A Literature Map of Dropout Prevention Interventions for Students With Disabilities

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Executive Summary

Overview

Dropping out of school has serious negative outcomes for youth, including an increased likelihood of living in poverty, being unemployed, unhealthy, and incarcerated. Students with disabilities have much higher dropout rates than general education students and consequently have much poorer adult outcomes. Although dropout prevention programs are implemented in many schools, the impact of these interventions is rarely evaluated. The last review of initiatives related to graduation for students with disabilities was conducted in 2004 (with a 2005 publication date; Cobb, Sample, Alwell, & Johns, 2005). This report presents research on dropout prevention interventions for students with disabilities, published between January, 2004, and January, 2013.

A search of published and unpublished studies turned up 544 studies that appeared from their abstracts to be about dropout prevention. However, only 19 studies included students with disabilities in their sample groups and reported outcomes for these students, which were criteria for inclusion in this review. These 19 studies are presented here in a "literature map" describing their interventions, outcomes, sample characteristics, and methodological characteristics.

Findings

The three most common interventions associated with graduating from school described in the studies involved: (a) mentoring, (b) interventions targeted to specific disability-related needs (e.g., academic, interpersonal), and (c) class setting and exit options. Eleven of the nineteen studies described comprehensive dropout prevention programs that had multiple components. Interventions reflected many of the same practices identified by The Institute of

Education Sciences (IES) as effective dropout interventions for general education students (Dynarski, Clarke, Cobb, Finn, Rumberger, & Smink, 2008). In line with Dynarski et al.'s (2008) recommendations, most of the comprehensive dropout prevention programs provided mentoring, academic supports, and instruction on positive behaviors, social skills, and character development. Programs also focused on engaging students through relevant instruction and skills students would need after school, through job training, career awareness, and exposure to postsecondary education. Several of the studies also described programs that provided a personalized learning environment with individualized instruction.

Implications

While the interventions described in these 19 studies appear promising for increasing graduation rates for students with disabilities, only three studies were conducted using experimental designs. By using a treatment and control group, experimental studies have advantages over other research designs in that they provide estimates of the impact of a given intervention. In addition, only five studies reported effect sizes, which indicate how much of a difference the intervention made. In terms of the sample groups, in four studies, students were just described as having special education status and their specific disabilities were not described. Three studies did not report the gender or racial/ethnic make-up of the sample group.

Overall, this literature map points to the need for more experimental research into effective dropout prevention initiatives that increase the graduation rates of students with disabilities and the need to disaggregate sample characteristics by demographic features, including disability and race/ethnicity. Policy recommendations include increasing flexibility regarding the length of time allowed for students with disabilities to obtain a high school diploma.

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Abstract

This paper presents a review of the literature on dropout prevention interventions for students with disabilities. A variety of search methods, including electronic library searches, hand searches of journals, and Internet searches were used to acquire the widest possible set of research studies. To be included in this review, the studies must have: (a) been published in English between January 2004 and January 2013, (b) used sample groups that included youth with disabilities, and (c) reported outcomes for students with disabilities related to dropout or graduation. The final literature set of 19 studies is described in terms of its interventions, outcomes, sample characteristics, and methodological features. The three most popular interventions for which outcomes were reported involved: (a) mentoring, (b) interventions targeted to specific disability-related needs, and (c) class setting and exit options. This review also identifies gaps in the knowledge base around the intersection of dropout interventions and outcomes for students across the dimensions of disability, gender, and ethnicity.

Introduction

Dropping out of school refers to students' departure from school prior to obtaining a high school credential. Dropping out has serious negative outcomes for youth, including an increased likelihood of being unemployed, underemployed, dependent on welfare (Belfield & Levin, 2007; Levin & Belfield, 2007), unhealthy (Archambault, Janosz, Morizot, & Pagani, 2009; Hayes, Nelson, Tabin, Pearson, & Worthy, 2002), and incarcerated (Sanford, et al., 2011, Stanard, 2003). The graduation rate is approximately 75% for students in general (Stillwell, Sable, & Plotts, 2011), but is about 50% for special education students (U.S. Department of Education, 2010).

Students from certain disability categories have particularly high rates of dropout. In the 2008-2009 school year, 22% of students aged 14-21 with disabilities dropped out. Students with emotional disturbance had the highest dropout rates of all disability groups, with 40% dropping out. Dropout rates were also high for students with specific learning disabilities (21%), other health impairments (20%), and intellectual disabilities (20%) (Snyder & Dillow, 2012, Table 118). Students who are ethnic and racial minorities—specifically, African American, Hispanic/Latino, and Native American—are also disproportionately represented among the nation's dropouts. Graduation rates are particularly low for African American and Hispanic/Latino students with disabilities—40% and 48%, respectively (U.S. Department of Education, 2009, Table 1-20).

The National Longitudinal Transition Study-2 (NLTS2) revealed that only 63% of students with disabilities who had dropped out were employed at some point in the 4 years since leaving school, compared to 75% of students with disabilities who had graduated (Newman, Wagner, Cameto, & Knokey, 2009). In addition, only 17% of students with disabilities attended

postsecondary school after leaving high school up to 4 years earlier (Newman, et al., 2009). Considering that 12 of the 20 fastest growing occupations require an associate's degree or higher (Bureau of Labor Statistics, 2010), youth with disabilities who drop out of school are at a distinct disadvantage as they strive for independence and self-sufficiency in adulthood.

The Need for a Review of Dropout Interventions for Students With Disabilities

In 2008, regulations governing programs administered under Part A of Title I of the Elementary and Secondary Education Act of 1965 were amended with new requirements for calculating graduation rates. According to these amendments, states must report graduation rates using a 4-year adjusted cohort rate disaggregated by the following subgroups: students with disabilities, economically disadvantaged students, students from racial and ethnic groups, and students with limited English proficiency (U.S. Department of Education, 2013). As these graduation rates are used for determining adequate yearly progress (AYP) for high schools, it is in the interest of schools to improve the graduation rates of students with disabilities.

Although dropout prevention strategies may be included in students' Individualized Education Programs (IEPs), the impact of these interventions and other schoolwide interventions, is rarely evaluated. The last review of initiatives related to graduation for students with disabilities was conducted in 2004 (with a 2005 publication date; Cobb, Sample, Alwell, & Johns, 2005). In this report, we describe the research conducted since 2004 through a "literature map" of dropout prevention interventions for middle- and high-school aged youth with disabilities. A literature map is "a descriptive document that catalogs the intervention constructs, outcome constructs, sample characteristics, study contexts, and methodological characteristics of a body of empirical literature that has appeared in a particular theoretical area" (Alwell & Cobb,

2006, p. 4). This updated review will highlight the current status of dropout prevention research on students with disabilities and will help to identify areas in need of further research.

Objectives

This report presents a literature map of programs designed to reduce dropout among students with disabilities as described in research reported during the last 9 years. In addition to presenting research findings that can inform decisions about dropout interventions, this review aims to identify gaps in the knowledge base around the intersection of dropout interventions and outcomes for students across the following characteristics: (a) disability, (b) gender, and (c) ethnicity. This information is intended to highlight what is known based on existing research, as well as areas in need of further study. This review describes the characteristics of programs designed to help students graduate from school, as well as the influence of other variables, such as classroom setting and state graduation requirements that are associated with improved graduation rates for students with disabilities.

Who Is a Dropout?

Under the Title 1 graduation regulations, graduates are students who obtained a standard high school diploma (Federal Register, 2008). However, there are many students who do not earn a standard high school diploma, but would not be considered dropouts. States offer a variety of alternative routes for special education students to complete high school, such as certificates of achievement (Alaska, Louisiana, Massachusetts, Minnesota, North Carolina); certificates of completion (Arizona, Florida); certificates of attendance (Nevada); certificates of performance (Georgia); and graduation certificates (Alabama; Thurlow, Cormier, & Vang, 2009). Given that

these alternative credentials are not counted as standard diplomas under the Title 1 graduation regulations, a working definition of a dropout is: a student who did not complete high school.

Research Questions

1. What are the distributions of dropout prevention interventions for students with disabilities, outcome measures to assess their efficacy, and research designs to test their effects that have been used since 2004?
2. How do the distributions of dropout prevention interventions, outcome measures, and research designs differ across student disability, gender, and race/ethnicity?
3. What proportion of identified studies reported results from which effect sizes could be calculated?

Procedures

The search procedures used in this literature map were based on the strategies and sources used in the systematic review by Cobb, Sample, Alwell, and Johns (2006). Additional details on the search strategies and sources used in this review are provided in the following section.

Search Strategies

Search terms were identified from descriptors of relevant articles and recommendations made by the National Dropout Prevention Center for Students with Disabilities (NDPC-SD) advisory board members. A search librarian at Clemson University was also consulted to help identify the broadest possible list of relevant search terms. The search of electronic databases was conducted by the authors and a graduate student in the special education department at Clemson University, using different combinations of disability, student, intervention, setting, and

outcome terms. Terms that were used in the search of electronic databases to obtain literature related to dropout prevention interventions for students with disabilities are listed in Appendix A.

Sources

A sample of the sources that were used to find articles is shown below. The complete list is provided in Appendix B.

Database search. To establish the most inclusive literature set possible, searches were conducted of various electronic databases, including the following: Academic Search Premier, ERIC, JSTOR, PsycINFO, and WorldCat. An electronic search was also conducted of all materials in the Clemson University Libraries system, in order to include relevant books and electronic media in the search.

Web site search. The following Web sites were included in the search for relevant publications: Administration for Children and Families, American Youth Policy Forum, The Annie E. Casey Foundation, Jobs for the Future, Mentor, National Collaborative on Workforce and Disability, National High School Center, and the University of Chicago Urban Education Institute. A search was also conducted of all U.S. State Department of Education Web sites.

Journal hand search. In order to include articles that may not yet have been indexed by electronic indexing tools, hand searches of the table of contents of the most current issues of key journals were conducted. The journals that were hand searched were selected from education journals housed at the Clemson University Libraries, and included the *British Journal of Special Education*, *Journal of Emotional and Behavioral Disorders*, and *Journal of Learning Disabilities*.

Electronic journal search. In order to find articles that may not have turned up in the electronic databases using the search terms, electronic searches of entire journals were conducted of select journals, including: *American Educational Research Journal*, *Exceptional Children*, *Intervention in School and Clinic*, *Journal of Behavioral Education*, and *Journal of Special Education*.

Reference list search. Reference lists of previous meta-analyses conducted in the area of dropout were also scanned. Reviews were obtained from The Campbell Library and The Evidence for Policy and Practice Information and Coordinating Centre (EPPI-Centre). Reference list searches were also conducted of bibliographic databases and full-text journal databases, including the Directory of Open Access Journals (DOAJ) and HighWire Press.

Unpublished studies/grey literature search. So that unpublished studies and ongoing studies could be included in this review, a search was conducted of the social networking site *academia.edu*, which is designed to "help academics follow the latest research in their field" (http://www.academia.edu/about). In order to include doctoral research, a search of the ProQuest Digital Dissertations and Theses database was conducted. To obtain conference proceedings and other unpublished reports, the following databases were searched: PAIS International, OpenSIGLE, and The Directory of Open Access Repositories (OpenDOAR).

Selection Criteria

In order to be included in this review, studies had to focus on interventions that reduced dropout, or interventions associated with graduation for middle, junior high, and high school students (i.e., students aged 11-21) with disabilities. The studies had to report outcomes for students with disabilities related to dropping out or graduating separate from results for all

students. Studies must have been written in English and published between January 2004 and January 2013. While the article must have had a publication date between (and inclusive of) January 2004 and January 2013, the intervention and study could have been conducted at any time.

