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

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, Middle Search Plus, 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 post-school 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: $(OR^{3/4} - 1) / (OR^{3/4} + 1)$. 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, 2. Internship completion	1. Employment, 2. Employment	Discriminant analysis	1. 0.23 (0.89 structure coefficient), 2. 0.23 (0.44 structure coefficient), Canonical correlation	1. $p < 0.001$, 2. $p < 0.001$	1. 0.23 (small), 2. 0.23 (small)
Fourqurean, Meisgeier, Swank, & Williams (1991)	123	LD	75% male, 82% White, 11% Hispanic, 7% Black	1. High school employment, 2. Parent participation, 3. Parent participation, 4. Math ability	1. Employment (stability), 2. Employment (stability), 3. Employment (status), 4. Employment (status)	Multiple regression; Discriminant analysis	1. 0.05, 2. 0.03 R^2, 3. 0.43, Canonical correlation	1. $p < 0.01$, 2. $p < 0.05$, 3. $p < 0.01$	1. 0.05 (small), 2. 0.03 (small), 3. 0.43 (medium)
Halpern, Yovanoff, Doren, & Benz (1995)	Oregon/Nevada: 422; Arizona: 565	All disability categories	60% male, 10% minorities, 61% family income > $25k/year; 63% male, 23% minorities, 48% family income >$25k/year	1. Instruction received, 2. Transition planning, 3. Student satisfaction; 1. Functional achievement, 2. Instruction received, 3. Transition planning, 4. Student satisfaction	1. Education, 2. Education, 3. Education; 1. Education, 2. Education, 3. Education, 4. Education	Logistic regression; Logistic regression	1. 3.91, 2. 3.21, 3. 22.48; 1. 12.67, 2. 4.82, 3. 6.61, 4. 27.65	1. $p < 0.05$, 2. $p < 0.05$, 3. $p < 0.01$; 1. $p < 0.01$, 2. $p < 0.05$, 3. $p < 0.05$, 4. $p < 0.01$	1. 0.47 (medium), 2. 0.41 (medium), 3. 0.82 (large); 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, 2. Vocational education credit in high school, 3. Vocational education credit in high school	1. Employment, 2. Employment (wage earnings), 3. Employment (hours worked)	Logistic and ordinary least-squares regression	1. 1.75, 2. 3.19, 3. 3.65	1. $p < 0.001$, 2. $p < 0.001$, 3. $p < 0.001$	1. 0.21 (small), 2. 0.41 (medium), 3. 0.45 (medium)
Heal, Khoju, & Rusch (1997)	713	All disability categories	Data not reported	1. Extent of school integration, 2. Percentage of hours spent in regular education classes	1. Independent Living: (QOL: Independence), 2. Independent Living : (QOL: Independence) (QOL Esteem)	Hierarchical multiple regression	1. 0.37, 2. 0.48, 0.32 Pearson r	1. $p < 0.001$, 2. $p < 0.001$, $p < 0.001$	1. 0.37 (medium), 2. 0.48 (medium), 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.

(n = 18) included raw number or percentage data on gender represented in the sample populations. Data on ethnicity were reported in 16 studies. Few studies reported number or percentage data on geographic location or socioeconomic status of the sample populations. Most studies either descriptively reported or included a table with numerical data indicating that the sample populations involved were comparable to the general population. See Table 1 for a summary of demographic data for each study.

As a result of the systematic review, 16 predictor categories correlated with improved postschool outcomes in the areas of education, employment, and/or independent living were identified. Of the 16 predictor categories identified in this review, 11 significantly correlated with postschool education, 5 with postschool independent living, and all 16 predictor categories significantly correlated with postschool employment. The 16 predictor categories were comprised of 42 predictor variables (i.e., independent variables) that were analyzed a total of 65 times across studies. The most common predictor variable analyzed was participation in vocational education coursework (n = 4 occurrences, 6.2%). The next most common predictor variables were (a) acceptance of postinternship job while in school, (b) internship completion, (c) paid work, (d) percentage of time spent in regular education placement, and (e) social skills (n = 3 occurrences, 4.6% for each).

