. The findings of this review strongly support the efficacy of mnemonic interventions across study methods, educational settings, student ages, and disabilities in the improvement of academic performance, typically measured by recall of word meanings or factual information. However, the studies reviewed either lacked in participation

diversity or failed to conduct subgroup analyses. It is unknown whether mnemonics instruction differentially affects female or ethnic students. A series of detailed implications for practice is discussed and the reader is referred to specific literature providing detailed descriptions of mnemonic interventions.

2. *The Effects of Visual Display Interventions on Academic Outcomes for Youth with Disabilities: A Systematic Review.* Jennifer R. Wolgemuth, Eric Trujillo, R. Brian Cobb, Colorado State University; Morgen Alwell, Appalachian State University

   The relationship between visual displays (the intervention) and academic performance (the outcome) for secondary aged youth with disabilities was explored in this systematic review. A total of seven studies intervening with 318 youth with learning disabilities, developmental disabilities, and hearing deficits were reviewed. The findings of this review support the efficacy of visual display interventions to improve reading comprehension, content learning, and problem solving for secondary youth with disabilities. A series of implications for practice are suggested as well as directions for the reader to locate more detailed descriptions of how these interventions might be implemented in secondary educational environments.

3. *The Effects of Technology-Based Interventions on Academic Outcomes for Youth with Disabilities.* James J. Dugan, R. Brian Cobb, Colorado State University; Morgen Alwell, Appalachian State University

   The relationship between technology-based interventions and academic performance for secondary aged youth with disabilities was explored in this systematic review. A total of 39 studies intervening with 1,491 youth with behavioral disorders, emotional disorders, learning disabilities, and moderate and severe disabilities were included. These studies matched the intervention, outcome, and sampling selection criteria for the review, and met minimally acceptable standards of internal and external validity for research design and methodology. The findings of this review strongly support the efficacy of technology-based interventions across treatment types, educational settings, and disability categories in the improvement of academic achievement. Detailed implications for special education practice in secondary school environments are presented, rival explanations for the findings are examined, and future research topics are suggested

4. *The Effects of Self-Management Interventions on Academic Outcomes for Youth with Disabilities.* Jennifer R. Wolgemuth, R. Brian Cobb, James J. Dugan, Colorado State University.

   The relationship between self-management (the intervention) and academic performance and classroom behavior (the outcomes) for secondary aged youth with disabilities was explored in this systematic review. A total of 17 studies intervening with 88 youth with behavioral disorders, attention deficit/hyperactivity disorders, learning disabilities, and developmental disabilities were reviewed. The findings of this review st4rongly support the efficacy of self-management interventions across educational environments, disability types, ages, and genders in the improvement of academic performance and correlates of academic achievement (classroom behavior). A series of more detailed implications for practice are

suggested as well as directions to the reader to locate more detailed descriptions of how these interventions might be implemented in their secondary educational environments.

5. *Effects of Academic Peer Assistance Interventions on Academic Outcomes for Youth with Disabilities: A Systematic Review.* Marc A. Winokur, R. Brian Cobb, James J. Dugan, Colorado State University.

   The relationship between academic peer assistance (the intervention) and academic performance and classroom behavior (the outcomes) for secondary aged youth with disabilities was explored in this systematic review. A total of 14 studies intervening with 165 youth with behavioral disorders, emotional disorders, learning disabilities, and moderate and severe disabilities were included. These studies matched the intervention, outcome, and sampling selection criteria for the review, and met minimally acceptable standards of internal and external validity for research design and methodology. The findings of this review strongly support the efficacy of peer assistance interventions across treatment types, educational settings, and disability categories in the improvement of academic content achievement and social and behavioral outcomes. Detailed implications for special education practice in secondary school environments are presented, rival explanations for the findings are examined, and future research topics are suggested.

The completed syntheses are located on the website of the National Post School Outcomes Center at: http://www.psocenter.org/pubs.html

Next, in collaboration with the National Drop-out Prevention Center for Students with Disabilities, the *What Works in Transition Research Synthesis Project* conducted a meta-analysis of cognitive-behavioral interventions and programs interventions. The purpose of the study was to identify interventions that carried a sufficient level of scientific evidence so as to be considered effective under the What Works Clearinghouse's standards of evidence-based practices. This systematic review, entitled "The Effects of Cognitive Behavioral Interventions on Dropout for Youth with Disabilities," summarized scientifically-based research studies produced in the past two decades from three distinct perspectives: (a) cognitive-behavioral interventions, (b) dropout or dropout-related outcomes, and (c) samples of secondary-aged youth with disabilities. It explored the relationship between cognitive-behavioral interventions/therapies and dropout outcomes and violent verbal or physical aggression for secondary-aged youth with disabilities.

The synthesis on Cognitive Behavioral Interventions as a dropout prevention strategy for students with disabilities can be found at the website of the National Dropout Prevention Center for Students with Disabilities:http://www.ndpc-sd.org/knowledge/research_syntheses.php

APPENDIX A

Career Developme
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Evidence-Based Practices in Secondary Transition

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A literature review was conducted to identify evidence-based practices in secondary transition using quality indicator checklists for experimental research. Practices were categorized by the Taxonomy for Transition Programming. Overall, 32 secondary transition evidence-based practices were identified. Two practices had a strong level of evidence, 28 had a moderate level of evidence, and 2 had a potential level of evidence. The majority of practices represented instruction of skills within the category of Student Development. No evidence-based practices were identified in the category of Interagency Collaboration. Findings provide practitioners with a set of evidence-based practices for improving transition services and researchers with an agenda for conducting future research.

Keywords: *secondary transition; career and vocational; high school; research*

In an effort to improve educational outcomes for all children, Congress now requires schools and educators to use instructional programs or practices grounded in scientifically based research (U.S. Department of Education, 2008). Scientifically based research was first defined in No Child Left Behind (NCLB) as "research that involves the application of rigorous, systematic, and objective procedures to obtain reliable and valid knowledge relevant to education activities and programs" (NCLB, 20 U.S.C 7801 § 9101[37]). The Individuals with Disabilities Education Improvement Act (IDEA; 2004) also used the same definition when it required that special education and related services and supplemental aids and services outlined in a student's Individual Education Program be based on peer-reviewed reports to the "extent practicable" (IDEA, 20 U.S.C. § 1400 et seq.).

In an effort to begin to determine educational practices based on "scientifically-based research" the Institute of Education Science (IES) established the What Works Clearinghouse (WWC). The WWC conducts systematic reviews and posts results on their website in seven areas including beginning reading, English language learners,

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early childhood education, character education, elementary school math, middle school math, and dropout prevention. Although IES and WWC acknowledge that different methodologies are useful for answering different research questions, their gold standard has been the use of randomized clinical trials.

Also in response to the call for "scientifically based research" practices, the Council for Exceptional Children (CEC) has emerged as a leader for the field of special education. First, through its Division of Research, it established a task force to address these issues. One of the outcomes of this task was a special issue of *Exceptional Children* ("Criteria," 2005). In the first article, Odom, Brantlinger, Gersten, Horner, Thompson, and Harris (2005) used the term "evidence-based practice" to refer to educational practices that have been demonstrated effective based on quality research. In keeping with this theme, we will use the term evidence-based practices throughout. In addition, Odom et al. recognized the potential contributions of various types of educational research. The remaining four articles in the special issue proposed a set of quality indicators for group and quasi-experimental research (Gersten et al., 2005), single-subject research (Horner et al., 2005), correlational research (Thompson, Diamond, McWilliam, Snyder, & Snyder, 2005), and qualitative studies (Brantlinger, Jimenez, Klingner, Puguch, & Richardson, 2005) to be used for identifying evidence-based practices in special education. Second, through its Professional Standards and Practices Committee, CEC is developing a process for identifying evidence-based special education practices (Council for Exceptional Children, 2008) based on the quality indicators published in *Exceptional Children* in 2005. As a result, CEC has explicitly acknowledged the value of different research methodologies for answering different research questions.

Although IES and CEC are helping to focus the fields of general and special education on evidence-based practices, to date little of the work has been related to secondary transition. An exception is the *What Works Transition Research Synthesis Project* (Grant # H324W010005) funded by the U.S. Department of Education, Office of Special Education Programs. The *What Works Transition Research Synthesis Project* reviewed and synthesized 20 years of research in the area of transition of youth with disabilities (Alwell & Cobb, 2006a). Systematic reviews of interventions for teaching functional life skills, social/communication skills, transition planning/ coordinating, and self-determination are available at http://www.nsttac.org/ebp/what_works.aspx. Although these syntheses provided valuable information to the field of secondary transition, their search parameters primarily reflected IES standards, which limited the use of research involving single subject experimental designs to those that reported effect sizes or provided data to allow effect sizes to be calculated.

Recently, the U.S. Department of Education, Office of Special Education Programs, funded the National Secondary Transition Technical Assistance Center (NSTTAC; Grant # H326J050004) to assist states and local education agencies in building their capacity to implement effective transition education and services that improve postschool outcomes. To do this, one of NSTTAC's objectives has been to identify and disseminate evidence-based practices in secondary transition. Therefore, the purpose of this article is to summarize the findings of a comprehensive review of the literature designed to identify evidence-based practices in secondary transition. We used quality indicators and evidence-based practice guidelines from the special issue of *Exceptional Children* as the basis for our review.

Method

Selection Procedures

Studies used to establish the secondary transition evidence-based practices came from the NSTTAC literature database. The NSTTAC literature database was developed using a multistep process by (a) conducting an initial electronic search, (b) reviewing reference lists of related articles, (c) conducting hand searches of peer-reviewed journals, and (d) updating the electronic search by replicating the initial procedures.

First, an electronic search of ERIC databases was conducted including Sociological Abstracts, Social Work Abstracts, Education Research Complete, Academic Search Premier, MasterFile Premier, and PsychInfo to identify all journal articles related to secondary transition. Full and truncated versions of the following search terms were used related to the following: (a) students' ages, including students, youth, adolescents, and young adults; (b) disability status, including disability and specific disability labels (i.e., autism, behavior disorder, blind, cognitive disability, disability, disabilities, handicapped, deaf, developmental disability, emotional disability, emotional disorder, health impairment, hearing impairment, learning disability, mental retardation, orthopedic impairment, physical disability, severe disability, significant disability, speech language impairment, traumatic brain injury, visual impairment, attention deficit hyperactivity disorder, attention deficit disorder, Attention Deficit-Hyperactivity Disorder [ADHD], and Attention Deficit Disorder [ADD]); (c) transition services, including

vocational education, community-based instruction, junior high school, high school, school-to-work transition, educational objectives, self-care skills, career education, leisure skills instruction, life skills instruction, self-determination instruction, technical education, transition education, transition focus, transition practice, and transition service; and (d) adult life, including outcomes, post-school, postsecondary, employment, independent living, higher education, graduation, outcomes of education, postsecondary education, employment status, continuing education, adult education, postschool outcomes, school-based outcomes, career training participation, community integration, community participation, independent, job training participation, leisure skills, postsecondary education attendance, postsecondary education completion, postsecondary education retention, recreation access, recreational participation, residential access, and residential independence.

Inclusion Criteria for NSTTAC Literature Database

To be included in the literature database, articles needed to meet the following criteria: (a) published between 1984 (i.e., Will's 1984 definition of transition) and March 2008, (b) included at least one student with a disability as defined by the Individuals with Disabilities Educational Improvement Act of 2004 and Section 504 of the Rehabilitation Act of 1973 who received education services through a local education agency in a non-elementary and non-postsecondary school setting, inclusive of ages 11 to 22 years, and (c) included independent variables or dependent variables aligned with one of the five areas of the Taxonomy for Transition Programming (Kohler, 1996) or clearly linked to a post-secondary outcome.

The five areas of the Taxonomy include (a) student-focused planning (e.g., student participating in individual education plan [IEP] development), (b) student development (e.g., teaching employment skills, teaching life skills), (c) interagency collaboration (e.g., creating frameworks for delivering services collaboratively), (d) family involvement (e.g., training families in self-determination), and (e) program structures (e.g., allocating resources to provide transition services). The Taxonomy was used to organize identified practices because it is widely accepted as a framework for comprehensive secondary transition education and services in secondary transition. The Taxonomy was developed as an outcome of four studies that identified effective secondary transition practices supported with evidence through a review of the literature (Kohler, 1993), an analysis of exemplary transition programs identified through evaluation studies (Kohler, DeStefano, Wermuth, Grayson, & McGinty, 1994), a meta-evaluation of model demonstration transition program outcomes and activities (Rusch, Kohler, & Hughes, 1992), and a concept mapping process (Kohler, 1996). More recently, Kohler and Chapman (1999) and Kohler and Field (2003) found that the practices identified in the original model were reflected in more current secondary transition research.

From an initial list of more than 12,000 references, researchers read titles and electronic abstracts to exclude articles that were not related to our purpose, resulting in 2,739 abstracts. Examples of articles that were excluded because of unrelated content included transition from preschool to kindergarten, transition of older adults to a nursing home, and medical studies including experimental drug trials. Researchers read each of the 2,739 abstracts, reducing the database to 1,302 potential articles. Interrater reliability on this phase of the search process was 86.8% agreement on all of the 2,739 abstracts. The database was managed using *EndNote* (2006).