Participants. Studies that used sample groups of middle-, junior high-, and high- school students were selected because these are the school levels at which students typically drop out. Longitudinal studies that began when students were in elementary school were included if they measured graduation outcomes and met the other inclusion criteria. Ex post facto studies in which participants were older than age 21, but which were based on their experiences while enrolled in school were also included.

Sample groups must have included students with disabilities. The 13 federal disability categories under the 2004 Individuals with Disabilities Act (IDEA) are as follows: Autism; Deafness; Deaf-Blindness; Emotional Disturbance (ED); Hearing Impairment; Intellectual Disability; Multiple Disabilities; Orthopedic Impairment; Other Health Impairment (OHI); Specific Learning Disability (SLD); Speech or Language Impairment; Traumatic Brain Injury (TBI); and Visual Impairment, including blindness. As ADHD is not a federal disability category, but a student with ADHD may qualify for services under a disability category such as ED or OHI, ADHD was also included as an eligible disability.

Participants in the sample may not have been described by the authors in terms of IDEA classifications, but if participants exhibited characteristics that mirrored criteria for special education eligibility, the studies were included. The 2004 reauthorization of IDEA supports the use of Response to Intervention (RTI) to identify students at risk for academic failure. The use of RTI represents a shift in how children are identified for special education services. The old "wait

to fail" model that required students with learning disabilities to show a discrepancy between ability and achievement is no longer the primary criterion used to determine eligibility (see Fed. Reg. §300.307, 2006). The provision of educational supports is no longer reserved for students already identified with a qualifying disability; therefore, studies in which participants were identified as having academic difficulties or being in need of supports to prevent school failure were included. One such study was included, as shown in Table 1.

Table 1

IDEA 2004 Special Education Eligibility and Sample Characteristics

IDEA 2004		Study	
IDEA Disability Category	**IDEA Eligibility Criteria**	**Sample Characteristics**	**Authors**
Specific Learning Disability (SLD)	The child does not achieve adequately for the child's age or to meet State-approved grade-level standards in one or more of the following areas: oral expression, listening, comprehension, written expression, basic reading skills, reading fluency skills, reading comprehension, mathematics calculation/ problem solving (§ 300.309).	Students had failed at least one grade in elementary school, or had scores at least one grade level behind in math or reading. Note: Some participants only had low attendance, but many had multiple risk factors (e.g., low attendance + below grade level in math or reading).	Lever, Sander, Lombardo, Randall, Axelrod, Rubenstein, & Weist (2004).

Note. Adapted from U.S. Department of Education, 2006.

Interventions. Studies were included if they implemented interventions designed to prevent dropout from school. Studies that were not strictly intervention-based, but were ex post facto studies that established relationships between particular variables and students' likelihood

of graduating from school were also included. Studies conducted while students were still in school were disqualified, unless students were previous dropouts who had returned to school.

Outcomes. Studies that included outcome measures related to returning to or graduating from high school were included. Studies that focused on outcomes such as improved behavior, academic achievement, or adult outcomes were excluded if graduating from school was not also an outcome measure.

Study designs. The purpose of a literature map is to present information on all studies that have been published in a particular theoretical area within a specific timeframe. Therefore, all research designs were considered appropriate for inclusion, including: (a) experimental, (b) quasi-experimental, (c) single-subject, (d) qualitative, (d) descriptive, and (e) correlational.

Coding Protocols

After conducting the search of literature, coding protocols were created for both quantitative and qualitative studies. Due to the nature of a mapping review, it was considered appropriate to include all studies that met inclusion criteria regardless of the rigor with which research designs were implemented. The coding protocols were therefore designed to capture descriptive and demographic factors. Draft protocols were reviewed by NDPC-SD advisory board members and their feedback was incorporated into the final protocols, which can be seen in Appendix C.

Results

The search of electronic databases yielded a total of 544 journal articles that appeared from their abstracts to be about dropout prevention. These abstracts were then screened by the authors and a graduate student using the Screening Criteria Checklist (see Appendix D). There were 176 articles that either appeared to meet our screening criteria based on their abstracts or that did not provide enough information in their abstracts on which to base a decision about their inclusion in this review. The full-text copies of these 176 articles were obtained. Further screening of the 176 full text articles resulted in 13 articles meeting the established inclusion criteria. An electronic search of the Proquest Digital Dissertations and Theses database resulted in 55 dissertations that appeared to be relevant. After screening full-text electronic versions of the dissertations, one study was retained for inclusion in this review. A search of state department of education Web sites resulted in eight reports that evaluated dropout prevention activities, four of which contained information about outcomes for students with disabilities. These four reports were retained for inclusion in this review. An electronic search of select journals yielded one article for inclusion. The screening process resulted in a total of 19 studies being retained. No other search methods (e.g., Academia.edu; journal hand search; or reference list search) yielded unique articles. The 19 studies included in this review are shown in Table 2.

Fifteen of the studies were conducted in the U.S., two studies were conducted in the U.K. and one study was conducted in Australia, Brazil, and Canada, respectively. Because the purpose of a mapping review is to report all research conducted within a specific time period, all articles that met our inclusion criteria were included regardless of their methodological soundness. The most common reason for rejecting studies was the lack of information about graduation outcomes for students with disabilities separate from all students.

Table 2

Studies Included in Review (N = 19)

Author	Title of Article	Publication Type	Country
Ahrens, DuBois, Lozano, & Richardson (2010)	*Naturally Acquired Mentoring Relationships and Young Adult Outcomes Among Adolescents with Learning Disabilities*	Journal article	U.S.
Attwood, Croll, & Hamilton (2005)	*Recovering Potential: Factors Associated With Success in Engaging Challenging Students With Alternative Pre-16 Provision*	Journal article	U.K.
Dunn, Chambers, & Rabren (2004)	*Variables Affecting Students' Decisions to Drop Out of School*	Journal article	U.S.
Graeff-Martins, Oswald, Comassetto, Kieling, Gonçalves, & Rohde (2006)	*A Package of Interventions to Reduce School Dropout in Public Schools in a Developing Country*	Journal article	Brazil
Keane, Aldridge, Costley, & Clark (2012)	*Students with Autism in Regular Classes: A Long-Term Follow-Up Study of A Satellite Class Transition Model*	Journal article	Australia
Landrum, Katsiyannis, & Archwamety (2004)	*An Analysis of Setting and Exit Patterns of Students with Emotional or Behavioral Disorders*	Journal article	U.S.
Lever, Sander, Lombardo, Randall, Axelrod, Rubenstein, & Weist (2004)	*A Drop-Out Prevention Program for High-Risk Inner-City Youth*	Journal article	U.S.
Malloy, Sundar, Hagner, Pierias, & Viet (2010)	*The Efficacy of the RENEW Model: Individualized School-to-Career Services for Youth At Risk of School Dropout*	Journal article	U.S.
McGee (2011)	*Skills, Standards, and Disabilities: How Youth With Learning Disabilities Fare in High School and Beyond*	Journal article	Canada
Murray & Naranjo (2008)	*Poor, Black, Learning Disabled, and Graduating: An Investigation of Factors and Processes Associated With School Completion Among High-Risk Urban Youth*	Journal article	U.S.

Table 2. *(Continued)*

Author	Title of Article	Publication Type	Country
Nowicki, Duke, Sisney, Strickler, & Tyler (2004)	*Reducing the Drop-Out Rates of At-Risk High School Students: The Effective Learning Program (ELP)*	Journal article	U.S.
Powers, Geenen, Powers, Pommier-Satya, Turner, Dalton, Drummond, & Swank (2012)	*My Life: Effects of A Longitudinal, Randomized Study of Self-Determination Enhancement on The Transition Outcomes of Youth in Foster Care and Special Education*	Journal article	U.S.
Samel, Sondergeld, Fischer, & Patterson (2011)	*The Secondary School Pipeline: Longitudinal Indicators of Resilience and Resistance in Urban Schools Under Reform*	Journal article	U.S.
Sinclair, Christenson, & Thurlow (2005)	*Promoting School Completion of Urban Secondary Youth With Emotional or Behavioral Disabilities*	Journal article	U.S.
Arroyo Research Services (2009)	*Texas Dropout Recovery Pilot Program: Cycle 1 Evaluation Report*	Program evaluation report	U.S.
Arroyo Research Services (2011)	*Evaluation of the Texas Dropout Recovery Pilot Program: Cycles 1 and 2*	Program evaluation report	U.S.
ICF International (2008)	*Evaluation of Communities In Schools (CIS) of Texas*	Program evaluation report	U.S.
White, Martin, & Jeffes (2010)	*The Back On Track Alternative Provision Pilots: Final report*	Program evaluation report	U.K.
Alvarez (2008)	*A Study of a Dropout Prevention Program for African-American and Latino Males in High School*	Dissertation	U.S.

The following section presents the results of the three research questions. After a general discussion of the findings of the first research question, specific information addressing the research question is presented in four separate tables. Each table is followed by a brief narrative of the studies presented in the table.

Research Question 1

What are the distributions of dropout prevention interventions for students with disabilities, outcome measures to assess their efficacy, and research designs to test their effects that have been used since 2004?

The results of Research Question 1 are presented in Tables 3-6. Of the 19 studies included in this report, 11 described comprehensive dropout prevention programs with multiple components. The majority of these programs shared in common the following interventions: conducting outreach to families, monitoring students' attendance, providing additional academic support for students, and providing career awareness and job training. The specific components of these 11 programs are shown in Table 3. The integrated nature of the interventions complicates the process of trying to associate specific interventions with positive student outcomes related to graduating from school. Therefore, in attempting to categorize the main intervention(s) delivered in these 11 comprehensive programs, we relied on the results reported for students with disabilities. For example, in cases where graduation outcomes were reported for students who had an adult advocate and that advocate delivered a variety of interventions, such as family outreach, tutoring, and attendance monitoring, the intervention was classified as "mentoring."

Table 3 presents 11 studies that identified mentoring as an intervention and reported graduation/dropout outcomes for students with disabilities who were mentored. Table 4 presents six studies that described therapeutic, social-emotional, communication, vocational, and academic interventions targeted to students' disability-related needs. Table 5 presents the two remaining studies included in this review. These studies were ex post facto correlational designs that found associations between (a) students' classroom setting and graduating, and (b) states' high school exit options and students' likelihood of graduating.

Interventions

The dropout prevention interventions described in the studies fell into three categories: (a) mentoring, (b) interventions targeted to students' specific disability-related needs, and (c) classroom setting and exit options. These interventions are described in the following section.

Mentoring

Overall, 11 of the 19 studies included in this review involved mentoring as an intervention for dropout prevention. These 11 studies are shown in Table 3 with information on the research design, outcome measures, graduation/dropout results, and disabilities of students in the sample.