For all variables for which r was calculated (n = 59), the effect sizes ranged from .08 (small) to .86 (large) with a median effect size of .40 (medium). For all variables in which multiple R^2 were converted to effect size (n = 6), the ranges were from 0.03 (small) to 0.28 (medium), with a median effect size of .06 (small). Levels of significance for all relationships examine ranged from $p \leq .001$ to $p \leq .05$. Of the 65 significant findings, 19 (29.2%) were reported at the $p \leq .001$ level, 14 (21.5%) were reported at the $p \leq .01$ level, and 32 (49.2%) were reported at $p \leq .05$. Across all studies, 21 (32.3%) relationships resulted in small effect sizes, 29 (44.6%) relationships resulted in medium effect sizes, and 15 (23.1%) relationships yielded large effect sizes. Because two different effect size scales (i.e., r, multiple R^2) were used to denote small, medium, and large effects, median and range effect sizes were unable to be computed by size of effect.

Predictor Variables

As a result of the systematic review, the following 16 evidence-based predictor categories correlated with improved postschool outcomes in the areas of education, employment, and/or independent living were identified: career awareness, community experiences, exit exam

requirements/high school diploma status, inclusion in general education, interagency collaboration, occupational courses, paid work experience, parental involvement, program of study, self-advocacy/self-determination, self-care/independent living, social skills, student support, transition program, vocational education, and work study. The descriptions of each predictor were taken directly from the findings in the studies reviewed. Researchers named each predictor to reflect a comprehensive term that included the various findings in each. Table 2 provides descriptions of all predictors as well as levels of evidence, postschool outcome areas, and effect size calculations.

Career awareness. Based on one a priori study (Benz, Yovanoff, & Doren, 1997), career awareness had a potential level of evidence for education and a potential level of evidence for employment. Effect sizes were .27 and .23, both indicating small effects.

Community experiences. Community experiences had a potential level of evidence for employment based on one exploratory study (White & Weiner, 2004), with a medium effect size of .39.

Exit exam requirements/high school diploma status. The exit exam requirements/high school diploma status predictor had a potential level of evidence for employment based on one a priori study (Heal & Rusch, 1994) with a small effect size of .06 (multiple R^2).

Inclusion in general education. Inclusion in general education was the most common predictor category among the studies reviewed (n = 8), with a moderate level of evidence for education based on three a priori studies (Baer et al., 2003; Blackorby, Hancock, & Siegel, 1993; Halpern et al., 1995). Effect sizes for postschool education ranged from .27 (small) to .74 (large) with a median effect size of .53 (large). It was also a predictor of employment with a moderate level of evidence based on three a priori studies (Blackorby et al., 1993; Heal & Rusch, 1995; Leonard, D'Allura, & Horowitz, 1999) and one exploratory study (White & Weiner, 2004). In addition, inclusion in general education was a predictor of independent living with a moderate level of evidence based on three a priori studies (Blackorby et al., 1993; Heal & Rusch, 1994; Heal et al., 1997). Effect size ranges for employment and independent living could not be calculated because different effect size scales (i.e., r, multiple R^2) were used.

Interagency collaboration. Interagency collaboration was a predictor of education with a potential level of evidence based on one a priori (Bullis, Davis,

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) • 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)	• 0.27 (small) • 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) • 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) • 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) • 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) • 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) • 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) • 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]	• 0.55 (large) • 0.27 (small) • 0.74 (large; Arizona) • 0.47 (medium; Oregon/Nevada) • 0.53 (large; Arizona) • 0.06 (small) • 0.09 (small) • 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)
			• 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)	• 0.20 (small)
			• 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) • Students with higher self-determination skills were more likely be engaged in postschool employment (Wehmeyer & Schwartz, 1997)	• 0.21 (small) • 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) • Students who had high self-care skills were more likely to be engaged in postschool education, employment, and independent living (Blackorby et al., 1993) • 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)	• 0.06 (small) • 0.27 (small) • 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) • 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) • 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)	• 0.43 (medium) • 0.47 (medium; Oregon/Nevada) • 0.53 (large; Arizona) • 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) • 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)	• 0.31 (medium; males) • 0.46 (medium; females) • 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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