Next, we began to examine the 1,302 potential articles from the review of abstracts, as well as the reference list from the literature review conducted by the *What Works in Transition Research Synthesis Project* that included articles published through 2005. In addition, reference lists from literature reviews conducted by other experts in the field of secondary transition (e.g., transition assessment, transition for students with autism) were reviewed to identify potential articles for inclusion. Researchers also conducted a hand search of *Career Development for Exceptional Individuals* and *Exceptional Children*. Finally, references were identified within articles reviewed. During this phase of the selection process, we eliminated articles for review if participants, setting, or skills did not match inclusion criteria, resulting in a database of 1,069 articles.

Because this process only included articles published through 2005, an additional electronic search was conducted to identify possible articles published between 2005 and March 2008. This review identified an additional 237 potential references for a total of 1,306 possible articles. These articles were then reviewed for possible inclusion in the evidence-based literature review.

Inclusion Criteria for Evidence-Based Literature Review

To be included in the secondary transition evidence-based practices literature review, articles must have been either (a) systematic literature reviews which clearly

Table 2
Summary of Evidenced-Based Practices in Student-Focused Planning

Practice	Level of Evidence	Current Evidence
Involving students in Individualized Education Program (IEP) meetings	A *moderate* level of evidenced based on 1 acceptable-quality systematic literature review of 16 studies	• Test, Mason, Hughes, Konrad, Neale, & Wood (2004)
Self-Advocacy Strategy	A *moderate* level of evidence based on 1 high-quality group experimental study and 4 acceptable-quality single subject studies	• Hammer (2004) • Lancaster, Schumaker, & Deshler (2002) • Test & Neale (2004) • Van Reusen & Bos (1994) • Van Reusen, Deshler, & Schumaker (1989)
Self-Directed IEP	A *moderate* level of evidence based on 1 high-quality group experimental study	• Martin et al. (2006)

consulted the panel of special education researchers to establish criteria for identifying evidence-based practices from the literature based on the recommendations from an issue on special education research published in *Exceptional Children* (2005) and the work of the IES. Practices with strong, moderate, and potential levels of evidence (see Table 1) were identified from systematic literature reviews (including meta-analyses), group and quasi-experimental, and single subject research.

Sixty-three studies met criteria as high- or acceptable-quality group or single subject intervention studies, or were a comprehensive literature review or meta-analysis, and were thus able to contribute to the evidence base for secondary transition practices. Once the number of studies needed to establish a strong level of evidence for a practice was identified, additional articles related to that practice were not reviewed.

Results

Overall, 32 secondary transition evidence-based practices were identified. The majority of practices represented instruction of skills within the Student Development area of the Taxonomy. Two practices were supported with strong evidence, 28 were supported with moderate evidence, and 2 were supported by a potential level of evidence. No evidence-based practices were identified in the category of Interagency Collaboration. Each practice and supporting evidence is summarized in Tables 2 through 5.

Student-Focused Planning

Table 2 lists three practices with a moderate level of evidence in the area of student-focused planning. All three practices reflected instruction around student participation in the educational planning process (i.e., IEP meeting participation). One practice was more general (i.e., promoting student involvement in the IEP meeting) and included multiple methods for skill instruction and two of the practices were specific (i.e., *Self-Advocacy Strategy, Self-Directed IEP*).

Student Development

Table 3 lists 25 evidence-based practices identified in the area of Student Development. Two practices had strong levels of evidence, 22 had a moderate level of evidence, and 1 had a potential level of evidence. There were 17 practices identified in life skills, 6 in employment skills, and 2 in functional academics.

Family Involvement

Table 4 lists one evidence-based practice in the category of Family Involvement. A moderate level of evidence was identified for the practice of family training on transition issues.

Program Structures

Table 5 lists three practices in the category of Program Structures, two with a moderate level of evidence and one with a potential level of evidence. Practices included providing flexible programming, having outcome-based curricula and programs, and using community-referenced curricula.

Interagency Collaboration

No evidence-based practices were identified in this category.

Discussion

This review of the literature used quality indicator checklists for group (Gersten et al., 2005) and single

Table 1
National Secondary Transition Technical Assistance Center's (NSTTAC) Decision Rules for Determining Levels of Evidence

Levels of Evidence of Causal Inference	Group Experimental Designs	Single Subject Designs	Literature Reviews and Meta-Analyses
Strong	• 4 acceptable quality or 2 high quality • High quality = must meet 1, 2, 3, 4, 6, 8, 9 and 10, and 5 or 7 of EQIs, and at least 4 of the DQIs • Acceptable = must meet 1, 2, 3, 4, 6, 8, 9 and 10, and 5 or 7 of EQIs, and at least 1 of the DQIs • Must calculate ES or report data that allow for calculation • There is no contradictory evidence from a study reflecting strong evidence	• 5 high-quality studies • High quality = meets all QIs • 3 independent research teams • Must have a functional relationship • There is no contradictory evidence from a study reflecting strong evidence	Comprehensive or systematic literature reviews • Described search methods and inclusion criteria • Provided a quantitative summary of data • If QI review; majority of articles were high quality Meta-analysis has overall ES > 0.40 or PND > 70% • If both quasi and true group experimental studies, provided analysis of ES for each study design separately
Moderate	• 2 acceptable quality or 1 high quality • Must calculate ES or report data that allows for calculation	• 3 high- or acceptable-quality studies • Acceptable = meets all QIs except 2, 11, and one of 17 through 20 • 1 to 2 independent research teams • Must have a functional relationship	• Other comprehensive or systematic literature reviews which describe search methods but do not calculate ES or PND • If QI review; majority of articles were acceptable quality
Potential (Needs additional research)	• 1 acceptable quality • Must calculate ES or report data that allow for calculation	• 1 or 2 high or acceptable studies • 1 or 2 independent research teams • Must have a functional relationship	• N/A

Note: EQI = Essential Quality Indicators; DQI = Desirable Quality Indicators; QI = Quality Indicators; ES = Effect Size; PND = Percent of Non-Overlapping Data.

described their search procedures and quantified results or (b) group or single subject experimental studies that met specific quality criteria. As a result, 240 literature reviews and intervention studies were identified as potentially contributing to the evidence base for identifying secondary transition practices.

Once an article was identified for possible inclusion in the current literature review, it was reviewed twice. First, reviewers used a 103-item content review form to record information from each article regarding (a) setting, (b) population, (c) study design, (d) independent variable, including aligning with the Taxonomy, (e) dependent variable, and (f) results. An item-by-item analysis of coding forms was completed to calculate a percentage of agreement for reviewing articles. The mean interrater agreement for study content on 25 reviewed articles (approximately 10% of the studies considered for this review) was 95.2%.

Next, authors used a 20-item quality indicator checklist for experimental research designs or an 8-item quality indicator checklist for literature reviews to determine the quality of the research study. The quality checklist for single subject designs was developed based on criteria from Horner et al. (2005) and the quality checklist for group experimental research was developed based on criteria from Gersten et al. (2005). The checklist used to examine the quality of literature reviews was developed with the input of a panel of special education researchers, which included researchers from the *What Works in Transition Research Synthesis Project.* Mean interrater agreement on the quality indicator checklist calculated for four literature reviews was 96.9%, 93.2% calculated for 6 group experimental studies, and 89.9% calculated for 15 single subject research studies.

Finally, articles that met the criteria for high- or acceptable-quality studies were then used to develop the evidence-base for a secondary transition practice. (See Table 1 for decision rules used to determine strong, moderate, or potential levels of evidence.) Researchers

Table 2
Summary of Evidenced-Based Practices in Student-Focused Planning

Practice	Level of Evidence	Current Evidence
Involving students in Individualized Education Program (IEP) meetings	A *moderate* level of evidenced based on 1 acceptable-quality systematic literature review of 16 studies	• Test, Mason, Hughes, Konrad, Neale, & Wood (2004)
Self-Advocacy Strategy	A *moderate* level of evidence based on 1 high-quality group experimental study and 4 acceptable-quality single subject studies	• Hammer (2004) • Lancaster, Schumaker, & Deshler (2002) • Test & Neale (2004) • Van Reusen & Bos (1994) • Van Reusen, Deshler, & Schumaker (1989)
Self-Directed IEP	A *moderate* level of evidence based on 1 high-quality group experimental study	• Martin et al. (2006)

consulted the panel of special education researchers to establish criteria for identifying evidence-based practices from the literature based on the recommendations from an issue on special education research published in *Exceptional Children* (2005) and the work of the IES. Practices with strong, moderate, and potential levels of evidence (see Table 1) were identified from systematic literature reviews (including meta-analyses), group and quasi-experimental, and single subject research.

Sixty-three studies met criteria as high- or acceptable-quality group or single subject intervention studies, or were a comprehensive literature review or meta-analysis, and were thus able to contribute to the evidence base for secondary transition practices. Once the number of studies needed to establish a strong level of evidence for a practice was identified, additional articles related to that practice were not reviewed.

Results

Overall, 32 secondary transition evidence-based practices were identified. The majority of practices represented instruction of skills within the Student Development area of the Taxonomy. Two practices were supported with strong evidence, 28 were supported with moderate evidence, and 2 were supported by a potential level of evidence. No evidence-based practices were identified in the category of Interagency Collaboration. Each practice and supporting evidence is summarized in Tables 2 through 5.

Student-Focused Planning

Table 2 lists three practices with a moderate level of evidence in the area of student-focused planning. All three practices reflected instruction around student participation in the educational planning process (i.e., IEP meeting participation). One practice was more general (i.e., promoting student involvement in the IEP meeting) and included multiple methods for skill instruction and two of the practices were specific (i.e., *Self-Advocacy Strategy, Self-Directed IEP*).

Student Development

Table 3 lists 25 evidence-based practices identified in the area of Student Development. Two practices had strong levels of evidence, 22 had a moderate level of evidence, and 1 had a potential level of evidence. There were 17 practices identified in life skills, 6 in employment skills, and 2 in functional academics.

Family Involvement

Table 4 lists one evidence-based practice in the category of Family Involvement. A moderate level of evidence was identified for the practice of family training on transition issues.

Program Structures

Table 5 lists three practices in the category of Program Structures, two with a moderate level of evidence and one with a potential level of evidence. Practices included providing flexible programming, having outcome-based curricula and programs, and using community-referenced curricula.

Interagency Collaboration

No evidence-based practices were identified in this category.

Discussion

This review of the literature used quality indicator checklists for group (Gersten et al., 2005) and single

Table 3
Summary of Evidence-Based Practices in Student Development

Practice	Level of Evidence	Current Evidence
Teaching life skills	A *strong* level of evidence based on 1 high-quality meta-analysis of 50 intervention studies	• Alwell & Cobb (2006b)
Teaching purchasing skills	A *strong* level of evidence based on 1 high-quality meta-analysis of 28 intervention studies	• Xin, Grasso, Dipipi-Hoy, & Jitendra (2005)
Teaching banking skills	A *moderate* level of evidence based on 3 acceptable-quality single subject studies	• Alberto, Cihak, & Gama (2005) • Cihak, Alberto, Kessler, & Taber (2004) • McDonnell & Ferguson (1989)
Teaching completing a job application	A *moderate* level of evidence based on 1 high-quality group study	• Nelson, Smith, & Dodd (1994)
Teaching cooking skills	A *moderate* level of evidence based on 1 high-quality and 3 acceptable-quality single subject studies.	• Fiscus, Schuster, Morse, & Collins (2002) • Mechling, Gast, & Fields (2008) • Steege, Wacker, & McMahon (1987) • Trask-Tyler, Grossi, & Heward (1994)
Teaching employment skills using community- based instruction	A *moderate* level of evidence based on 1 high-quality group study	• Bates, Cuvo, Miner, & Korabek (2001)
Teaching food preparation skills	A *moderate* level of evidence based on 1 acceptable-quality literature review of 23 studies and 4 acceptable-quality single subject studies	• Arnold-Reid, Schloss, & Alper (1997) • Lancioni & O'Reilly (2002) • Mechling & Gast (1997) • Steege et al. (1987) • Trask-Tyler et al. (1994)
Teaching functional math skills	A *moderate* level of evidence based on 1 high-quality group experimental study and 4 acceptable-quality single subject studies	• Alberto et al. (2005) • Birkan (2005) • Bates et al. (2001) • Denny & Test (1995) • McDonnell & Ferguson (1989)
Teaching functional reading skills	A *moderate* level of evidence based on 5 acceptable-quality single subject studies.	• Browder & Shear (1996) • Mechling (2004) • Mechling & Gast (2003) • Mechling, Gast, & Langone (2002) • Schloss et al. (1995)
Teaching grocery shopping skills	A *moderate* level of evidence based on 1 acceptable-quality systematic literature review of 20 studies, 1 high-quality group experimental study, and 2 acceptable-quality single subject studies	• Ayres, Langone, Boon, & Norman (2006) • Bates et al. (2001) • Mechling (2004) • Morse & Schuster (1996)
Teaching home maintenance skills	A *moderate* level of evidence based on 1 high-quality single subject study and 4 acceptable-quality single subject studies	• Cuvo, Davis, O'Reilly, Mooney, & Crowley (1992) • McDonnell & McFarland (1988) • Mechling & Gast (1997) • Steege et al. (1987) • Taylor, Collins, Schuster, & Kleinert (2002)
Teaching leisure skills	A *moderate* level of evidence based on 4 acceptable-quality single subject studies	• Collins, Hall, & Branson (1997) • Nietupski et al. (1986) • Vandercook (1991) • Wall, Gast, & Royston (1999)
Teaching life skills using community-based instruction	A *moderate* level of evidence based on 1 high-quality group study and 4 acceptable-quality single subject studies	• Alberto et al. (2005) • Ayres et al. (2006) • Bates et al. (2001) • Cihak et al. (2004) • Taylor et al. (2002)
Teaching life skills using computer-assisted instruction	A *moderate* level of evidence based on 1 high-quality single subject study and 3 acceptable-quality single subject studies	• Ayres et al. (2006) • Mechling (2004) • Mechling & Cronin (2006) • Mechling et al. (2002)