Of the 11 comprehensive dropout prevention programs, eight included mentoring as a component of a larger program designed to prevent students from dropping out of school (see Table 2). In Alvarez's (2008) qualitative study of students in grades 9-12, students participated in The MORE Program in which they attended weekly meetings for mentoring, counseling, tutoring, and participating in social/cultural activities. In the Texas Dropout Recovery Pilot Program (TDRPP), mentoring and support from adult advocates was a component of a larger

Table 3

Components of Comprehensive Dropout Prevention Program (n = 11)

Program and Researchers	***RENEW*** **Malloy et al. (2010)**	***Check & Connect*** **Sinclair, et al. (2005)**	**CIS ICF Intl. (2008)**	***ELP*** **Nowicki, et al. (2005)**	***FUTURES*** **Lever, et al. (2004)**	***MORE*** **Alvarez (2008)**	***TDRPP*** **Arroyo Research Services (2009, 2011)**	***Back on Track*** **White, et al. (2010)**	***Early Entrants*** **Attwood, et al. (2005)**	***SDIP*** **Graeff-Martins, et al. (2006)**
Disability Categories in Sample	**EBD**	**EBD, SLD, OHI**	**SPED**	**EBD, SLD, OHI**	**LD**	**LD**	**SPED**	**SPED**	**SPED, LD**	**EBD, ADHD**
Interventions										
Family outreach (9)	X	X	X	X	X	X	X	X		X
Tutoring/academic support (8)	X		X	X	X	X	X	X	X	
Job training/career awareness (8)	X		X	X	X		X	X	X	X
Attendance monitoring (8)		X	X	X	X		X	X	X	X
Counseling, mental health services (8)		X	X		X	X	X	X	X	X
Social/cultural or school activities (8)		X	X	X	X	X	X	X		X
Mentoring/adult advocates (7)	X	X	X	X	X	X	X			
Behavior/social skills (7)	X	X	X	X	X	X		X		
Life skills (6)		X		X	X	X	X	X		
Character development (6)		X			X	X	X	X		X
College exposure (6)			X		X	X	X	X	X	
Self-paced/flexible programming (4)	X						X	X	X	
Incentives				X	X		X	X		
Credit recovery (3)	X	X						X		
Health services or referral (3)			X				X	X		
Childcare (2)							X	X		
Transportation (1)							X			

Note: This table is based on program features and services described in the article cited in this report, and does not necessarily reflect all the services the program may have offered. Number of programs including each intervention is shown in parentheses. CIS = Communities In Schools, ELP = Effective Learning Program, TDRPP = Texas Dropout Recovery Pilot Program, SDIP = School Dropout Intervention Package.

program that, in its first cycle, involved 22 education organizations that provided mentoring, self-paced instruction, tutoring, social worker services, transportation, childcare, and college exposure activities (Arroyo Research Services, 2009). In Cycle 2, the program operated in 45 sites that provided mentoring/one-on-one coaching; additional social support services (e.g., case management, childcare, job training); and cash incentives for obtaining benchmarks, including graduation (Arroyo Research Services, 2011). ICF International (2008) evaluated Communities In Schools (CIS) of Texas, each campus of which provided: supportive guidance from a caring adult, health and human services, parental and family involvement, career awareness and employment services, and educational enhancement and enrichment activities. In the APEX Dropout Prevention Project described by Malloy, Sundar, Hagner, Pierias, and Viet (2010) facilitators in the RENEW program (a component of the APEX dropout prevention program) worked with youth for 12 months to help them identify current networks of supports and make plans for educational, employment, and adult life goals. Similarly, in the FUTURE's program described by Lever et al. (2004), students attended small classes with a focus on staff-student relationships. Students received individual support from advocates/mentors who remained with students throughout their enrollment and monitored their attendance, provided life-skills training, character development, career preparation activities, and incentives for positive achievements. In the Effective Learning Program (ELP) described by Nowicki, Duke, Sisney, Stricker, and Tyler (2004), students were also taught in small classes in which teachers specifically aimed to build a family atmosphere and have close relationships with students. Teachers taught students relationship skills, how to use nonverbal communication more skillfully, and how to increase their internal locus of control. In the Check-and-Connect Program evaluated by Sinclair, Christenson, and Thurlow (2005), students received individualized support from designated

advocates/mentors who also remained with students throughout their enrollment. Mentors conducted attendance monitoring, family outreach, and facilitated students' participation in school-related activities. In addition to relationship building between adults and students, the program focused on developing students' life skills, problem-solving skills, and interpersonal skills.

In addition to these eight comprehensive dropout prevention programs with a mentoring component, there were three studies (Ahrens, DuBois, Lozano, & Richardson 2010; Dunn, Chambers, & Rabren, 2004; Murray & Naranjo, 2008) that specifically focused on the role of a caring adult/mentor in helping students graduate from school. Ahrens et al.'s (2010) study on the role of a particular adult in students' decisions to stay in school was an ex post facto correlational study that looked at the role of adults who had relationships that lasted for two or more years with students in grades 7-12. For the purposes of this study, mentoring involved providing students with guidance/advice, emotional support, role modeling, tangible/instrumental support, or serving as a parent figure. Rather than being formally designated to mentor students, these adults were naturally acquired through students' interactions with adults in the school setting. Dunn, et al. (2004) also conducted a retrospective study to calculate the probability that students would drop out of school based on their belief that school had prepared them for their future, and that they had experienced a helpful class and helpful person. The helpful person may or may not have been a formal mentor—the researchers did not provide details on the specific role of the helpful person. However, it was found that students with disabilities who identified a helpful person in school had a lower probability of dropping out than students with disabilities who did not identify a helpful person in school. Murray and Naranjo's (2008) qualitative study involved graduates who had several risk factors for not graduating, sharing their beliefs about factors that

contributed to their graduating from school. All participants identified teachers as an important source of support: Teachers got to know students on a one-on-one basis, provided help with work when students were struggling, pushed students to succeed, and fulfilled the role of a caring adult who monitored students' progress over time.

While programs such as Check and Connect involved a formal mentor, the studies by Dunn, et al. (2004) and Murray and Naranjo (2008) indicate that even when students have connections to caring adults who are not formal mentors, these relationships can be instrumental in preventing students from dropping out of school. In addition, the studies of comprehensive dropout prevention programs highlight the important role that adult advocates play in dropout prevention initiatives. For example, services such as tutoring are more effective if tutors develop personal relationships with students and demonstrate their desire to help students' succeed. Contact with students' parents is also likely to be more fruitful if teachers have close relationships with the parents' children.

Interventions Targeted to Students' Specific Disability-Related Needs

Three of the 11 studies on comprehensive dropout prevention programs focused on specific disability-related needs that were addressed through targeted interventions. In two studies conducted in the U.K., disengaged youth with special educational needs attended programs focused on academics and vocational training (Attwood, Croll, & Hamilton, 2005; White, Martin, & Jeffes, 2010). The initiative described by Atwood et al. (2005) involved youth in their final 2 years of high school (with age 16 being the last compulsory year of school) attending a College of Further Education and taking vocational courses alongside Post-16 students. The majority of students with special educational needs completed the program. In the pilot program

described by White et al. (2010), the focus was on helping youth who had poor attendance and had completed very little coursework obtain academic qualifications. One student with special educational needs graduated from the program with a vocational qualification and a school completion qualification. The third comprehensive dropout prevention program involved services geared towards students' mental health needs (Graeff-Martins et al., 2006). The intervention was conducted in the first semester of an elementary school with one of the highest dropout rates in Porto Alegre, Brazil. The intervention was applied to all seventh grade classes, the grade at which dropout peaked, and involved: conducting two workshops with teachers, sending five letters about school dropout to parents, and holding three meetings with parents. In addition, there was a student music contest based on staying in school and a one-day program for students entitled, "The Advantages of Staying in School." A telephone helpline was established for parents, and parents were invited to participate in service projects around the school. In addition to this universal intervention, targeted interventions were provided for students who were absent 10 or more consecutive days. A mental health team visited these students at home and conducted mental health evaluations and made referrals to community resources, if necessary. After the intervention, there was a significant difference between the dropout rate in the intervention school (3.85%) and the control school (9.54%). Eighty-three percent (n = 18) of the students who responded to the intervention had diagnoses of Oppositional Defiance Disorder (ODD), Attention Deficit Hyperactivity Disorder (ADHD), Generalized Anxiety Disorder (GAD) Social Phobia, Conduct Disorder, or nicotine use.

In addition to these three studies (Attwood et al., 2005; Graeff-Martins et al., 2006; White et al., 2010), there were three studies in which interventions that were not part of a comprehensive program were geared towards students' specific disability-related needs. One

program focused on the social and communication needs of students with autism spectrum disorders (ASD; Keane, Aldridge, Costley, & Clark, 2012) and another focused on the self-determination needs of students with disabilities in foster care (Powers et al., 2012). Keane et al. (2012) described an early intervention satellite program for students in grades K-4 with Autism Spectrum Disorders (ASD) which aimed to increase students' success in mainstream schools and beyond. Three out of four students who attended this program over a decade earlier graduated from high school and the fourth returned to school after dropping out. Parents reported that the most beneficial aspects of the program were the specific focus on social and communication skills, access to therapies such as speech pathology, and teacher knowledge and support. It was also found that sharing of information about the child and ASD to staff in the receiving school increased the provision of effective strategies. In the study by Powers et al. (2012), students with disabilities who were in foster care benefited from a self-determination course in which they participated in weekly coaching sessions and quarterly workshops with mentors who were formerly in foster care. Students in the intervention group were more likely to complete high school and subsequently obtain paid employment than students in a comparison group who did not receive the self-determination intervention.

In the final study that addressed students' specific needs, students with academic needs who failed one or more core courses in ninth grade could retake classes during summer school (as a service of GEAR UP) or take freshman and sophomore class concurrently in 10th grade (Samel, Sondergeld, Fischer, & Patterson, 2011).

In all of these studies, the interventions were directly related to students' areas of difficulties that may have prevented them from completing school. These studies highlight the importance of targeting interventions to the specific needs of youth with disabilities. While all

students with disabilities can benefit from an intervention such as mentoring, students with mental health issues or interpersonal and communication problems benefit from more targeted interventions related to their specific areas of difficulty. Table 4 provides information on the six studies that involved targeted therapeutic, social-emotional, communication, vocational, and academic interventions for students with specific disability-related needs.

Classroom Setting and Exit Options

There were two correlational studies that found associations between students' likelihood of graduating from school and (a) students' class setting, and (b) state's high school graduation requirements (Landrum, Katsiyannis, & Archwamety, 2004; McGee, 2011). The research designs, outcome measures, graduation/dropout results, and disability categories of students in the samples are shown in Table 5.

McGee's (2011) study on high school exit options found that in states with flexibility in graduation requirements, such as exemption from exit exams for students with disabilities, and the option of obtaining a diploma based on IEP completion, students with learning disabilities were more likely to graduate from high school than they were in states without such flexibility in high school exit requirements. Landrum et al. (2004) examined state graduation and dropout data on the percentage of students with EBD who graduated with a high school diploma, certificate, or dropped out from either a: (a) general education class, (b) resource room, or (c) separate class. They found that students in separate class settings were less likely to drop out than students in general class settings. Additionally, there was an association between being in a separate class setting and graduating with a certificate (although not a diploma).

Outcome Measures and Research Designs

Tables 4, 5, and 6 show the research designs and outcome measures, along with results of the studies by intervention types: Table 4 shows studies that measured mentoring interventions; Table 5 shows studies that involved interventions targeted to students' specific needs; and Table 6 provides information on ex post facto studies that measured the effects of classroom settings and state's high school exit options on students' likelihood of graduating.

Of the 19 studies, there were 11 (58%) that involved comprehensive programs involving such interventions as family involvement, attendance monitoring, and academic support. Due to the integrated nature of interventions delivered in comprehensive programs, it was difficult to determine the unique contributions that specific interventions made to students' graduating from school. Overall, the most common intervention was mentoring (n = 11).

In terms of outcome measures, 11 of the 19 studies measured graduating from school along with other outcomes and one study measured the dropout rate along with students' psychosocial functioning. In one study conducted in the U.K., the outcome measure involved program completion at a college, and in a study conducted in Brazil, the outcome measure for students who had dropped out was returning to school. In the remaining studies, graduation/dropout measures were the sole outcome measures.

Three of the 19 studies involved experimental designs, which were used to study programs focused on mentoring, relationship building, and self-determination. All of the mixed methods designs (n = 5) involved mentoring interventions. Overall, there were four correlational studies, two of which measured mentoring interventions; one measured classroom settings and one measured high school exit options. In the six studies involving interventions geared towards students' specific disability-related needs, four different research designs were used.

Table 4

Mentoring Interventions, Outcome Measures, and Research Designs

Mentoring (n = 11)				
Outcome Measures	**Disabilities**	**Graduation/Dropout Results**	**Research Design**	**Authors**
Graduating from high school; education / employment; psychological well-being; physical health; participation in unhealthy behaviors	Specific Learning Disabilities (SLD)	Odds ratio of graduating from high school for students with SLD who received mentoring was positive and significant (OR 2.53, CI 1.31–4.90, $p <$ .01).	Correlational: Logistic regression	Ahrens, DuBois, Lozano, & Richardson (2010)
Graduating from high school	Learning Disability with Cognitive Delay	Students who were at risk of dropping out (7 regular ed. and 1 SWD) who attended weekly meetings for counseling, mentoring, tutoring, and social/cultural activities, graduated from high school.	Qualitative: Student questionnaires	Alvarez (2008)
Graduating from high school; program completion; college readiness	Special Education (disabilities not specified)	17% of previous dropouts with disabilities and 20% of students without disabilities who enrolled in a Texas Dropout Recovery Pilot Program (TDRPP) where they received mentoring, graduated from high school (from sample of 1,097 students).	Mixed Methods	Arroyo Research Services (2009)
Graduating from high school; program completion; college readiness	Special Education (disabilities not specified)	29% of previous dropouts who enrolled in a Texas Dropout Recovery Pilot Program (TDRPP) where they received mentoring graduated and 33% of previous dropouts without disabilities graduated.	Mixed Methods	Arroyo Research Services (2011)
Probability of dropping out	Specific Learning Disabilities (SLD) and Mental Retardation (MR)	Students with MR and LD who identified a helpful person and class and felt they were being prepared for life after school had a .29 probability of dropping out compared to a .80 probability for students with MR and LD who did not identify a helpful person or class and did not feel they were being prepared for life after school.	Correlational: Logistic regression	Dunn, Chambers, & Rabren (2004)
Graduation/dropout rates; academic achievement; attendance; discipline; promotion	Special Education (disabilities not specified)	Special education case managed students were 1.55 times more likely to graduate from high school than their non-special education case-managed classmates.	Mixed Methods	ICF International (2008)

Table 4 *(Continued)*

Mentoring (n = 11)				
Outcome Measures	**Disabilities**	**Graduation/Dropout Results**	**Research Design**	**Authors**
Dropout rate; psychosocial functioning	Specific Learning Disabilities (SLD)	Dropout rate in FUTURES program in Baltimore, MD, in which "high risk" students received support from an adult advocate throughout their enrollment, was 5.12% compared to 8.14% for all students in the Baltimore City Schools (1999-2000).	Mixed Methods	Lever, Sander, Lombardo, Randall, Axelrod, Rubenstein, & Weist (2004)
Graduating from high school; moods/ emotions; self-harmful behavior	Behavior issues	Case study of a student with poor attendance, few credits, and behavior issues who received support from a RENEW facilitator graduated from the dropout prevention program.	Mixed Methods	Malloy, Sundar, Hagner, Pierias, & Viet (2010)
Graduating from high school	Learning Disabilities (LD)	All at-risk students with LD ($N = 11$) who were interviewed about factors that contributed to their graduation identified teachers as an important source of support.	Qualitative: Student interviews	Murray & Naranjo (2008)
Graduating from high school; locus of control orientation; relationship-building skills	Emotional Disorders (ED), Specific Learning Disabilities (SLD), Other Health Impairments (OHI)	Graduation rate of SWD in Effective Learning Program (ELP), which focused on relationship building was significantly higher (98%) than graduation rate of students who qualified for the ELP but did not participate (38%) and regular education students (74%).	Experimental	Nowicki, Duke, Sisney, Strickler, & Tyler (2004)
Dropout and graduation rates; attendance; participation in IEP meetings; current transition goals on IEP	Emotional and Behavioral Disabilities (EBD), Specific Learning Disabilities (SLD), Other Health Impair-ments (OHI)	Students who participated in Check & Connect, in which they had a year-round monitor, were less likely to drop out at the end of years 4 and 5 than control group students. Compared to control group students, five times as many treatment group students completed school in year 5. The 4-year dropout rate for treatment group students was 39% vs. 58% for control group; the 5-year dropout rate was 42% for treatment group vs. 94% for control group, and the gradua-tion rate was 25% for treatment group vs. 6% for control group (all treatment and control group students had disabilities).	Experimental	Sinclair, Christenson, & Thurlow (2005)

Note. SWD = Students with disabilities.

Table 5

Interventions for Specific Disability-Related Needs, Outcome Measures, and Research Designs

Therapeutic, Social-Emotional, Communication, Vocational, and Academic Intervention (n = 11)				
Outcome Measures	**Disabilities**	**Graduation/Dropout Results**	**Research Design**	**Authors**
Program completion	29% (n = 26) had "special educa-tional needs" and 36% (n = 40) had "learning difficulties"	Of 34 at-risk students in the Early Entrants vocational program, more than 90% said they would not have completed the final year of school in their traditional schools. Overall, 56% of students completed the program, including 16 of the 26 (61%) students with special educational needs and 20 of the 36 (56%) students with learning difficulties.	Qualitative: College records, interviews, and questionnaires	Attwood, Croll, & Hamilton (2005)
Returning to school after dropping out	83% of treatment group had ODD, ADHD, GAD, social phobia, and conduct disorder. Mean IQ score = 78.4 (SD = 19.4)	Dropout rate at the control school was 9.54% vs. 3.85% at the experimental school where students received universal and targeted interventions, including a mental health assessment and referral to community resources. Of 40 absentee students in the experimental school, 18 (45%) received mental health intervention and returned to school.	Quasi-Experimental	Graeff-Martins, Oswald, Comassetto, Kieling, Gonçalves, & Rohde (2006)
Progress in mainstream primary school, high school, and post high school	Autism Spectrum Disorders (ASD)	Three out of four students who had attended a satellite program where they received social and communica-tion skills instruction between grades K-4, graduated from high school and the fourth student returned to high school after dropping out.	Qualitative: Interviews and case studies	Keane, Aldridge, Costley, & Clark (2012)
Graduated on time or in alternate time frame	Special Education (disabilities not specified)	Students who failed one or more core courses in 9th grade could retake classes during summer school or take freshman and sophomore class concurrently in 10th grade. At the end of 12th grade, 136 students graduated on time, including 12 SWD (9%). Forty-two regular education students and 11 SWD (26%) graduated in an alternate time frame. Overall, 178 regular education students and 23 SWD (13%) graduated. Twenty-seven SWD (16%) dropped out, but some graduated from a different high school or received a GED.	Descriptive	Samel, Sondergeld, Fischer, & Patterson (2011)

Table 5 *(Continued)*

Therapeutic, Social-Emotional, Communication, Vocational, and Academic Interventions (n = 11)				
Outcome Measures	**Disabilities**	**Graduation/Dropout Results**	**Research Design**	**Authors**
High school completion, self-determination, social connections (quality of life)	EBD, LD, OHI, Intellectual Disabilities, Speech/Language Impairments	37% of foster care youth with disabilities who participated in the TAKE CHARGE self-determination program for 1 year completed high school compared to 26% of youth in the comparison group who were in a foster care independent living program. After 1 year, 72% of intervention group youth and 50% of comparison group youth had graduated or obtained their GED.	Experimental	Powers, Geenen, Powers, Pommier-Satya, Turner, Dalton, Drummond, & Swank (2012)
Attainment of GCSE in one core area and BTEC qualification in a vocational area (high school completion qualifications)	Special Educational Needs (SEN; disabilities not specified)	Student with SEN who was disengaged and had poor previous attendance attended a pilot site providing a 1-year academic program and obtained a GCSE in one core area and a BTEC qualification in a vocational area.	Qualitative	White, Martin, & Jeffes (2010)

Note. PTSD = Post Traumatic Stress Disorder, ASD = Autism Spectrum Disorders, ED = Emotional Disturbances, EBD = Emotional and Behavioral Disorders; ODD = Oppositional Defiance Disorder, ADHD = Attention Deficit Hyperactivity Disorder, GAD = Generalized Anxiety Disorder, LD = Learning Disabilities, OHI = Other Health Impairment

Table 6

Interventions, Outcome Measures, and Research Designs

Classroom Setting and Exit Options (n = 2)				
Outcome Measures	**Disabilities**	**Graduation/Dropout Results**	**Research Design**	**Authors**
Receipt of certificate, diploma, or dropout	Emotional or Behavioral Disorders (EBD)	Students with EBD in separate classes were less likely to drop out and more likely to graduate with a certificate than EBD students in general education classrooms or resource rooms.	Correlational: Multiple regression	Landrum, Katsiyannis, & Archwamety (2004)
High school graduation; attending college; working; earnings post high school	Learning Disabilities (LD)	Students with LD in states that exempted students with disabilities (SWD) from exit exams were 30 percentage points more likely to graduate than observationally equivalent nondisabled peers (NDPs), and 21.8 percentage points more likely to graduate than students with LD in states where SWDs were required to take exit exams. Students with LD in states allowing schools to grant diplomas based on IEP completion were 18.6 percentage points more likely to graduate than NDPs living in the same state, and 34 percentage points more likely to graduate than NDPs who did not live in states where diplomas could be awarded based on IEP completion.	Correlational: Probit regression	McGee (2011)

Research Question 2

How do the distributions of dropout prevention interventions, outcome measures, and research designs differ across student disability, gender, and race/ethnicity?

Research Designs and Disabilities

Compared to other research designs (quasi-experimental, correlational, descriptive, qualitative, and mixed methods), studies that used experimental designs had samples with the broadest range of disabilities (emotional and behavioral disorders [EBD], specific learning disabilities [SLD], other health impairments [OHI], intellectual disabilities [ID], and speech/language impairments [SLI]). Across all research designs, students classified as SLD and EBD were included most often in the sample groups. In six studies, the samples included students who received special education services, but information on students' specific disabilities was not provided. These studies used qualitative, descriptive, and mixed methods research designs. The research designs of studies that included samples identified by disability category are shown in Table 7.

Table 7

Distribution of Research Designs by Disability Categories

Research Design	EBD	SLD	ID	ASD	OHI	SLI	SPED
Correlational	1	3	1				
Descriptive							1
Experimental	3	3	3		1	1	
Mixed Methods	1	1					3
Qualitative		3		1			2
Quasi-Experimental	1						

Note: EBD = Emotional and Behavioral Disorders; SLD = Specific Learning Disabilities; ID = Intellectual Disabilities; ASD = Autism Spectrum Disorders; OHI = Other Health Impairments; SLI = Speech/Language Impairments; SPED = Special Education (no disabilities specified).

Interventions and Disabilities

Studies in this review included samples of students with: emotional and behavioral disorders (EBD), specific learning disabilities (SLD), autism spectrum disorders (ASD), intellectual disabilities (ID), other health impaired (OHI), and speech/language impaired (SLI). All of these disability groups were represented in mentoring and self-determination interventions. A satellite program intervention for students with ASD included only students with ASD. In four studies, students were identified as having special education status, but their specific disabilities were not described. The interventions for these students were (a) a separate site academic program, (b) a credit recovery program, and (c) multicomponent programs with mentoring. In a college-based vocational program in the U.K. the sample was identified as containing both special education students and students with LD. The interventions and student disabilities, as well as the research designs used in the studies are shown in Table 8.