(continued)

Table 3 (continued)

Practice	Level of Evidence	Current Evidence
Teaching life skills using self-management	A *moderate* level of evidence based on 1 high-quality group experimental study, 1 high-quality single subject study, and 2 acceptable-quality single subject studies	• Bates et al. (2001) • Faloon & Rehfeldt (2008) • Gumpel & Nativ-Ari-Am (2001) • Taylor (1987)
Teaching job-specific employment skills	A *moderate* level of evidence based on 1 high-quality group study, 1 high-quality single subject study, and 4 acceptable-quality single subject studies	• Bates et al. (2001) • Cihak et al. (2004) • Mechling & Gast (1997) • Mechling & Ortega- Hurndon (2007) • Mitchell, Schuster, Collins, & Gassaway (2000) • Riffel et al. (2005)
Teaching job-specific employment skills using computer-assisted instruction	A *moderate* level of evidence based on 3 acceptable-quality single subject studies	• Mechling & Gast (1997) • Mechling & Ortega- Hurndon (2007) • Riffel et al. (2005)
Teaching purchasing using the "one more than" strategy	A *moderate* level of evidence based on 6 acceptable-quality single subject studies	• Ayres et al. (2006) • Colyer & Collins (1996) • Denny & Test (1995) • Haring, Kennedy, Adams, & Pitts-Conway (1987) • McDonnell, Horner, & Williams (1984) • Test, Howell, Burkhart, & Beroth (1993)
Teaching restaurant purchasing skills	A *moderate* level of evidence based on 1 high-quality group experimental study and 1 acceptable-quality single subject study	• Bates et al. (2001) • McDonnell (1984)
Teaching safety skills	A *moderate* level of evidence based on 1 high-quality single subject study and 6 acceptable-quality single subject studies	• Collins, Stinson, & Land (1993) • Gast & Winterling (1992) • O'Reilly, Green, & Braunling-McMurrow (1990) • Taber, Alberto, Hughes, &. Seltzer (2002) • Taber, Alberto, Seltzer, & Hughes (2003) • Winterling, Gast, Wolery, & Farmer (1992)
Teaching self-advocacy skills	A *moderate* level of evidence based on 1 high-quality group experimental study	• VanReusen & Bos (1994)
Teaching self-determination skills	A *moderate* level of evidence based on 1 high-quality meta-analysis of 51 intervention studies of predominantly acceptable quality	• Algozzine, Browder, Karvonen, Test, & Wood (2001)
Teaching self-management for employment skills	A *moderate* level of evidence based on 1 acceptable-quality systematic literature review of 35 studies	• Lancioni & O' Reilly (2002)
Social skills training	A *moderate* level of evidence based on 1 high-quality meta-analysis of 10 intervention studies of predominantly moderate effects	• Alwell & Cobb (2007)
Teaching job-related social communication skills	A *potential* level of evidence based on 1 high-quality single subject study and 1 acceptable-quality single subject study	• Clement-Heist, Seigel, & Gaylord-Ross (1992) • Heller, Allgood, Ware, & Castelle (1996)

Table 4
Summary of Evidence-Based Practices in Family Involvement

Practice	Level of Evidence	Current Evidence
Teaching parents and families about transition	A *moderate* level of evidence based on 1 high-quality group experimental study	• Boone (1992)

Table 5
Summary of Evidence-Based Practices in Program Structures

Practice	Level of evidence	Current Evidence
Provide community-based instruction	A *moderate* level of evidence based on 1 high-quality group study, 1 high-quality single-subject study, and 6 acceptable-quality single subject studies	• Alberto, Cihak, & Gama (2005) • Ayres, Langone, Boon, & Norman (2006) • Bates, Cuvo, Miner, & Korabek (2001) • Cihak, Alberto, Kessler, & Taber (2004) • Heller, Allgood, Ware, & Castelle (1996) • Mechling & Ortega- Hurndon (2007) • Schloss et al. (1995) • Taylor, Collins, Schuster, & Kleinert (2002)
Structure program to extend services beyond secondary school	A *moderate* level of evidence based on 1 high-quality group experimental study	• Izzo, Cartledge, Miller, Growick, & Rutkowski (2000)
Implement *Check & Connect* program for students with disabilities	A *potential* level of evidence based on 1 acceptable-quality group study	• Sinclair, Christensen, & Thurlow (2005)

subject research (Horner et al., 2005) developed for identifying evidence-based practices. Based on the quality of research, levels of evidence for specific practices in secondary transition were determined. Using this process, 32 evidence-based practices in the field of secondary transition were identified. The majority of practices were in the category of Student Development. Given that this area involves teaching functional skills (e.g., vocational, school, leisure) to students, it is not surprising that this category would be supported by group and single-subject research studies. These results extend the literature on evidence-based practices for students with disabilities to the field of secondary transition. Although the WWC has posted practices in a variety of areas, only character education and dropout prevention include practices designed for transition-aged students.

Limitations

The findings of this review are limited in a number of ways. First, it was not a comprehensive review of each practice. That is, once a practice was identified as having a strong level of evidence, further studies on that practice were not reviewed. Second, because our purpose was to identify an initial set of evidence-based practices in the field of secondary transition, we allowed each "practice" to emerge based on the literature that met the quality indicators. For example, as we identified studies that met our inclusion criteria, we began to group studies by the dependent variable (i.e., skill) that was taught in the study. This resulted in general practices, such as "Involving Students in the IEP Process," which included a range of practices for teaching students to participate in and lead IEP meetings. However, as additional studies were identified we were also able to identify specific practices, such as "Using the *Self-Advocacy Strategy*" and "Using the *Self-Directed IEP*" because enough high- or acceptable-quality studies had been conducted on each practice. This approach is different from the one used by WWC and proposed by CEC, in which a specific practice is first defined and then the literature is reviewed to determine if enough research exists to classify the practice as having a strong, moderate, or weak level of evidence. Third, in most cases, practices were labeled by the dependent variable (or skill learned) rather than the independent variable. This was done because it was assumed that a practitioner's focus would be on teaching a specific skill (i.e., making a purchase) rather than the method used to the teach the skill (i.e., constant time delay). The exception to this was in the Taxonomy category of Program Structures (e.g., using community based instruction). Fourth, to be an evidence-based practice, typically research studies must first meet a set of quality indicators, and then provide evidence of effect. For the studies that used single subject designs, the quality indicator checklist included an item that required determining the existence of a functional relationship; although this did allow an effect to be identified, it did not allow a calculation of the size of the effect. Although a functional relationship does imply a "robust" independent variable (Baer, 1977), it does not quantify the effect size as the Percentage of Non-Overlapping Data (PND; Scruggs & Mastropieri,

2001), Percentage of All Non-Overlapping Data (PAND; Parker, Hagan-Burke, & Vannest, K., 2007), or the Improvement Rate Difference (IRD; Parker, Vannest, & Brown, 2009) have been suggested to do for single subject designs. Neither PNDs, PANDs, nor IRDs were calculated for the single subject studies used in this review. However, because the group design quality indicators checklist did not include an assessment of intervention "effects," we did attempt to calculate effect sizes for the six group studies used in our review (i.e., Bates, Cuvo, Miner, & Korabek, 2001; Izzo, Cartledge, Miller, Growick, & Rutkowski, 2000; Martin et al., 2006; Nelson, Smith, & Dodd, 1994; Sinclair, Christensen, and Thurlow (2005); Van Reusen & Bos, 1994). Using Cohen's *d*, effect sizes were $d = 0.334$ (Self -Advocacy Strategy; Van Reusen & Bos, 1994), $d = 0.588$ (extending services beyond secondary school; Izzo et al., 2000), and $d = 1.53$ (teaching job applications; Nelson et al., 1994). Effect sizes for the other three studies were not, or could not be, calculated.

Suggestions for Future Research

A byproduct of identifying evidence-based practices is the recognition of research needed to improve the level of evidence for specific practices to "strong." (See Table 6.) Table 6 indicates a continued need for more experimental research (using group and/or single subject research designs) to establish "strong" levels of evidence for many secondary transition practices. At this point there are only two practices that have a strong level of evidence (i.e., teaching life skills and teaching purchasing skills). Both are in the Taxonomy category of Student Development, which also includes 22 of the *moderate* practices and 1 *potential* practice. There are three *moderate* level practices in Student-Focused Planning, and the remaining *moderate* or *potential* practices are in Family Involvement or Program Structures. No evidence-based practices have been found in the category of Interagency Collaboration. In addition, many secondary-transition related skills (e.g., managing finances, physical fitness, travel, healthy living, engaging in civic activities, maintaining employment) do not appear to have any evidence base. Although there is clearly much to be done, careful attention needs to be paid to ensuring that this research meets the quality indicators for group and/or single subject designs.

Finally, although the evidence-based practices identified by this review do provide practitioners with strategies for teaching specific skills, the literature reviewed did not correlate student skill development with improved postschool outcomes. Research is needed to link these evidence-based practices with postschool outcomes, such as employment, education/training, and quality of life.

Implications for Practice

The current list provides practitioners with a starting point for implementing evidence-based practices. Are they guaranteed to work? No, but practitioners can be confident that practices with strong and moderate levels of evidence will produce similar effects with their students. Practitioners will still need to use their professional judgment to select practices for their students. To help them with this process, further information about each practice can be found at http://www.nsttac.org under "Evidence-Based Practices." At this website, each practice is described in terms of the supporting evidence, with whom it was implemented (i.e., disability labels, gender, ethnicity if provided), what the practice is, how and where it has been implemented, how the practice relates to State Performance Plan Part B Indicator 13 and national standards, where the best place to find out how to do the practice is, and references used to establish the current evidence base.

In addition, for each practice description there is a set of research-to-practice lesson plan starters listed under the section "The best place to find out how to do this practice." All lesson plan starters can also be found in the Lesson Plan Library at http://www.nsttac.org. Each starter includes the basic information needed to write a lesson including an objective, setting/materials, content to be taught, teaching procedure, and evaluation ideas. All information for each lesson plan starter was taken directly from a study used to identify the level of evidence for a practice.

Both the practice descriptions and lesson plan starters were developed to help state and local education agencies use evidence-based practices in classrooms. In addition, because the evidence-based practices are categorized by the Taxonomy, which is a widely accepted framework for comprehensive secondary transition programs, state and local education agency personnel should use the practices listed under each category of the Taxonomy as starting points for providing quality transition services to students. This same logic can be applied to improving SPP Part B Indicator 13 outcomes, in that these evidence-based practices should serve as the starting point for writing annual goals and transition services designed to help students achieve their postschool goals.

In conclusion, the results of this review provide practitioners with a set of evidence-based practices for improving transition services and researchers with an agenda for conducting future research to help establish additional secondary transition instructional practices as having a

Table 6
Intervention Research Needed to Enhance the Level of Evidence to Strong

Practice	Current Level of Evidence	Research Needed
Student-Focused Planning		
Involving students in the individual education plan (IEP) process	Moderate	• 2 high-quality group experimental studies or • 4 acceptable-quality group experimental studies or • 5 high-quality single subject studies
Self-Advocacy Strategy	Moderate	• 1 high-quality group experimental study or • 4 acceptable-quality group experimental studies or • 5 high-quality single subject studies
Self-Directed IEP	Moderate	• 1 high-quality group experimental study or • 4 acceptable-quality group experimental studies or • Five high-quality single subject studies
Student Development (Life Skills Instruction)		
Teaching life skills	Strong	None
Teaching purchasing skills	Strong	None
Teaching self-advocacy skills	Moderate	• 1 high-quality group experimental study or • 4 acceptable-quality group experimental studies or • 5 high-quality single subject studies
Teaching self-determination skills	Moderate	• 2 high-quality group experimental studies or • 4 acceptable-quality group experimental studies or • 5 high-quality single subject studies
Functional reading sight words	Moderate	• 2 high-quality group experimental studies or • 4 acceptable-quality group experimental studies or • 5 high-quality single subject studies
Functional math skills	Moderate	• 1 high-quality group experimental studies or • 4 acceptable-quality group experimental studies or • 5 high-quality single subject studies
Banking skills	Moderate	• 2 high-quality group experimental studies or • 4 acceptable-quality group experimental studies or • 5 high-quality single subject studies
Cooking skills	Moderate	• 2 high-quality group experimental studies or • 4 acceptable-quality group experimental studies or • 4 high-quality single subject studies
Food preparation skills	Moderate	• 2 high-quality group experimental studies or • 4 acceptable-quality group experimental studies or • 5 high-quality single subject studies
Grocery shopping skills	Moderate	• 1 high-quality group experimental studies or • 4 acceptable-quality group experimental studies or • 5 high-quality single subject studies
Home maintenance skills	Moderate	• 2 high-quality group experimental studies or • 4 acceptable-quality group experimental studies or • 4 high-quality single subject studies
Leisure Skills	Moderate	• 2 high-quality group experimental studies or • 4 acceptable-quality group experimental studies or • 5 high-quality single subject studies
Restaurant Purchasing Skills	Moderate	• 1 high-quality group experimental studies or • 4 acceptable-quality group experimental studies or • 5 high-quality single subject studies
Purchasing using the "one more than" strategy	Moderate	• 2 high-quality group experimental studies or • 4 acceptable-quality group experimental studies or • 5 high-quality single subject studies
Safety skills	Moderate	• 2 high-quality group experimental studies or • 4 acceptable-quality group experimental studies or • 4 high-quality single subject studies
Social skills training	Moderate	• 2 high-quality group experimental studies or • 4 acceptable-quality group experimental studies or • 5 high-quality single subject studies

(continued)

Table 6 (continued)

Practice	Current Level of Evidence	Research Needed
Life skills using community-based instruction	Moderate	• 1 high-quality group experimental studies or • 4 acceptable-quality group experimental studies or • 5 high-quality single subject studies
Life skills using computer-assisted instruction	Moderate	• 2 high-quality group experimental studies or • 4 acceptable-quality group experimental studies or • 4 high-quality single subject studies
Life skills using self-management	Moderate	• 1 high-quality group experimental study or • 4 acceptable-quality group experimental studies or • 4 high-quality single subject studies
Student Development (Employment Skills Instruction)		
Job-specific employment skills	Moderate	• 1 high-quality group experimental study or • 4 acceptable-quality group experimental studies or • 4 high-quality single subject studies
Job-specific employment skills using computer-assisted instruction	Moderate	• 2 high-quality group experimental studies or • 4 acceptable-quality group experimental studies or • 5 high-quality single subject studies
Completing a job application	Moderate	• 1 high-quality group experimental study or • 4 acceptable-quality group experimental studies or • 5 high-quality single subject studies
Employment skills using community-based instruction	Moderate	• 1 high-quality group experimental study or • 4 acceptable-quality group experimental studies or • 5 high-quality single subject studies
Teaching self-management for employment skills	Moderate	• 2 high-quality group experimental studies or • 4 acceptable-quality group experimental studies or • 5 high-quality single subject studies
Job-related social/communication skills	Potential	• 2 high-quality group experimental studies or • 4 acceptable-quality group experimental studies or • 4 high-quality single subject studies
Family Involvement		
Teaching parents and families about transition	Moderate	• 1 high-quality group experimental study or • 4 acceptable-quality group experimental studies or • 5 high-quality single subject studies
Program Structure		
Provide community-based instruction	Moderate	• 1 high-quality group experimental study or • 4 acceptable-quality group experimental studies or • 4 high-quality single subject studies
Structure program to extend services beyond secondary school	Moderate	• 1 high-quality group experimental study or • 4 acceptable-quality group experimental studies or • 5 high-quality single subject studies
Check & Connect	Potential	• 2 high-quality group experimental studies or • 3 acceptable-quality group experimental studies or • 5 high-quality single subject studies

strong level of evidence using quality indicators established for group experimental research (Gersten et al., 2005) and single subject research designs (Horner et al., 2005). As schools place increased emphasis on teacher use of evidence-based practices in their instruction, in order to insure that secondary transition services are not left out, we must commit to identifying and using secondary transition practices having *strong* levels of evidence.

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APPENDIX B

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Evidence-Based Secondary Transition Predictors for Improving Postschool Outcomes for Students With Disabilities

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The purpose of this study was to conduct a systematic review of the secondary transition correlational literature to identify in-school predictors of improved postschool outcomes in the areas of education, employment, and/or independent living for students with disabilities. Based on results of this review, 16 evidence-based, in-school predictors of postschool outcomes were identified. Of the 16 predictors, 4 (25%) predicted improved outcomes in all three postschool outcome areas, 7 (43.8%) predicted improved outcomes for only postschool education and employment, and 5 (31.3%) predicted improved outcomes for employment only. Limitations and implications for future research and practice are discussed.

Keywords: *secondary transition; research; high school; students with disabilities*

Life is a series of transitions; from diapers to underpants, from day care to preschool, preschool to elementary school, elementary school to middle school, and middle school to high school. Although these and many other transitions occur for students, one of the most significant points of transition is from high school to adulthood. High school graduation traditionally signifies a time of many challenges and changes, filled with hopes and dreams of successfully leaving high school and moving into employment and/or postsecondary education. Halpern (1992) has defined this transition as "a period of *floundering* that occurs for at least the first several years after leaving school as adolescents attempt to assume a *variety* of adult roles in their communities" (p. 203).

Unfortunately for students with disabilities, the floundering period often lasts for years, as documented since the mid-1980s by studies of postschool outcomes of students with disabilities. For example, Hasazi, Gordon, and Roe (1985) conducted a study of 462 youth from nine Vermont school districts who exited high school between 1979 and 1983. Their results indicated that 55% were in paid jobs, but only 67% of these were full-time. For those who graduated from high school, 72% earned less than $5.00/hour, while of those who dropped out, over 84% earned less than $5.00/hour. By the mid-1990s and early 2000s, there had been some progress, but for young people with disabilities between the ages of 18 and 29 the employment rate was only 57% compared to a 72% employment rate for individuals without disabilities (National Organization on Disability, 2004). Three to five years after graduation, special

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education graduates still lagged behind their peers without disabilities, 50% to 69%, in having a competitive job (Fabian, Lent, & Willis, 1998). For individuals with more severe disabilities the employment rate dropped to 25%, and to 8% for individuals with profound disabilities (La Plante, Kennedy, Kaye, & Wenger, 1996). When looking at all individuals with disabilities of all working ages only 35% reported having a full-time or part-time job versus 78% of those without disabilities (National Organization on Disability, 2004). Despite federal legislation resulting in nationwide implementation of transition programs, "being unemployed" or "underemployed" continued to most clearly exemplify what it truly meant to be disabled (National Organization on Disability, 1998).

Recently, the *National Longitudinal Transition Study-2* (NLTS2; 2007) Wave 3 data indicated that 72.6% of youth with disabilities continued to live with their parents after high school, 9.9% lived alone, and 0.5% lived in a group home or assisted living facility. Postschool education data indicated that only 7.7% were attending a 4-year college or university and 12.8% were attending a 2-year community college. Postschool employment data were more favorable for youth with disabilities when compared to previous years, indicating that 55.1% of youth had a paid job a year or more after high school. Although postschool outcomes for youth with disabilities have increased slightly over the years, there is still need for improvement in the areas of employment, education, and independent living. Therefore, it remains imperative to continue investigating programs and practices at the secondary level that lead to improved postschool outcomes for youth with disabilities (Wagner, Newman, Cameto, Levine, & Garza, 2006).

As a result, one of the most interesting challenges facing educators who wish to develop and implement transition programs that improve the postschool outcomes for students is to determine what practices lead to improved postschool outcomes for students with disabilities. Researchers in the field of secondary transition have been trying to provide this answer since the introduction of Will's (1984) bridges model of transition. For example, the first set of studies that identified promising transition practices were conducted in the 1980s (e.g., Hasazi et al., 1985; Kortering & Edgar, 1988; Mithaug, Horiuchi, & Fanning, 1985; Sitlington & Frank, 1990; Wehman, Kregel, & Seyfarth, 1985). Along with documenting poor postschool outcomes for students exiting high school programs, these studies also investigated the relationship between improved postschool outcomes and components of students' high school programs to determine what students did in high school that impacted postschool outcomes. For example, Hasazi et al. (1985) found that students who received work experiences while in high school had better postschool employment outcomes than students who did not. Overall, these early studies found a positive relationship between taking vocational education classes, participating in paid job experiences, and transition programming and better student postschool employment outcomes.

Though these findings are still being supported by research (Baer et al., 2003), researchers have also identified other skills correlated with improved postschool success for students with disabilities, including self-determination (Benitez, Lattimore, & Wehmeyer, 2005; Wehmeyer & Palmer, 2003) and participation in transition planning (Halpern, Yovanoff, Doren, & Benz, 1995). For example, Benitez et al. (2005) found that teaching self-determination skills in high school was positively correlated with improved postschool outcomes for students with disabilities, and Wehmeyer and Palmer found that self-determination skills in high school were significant predictors of postschool education and independent living success.

In addition to descriptive and correlational studies that identified practices associated with improved postschool outcomes, following the 1990 IDEA (Individuals With Disabilities Education Act) revisions mandating transition services, published lists of "best practices" accelerated (e.g., DeStefano, Heck, Hasazi, & Furney, 1999; Hasazi, Furney, & DeStefano, 1999; Hughes, Eisenman et al., 1997; Hughes, Hwang et al., 1997; Hughes, Kim et al., 1997; Johnson & Rusch, 1993; Karge, Patton, & de la Garza, 1992; Kohler, DeStefano, Wermuth, Grayson, & McGinty, 1994). These lists were developed using such strategies as analyzing exemplary programs (Kohler et al.), surveying teachers (Hughes, Kim et al.), researchers, (Hughes, Hwang et al.), and reviewing the literature (Karge et al.).

It is clear that researchers in the field of secondary transition have been working to provide practitioners with practices designed to help improve students' postschool outcomes. Recently, the National Secondary Transition Technical Assistance Center (NSTTAC) was charged with the task of identifying evidence-based practices for the field of secondary transition. To do this, NSTTAC researchers have conducted two reviews of the literature. The first review identified evidence-based practices based on experimental (both group and single subject designs) studies, including practices such as (a) teaching life skills using community-based instruction, (b) teaching purchasing skills, and (c) teaching functional reading skills (Test et al., 2009). However, though the evidence-based practices identified from experimental research were designed to teach students specific transition-related skills, to date,

the experimental literature has not attempted to measure the impact of these skills on postschool outcomes (Test et al.). As a result, Test et al. identified the need for a review of correlational research in secondary transition to identify evidence-based predictors that are correlated with improved postschool outcomes in education, employment, and/or independent living. In addition, given the recent focus on evidence-based practices, it is important that the findings be based on a current set of standards designed to evaluate the quality of correlational research.

Recently, the Council for Exceptional Children (CEC) through its Division of Research addressed this in a special issue of *Exceptional Children* ("Criteria," 2005), by including an article that proposed a set of quality indicators for correlational research (Thompson, Diamond, McWilliam, Snyder, & Snyder, 2005). In addition, through its Professional Standards and Practices Committee, CEC is developing a process for identifying evidence-based special education practices (Council for Exceptional Children [CEC], 2008) based on these, and other quality indicators published in *Exceptional Children* in 2005.

Therefore, the purpose of this study was to conduct a systematic review of the secondary transition correlational literature using quality indicators suggested by Thompson et al. (2005) to identify in-school predictors of improved postschool outcomes for students with disabilities.

Method

Researchers conducted an electronic search with EBSCO Host and Cambridge search engines to identify all publications between 1984 and March of 2009 that used correlational research methods (i.e., articles that specifically investigated the relationship between predictor and outcome variables) to investigate secondary transition predictors of postschool success. The databases targeted for the search included: Academic Search Premier, Educational Administration Abstracts, Education Research Complete, Educational Resources Information Center (ERIC), MasterFILE Premier, MiddleSearchPlus, PsycARTICLES, and PsycINFO. Full and truncated versions of the following search terms were used: *correlation*, *correlate*, *correlational*, *predictor*, *relationship*, *students*, *youth*, *adolescents*, *young adults*, *disability*, *middle school*, *high school*, *transition*, *education*, *special education*, *outcomes*, *post-school*, *postsecondary*, *post-school outcomes*, *in-school*, *post-secondary education*, *employment*, *independent living*, and *quality of life*. Additional correlational articles were also found for review through NSTTAC's search to identify evidence-based practices in secondary transition (Test et al., 2009). Finally, researchers conducted a hand search of reference lists of articles identified through electronic searches that met inclusion criteria to identify additional articles pertinent to this review. From the original search, 162 articles were identified. Researchers reviewed abstracts and data analysis sections of the articles to determine if analyses were correlational in nature. Articles found that were (a) expert opinion, (b) literature reviews, (c) program evaluations, (d) experimental, (e) descriptive, or (f) univariate with no correlational analyses were excluded from the review, resulting in 63 potential articles to be examined further. Interrater reliability for the original search was calculated by two separate reviewers and totaled 100% across all articles for inclusion of correlational studies.