Table 8

Research Designs, Interventions, and Disability Categories in Sample

Research Design	Intervention	EBD	SLD	ASD	OHI	ID	SLI	SPED
Correlational	Classroom setting	X						
	Mentoring		X			X		
	State exit exam requirements		X					
Experimental	Mentoring	X	X		X			
	Self-determination program	X	X		X	X	X	
Mixed Methods	Mentoring							X
Qualitative	Mentoring		X					
	Pilot site academic program							X
	Social and communication skills			X				
	Vocational program		X					
Quasi-Experimental	Mental health referral	X			X			
Descriptive	Credit recovery							X

Note: EBD = Emotional and Behavioral Disorders; SLD = Specific Learning Disabilities; ID = Intellectual Disabilities; ASD = Autism Spectrum Disorders; OHI = Other Health Impairments; SLI = Speech/Language Impairments; SPED = Special Education (no disabilities specified). In some cases, more than one study shared the same research design, intervention, and sample group disability categories.

Outcome Measures and Disabilities

All disability groups included in the studies (EBD, SLD, ID, ASD, OHI, and SLI) and students not identified by disability, but as receiving special education services, were represented in samples of studies that measured graduating from high school as an outcome measure (n = 18). In one study, the outcome measure for students with EBD and OHI (ADHD) who had dropped out of school was returning to school. Fourteen additional outcome measures were reported in studies that provided information on the disability categories of students, which are shown in Table 9. Table 10 lists the 15 studies that reported student disability categories along with outcome measures. The remaining four studies did not provide a breakdown of student disability categories in the samples.

Research Designs, Gender, and Race/Ethnicity

Only one study in this review provided the breakdown of the sample by gender and race/ethnicity across multiple outcome measures (Sinclair et al., 2005). Three studies (one mixed methods [Lever et al., 2004], one correlational [Landrum et al., 2004], and one qualitative [Keane et al., 2012]) did not report the gender or racial/ethnic makeup of the sample group.

One experimental study (Nowicki et al., 2004) and one descriptive study (Samel et al., 2011) provided the gender and racial/ethnic make-up of the sample group, but did not provide the breakdown by gender or race/ethnicity in the results. In another experimental study (Powers et al., 2012), the racial/ethnic composition of the sample group was not provided and although the gender composition was provided, the results were not reported by gender.

Table 9

Number of Studies Reporting Outcome Measures by Disability Categories

Outcome Measures	Disability Categories				
	EBD	SLD	ASD	ID	OHI (ADHD)
Graduating from high school	1	6	1	1	
Dropout and graduation rates	1*	1			
Diploma, certificate, or dropout	1				
Returning to school after dropping out	1				1
Program completion		2			
Academic achievement		1			
Education/employment	1	3	1		
Attendance	1*	1			
Psychosocial functioning	1	1			
Physical health		1			
Participation in unhealthy behaviors		1			
Participation in IEP meetings	1*				
Current transition goals on IEP	1*				
Locus of control orientation		1			
Relationship-building skills		1			
Independent living			1		
Social connections	1		1		
Postschool wages		1			

*The sample group was students with primary diagnoses of EBD, but students with LD and OHI who had behavior goals on their IEP were also represented. Outcome measures were provided for the sample as a whole so the disability category is recorded as EBD, rather than EBD, LD, and OHI.

Table 10

Outcome Measures Reported for Disability Categories Included in Study Samples

Researchers	Disability Category in Sample	Outcome Measures
Ahrens et al. (2010); Alvarez (2008); Attwood et al. (2005); Dunn et al. (2004); Lever et al. (2004); McGee (2011); Murray & Naranjo (2008)	Learning disabilities (LD)	Graduating from high school, probability of dropping out, dropout/graduation rates, program completion, academic achievement, education/employment, psychosocial functioning, relationship-building skills, physical health, postschool wages
Landrum et al. (2004); Malloy et al. (2010)	Emotional and behavioral disorders (EBD)	Graduating from high school, attainment of diploma or certificate, education/employment, social connections, psychosocial functioning
Keane et al. (2012)	Autism Spectrum Disorders (ASD)	Graduating from high school, independent living, education/ employment, social connections
Graeff-Martins et al. (2006)	EBD and Other Health Impairment (OHI) - ADHD	Returning to school after dropping out
Nowicki, et al. (2004); Sinclair et al. (2005)	EBD, LD, OHI	Graduating from high school, dropout rates, attendance, participation in IEP meetings, transition goals on IEP; locus of control orientation; relationship-building skills
Powers et al. (2012)	EBD, LD, OHI, Intellectual Disabilities (ID) Speech/Language Impairments (SLI)	High school completion, self-determination skills, social connections
Dunn et al. (2004)	LD, ID	Probability of dropping out

In three mixed methods studies (Arroyo Research Services, 2009, 2011; ICF International, 2008) and one qualitative study (Attwood et al., 2005), the breakdown of students by special education status, gender, and race/ethnicity was provided as separate categories for the sample group, but the gender and racial/ethnic composition of the special education students in the sample was not provided separate from all students.

In one qualitative study (Alvarez, 2008), all participants were male (N = 8) and African American or Latino and one student had a learning disability. In another qualitative study (Murray & Naranjo, 2008), all students (N =11) were African American and had learning disabilities; eight of the students were male and three were female. In both of these qualitative studies, all students in the sample groups graduated.

Only one student with "special educational needs" who achieved outcomes related to graduating was highlighted in the report on the Back on Track pilot programs (White et al., 2010) and neither the gender nor the race/ethnicity of this student was provided. Additional information on the research designs, outcome measures, and sample characteristics by gender and race/ethnicity is shown in Table 11.

Table 11

Sample Characteristics

Authors	Research Design	Intervention	Outcome Measures	Sample Characteristics		Results
Ahrens, DuBois, Lozano, & Richardson (2010)	Correlational	Mentoring	Graduated from high school; education/ employment; psychological well-being; physical health	Learning Disabilities (LD)	*N* = 1,714	The odds ratio of graduating for students with LD who received mentoring was positive and significant (OR 2.53, CI 1.31–4.90, $p < .01$).
				Gender	F = 37%; M = 63%	Results not reported by gender.
				Ethnicity	W = 77%; A = 3%; AA = 15%; O = 3%; H/L = 9%; NA = 2%	Results not reported by ethnicity.
Alvarez (2008)	Qualitative	Mentoring, Counseling, and Tutoring	Graduated from high school	Learning disability with cognitive delay	*n* = 1	African American male student who was at risk of dropping out who attended weekly meetings for counseling, mentoring, tutoring, and social/cultural activities, graduated from high school.
				Gender	Male	
				Ethnicity	African American	
Dunn, Chambers, & Rabren (2004)	Correlational	Students' belief that school prepared them for their future, and that they had a helpful person and helpful class.	Dropped out or graduated from high school	Learning Disabilities (LD) Mental Retardation (MR)	Dropouts: *n* = 162 Graduates: *n* = 116 Dropouts: *n* = 66 Graduates: *n* = 112	The probability of dropping out for a student with MR who felt he or she was being pre-pared for life after high school and found a particular class and person helpful was .16, compared to .86 for a student with LD who did not feel he or she was being prepared for life after high school and did not find any particular class and person helpful.
				Gender	M dropouts = 70% M graduates = 64% F dropouts = 30% F graduates = 36%	Results not reported by gender.
				Ethnicity	W graduates = 52% AA graduates = 48% W dropouts = 62% AA dropouts = 38%	Results not reported by ethnicity.

Table 11. *(Continued)*

Authors	Research Design	Intervention	Outcome Measures	Sample Characteristics		Results
Graeff-Martins, Oswald, Comassetto, Kieling, Gonçalves, & Rohde (2006)	Quasi-Experimental	Universal: teacher workshops, parent outreach, and "The Advantages of Staying at School" program. Targeted: mental health assessment and referral to community resources.	Returning to school after dropping out	ODD, conduct disorder, GAD social phobia, ADHD (EBD & OHI)	Universal interventions delivered schoolwide. Targeted interventions delivered to 38 of 40 absentee students with EBD/OHI.	EBD/OHI: Dropouts = 81.8% Returners = 83.3%
				Ethnicity	African-Brazilian: $n = 21$ European-Brazilian: $n = 17$ (87% = EBD/OHI)	African-Brazilian Dropouts = 59.1% African-Brazilian Returners = 44.4% European-Brazilian Dropouts = 36.4% European-Brazilian Returners = 50%
				Gender	Male: $n = 22$ Female: $n = 16$ (87% = EBD/OHI)	Male dropouts = 77.3% Male returners = 27.8% (female data not provided)
Malloy, Sundar, Hagner, Pierias, & Viet (2010)	Mixed Methods	RENEW Program	Graduating from high school	EBD	$n = 1$	Student with conduct disorder who received mentoring, credit recovery, and flexible programming graduated from high school and enrolled in college.
				Gender	Female	
				Ethnicity	Not reported	
McGee (2011)	Correlational	State exit exam requirements	Graduating from high school	Learning disabilities (LD)	With LD: $n = 270$ Without LD: $n = 4438$	The difference in probability of high school graduation for youth with and without LD was related to state's exit exam exemptions for students with disabilities. A white male with skills at the bottom quartiles of the skill distributions for youth with LD was 12.5 percentage points more likely to graduate from high school than an observationally equivalent peer without a learning disability.
				Gender	High school graduates in log wage model: Male: 77% Female: 23%	
				Ethnicity	High school graduates in log wage model: Black: 33% Hispanic: 22%	

Table 11. *(Continued)*

Authors	Research Design	Intervention	Outcome Measures	Sample Characteristics		Results
Sinclair, Christenson, & Thurlow (2005)	Experimental	Check & Connect	Dropout and graduation rates	EBD, SLD, OHI	Intervention: *n* = 74 Control: *n* = 73 *N* = 144	4-year dropout rate was 39% for treatment group vs. 58% for control group; 5-year dropout rate was 42% for treatment group vs. 94% for control group; and graduation rate was 25% vs. 6%.
				Gender	M = 84% F = 16%	No significant difference in dropout or graduation rates for females in treatment and control groups. Female treatment students were significantly more likely to have articulated IEP goals in four of the five transition areas compared to their female peers in the control group. Male treatment students were statistically more likely to have an IEP updated after 9th grade than males in the control group (53% vs. 36%). Difference for males by ethnicity is reported below.
				Ethnicity	W = 24% AA = 64% O = 12%	Non-African American males in the treatment group were less likely to drop out at the end of 4 years compared to similar students in the control group (38% vs. 63%). African American male treatment group students were significantly more likely to have IEP transition goals related to community participation compared to the IEPs of similar students in the control group (56% vs. 19%).

Note: Ethnicity: W = White; AA = African American; H/L = Hispanic/Latino; NA = Native American; A = Asian; O = Other Disabilities; ADHD = Attention Deficit Hyperactivity Disorder; EBD = Emotional and Behavioral Disorders; GAD = Generalized Anxiety Disorder; ODD = Oppositional Defiant Disorder; OHI = Other Health Impairments; SLD = Specific Learning Disabilities.

Summary

Overall, there was a lack of information on the gender and race/ethnicity of students in the sample groups in the studies. In fact, there was only one study that provided information on the gender and race/ethnicity of students across different outcome measures. The outcome measure of interest: graduating from school, included students in all identified disability groups, with the exception of one study in which the outcome measure for students with OHI was returning to school. Most studies also included additional outcome measures, with a focus on social connections and relationship-building skills across disability groups (e.g., EBD, SLD, ASD). Compared to other research designs, experimental studies used samples of students with the broadest range of disabilities. With the exception of one descriptive study that did not specify students' disabilities, students with EBD and SLD were included in all research designs. Mentoring was the most popular intervention used across research designs.