Inclusion Criteria for Correlational Literature Review

Prior to determining quality, the 63 articles were examined to determine if they met preliminary inclusion criteria for this systematic review. To be included in the review, a study had to include (a) predictor variables related to a secondary transition program or practice and (b) outcome variables related to postschool education, employment, and independent living. Of the 63 potential articles reviewed, 35 were excluded for the following reasons: (a) in-school variables related to a secondary transition program or practice were not addressed ($n = 9$); (b) outcome variables were not related to postschool education, employment, and/or independent living ($n = 19$); (c) students and/or adults with disabilities were not included ($n = 4$); and (d) only demographic variables (e.g., age, disability, gender) were analyzed ($n = 3$). Interrater reliability for this part of the review was also calculated by two separate reviewers and was 100%.

The remaining 28 articles were then reviewed to evaluate the quality of evidence using a 13-item checklist for correlational research. The quality indicator checklist was developed based on criteria from Thompson et al. (2005; see Figure 1). Of the 28 articles reviewed, 22 met requirements of the quality indicator checklist to be included in the final review. Four of the articles were excluded because stepwise methods of analyses were used. Stepwise regression analyses were excluded because they are not designed to identify the best subset of predictor variables and negate the theoretical knowledge the experimenter may have by giving control of determining the best set of predictors to the computer program (Knapp & Sawilowsky, 2001; Tabachnick & Fidell, 2007; Thompson et al., 2005). Additionally, using stepwise regression analysis can result in other major problems, including: (a) computer programs tend to use erroneous

Figure 1
Quality Indicator Checklist for Correlational Research

Quality Indicator Checklist: Correlational Studies

QUALITY INDICATORS

Analytic Method (must meet 1 and 3; or 2 and 3)

- ☐ (1) Hypotheses are not formulated prior to conducting analysis (i.e., *exploratory*)
- ☐ (2) Hypotheses are planned and formulated prior to conducting analysis (i.e., *a priori*)
- ☐ (3) Significant correlations of(±0.1) are reflected between predictor and outcome variables

Measurement (suggested)

- ☐ (4) Score reliability coefficients are reported for all measured variables based on induction from a prior study or analysis of data within current study
  - ☐ If score reliability based on a measure from a previous study, the sample in the current study is comparable to the previous study
- ☐ (5) Score validity coefficients are reported for all measured variables based on induction from a prior study or analysis of data within current study
  - ☐ If score validity based on a measure from a previous study, the sample in the current study is comparable to the previous study

Practical Significance (must meet)

- ☐ (6) Effect sizes are reported or may be calculated for each outcome (relevant to this review), even when the outcome was not statistically significant
  - ☐ Examples of effect categories include: (a) standardized differences (e.g., Cohen's *d*, Glass's); (b) "uncorrected" variance-accounted-for (e.g.,η^2, R^2); and (c) "corrected" variance-accounted-for (e.g., adjusted R^2, ω^2)
  - ☐ When comparing multiple related studies with related variables and outcomes, comparison of effects to evaluate consistency of results across studies is recommended.

Macro-analysis (must meet 7, 8, 9, 10, 11; suggested 12)

- ☐ (7) General Linear Model (GLM) weights (e.g., beta weights, factor pattern coefficients, discriminate function coefficients) are interpreted as reflecting correlations of predictors with outcome variables only in the exceptional case that the weights are correlation coefficients
- ☐ (8) If multiple regression analysis, exploratory factor analysis, confirmatory factor analysis, descriptive discriminate analysis, or canonical correlation analysis are used, the interpretation of results includes examination of structure coefficients (i.e., correlations of measured variables with latent variables actually being analyzed)
- ☐ (9) Univariate methods are not used in the presence of multiple outcome variables
- ☐ (10) Univariate methods are not used post hoc to multivariate tests (i.e., multivariate post hoc methods (e.g., descriptive discriminant analysis) are conducted when multivariate methods are employed)
- ☐ (11) Interval data (e.g., IQ scores) are not converted to nominal scale (e.g., "low", "high") unless such choices are justified and thoughtfully considered
- ☐ (12) Evidence is presented that statistical assumptions are sufficiently met for results to be deemed credible (e.g., homogeneity of variance, normal distribution, measures of central tendency)

Confidence Intervals (suggested)

- ☐ (13) Confidence intervals are reported or can be calculated for :
  - ☐ (a) reliability coefficients derived for study data,
  - ☐ (b) sample statistics (e.g., means, correlation coefficients) of primary interest in the study
  - ☐ (c) study effect sizes

degrees of freedom in stepwise calculations that may lead to an increased "likelihood of obtaining spurious statistical significance" (Thompson, 1995, p. 525); and (b) the Type I error rate tends to be inflated because of the incorrect computation of degrees of freedom (Knapp & Sawilowsky; Thompson). Finally, two articles were excluded because effect sizes were not reported, and there was not sufficient information to calculate effect

sizes for each outcome. Interrater reliability on 41% (n = 9) of the correlation studies reviewed using the quality indicator checklist in this phase was 100% for the two reviewers.

Finally, the 22 articles that met the quality indicator criteria for correlational research were used to develop the evidence-based in-school predictors of improved postschool outcomes for students with disabilities. Decision rules for determining levels of evidence for correlational research based on the Institute for Education Sciences (IES; B. Cobb, personal communication, May 12, 2006) were then established. According to IES, the evidence provided by correlational research may only be established as a *moderate* level of causal inference. Researchers then added a *potential* level of evidence to allow for recognizing research that may be promising, but has insufficient evidence to meet moderate levels. To be identified as a moderate level of evidence, a predictor had to have: (a) two a priori (i.e., planned hypothesis prior to analysis) studies with consistent significant correlations between predictor and outcome variables (exploratory studies were included only when paired with a priori significant correlations) and (b) effect size calculations or data to calculate effect size. To be identified as a potential level of evidence, a predictor had to have: (a) one a priori (i.e., planned hypothesis prior to analysis) study and/or (b) two or more exploratory (no specific hypothesis) studies with significant correlations between predictor and outcome variables.

The descriptions of each predictor were taken directly from the findings in the studies reviewed. Predictor categories were created based on consensus by researchers, and researchers classified each predictor to reflect a comprehensive term to support each description.

Data Analysis

Researchers examined each study for the following: (a) population (i.e., disability type), (b) sample size, (c) predictor variable(s), (d) postschool outcome variable(s), (e) type of statistical analysis used, (f) relationships among variables, (g) significance levels, and (h) data that allowed for calculation of effect sizes. Because the correlational studies included in this review were comprised of various types of analyses that yielded numerically different values, it was not possible to draw meaningful conclusions across studies (Lipsey & Wilson, 2001). Therefore, researchers chose to convert significant relationships to standardized effect size measures to allow comparisons. To make comparisons, several conversions had to be calculated. Studies using Pearson r or canonical correlations directly translated to effect size. Studies using logistic regression analysis reported odds ratio statistics that were converted to tetrachoric approximations (Digby, 1983) using the equation: $(OR^{.5} - 1) / (OR^{.5} + 1)$. Tetrachoric transformations are often used with odds ratio statistics so that such statistics can be converted to Pearson r correlations. Studies using standard multiple regression analysis reporting only multiple R^2 were converted to Cohen's f^2 effect size statistic (Cohen, 1977) using the equation: $f^2 = R^2 / (1 - R^2)$. One study (i.e., Wehmeyer & Schwartz, 1997) reported multiple R^2 for the full model and standardized regression coefficients (i.e., betas) for individual predictor variables. The standardized regression coefficient is an effect size measure that represents the change in dependent variable for one standard deviation change in the independent variable (MacKinnon, 2008). Another study (i.e., Heal, Khoju, & Rusch, 1997) did not report multiple R^2 data for each set of predictors or for the full model, but did report correlations (i.e., r) between each predictor variable and the three outcome variables. Therefore, the correlations were reported and converted to effect sizes for this study. For studies conducting hierarchical multiple regression analyses, the multiple R^2 was converted to effect size using a variation of the Cohen's f^2 effect size statistic (Cohen) using the equation: $f^2 = (R^2_{AB} - R^2_A) / (1 - R^2_{AB})$. In this equation, R^2_A is the variance accounted for by a set of one or more independent variables A, and R^2_{AB} is the combined variance accounted for by A and another set of one or more independent variables B (often the first set of control variables; Cohen). The determination of small, medium, and large effect sizes was made based on Cohen's appraisal system. Values for correlation (r) effect sizes were: (a) small: $r \leq .10$; (b) medium: $r = .30$; (c) large: $r \geq .50$. Values for multiple R^2 effect sizes were: (a) small: $f^2 = .02$; (b) medium: $f^2 = .15$; and (c) large: $f^2 = .35$.

Results

A total of 22 articles met the criteria to be included in the systematic correlational literature review. Of the 22 articles, 3 were *exploratory* studies and 19 were *a priori* studies. Findings are discussed below in terms of population and overall effects, predictor categories, and negative findings.

Population and Overall Effects

Table 1 indicates that the total number of participants for the 22 studies was 26,480 with sample sizes ranging from 38 to 7,007. The mean sample size for this review was 1203.6 and the median was 535. Twenty-three percent of the studies included sample populations comprised of all disability categories (n = 5) and 77% (n = 17) included only some disability categories. The majority of studies

Table 1
Results

Reference	*N*	Disability	Other Demographics	Predictor Variable	Postschool Outcome Variable	Statistical Analysis	Relationship	Significance Level	Effect Size
Baer et al. (2003)	140	All disability categories except speech	59% male 41% female 18% minority Urban, suburban, and rural representation	1. Work study 2. Vocational education 3. Regular academics	1. Employment 2. Employment 3. Education	Logistic regression	1. 3.67 2. 2.60 3. 5.13	1. $p < 0.01$ 2. $p < 0.05$ 3. $p < 0.01$	1. 0.45 (medium) 2. 0.34 (medium) 3. 0.55 (large)
Benz, Lindstrom, & Yovanoff (2000)	709	All disability categories	62% male 38% female 87% Caucasian 5% Hispanic 3% African American 3% Asian/Pacific Islander 2% Native American	1. Number of paid jobs 2. Transition goals met	1. Productive Engagement (employment or education) 2. Productive Engagement (employment or education)	Logistic regression	1. 1.80 2. 3.82	1. $p < 0.001$ 2. $p < 0.001$	1. 0.22 (small) 2. 0.46 (medium)
Benz, Yovanoff, & Doren (1997)	218	All disability categories	63% male 37% female 92% Caucasian 8% minority	1. Social skills at exit 2. Number of jobs in school 3. Job search skills at exit 4. Career awareness at exit	1. Employment 2. Employment 3. Employment 4. Productive Engagement (employment or education)	Logistic regression	1. 3.44 2. 2.03 3. 2.11 4. 1.89	1. $p < 0.05$ 2. $p < 0.01$ 3. $p < 0.05$ 4. $p < 0.05$	1. 0.43 (medium) 2. 0.26 (small) 3. 0.27 (small) 4. 0.23 (small)
Blackorby, Hancock, & Siegel (1993)	939	LD, MR, ED, sensory impairments, physical disabilities	62% male 38% female	1. Student's School Programs (percentage of time spent in regular education placement; student took academics in regular education placement) 2. Individual aptitude (student's self-care ability scale; student's IQ level)	1. Employment, Education, and Independent Living 2. Employment, Education, and Independent Living	Correlated factor analysis	1. 0.27 2. 0.42 Pearson *r*	1. $p < 0.001$ 2. $p < 0.001$	1. 0.27 (small) 2. 0.42 (medium)
Bullis, Davis, Bull, & Johnson (1995)	308	Students with deafness or with disabilities plus deafness	Data not reported	1. Year-round job 2. Paid work 3. Assistance from 3–6 community-based agencies	1. Engagement (education or employment) 2. Independent Living 3. Independent Living	Logistic regression	1. 4.94 2. 2.21 3. 2.34	1. $p = 0.05$ 2. $p = 0.05$ 3. $p = 0.05$	1. 0.54 (large) 2. 0.29 (medium) 3. 0.31 (medium)
Doren & Benz (1998)	422	All disability categories	65% male 35% female	1. Number of jobs in school (males only) 2. Method used to find job (self–family–friend network)	1. Employment 2. Employment	Logistic regression	1. 2.04 2. Males 2.33 Females 3.77	1. $p < 0.05$ 2. $p < 0.05$ $p < 0.05$	1. 0.26 (small) 2. 0.31 (medium) 0.46 (medium)

(continued)

Table 1 (continued)