Research Question 3

What proportion of the identified studies reported results from which effect sizes could be calculated?

When evaluating the effectiveness of a dropout intervention, effect sizes are valuable for knowing how much of a difference the intervention made. Of the 13 studies that analyzed data using quantitative methods, five studies (38%) reported effect sizes. The remaining eight studies did not report effect sizes, but reported results from which effect sizes could be calculated. These studies are shown in Table 12. It should be noted that it was not an aim of this review to determine effect sizes of interventions. The information in Table 12 is provided for readers who may be interested in calculating effect sizes.

Table 12

Studies That Reported Effect Sizes (N = 19)

Author	Research Design	Effect Sizes Reported		Effect Sizes Can Be Calculated From Results	
		Yes	No	Yes	No
Ahrens, DuBois, Lozano, & Richardson (2010)	Correlational: Logistic regression	X			
Arroyo Research Services (2009)	Mixed Methods		X	X	
Arroyo Research Services (2011)	Mixed Methods		X	X	
Dunn, Chambers, & Rabren (2004)	Correlational: Logistic regression		X	X	
Graeff-Martins, Oswald, Comassetto, Kieling, Gonçalves, & Rohde (2006)	Quasi-Experimental	X			
ICF International (2008)	Mixed Methods	X			
Landrum, Katsiyannis, & Archwamety (2004)	Correlational: Multiple regression	X			
Lever, Sander, Lombardo, Randall, Axelrod, Rubenstein, & Weist (2004)	Mixed Methods		X	X	
McGee (2011)	Correlational: Probit regression		X	X	
Nowicki, Duke, Sisney, Strickler, & Tyler (2004)	Experimental		X	X	
Powers, Geenen, Powers, Pommier-Satya, Turner, Dalton, Drummond, & Swank (2012)	Experimental		X	X	
Samel, Sondergeld, Fischer, & Patterson (2011)	Descriptive		X	X	
Sinclair, Christenson, & Thurlow (2005)	Experimental	X			
Alvarez (2008)	Qualitative	N/A			
Attwood, Croll, & Hamilton (2005)	Qualitative	N/A			
Keane, Aldridge, Costley, & Clark (2012)	Qualitative	N/A			
Malloy, Sundar, Hagner, Pierias, & Viet (2010)	Mixed Methods	N/A			
Murray & Naranjo (2008)	Qualitative	N/A			
White, Martin, & Jeffes (2010)	Qualitative	N/A			

In Ahrens et al.'s study (2010), the odds of graduating for students who had received mentoring were 2.53 times greater than the odds of graduating for students who had not received mentoring. Similarly, ICF International's (2008) evaluation of CIS of Texas schools found special education case-managed students were 1.55 times more likely to graduate from high

school than their nonspecial education case-managed classmates. According to Cohen's "Rules of Thumb," an odds-ratio of 3.50 is a medium effect size. In other words, both of these interventions involving mentoring and case management had small effect sizes.

Graeff-Martins et al. (2006) reported significant differences between the experimental school in which universal dropout prevention interventions were implemented and the control school in both dropout ($p < 0.001$) and absenteeism in the last semester of the school year ($p < 0.05$; ES = 0.64). An effect size of 0.64 is considered a medium effect size. An effect size for the targeted intervention for students with disabilities was not provided.

In Landrum et al.'s (2004) study of students with EBD, graduating with a certificate was positively associated with a separate class setting ($r = .24$) and negatively associated with graduating with a diploma ($r = -.21$). Classroom setting explained about 7% of the variance in the equation for predicting graduation with a certificate. The R-square of 0.073 indicates a medium effect. Although students were more likely to drop out of regular education classroom settings than they were from separate classes, the desired goal is for students with mild disabilities to graduate with a standard diploma, rather than a certificate.

In Sinclair et al.'s (2005) study of Check and Connect, it was found that students with EBD were significantly less likely to drop out of school than similar students in the control group at the end of 4 years (ES = .18) and at the end of 5 years for a subsample of study participants (ES = .58). The effect size for the likelihood of dropping out at the end of 4 years was small and the effect size for the likelihood of dropping out at the end of 5 years for students with EBD was medium.

Overall, no studies reported large effect sizes for interventions associated with students with disabilities graduating with a high school diploma.

Discussion

Overall, the most striking finding of this mapping review was that there is a dearth of empirical studies reporting outcomes of dropout prevention interventions for students with disabilities. When looking at subgroups by gender and race/ethnicity, the lack of information becomes even more striking. Given the current state of knowledge about the disability and racial/ethnic groups most likely to drop out, information on interventions for these students is a critical need if dropout prevention is to become a reality. Based on the findings of this mapping review, the following section presents some recommendations for practice, research, and policy.

Recommendations for Practice, Research, and Policy

Recommendations for Practice

Interventions included in this review reflected many of the same practices identified by The Institute of Education Sciences (IES) as effective dropout interventions for general education students (Dynarski, et al., 2008). In particular, Dynarksi et al.'s (2008) recommendations include:

- **Assign adult advocates to students at risk of dropping out.**

An adult advocate/mentor was involved in 11 of the 19 (58%) studies included in this review. In the RENEW program described by Malloy et al. (2010), trained facilitators worked with students on an individual basis to develop their "futures plan" and coordinated academic- and work-related experiences for students. In the FUTURES Academy (Lever et al., 2004), advocates remained with students throughout their enrollment and provided such services as helping students develop skills to manage conflicts, arranging tutoring, and providing

counseling. In Check and Connect (Sinclair, et al., 2005), monitors worked with students for four to five years, fulfilling the roles of mentors, advocates, and service coordinators. In these studies, as well as the additional eight studies of programs that used mentors, mentors were described as providing students with guidance, advice, emotional support, role modeling, help with academic work, life-skills training, character development, and incentives for positive achievements. Mentors also monitored students' attendance, coordinated career preparation activities, facilitated students' participation in school-related activities, conducted family outreach, and played the role of a surrogate parent. In some cases, these adults were not formal mentors but individuals who served as caring adults in the student's life. For example, all case-managed students in Communities In Schools of Texas reported having a relationship with a caring adult in their school, even though the adult may not have been a formally designated mentor (ICF International, 2008).

- **Utilize data systems that support a realistic diagnosis of the number of students who drop out and that help identify individual students at high risk of dropping out.**

Several programs in this review demonstrated the use of data systems to help identify students at risk of dropping out. The FUTURES Program identified students at risk of dropping out and provided services to these students beginning the summer before ninth grade and ending the year after graduation from high school (Lever et al., 2004). The evaluation of the Texas Dropout Recovery Pilot Program (TDRPP; Arroyo Research Services, 2009) stated that sites monitored student progress intensively with daily or near daily attendance monitoring. Progress monitoring also included weekly reviews of computerized student records and reviews of student achievement and graduation plans after students completed each course. The Back on Track Pilot sites in the U.K. ensured "effective data collection and information exchange" (White et al.,

2010, p. 69) and used systematic, data-driven approaches to measuring students' progress, focusing primarily on data related to outcomes such as reducing exclusions and behavior-related incidents. Likewise, Sinclair et al. (2005) described the *Check* component of the Check and Connect model as involving "the continuous and systematic assessment of student levels of engagement with school (e.g., attendance, suspensions, grades, credits)" (p. 466). Other studies suggested data system use involving monitoring students' attendance (Arroyo Research Services, 2011; ICF International, 2008; Lever et al., 2004; Nowicki et al., 2004), academic progress (Murray & Naranjo, 2008), and credit needs (Arroyo Research Services, 2009, 2011; Malloy et al., 2010; Sinclair et al., 2005).

- **Provide academic support and enrichment to improve academic performance.**

The provision of academic supports for students was one of the most common interventions described in the studies and was a component of nine of the 11 comprehensive programs designed to reduce dropout. In Samel et al.'s (2011) study, students who failed core courses in ninth grade could retake classes during summer school or take freshman and sophomore class concurrently in 10th grade, which allowed students who had fallen behind a grade level to advance to the traditional grade level. In Malloy et al.'s (2010) study, supports for students included tutoring, guided study, work-based learning experiences, internships, paid work experiences, and volunteer opportunities. In the FUTURES Program, students who were identified as being at risk of dropping out prior to ninth grade attended classes throughout the summer to improve math, writing, reading, and computer skills. Students attended small classes for ninth grade and participated in cultural enrichment, character development, and career preparation activities (Lever et al., 2004). White et al.'s (2010) qualitative study described a variety of pilot programs in the U.K. designed to address the academic needs of students who

had not attended school regularly. Individual tutors monitored students' progress on the targets outlined in their individualized education programs and completed portfolios to formally document students' learning achievements. CIS of Texas also provided career preparation and academic enrichment based on students' individual needs assessments (ICF International, 2008).

- **Implement programs to improve students' classroom behavior and social skills.**

Eight of the 11 comprehensive dropout prevention programs in this review focused on developing positive behaviors and social skills, and/or character development. These studies can be seen in Table 2. The Back on Track pilots (White et al., 2010) provided individualized support for students through activities focused on social skills, friends and relationships, bullying, peer pressure, life skills, and independent living skills. In Attwood et al.'s (2005) study of disengaged high school students who attended a college-based vocational program, students experienced success in the adult environment of college. Students' behavior improved because students felt they were treated like adults and did not have to constantly attend to the "pointless" rules of school. In Keane et al.'s (2012) study, students with ASD attended a satellite program during grades K-4 in which they received specialized teaching in social skills, communication skills, socioemotional understanding, and related skills needed to succeed in the general education setting. Similarly, in the Effective Learning Program (ELP), students were taught the "language" of relationships and how to use nonverbal communication more effectively. Students also received English, mathematics, social studies, and humanities instruction in 3-hour blocks, allowing for the creation of a "family" atmosphere focused on the interpersonal styles involved in social interactions (Nowicki et al., 2004). In the Check and Connect program (Sinclair et al., 2005), monitors met with students on a weekly to biweekly basis to conduct problem-solving conversations about students' progress in school, the relationship between school completion and

students' regular participation in school, and the importance of staying in school. Monitors also modeled and coached the use of a cognitive-behavioral problem-solving approach to help students learn conflict resolution skills and the ability to seek solutions to problems, rather than assign blame.

- **Personalize the learning environment and instructional process.**

Eight of the 19 studies (42%) in this review described programs that provided a personalized learning environment and individualized instructional approach. The Texas Dropout Recovery Pilot Program (TDRPP; Arroyo Research Services, 2009, 2011) involved tutoring, case management, and close involvement of various agencies in students' lives. In the FUTURES program, students received individualized support from adult advocates and were taught in small classes focused on building close staff-student relationships (Lever et al., 2004). Similarly, the Effective Learning Program (ELP) described by Nowicki et al. (2004) had a low student-teacher ratio of 15:1 with an emphasis on building a "family" or "team" atmosphere. Teachers also met regularly with student advocates and a mental health clinician to discuss students' progress and to develop plans for individualized intervention. In the RENEW Program described by Malloy et al. (2010), facilitators worked with students to develop an individualized pathway for graduation that was unique to each student, and that included consideration of classes and teachers, tutoring needs, and work-based learning experiences. The purpose of the Check and Connect program described by Sinclair et al. (2005) was to connect students to the school environment through close monitoring and facilitation of students' participation in school activities. In Alvarez's (2008) qualitative study, students participated in group meetings and social/cultural activities. Finally, it was found in Dunn et al.'s (2004) ex post facto study that students were less likely to have dropped out if they had experienced a helpful person in school.