Reference	*N*	Disability	Other Demographics	Predictor Variable	Postschool Outcome Variable	Statistical Analysis	Relationship	Significance Level	Effect Size
Fabian, Lent, & Willis (1998)	2,258	LD, MR, ED, other disabilities that included epilepsy, sensory impairments, head injury, and orthopedic and mobility impairments	62% male 48% African American 21% Hispanic 5% Asian American 22% European American 3% Other Urban location of Bridges' programs	1. Acceptance of postinternship job offer	1. Employment	Discriminant analysis	1. 0.23 (0.89 structure coefficient)	1. $p < 0.001$	1. 0.23 (small)
				2. Internship completion	2. Employment		2. 0.23 (0.44 structure coefficient) Canonical correlation	2. $p < 0.001$	2. 0.23 (small)
Fourqurean, Meisgeier, Swank, & Williams (1991)	123	LD	75% male 82% White 11% Hispanic 7% Black	1. High school employment	1. Employment (stability)	Multiple regression	1. 0.05	1. $p < 0.01$	1. 0.05 (small)
				2. Parent participation	2. Employment (stability)		2. 0.03 R^2	2. $p < 0.05$	2. 0.03 (small)
				3. Parent participation	3. Employment (status)	Discriminant analysis	3. 0.43	3. $p < 0.01$	3. 0.43 (medium)
				4. Math ability	4. Employment (status)		Canonical correlation		
Halpern, Yovanoff, Doren, & Benz (1995)	Oregon/ Nevada: 422	All disability categories	60% male 10% minorities 61% family income > $25k/year	1. Instruction received 2. Transition planning 3. Student satisfaction	1. Education 2. Education 3. Education	Logistic regression	1. 3.91 2. 3.21 3. 22.48	1. $p < 0.05$ 2. $p < 0.05$ 3. $p < 0.01$	1. 0.47 (medium) 2. 0.41 (medium) 3. 0.82 (large)
	Arizona: 565		63% male 23% minorities 48% family income >$25k/year	1. Functional achievement 2. Instruction received 3. Transition planning 4. Student satisfaction	1. Education 2. Education 3. Education 4. Education	Logistic regression	1. 12.67 2. 4.82 3. 6.61 4. 27.65	1. $p < 0.01$ 2. $p < 0.05$ 3. $p < 0.05$ 4. $p < 0.01$	1. 0.74 (large) 2. 0.53 (large) 3. 0.61 (large) 4. 0.85 (large)
Harvey (2002)	7,007	LD, orthopedic impairments, visual or hearing problems, deafness, speech problems, orthopedic problems, physical disabilities, learning problems, emotional problems, or other health problems, mental or physical disabilities; students without disabilities	50.8% male 49.2% female 79.4% White 20.0% Other 23.5% urban 42.3% suburban 34.3% rural 18.7% low SES 23.7% mid-low SES 26.6% mid-high SES 31.0% high SES	1. Vocational education credit in high school	1. Employment	Logistic and ordinary least-squares regression	1. 1.75	1. $p < 0.001$	1. 0.21 (small)
				2. Vocational education credit in high school	2. Employment (wage earnings)		2. 3.19	2. $p < 0.001$	2. 0.41 (medium)
				3. Vocational education credit in high school	3. Employment (hours worked)		3. 3.65	3. $p < 0.001$	3. 0.45 (medium)
Heal, Khoju, & Rusch (1997)	713	All disability categories	Data not reported	1. Extent of school integration	1. Independent Living: (QOL: Independence)	Hierarchical multiple regression	1. 0.37	1. $p < 0.001$	1. 0.37 (medium)
				2. Percentage of hours spent in regular education classes	2. Independent Living : (QOL: Independence)		2. 0.48	2. $p < 0.001$	2. 0.48 (medium)
					(QOL Esteem)		0.32 Pearson *r*	$p < 0.001$	0.32 (medium)

(continued)

Table 1 (continued)

Reference	*N*	Disability	Other Demographics	Predictor Variable	Postschool Outcome Variable	Statistical Analysis	Relationship	Significance Level	Effect Size
Heal, Khoju, Rusch, & Harnisch (1999)	505	Mild disabilities, LD, ED, speech impairments, sensory (vision, hard of hearing, deaf), orthopedic impairments, other health impairments, severe disabilities	Data not reported	Amount of time per week students spent with friends or family (student support)	Independent Living: (QOL: Independence) (QOL: Social Relationships)	Hierarchical multiple regression	0.19 0.40 R^2	$p < 0.001$ $p < 0.001$	0.26 (medium) 0.06 (small)
Heal & Rusch (1994)	2,686	All disability categories; students without disabilities	61.6% male 38.4% female 23.5% Black 63.6% White 7.9% Hispanic 2.4% Other 30.7% from single parent family	High scores on adaptive and academic skills, self-care skills, GPA on academic activities, received a diploma, and higher IQs	Independent Living	Hierarchical multiple regression	0.03 R^2	$p = 0.001$	0.06 (small)
Heal & Rusch (1995)	2,405	ED, speech impairments, LD, MR, severe disabilities, physical disabilities, hearing impairments, visual impairments	62.8% male 37.2% female 24.5% Black 64.6% White 7.8% Hispanic 3.4% Other 32.3% from single parent family	Hours in vocational education courses, academic courses, occupational courses, percentage of hours in regular education	Employment	Hierarchical multiple regression	0.08 R^2	$p < 0.001$	0.09 (small)
Leonard, D'Allura, & Horowitz (1999)	167	Individuals with visual impairments	55.7% male 47.1% White 26.5% Black 16.8% Hispanic 5.2% Asian 4.5% Other	1. Type of school (integrated) 2. Received technology training	1. Employment 2. Employment	Logistic regression	1. 1.74 2. 2.20	1. $p < 0.05$ 2. $p < 0.05$	1. 0.20 (small) 2. 0.29 (small)
Luecking & Fabian (2000)	3,024	MR, ED, LD	52.8% male 47.2% female 81% minority* *urban location of Bridges' programs	*6-month follow up:* 1. Internship completion 2. Postinternship job offer *12-month follow up:* 1. Internship completion 2. Postinternship job offer	1. Employment 2. Employment 1. Employment 2. Employment	Logistic regression	1. 4.50 2. 5.28 1. 1.84 2. 3.07	1. $p < 0.01$ 2. $p < 0.01$ 1. $p < 0.05$ 2. $p < 0.01$	1. 0.51 (large) 2. 0.55 (large) 1. 0.22 (small) 2. 0.40 (medium)
Rabren, Dunn, & Chambers (2002)	1393	LD, MR, other (not specified)	67% male 33% female 61% Caucasian 39% African American	1. Job at time of high school exit	1. Employment	Logistic regression	1. 5.10 Odds ratio	1. $p < 0.001$	1. 0.54 (large)
Repetto, Webb, Garvan, & Washington (2002)	Not specified	Students with disabilities (not specified)	Data not reported	*1993 follow-up:* 1. Interagency council characteristics 2. Transition support characteristics	1. Education 2. Education	Correlation	1. 0.26 2. 0.26	1. $p < 0.05$ 2. $p < 0.05$	1. 0.26 (small) 2. 0.26 (small)

(continued)

Table 1 (continued)

Reference	*N*	Disability	Other Demographics	Predictor Variable	Postschool Outcome Variable	Statistical Analysis	Relationship	Significance Level	Effect Size
				1997 follow-up:					
				1. Interagency council characteristics	1. Education		1. 0.34	1. $p < 0.05$	1. 0.34 (medium)
				2. Transition program characteristics	2. Education		2. 0.39	2. $p < 0.01$	2. 0.39 (medium)
				3. Transition service characteristics	3. Education		3. 0.36	3. $p < 0.05$	3. 0.36 (medium)
				4. Transition support characteristics	4. Education		4. 0.45 Pearson *r*	4. $p < 0.001$	4. 0.45 (medium)
Roessler, Brolin, & Johnson (1990)	38	Mild MR, LD	55% male 45% female 76% Caucasian 24% African American	1. Daily living skills (teacher rating)	1. Employment	Correlation	1. 0.53	1. $p = 0.01$	1. 0.53 (large)
				2. Personal/social skills (teacher rating)	2. Employment		2. 0.47	2. $p = 0.02$	2. 0.47 (medium)
				3. Occupational guidance and preparation (teacher rating)	3. Employment		3. 0.56	3. $p = 0.01$	3. 0.56 (large)
				4. Daily living skills (student rating)	4. Independent Living (QOL)		4. 0.39	4. $p = 0.02$	4. 0.39 (medium)
				5. Personal/social skills (student rating)	5. Independent Living (QOL)		5. 0.44	5. $p = 0.01$	5. 0.44 (medium)
				6. Occupational guidance and preparation (student rating)	6. Independent Living (QOL)		6. 0.37 Pearson *r*	6. $p = 0.03$	6. 0.37 (medium)
Shandra & Hogan (2008)	2,254	Disability defined as one or more serious functional limitations, or no serious limitation but one or more moderate limitations; concept of disability drawn from World Health Organization's International Classification of Functioning, Disability, and Health (ICF) model	55.3% male 23.6% Black 15.9% Hispanic	1. Participation in school-based program of study	1. Employment (stability: benefits, insurance, paid sick days)	Generalized estimating equations	1. 1.27	1. $p < 0.05$	1. 0.09 (small)
				2. Participation in school-based program of study	2. Employment (full-time)		2. 1.24	2. $p < 0.05$	2. 0.08 (small)
Wehmeyer & Schwartz (1997)	80	MR, LD	55% female 45% male 69% White 21% Black 5% Hispanic 5% Native American or Asian American	1. Psychological empowerment	Employment (hourly pay rate)	Multiple regression	1. 0.72	1. $p = 0.04$	1. 0.72 (large)
				2. Self-realization			2. 0.70	2. $p = 0.05$	2. 0.70 (large)
				3. Self-regulation			3. 0.86 Standardized regression coefficients	3. $p = 0.02$	3. 0.86 (large)

(continued)

Table 1 (continued)

Reference	*N*	Disability	Other Demographics	Predictor Variable	Postschool Outcome Variable	Statistical Analysis	Relationship	Significance Level	Effect Size
White & Weiner (2004)	104	Severe disabilities	53.8% male 46.2% female 53% Caucasian 28% Hispanic 13% Asian 4% African American 2% Pacific Islander 79.8% living at home with parents 20.2% living in group home	1. Degree of school integration with age-appropriate peers 2. Duration of community-based training	1. Employment 2. Employment	Correlation	1. 0.36 2. 0.39 Pearson *r*	1. $p < 0.001$ 2. $p < 0.05$	1. 0.36 (medium) 2. 0.39 (medium)

Note: ED = Emotional Disturbance; LD = learning disabilities; MR = Mental Retardation; QOL = Quality of Life; SES = socioeconomic status.

Table 2
Summary of Predictor Categories, Level of Evidence, and Descriptions

Predictor Category	Outcome Area(s)	Level of Evidence	Description	Effect Sizes
• Career awareness	• Education • Employment	• Potential • Potential	• Students in the School to Work Transition Program who exited school with high job search skills were more likely to be engaged in postschool employment (Benz et al., 1997)	• 0.27 (small)
			• Students in the School to Work Transition Program who exited school with high career awareness skills were more likely to be engaged in postschool employment or education (Benz et al., 1997)	• 0.23 (small)
• Community experiences	• Employment	• Potential	• Students who participated in community-based training that involved instruction in nonschool, natural environments focused on development of social skills, domestic skills, accessing public transportation, and on-the-job training were more likely to be engaged in postschool employment (White & Weiner, 2004)	• 0.39 (medium)
• Exit exam requirements/ high school diploma status	• Employment	• Potential	• Students who had high scores on adaptive and academic skills, self-care skills, GPA on academic activities, received a diploma, and higher IQs as reported in school records were more likely to be engaged in postschool employment (Heal & Rusch, 1994)	• 0.52 (large)
• Inclusion in general education	• Education • Employment • Independent Living	• Moderate • Moderate • Moderate	• Students who participated in regular academics were 5 times more likely to participate in postsecondary education (Baer et al., 2003)	• 0.55 (large)
			• Students who took academic courses in regular education placements were more likely to be engaged in postschool education, employment, and independent living (Blackorby et al., 1993)	• 0.27 (small)
			• Students with high performance in five areas, including reading, writing, math, behaving responsibly, and problem-solving skills, were more likely to be engaged in postsecondary education (Halpern et al., 1995)	• 0.74 (large; Arizona)
			• Students who passed more than half or all courses in eight curriculum areas (remedial academics, traditional content classes, personal finance, community access, behaving responsibly, goal-setting or problem solving, specialized vocational education, regular vocational education) were more likely to be engaged in postsecondary education (Halpern et al., 1995)	• 0.47 (medium; Oregon/Nevada) • 0.53 (large; Arizona)
			• Students who had high scores on adaptive and academic skills, self-care skills, GPA on academic activities, received a diploma, and higher IQs as reported in school records were more likely to live independently (Heal & Rusch, 1994)	• 0.06 (small)
			• Students who took more hours of academic and occupational courses and spent more time in regular education were more likely to be engaged in postschool employment (Heal & Rusch, 1995)	• 0.09 (small)
			• Students who participated in more highly integrated and less highly specialized school programs were more likely to be living independently [i.e., high independence defined as: (a) parent's prediction of youth's future home independence, sum of cooking, shopping, washing, and cleaning skills; (b) sum of phone, time-keeping, counting, reading skills; (c) sum of dressing, feeding, and going out skills; (d) respondent's claim of youth's ability to respond on a follow-up questionnaire; Heal et al., 1997]	• 0.37 (medium; high independence)