- **Provide rigorous and relevant instruction to better engage students in learning and provide the skills needed to graduate and to serve them after they leave school.**

Nine of the 11 comprehensive dropout prevention programs described in the review incorporated job training/career awareness, and seven programs exposed students to postsecondary education. In the RENEW program described by Malloy et al. (2010) facilitators helped students make plans for educational, employment, and adult life goals; and spent 12 months organizing a support team and getting the involvement of key agencies. In the TDRPP (Arroyo Research Services, 2009, 2011), students participated in college exposure activities. The Check and Connect Program (Sinclair et al., 2005) focused on life skills, problem-solving skills, interpersonal skills, and character building. Similarly, in the FUTURES program (Lever et al., 2004), students received life-skills training, character development, cultural enrichment workshops, as well as career preparation activities. The two studies conducted in the U.K. focused on vocational education: The Back on Track pilots offered a variety of vocational courses that were incorporated into academic content in such areas as construction, agriculture, horticulture, animal care, retail, catering, childcare, motor mechanics, and sports and leisure. Additionally, one of the pilot sites established a relationship with a local College of Further Education through which students had access to accredited vocational and academic courses. This partnership also facilitated students' transition to college (White et al., 2010). In Attwood et al.'s (2005) study of students attending a College of Further of Education, students were motivated to succeed because they had a particular interest in the vocational courses they were pursuing. Similarly, in Dunn, et al.'s (2004), ex post facto study students were less likely to drop out if they felt they were being prepared for life after school. In the year-long TAKE CHARGE self-determination program described by Powers et al. (2012), students attended individual,

weekly coaching sessions on applying self-determination skills needed to develop an individualized transition plan and carry out a youth-led transition planning meeting, along with other skills related to goal-setting, partnership development, and self-regulation.

In addition to the recommendations made by Dynarski et al. (2008), this review also indicated that students who were at risk of dropping out benefitted from:

- Services tailored to their specific disability-related needs (e.g., communication/social skills classes).
- Flexibility regarding time limits for meeting diploma requirements.

Although the components of the programs described in this review were aligned with the recommendations made by Dynarski et al. (2008) regarding effective dropout interventions, there are several limitations regarding the studies included in this review. Several research implications emerge from the limitations of studies, which are described in the following section.

Recommendations for Research

Although 19 studies were identified as intervention-based studies that reported graduation or dropout outcomes for students with disabilities, only three of these studies (15.7%) were conducted using experimental designs. While experimental designs are not superior designs per se, they do have advantages over other research designs when evaluating the effectiveness of an intervention. In experimental studies, the difference in average outcomes between the treatment group and the control group can provide estimates of the impact of a given intervention. Other research designs can provide useful information on dropout interventions; interviews with students, for example, can shed light on the within-school factors that motivate students to remain in school or return to school after dropping out. Such information is needed to inform

intervention efforts. However, when assessing the effects an intervention has on the outcome of interest—graduating from school—experimental studies are needed. Given that the search of studies that met inclusion criteria for this review turned up only three experimental studies, it is clear that more experimental studies are needed to inform our knowledge of dropout interventions that are effective for students with disabilities.

Eleven of the studies in this review described comprehensive dropout prevention programs that had multiple components, such as family outreach, academic support, attendance monitoring, career awareness, mentoring, and counseling. Because these interventions operated in conjunction with one another, it is difficult to single out the intervention that had the strongest influence on students' graduating from school. Additionally, it is not known which interventions work best in conjunction with each other. For example, we know that mentoring as an intervention is effective and attendance monitoring is effective, but does it make a difference if the student's mentor monitors their attendance or whether attendance monitoring is conducted by an adult with whom the student is unfamiliar? It is recommended that future studies identify the contributions that different interventions make to students' likelihood of graduating.

Only five of the 19 studies included in the review reported effect sizes. Of those five studies, none reported a large effect. There were eight additional studies with quantitative components from which effect sizes could have been calculated. However, without effect size information, the effectiveness of the interventions cannot be determined, reducing the possibility of replicating the intervention. It is therefore recommended that more studies be conducted using quantitative methods from which effect sizes can be calculated and reported.

Although 544 potential studies were identified for inclusion in the review, only 19 studies included students with disabilities in their samples *and* reported graduation outcomes for

students with disabilities separate from the overall sample. The most important implications of this situation are that (a) more research is needed on interventions that are effective for students with disabilities, and (b) graduation outcomes should be disaggregated by demographic characteristics, including different disability groups. For example, although progress has been made in improving the graduation rates of student with disabilities in general, this progress has not been consistent across disability categories. Students with emotional and behavior disorders (EBD) and specific learning disabilities (SLD) have the lowest graduation rates of all disability groups (Planty et al., 2008). Despite this situation, this review indicates that more studies included samples of students with SLD (n = 6) than EBD (n = 4). As was noted by Lane, Carter, Pierson, and Glaeser (2006), the lack of studies with samples of students with EBD has led to a paucity of information about effective interventions for students classified as EBD. While interventions for teaching prosocial behaviors and social skills have been found to be beneficial, they do not in isolation improve the graduation rates of students with EBD (Lane, Parks, Kalberg, & Carter, 2007). These situations indicate that further research needs to be conducted on effective interventions for increasing the graduation rates of students with EBD.

African American students with disabilities are another demographic group with disproportionately high dropout rates. However, only four (21%) of the studies in this review reported the race/ethnicity of students with disabilities who graduated after participating in the intervention. As African American students and students with EBD have the highest dropout rates of all students with disabilities, interventions should target these demographic groups and studies should report results by race/ethnicity as well as disability category.

In summary, the recommendations for researchers are as follows:

- Conduct more research on interventions that increase the graduation rates of students with disabilities.
- Implement studies using rigorous research designs and report effect sizes so that interventions can be replicated with confidence.
- Include information on disabilities of students who responded to interventions so that practitioners can tailor interventions to particular student groups.
- Design studies using sample groups with varied demographic attributes and report outcomes by student race and disability.

Recommendations for Policy

Several studies included parental engagement as an intervention strategy. In special education, parent participation is an integral component of the Individuals with Disabilities Education Act (IDEA). Analysis of state performance data as reported on states' 2009 Annual Performance Reports, (APRs) indicate that with regards to Indicator 8: The percent of parents with a child receiving special education services who report that schools facilitated parent involvement as a means of improving services and results for children with disabilities, 20 states (of 59 states and territories) missed their targets. States should consider strengthening their partnerships with parent centers, so that they can capitalize on the services they provide with regards to implementing improvement activities, providing training to parents and professionals, and conducting outreach to families (National Dissemination Center for Children with Disabilities, 2012).

A finding that emerged from the studies in this review was that students with disabilities often benefit from additional time to complete academic work and graduate from school. Students who have disengaged from school frequently have poor attendance and therefore need to catch up on work at the same time as developing the academic skills they need to pass courses.

In the study on high school exit options (McGee, 2011), it was found that in states with flexibility in graduation requirements, such as exemption from exit exams for students with disabilities, and the option of obtaining a diploma based on IEP completion, students with learning disabilities were more likely to graduate from high school than they were in states without such flexibility in high school exit requirements. There are currently 24 states that have high school exit exams (National Center for Education Statistics [NCES], 2012a). Fourteen of these states award alternative diplomas or certificates to students with disabilities who do not pass the exit exam (NCES, 2012b). These alternative options provide more opportunities for students to complete school, although they do not contribute to the federally defined graduation rate under the 2008 ESEA Title 1 Regulations (Federal Register, 2008).

Policymakers should consider adding flexibility with regards to the length of time allowed for students to obtain a diploma. With the current requirements for schools to report a 4-year adjusted cohort graduation rate for AYP purposes, many schools do not have the option of providing the extra (more time-intensive) supports students need to graduate. Currently, in the majority of states (n = 30) the 4-year cohort graduation rate is below 66% for students with disabilities (Balfanz, Bridgeland, Bruce, & Fox, 2013).

Findings from the studies in this review also indicated that students with disabilities who have the option of taking vocational classes or fulfilling alternative school completion requirements, have a greater likelihood of remaining in school and graduating from school. The dropout rate of students with disabilities could be reduced if policymakers would explore more flexible graduation options for these students.

In summary, the recommendations for policymakers are as follows:

- Create stronger connections between state departments of education, schools, and parent centers to facilitate parental engagement.
- Develop greater flexibility with regards to time allowed to complete a high school diploma.

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Appendices

Appendix A

Database Search Terms

Disability Terms	attention deficit disorder, autism, antisocial behavior, behavior disorders, behavior problems, cognitive disabilities, deaf, deaf blind, disabilities, emotional or behavioral disabilities, emotional disturbances, emotionally disturbed, emotional problems, intellectual disabilities, mental retardation, multiple disabilities, orthopedic impairment, special education, special education student, special needs students, specific learning disability, speech/language impairment, traumatic brain injury, other health impairment
Student Terms	adolescents, at-risk students, youth, middle school students, junior high students, high school seniors, high school students
Intervention Terms	academic achievement, academic persistence, achievement gains, adult advocates, attendance patterns, behavior modification, behavior management, best practices, career and technical education, career development, community based instruction, community engagement, community involvement, community services, credit recovery, dropout prevention, dropout programs, dropout recovery, early school departure, early warning systems, educational environment, educational experience, educational improvement, educational programs, functional behavioral assessment, grades, high school equivalency programs, high school transition, Individualized Education Programs/IEP, individualized instruction, instructional programs, interagency collaboration, learner engagement, life skills, mentors, ninth grade transition, parent education, parent engagement, partnerships in education, program effectiveness, program evaluation, program implementation, reading achievement, reading instruction, reentry program, response to intervention/RTI, school completion, school holding power, school to work, social environment, special education, teacher student relationship, teaching methods, transitional programs, transition services, vocational education, vocational rehabilitation
Setting Terms	alternative education, alternative schools, alternative programs, career-oriented school, educational program, early college, high schools, junior high schools, middle college, middle schools, neighborhood schools, nontraditional education, nontraditional schools, occupational schools, schools, secondary education, self-contained, student setting, and urban schools, youth programs
Outcome Terms	academic achievement, adult outcomes, attendance certificate, behavior change, college, community college, dropout, education outcomes, employment, GED, graduation, high school diploma, high school to adulthood, outcomes of education, outcomes of treatment, postsecondary, postschool outcomes, supported employment, technical college, transition outcomes, and transition to adulthood

Appendix B

Search Sources

Database Search	Academic OneFile, Academic Search Premier, Clemson University Libraries, Cochrane Central Register of Controlled Trials, Education Full Text, Education Research Complete, Educator's Reference Complete, ERIC, General OneFile, Google Scholar, Ingenta Library Gateway, JSTOR, Medline, Project Muse, PsycINFO, SCOPUS, Sociological Index with Full Text, WorldCat
Web site Search	Administration for Children and Families, The After-School Corporation, American Institutes for Research, American Youth Policy Forum, The Annie E. Casey Foundation, The Association for High School Innovation, California Dropout Research Project, the Center for Prevention Research and Development, Center for Social Organization of Schools, The Civil Rights Project at UCLA, Education Development Center, Education Northwest, Family Strengthening Policy Center, Jobs for the Future, Mentor, National Collaborative on Workforce and Disability, National Center on Secondary Education and Transition, National High School Center, North Central Regional Educational Laboratory, Search Institute, Southwest Educational Development Laboratory, and the University of Chicago Urban Education Institute, U.S. State Department of Education
Journal Hand Search	British Journal of Special Education, Focus on Exceptional Children, Journal of Emotional and Behavioral Disorders, Journal of Learning Disabilities, Special Educator
Electronic Journal Search	American Educational Research Journal, American Journal of Education, Behavioral Disorders, British Educational Research Journal, Canadian Journal of Education, Career Development for Exceptional Individuals, Educational Researcher, Exceptionality, Exceptional Children, International Journal of Disability, Intervention in School and Clinic, Journal of Behavioral Education, The Journal of Experimental Education, Journal of Special Education, Learning Disability Quarterly, Psychology in the Schools, Remedial and Special Education, Teaching Exceptional Children
Reference List Search	Directory of Open Access Journals (DOAJ), HighWire Press, meta-analyses from The Campbell Library, The Cochrane Library [the Database of Systematic Reviews and the Database of Abstracts of Reviews of Effects (DARE)], The Evidence for Policy and Practice Information and Coordinating Centre (EPPI-Centre)
Unpublished studies/grey literature search	Academia.edu, ProQuest Digital Dissertations and Theses, PAIS International, PsycEXTRA, Conference Papers Index, The National Technical Information Service (NTIS), Social Science Research Network (SSRN), OpenSIGLE, Conference Proceedings Citation Index, The Directory of Open Access Repositories (OpenDOAR)