(continued)

Table 2 (continued)

Predictor Category	Outcome Area(s)	Level of Evidence	Description	Effect Sizes
			• Students who spent more hours in regular education courses were more likely to be living independently [i.e., high independence, high esteem, minimal—high independence defined as: (a) parent's prediction of youth's future home independence, sum of cooking, shopping, washing, and cleaning skills, (b) sum of phone, time-keeping, counting, reading skills; (c) sum of dressing, feeding, and going out skills; (d) respondent's claim of youth's ability to respond on a follow-up questionnaire; high esteem defined as: (a) respondent's or school's claim of therapeutic counseling for youth; (b) number of developmental disabilities services attributed to the youth; (c) youth used some developmental disabilities prosthetic device in the past year; (d) youth worked for pay in the past year; (e) youth worked with or without pay in the past year; (f) educational status, dropout to college graduation; Heal et al., 1997]	• 0.48 (medium; high independence) • 0.32 (medium; high esteem) • 0.20 (small)
			• Students who were integrated into a regular school setting (as opposed to special schooling for persons with a disability) for most of their schooling were more likely to be engaged in postschool employment (Leonard et al., 1999)	
			• Students who had the highest degree of integration with age-appropriate peers were more likely to engage in postschool employment (White & Weiner, 2004)	• 0.36 (medium)
• Interagency collaboration	• Education • Employment	• Potential • Potential	• Students who received assistance from 3 to 6 community-based agencies (as compared to students with assistance from 0 to 2 agencies) were more likely to be engaged in postschool employment or education (Bullis et al., 1995)	• 0.31 (medium)
			• Transition interagency council characteristics (i.e., agency directories, agreements, councils, general information, local business advisory boards, parent network, statements) were more likely to be engaged in postsecondary education (Repetto et al., 2002)	• 0.26 (small; 1993) • 0.34 (medium; 1997)
			• Transition service characteristics (i.e., Association of Retarded Citizens, Department of Children and Families, Developmental Services, Division of Blind Services, DVR Rehab, Easter Seal, Job Service of FL, Job Training, Mental Health, Social Security Initiatives, United Cerebral Palsy) were more likely to be engaged in postsecondary education (Repetto et al., 2002)	• 0.36 (medium; 1997)
			• Transition support characteristics (i.e., Agency Referral FU, Case Management, Community Services; Employment Spec., Equipment, Family Services, Financial, Guardianship, Guidance/Counseling, Living Arrangement, Medical, Parent Information, Referral, Social/Leisure, Support Service, Teacher Resources, Transition Spec., Transportation) were more likely to be engaged in postsecondary education (Repetto et al., 2002)	• 0.26 (small; 1993) • 0.45 (medium; 1997)

(continued)

Table 2 (continued)

Predictor Category	Outcome Area(s)	Level of Evidence	Description	Effect Sizes
• Occupational courses	• Education • Employment	• Potential • Potential	• Students who passed more than half or all courses in eight curriculum areas (remedial academics, traditional content classes, personal finance, community access, behaving responsibly, goal-setting or problem solving, specialized vocational education, regular vocational education) were more likely to be engaged in postsecondary education (Halpern et al., 1995)	• 0.47 (medium; Oregon/Nevada) • 0.53 (large; Arizona)
			• Students who took more hours of academic and occupational courses and spent more time in regular education were more likely to be engaged in postschool employment (Heal & Rusch, 1995)	• 0.09 (small)
• Paid employment/ work experience	• Education • Employment • Independent Living	• Moderate • Moderate • Potential	• Students who participated in the Youth Transition Program with two or more paid jobs during high school were more likely to be engaged in postschool employment or education (Benz et al., 2000)	• 0.22 (small)
			• Students in the School to Work Transition Program who had two or more jobs during the last two years of high school were more likely to be engaged in postschool employment (Benz et al., 1997)	• 0.26 (small)
			• Students who had year-round paid job for 1 full year during high school were 5 times more likely to be engaged in postschool employment and education (Bullis et al., 1995)	• 0.54 (large)
			• Students who had worked for pay during high school were more likely to be living independently (Bullis et al., 1995)	• 0.29 (small)
			• Students with two or more jobs during their last 2 years of high school were more likely to be engaged in postschool employment (Doren & Benz, 1998)	• 0.26 (small)
			• Students who had a job at the time of high school exit were 5.1 times more likely to be engaged in postschool employment (Rabren et al., 2002)	• 0.54 (large)
• Parental involvement	• Employment	• Potential	• Students with one or more parents who participated (as measured by the percentage) in more IEP meetings during the 11th and 12th grade year were more likely to be engaged in postschool employment (i.e., Employment Status defined as employed, skilled laborer receiving more than minimum wage that requires specific skill training prior to beginning the job; Employment Stability defined as high scores on the *Employment Training Index* that measure months of full-time and part-time employment, months out of high school, months enrolled in postsecondary education; Fourqurean et al., 1991)	• 0.03 (small; employment stability) • 0.43 (medium; employment status)
• Program of study	• Employment	• Potential	• Students who participated in school-based programs that included career major ("sequence of courses based on occupational goal"), cooperative education ("combines academic and vocational studies with a job in a related field"), school-sponsored enterprise ("involves the production of goods or services by students for sale to or use by others"), and technical preparation ("a planned program of study with a defined career focus that links secondary and post-secondary education") were 1.2 times more likely to be engaged in postschool employment [i.e., employment defined as (a) stability with benefits, insurance, paid sick days and (b) full-time employment; Shandra & Hogan, 2008]	• 0.09 (small; employment stability) • 0.08 (small; full-time employment)

(continued)

Table 2 (continued)

Predictor Category	Outcome Area(s)	Level of Evidence	Description	Effect Sizes
• Self-advocacy/ self-determination	• Education • Employment	• Potential • Potential	• Students who passed more than half or all courses in eight curriculum areas (remedial academics, traditional content classes, personal finance, community access, behaving responsibly, goal-setting or problem solving, specialized vocational education, regular vocational education) were more likely to be engaged in postsecondary education (Halpern et al., 1995)	• 0.21 (small)
			• Students with higher self-determination skills were more likely be engaged in postschool employment (Wehmeyer & Schwartz, 1997)	• 0.72 (large; psychological empower) • 0.70 (large; self-realization) • 0.86 (large; self-regulation)
• Self-care/ independent living skills	• Education • Employment • Independent Living	• Potential • Potential • Moderate	• Students who had high scores on adaptive and academic skills, self-care skills, GPA on academic activities, received a diploma, and higher IQs as reported in school records were more likely to live independently (Heal & Rusch, 1994)	• 0.06 (small)
			• Students who had high self-care skills were more likely to be engaged in postschool education, employment, and independent living (Blackorby et al., 1993)	• 0.27 (small)
			• Students with high daily living skills (based on teacher and student ratings from the *Life Centered Career Education* rating scales) were more likely to have a higher quality of life (independent living) and be engaged in postschool employment (Roessler et al., 1990)	• 0.53 (large; teacher rating) • 0.39 (medium; student rating)
• Social skills	• Education • Employment	• Potential • Potential	• Students in the School to Work Transition Program who exited high school with high social skills were more likely to be engaged in postschool employment (Benz et al., 1997)	• 0.43 (medium)
			• Students who passed more than half or all courses in eight curriculum areas (remedial academics, traditional content classes, personal finance, community access, behaving responsibly, goal-setting or problem solving, specialized vocational education, regular vocational education) were more likely to be engaged in postsecondary education (Halpern et al., 1995)	• 0.47 (medium; Oregon/Nevada) • 0.53 (large; Arizona)
			• Students with high social skills (based on teacher ratings from the *Life Centered Career Education* rating scales) were more likely to have a higher quality of life (independent living) and be engaged in postschool employment (Roessler et al., 1990)	• 0.47 (medium; teacher rating) • 0.44 (medium; student rating)
• Student support	• Education • Employment • Independent Living	• Potential • Potential • Potential	• Students who had support from self–family–friend network to find a job were more likely to be engaged in postschool employment (Doren & Benz, 1998)	• 0.31 (medium; males) • 0.46 (medium; females)
			• Students who indicated high levels of satisfaction with instruction received (reading, writing, math, behaving responsibly, and problem solving) during high school were more likely to be engaged in postschool education (Halpern et al., 1995)	• 0.82 (large; Oregon/Nevada) • 0.85 (large; Arizona)

(continued)

Table 2 (continued)

Predictor Category	Outcome Area(s)	Level of Evidence	Description	Effect Sizes
			• Students who spent more time per week with friends or family (i.e., days per week that youth interacted socially with friends or family members) during school were more likely to experience higher quality of life [i.e., independence defined as (a) self-sufficiency, (b) community living skills, (c) youth has post-high school education, (d) youth has checking/savings account, and (e) adaptive behavior; social relationships defined as (a) how well youth gets along with others, (b) days per week youth sees friends or family, (c) whether youth attending social groups in past twelve months, (d) if parent says youth is not socially isolated, and (e) days per week youth usually sees family; Heal et al., 1999]	• 0.28 (medium; independence) • 0.06 (small; social relationships)
			• Students with high occupational guidance and preparation (based on teacher student ratings from the *Life Centered Career Education* rating scales) were more likely to have a higher quality of life (independent living) and be engaged in postschool employment (Roessler et al., 1990)	• 0.56 (large; teacher rating) • 0.37 (large; student rating)
• Transition program	• Education • Employment	• Moderate • Potential	• Students who participated in the Youth Transition Program with four or more transition goals met were more likely to be engaged in postschool employment or education (Benz et al., 2000)	• 0.46 (medium)
			• Students who received transition planning services during the year prior to leaving school were more likely to be engaged in postschool education (Halpern et al., 1995)	• 0.41(medium; Oregon/Nevada) • 0.61 (large; Arizona)
			• Transition service characteristics (i.e., Association of Retarded Citizens, Department of Children and Families, Developmental Services, Division of Blind Services, DVR Rehab, Easter Seal, Job Service of FL, Job Training, Mental Health, Social Security Initiatives, United Cerebral Palsy) were more likely to be engaged in postsecondary education (Repetto et al., 2002)	• 0.45 (medium)
			• Transition support characteristics (i.e., Agency Referral FU, Case Management, Community Services; Employment Spec., Equipment, Family Services, Financial, Guardianship, Guidance/Counseling, Living Arrangement, Medical, Parent Information, Referral, Social/Leisure, Support Service, Teacher Resources, Transition Spec., Transportation) were more likely to be engaged in postsecondary education (Repetto et al., 2002)	• 0.26 (small; 1993) • 0.45 (medium; 1997)
			• Transition program characteristics (i.e., academic, adult ed., career education, college, community training, course mod., developmental training, employment, entrepreneurship, follow-up services, goodwill, job coach, Job Corp, life skills, military, vocational training, vocational evaluation/assess) were more likely to be engaged in postsecondary education (Repetto et al., 2002)	• 0.39 (medium; 1997)

(continued)

Table 2 (continued)

Predictor Category	Outcome Area(s)	Level of Evidence	Description	Effect Sizes
• Vocational education	• Education • Employment	• Moderate • Moderate	• Students who participated in vocational education were 2 times more likely to be engaged in full-time postschool (Baer et al., 2003)	• 0.34 (medium)
			• Students who passed more than half or all courses in eight curriculum areas (remedial academics, traditional content classes, personal finance, community access, behaving responsibly, goal-setting or problem solving, specialized vocational education, regular vocational education) were more likely to be engaged in postsecondary education (Halpern et al., 1995)	• 0.47 (medium; Oregon/Nevada) • 0.53 (large; Arizona)
			• Students with vocational education credits in high school were more likely to be engaged in postschool employment and postschool education (Harvey, 2002)	• 0.21 (small)
			• Students who received technology training were more than twice as likely to be employed (Leonard et al., 1999)	• 0.29 (small)
			• Students who took more hours of academic and occupational courses and spent more time in regular education were more likely to be engaged in postschool employment (Heal & Rusch, 1995)	• 0.09 (small)
• Work study	• Employment	• Moderate	• Students who participated in work study were 2 times more likely to be engaged in full-time postschool employment (Baer et al., 2003)	• 0.45 (medium
			• Students in the Bridges School to Work Program who accepted a postinternship job offer and who completed the internship were more likely to engage in postschool employment (Fabian et al., 1998)	• 0.23 (small)
			• Students who participated in the Bridges School to Work program in their last year of high school and completed the internship were 4 times more likely to be employed (Luecking & Fabian, 2000)	• 0.51 (large; 6 months) • 0.22 (small; 12 months)
			• Students who received a job offer after completion of the Bridges School to Work internship were 5 times more likely to be employed (Luecking & Fabian, 2000)	• 0.55 (large; 6 months) • 0.40 (medium; 12 months)

Note: GPA = Grade Point Average; IEP = Individualized Education Program; DVR = Division of Vocational Rehabilitation; FL = Florida; FU = University of Florida; Spec. = Specialist; ed. = education; mod. = modifications.

Bull, & Johnson, 1995) and one exploratory study (Repetto, Webb, Garvan, & Washington, 2002). Effect sizes ranged from .26 (small) to .45 (medium) with a median of .33 (medium). It was also a predictor of employment with a potential level of evidence based on one a priori study (Bullis et al., 1995) and a medium effect size of .31.

Occupational courses. Occupational courses had a potential level of evidence for education based on one a priori study (Halpern et al., 1995) with effect sizes of .47 (medium) and .53 (large). It also was a predictor of employment with a potential level of evidence based on one a priori study (Heal & Rusch, 1995) with a small effect size of .09.

Paid employment/work experience. Paid employment/work experience was a predictor of education with a moderate level of evidence based on two a priori studies (Benz, Lindstrom, & Yovanoff, 2000; Bullis et al., 1995), with effect sizes of .22 (small) and .54 (large). It was also a predictor of employment with a moderate level of evidence based on five a priori studies (Benz et al., 2000; Benz et al., 1997; Bullis et al., 1995; Doren & Benz, 1998; Rabren, Dunn, & Chambers, 2002). Effects sizes ranged from .22 (small) to .54 (large) with a median of .26 (small). Additionally, paid employment/work experience was a predictor of independent living with a potential level of evidence based on one a priori study

(Bullis et al.) with an effect size of .29 (small).

Parental involvement. Based on one a priori study (Fourqurean, Meisgeier, Swank, & Williams, 1991), parental involvement had a potential level of evidence for employment with a small effect size of .03 (multiple R^2).

Program of study. Program of study had a potential level of evidence for employment based on one a priori study (Shandra & Hogan, 2008) with small effect sizes of .08 and .09.

Self-advocacy/self-determination. Self-advocacy/self-determination had a potential level of evidence for education based on one a priori study (Halpern et al., 1995) with a small effect size of .21. It was also a predictor of employment with a potential level of evidence based on one a priori study (Wehmeyer & Schwartz, 1997) with large effect sizes ranging from .70 to .86 and a median of .72.

Self-care/independent living. Self-care/independent living had a potential level of evidence for education based on one a priori study (Blackorby et al., 1993) with a small effect size of .27. It was also a predictor of employment with a potential level of evidence based on one a priori (Blackorby et al., 1993) and one exploratory study (Roessler, Brolin, & Johnson, 1990) with .42 (medium) and .53 (large) respectively. In addition, it was a predictor of independent living with a moderate level based on two a priori studies (Blackorby et al., 1993; Heal & Rusch, 1994) and one exploratory study (Roessler et al.). Effect size ranges for independent living could not be calculated because different effect size scales (i.e., r, multiple R^2) were used.

Social skills. Social skills was a predictor of education with a potential level of evidence based on one a priori study (Halpern et al., 1995) and effect sizes of .47 (medium) and .53 (large). It was a predictor of employment with a potential level of evidence based on one a priori (Benz et al., 1997) and one exploratory study (Roessler et al., 1990).

Student support. Student support was a predictor of education with a potential level of evidence based on one a priori study (Halpern et al., 1995) with large effect sizes of .82 and .85. It was a predictor of employment with a potential level of evidence based on one a priori (Doren & Benz, 1998) and one exploratory study (Roessler et al., 1990) with effect sizes ranging from .31 (medium) to .56 (large) and a median effect size of .42 (medium). It was also a predictor of independent living with a potential level of evidence based on one a priori (Heal, Khoju, Rusch, & Harnisch, 1999) and one exploratory study (Roessler et al.). Effect size ranges for independent living could not be calculated because different effect size scales (i.e., r, multiple R^2) were used.

Transition program. Based on two a priori studies (Benz et al., 2000; Halpern et al., 1995) and one exploratory study (Repetto et al., 2002), transition program had a moderate level of evidence as a predictor of education. Effect sizes ranged from .26 (small) to .61 (large) with a median effect size of .45 (medium). Additionally, it was a predictor of employment with a potential level of evidence based on one a priori study (Benz et al., 2000) with a medium effect size of .46.

Vocational education. Vocational education was a predictor of education with a moderate level of evidence based on two a priori studies (Halpern et al., 1995; Harvey, 2002) with effect sizes ranging from .21 (small) to .53 (large) and a median of .47 (medium). It was also a predictor of employment with a moderate level of evidence based on four a priori studies (Baer et al., 2003; Harvey, 2002; Leonard et al., 1999; Heal & Rusch, 1995). Effect size ranges for employment could not be calculated because different effect size scales (i.e., r, multiple R^2) were used.

Work study. Work study was a predictor of employment with a moderate level of evidence based on three a priori studies (Baer et al., 2003; Fabian et al., 1998; Luecking & Fabian, 2000). Effect sizes ranged from .22 (small) to .55 (large) with a median of .41 (medium).

Negative Findings

In addition to significant positive relationships, all 22 studies included in this systematic review were examined for any significant negative findings that may have contradicted the evidence supporting each predictor category. Two studies (i.e., Heal et al., 1997; Rabren et al., 2002) reported significant negative relationships between secondary transition predictors and one or more post-school outcome variables. Specifically, Heal et al. (1997) reported a significant negative correlation ($r = -.35$) between percentage of time students with disabilities spent in regular education and the support variables under the quality of life domain (i.e., independent living). In this study, the support variable set included: (a) number of sources of public aid, (b) number of family and friend sources of services for youth, (c) respondent's relationship to the youth, (d) number of community services, (e) youth has used special developmental disabilities

transportation at some time, and (f) degree of involvement with state vocational rehabilitation. A significant negative correlation between those students having a mild disability and the support variable set was also reported ($r = -.47$). Heal et al. stated that these negative correlations suggested support was greater for participants with more severe disabilities who had spent a substantial amount of time in special education.

Finally, Rabren et al. (2002) reported significant negative findings that students with disabilities who received support from vocational rehabilitation (VR) and mental health/mental retardation (MH/MR) had significantly lower odds (i.e., −.377 and −1.410, respectively) of being engaged in postschool employment. Rabren et al. stated that this finding did not suggest receiving assistance from VR or MH/MR agencies hinders an individual's ability to become gainfully employed, but that level of functioning likely influences outcomes related to these service variables.

Discussion

The purpose of this study was to conduct a systematic review of the secondary transition correlational literature to identify in-school predictors of improved postschool outcomes for students with disabilities. Based on results of this review, 16 evidence-based, in-school predictors of postschool outcomes were identified. Of the 16 predictor categories, 4 (25%; inclusion in general education, paid employment/work experience, self-care/independent living skills, student support) predicted improved outcomes in all three postschool outcome areas. Seven (43.8%; career awareness, interagency collaboration, occupational courses, self-advocacy/self-determination, social skills, transition program, vocational education) were predictors of improved outcomes for both postschool education and employment. The remaining 5 (31.3%; community experiences, exit exam requirements/high school diploma status, parental involvement, program of study, work study) were predictors of improved postschool outcomes in the area of employment only.

Of the 11 categories predicting improved outcomes in postschool education, 4 were moderate levels (i.e., inclusion in general education, paid employment/work experience, transition program, vocational education) and 7 were potential levels of evidence (i.e., career awareness, interagency collaboration, occupational course, self-advocacy/self-determination, self-care/independent living, social skills, student support). All 16 predictors predicted improved postschool employment, with 4 indicating moderate levels (i.e., inclusion in general education, paid employment/work experience, vocational education, work study), and the remaining 12 had potential levels of evidence. Four categories predicted improved outcomes in postschool independent living, with two being a moderate level (i.e., inclusion in general education, self-care/independent living) and two being a potential level of evidence (i.e., paid employment/work experience, student support).

The findings of the literature review support and expand what is currently known. For example, since the initial descriptive and correlational postschool outcomes studies conducted in the 1980s (e.g., Hasazi et al., 1985; Kortering & Edgar, 1988; Mithaug et al., 1986), and continuing into the 2000s (e.g., Baer et al., 2003; Rabren et al., 2002), we have known that taking vocational education classes, participating in paid job experiences, and receiving transition programming lead to better student postschool employment outcomes. Though the results of this study provide further support for these same variables, the list is now extended to additional predictors and each predictor is now correlated with a specific type of postschool outcome (i.e., education, employment, independent living). In addition, given the current emphasis on evidence-based practices in education, the field of secondary transition can now say that we have a set of evidence-based predictors of postschool success based on criteria for quality correlational research suggested by Thompson et al. (2005).

Limitations and Implications for Future Research

There are several limitations to this systematic review. First, the results of this study are limited because correlational designs are not the best way to establish causality. However, Thompson et al. (2005) noted that correlational approaches that are statistically based or logic based (as were the studies included in this review) can help inform causal inferences and evidence-based practice. Future research must employ high-quality experimental designs that collect longitudinal data on the effects of secondary transition practices, if definitive causal conclusions are to be made.

Second, because the literature review was designed to include only studies that met a current and rigorous set of correlational quality indicators (Thompson et al., 2005), it limited the number of studies that were included. Specifically, studies were only included that reported significant positive and negative relationships between secondary transition predictor variables and the three postschool outcomes areas. Nonsignficant findings were

not reported or discussed. The application of this new set of standards did cause some correlational studies that were considered of sufficient quality based on past standards to be excluded from the current review. These limitations signal the need for an in-depth meta-analysis to be conducted on the secondary transition predictors of postschool success by extending the analysis to include reviewing less rigorous correlational studies, analyzing mediating relationships among variables, and investigating nonsignificant findings.

A third limitation is that this review only focused on research in the area of secondary transition program characteristics and did not focus on outcomes disaggregated by disability label. Future research could focus on disaggregating data by disability category to identify predictors of positive postschool outcomes for specific disability groups. Third, several articles used discriminant function analysis that posed a limitation for interpretation because a combination of predictor variables were entered into the equation simultaneously and results were reported on variables in combination with each other and could not be analyzed individually. However, if future researchers report the structure coefficients of each factor, then the most important variables for discriminating between two groups can be identified.

Fourth, as mentioned previously, each predictor was defined based on the findings provided in the studies reviewed and categorized to reflect a comprehensive term to support the findings. The categorizations were determined based on consensus by the researchers. Although the current categorization process resulted in 16 predictors, a different set of reviewers may sort them differently or name the categories differently. In addition, researchers and practitioners should pay careful attention to the descriptions of each predictor category. Though the predictor category names make it convenient to talk about each category, the category descriptions in Table 2 describes the specific "predictor" that was used in each study. Researchers should consider using these descriptions as they design future studies to allow for consistency across findings.

Next, the results of this study may be limited by the number of high-quality studies found. As a result, it becomes critical that more rigorous correlational research be conducted. This will allow for a more comprehensive understanding of in-school predictors that lead to postschool success for students with disabilities. In addition, research is needed to determine if these predictor variables hold up over multiple points in time. In the current review, 86.4% ($n = 19$) of the studies measured participant outcomes at only one point in time. Additionally, 31.8% ($n = 7$) gathered data 6 months to 1 year after participants left school, 18.2% (n = 4) gathered data from 1 to 2 years after participants left school, 18.2% ($n = 4$) gathered data from 2 to 4 years after participants left school, and 31.8% ($n = 7$) did not report how long after school exit data were gathered. Finally, it is important for researchers to recognize the NLTS2 data files as an available resource for which these types of rigorous studies can be conducted (NLTS2, 2009).

Implications for Practice

These results provide the field with a springboard for creating systems change by providing practitioners information about secondary transition program characteristics that have been empirically linked to improved postschool success for students with disabilities. As state and local education agencies seek strategies to improve their State Performance Plans/Annual Performance Report (SPP/APR) data for Part B Indicator 13 (postschool goals and transition IEP [Individualized Education Program] services) and Indicator 14 (postschool outcomes), these 16 predictors should provide information that can be used to develop and expand programs, evaluate existing programs, and improve the quality of student IEPs. First, state and local education agencies should begin by ensuring school programs offer student opportunities in, at least, the four predictors (i.e., inclusion in general education, paid employment/work experience, self-care/independent living skills, student support) that correlate with successful postschool outcomes in the three outcome areas. Next, adding the remaining predictors may improve postschool outcomes even more. Third, for existing programs, the list of predictors can be used to assess the current status of a program to identify strengths and areas that may need to be improved. Finally, as students and families engage in the IEP planning process, the predictors can help IEP teams design annual IEP goals and transition services that are more likely to help students achieve their stated postschool goals. For example, to increase the likelihood of a student meeting a goal of postsecondary education, the student's IEP should reflect activities in career awareness, inclusion in general education, interagency collaboration, occupational courses, paid employment/work experience, self-advocacy/self-determination, self-care/independent living, social skills, student support, transition programs, and/or vocational education.

In conclusion, by combining the 16 in-school predictors of postschool success, with the evidence-based instructional practices identified by Test et al. (2009), state and

local education agency personnel now have an excellent set of evidence-based strategies as a foundation on which to base program improvements. Ultimately, this should lead to improved school services and postschool outcomes for all students with disabilities, which is after all what the field of secondary transition is all about.

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