Appendix C

Coding Protocol: Quantitative Studies

1. Reference	Author(s): Title: Journal/Publisher:
2. Type of Publication	☐ Journal article ☐ Technical report (e.g., organization) ☐ Dissertation ☐ Conference paper
3. Discipline of Study	☐ Education ☐ Transition ☐ Mental Health ☐ Social Work ☐ Juvenile Justice ☐ Vocational Rehabilitation ☐ Medical ☐ Ethnic/Multicultural Studies
4. Country of Study	Country:
5. Publication date vs. Study date	Publication date: _____ Intervention implemented (from and to): _____ Study conducted: _____
6. Setting of Intervention	☐ **School** ☐ Public ☐ Private ☐ Charter ☐ Alternative ☐ Residential ☐ School-within-a-school ☐ Gen ed. ☐ Resource ☐ Self-contained ☐ Middle/junior high ☐ High school **Size** ☐ Large ☐ Small **Setting** ☐ Urban ☐ Rural ☐ Suburban ☐ **Job site** ☐ **Community Organization** ☐ After-school program ☐ Skills training/therapy ☐ **Multiple Sites** _____ (specify)
7. Participants (treatment group)	**Age** ☐ 5-10 ☐ 11-18 ☐ 18-21 Range: _____ Mean Age: _____ **SES Reported** ☐ Yes ☐ No ☐ High ☐ Medium ☐ Low **Ethnicity** **% of sample** ☐ White _____ ☐ African American _____ ☐ Asian _____ ☐ Hispanic/Latino _____ ☐ Native American _____ ☐ Not described _____ ☐ Other _____ _____ **Disability** ☐ Emotional Disturbance ☐ Specific Learning Disability ☐ Multiple Disabilities ☐ Autism ☐ Traumatic Brain Injury ☐ Intellectual Disability ☐ Orthopedic Impairment ☐ Other Health Impairment ☐ Hearing Impairment

	☐ Speech or Language Impairment ☐ Deaf-Blindness ☐ Deafness ☐ Visual Impairment, including blindness Specify if specific disability within other category (e.g., ADHD) _____
	Sample size _____ (Male = _____ Female = _____) **% of sample with disabilities _____**
8. Control / comparison group	Describe characteristics:
9. Delivery of Intervention	Intervention delivered by _____ (e.g., researcher, educator, service provider) Characteristics similar to sample? (e.g., race, SES, gender) ☐ Yes ☐ Somewhat ☐ No Language of delivery _____ Language/linguistic adaptations made for CLD participants? ☐ Yes ☐ No
10. Research Design	**Group Design** ☐ Experimental - Randomized Controlled Trial (RCT) ☐ Quasi-Experimental …☐ Single Group ☐ Pre-post test …☐ Post-test only Group allocation method: _____
	☐ **Single Subject** ☐ A-B ☐ Withdrawal ☐ Multiple Baseline ☐ Changing Criterion ☐ Alternating Treatments ☐ Other
	☐ **Correlational**
11. Attrition Rate (for RCT studies)	**Differential attrition rate** _____ Was baseline equivalence established through a: Pre-test? ☐ Yes ☐ No post-attrition analysis of samples (if high levels of attrition)? ☐ Yes ☐ No ☐ N/A If no, was statistical adjustment used to account for these differences in the analysis? ☐ Yes ☐ No
12. Independent Variable(s)	Describe intervention:

	Length of intervention: Frequency of program (e.g., sessions per week): Time per session:	
13. Dependent Variable(s)	Describe dependent variables and measures of each	
	Dependent Variable(s)	Measure(s) **Reliability data appear adequate** ☐ Yes ☐ No **Validity reported** ☐ Yes ☐ No
14. Results	Describe results:	
15. Method of Analysis	**Group Design** Statistical tests: Effect sizes calculated ☐ Yes ☐ No **Single Subject** Graphing ☐ Yes ☐ No	
16. Risk of Bias	**Risk of bias reported by authors** (e.g., incomplete data, allocation concealment, contamination effects, selective outcome reporting) ☐ Yes ☐ Somewhat ☐ No	

Coding Protocol: Qualitative Studies

<table>
<tr><td>1. Reference</td><td>Author(s):

Title:

Journal/Publisher:</td></tr>
<tr><td>2. Type of Publication</td><td>☐ Journal article ☐ Technical report (e.g., organization)
☐ Dissertation ☐ Conference paper</td></tr>
<tr><td>3. Discipline of Study</td><td>☐ Education ☐ Transition ☐ Mental Health ☐ Social Work
☐ Juvenile Justice ☐ Vocational Rehabilitation ☐ Medical
☐ Ethnic/Multicultural Studies</td></tr>
<tr><td>4. Country of Study</td><td>Country:</td></tr>
<tr><td>5. Publication date vs. Study date</td><td>Publication date: _____

Intervention implemented (from and to): _____

Study conducted: _____</td></tr>
<tr><td>6. Research Site</td><td>☐ School
☐ Public ☐ Private ☐ Charter ☐ Alternative
☐ Residential ☐ School-within-a-school ☐ Gen ed.
☐ Resource ☐ Self-contained
☐ Middle/junior high ☐ High school
Size ☐ Large ☐ Small
Setting ☐ Urban ☐ Rural ☐ Suburban
☐ Job site
☐ Community Organization
☐ After-school program ☐ Skills training/therapy
☐ Multiple sites _____ (specify)</td></tr>
<tr><td>7. Participants</td><td>Age ☐ 5-10 ☐ 11-18
☐ 18-21

Range: _____

Mean Age: _____

SES Reported ☐ Yes ☐ No

☐ High ☐ Medium ☐ Low

Ethnicity % of sample
☐ White _____
☐ African American _____
☐ Asian American _____
☐ Hispanic/Latino _____
☐ Native American _____
☐ Not described _____
☐ Other _____ _____

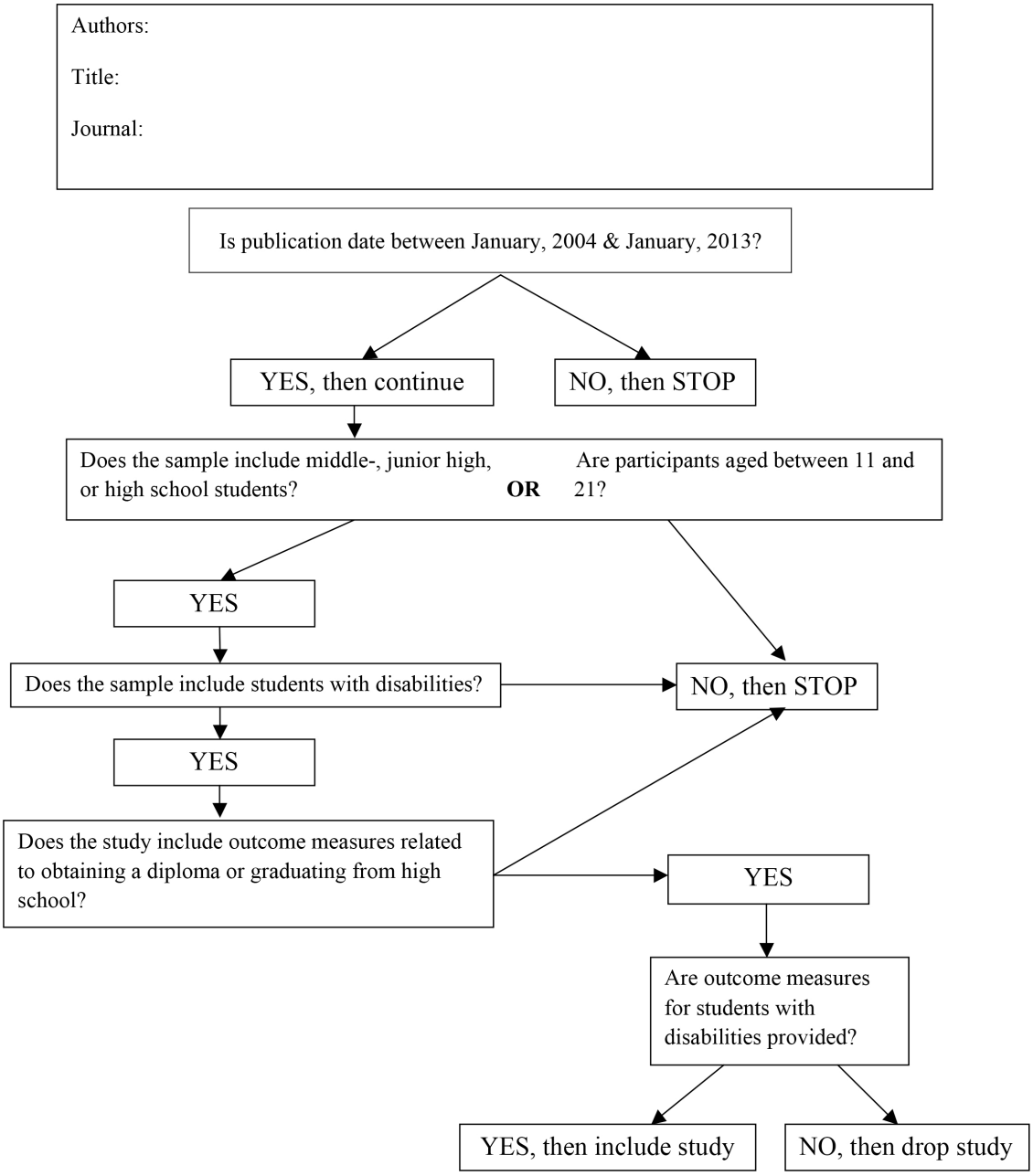
Disability
☐ Emotional Disturbance ☐ Specific Learning Disability
☐ Multiple Disabilities ☐ Autism ☐ Traumatic Brain Injury
☐ Intellectual Disability ☐ Orthopedic Impairment
☐ Other Health Impaired ☐ Speech or Language Impairment
☐ Hearing Impairment ☐ Deafness ☐ Deaf-Blindness
☐ Visual Impairment, including blindness</td></tr>
</table>

	Specify if specific disability within other category (e.g., ADHD) _____ **Sample size** _____ (Male = _____ Female = _____) **% of sample with disabilities** _____
8. Intervention	Intervention delivered by _____ (e.g., researcher, educator, service provider) Describe intervention: Was the intervention under study adequately described? ☐ Yes ☐ No Was the intervention under study adequately situated in a network of theoretical concepts/findings of previous studies? ☐ Yes ☐ No
9. Research Design	**Qualitative** ☐ Phenomenology ☐ Narrative Inquiry ☐ Grounded Theory ☐ Ethnography ☐ Case Study ☐ Action Research **Mixed Methods** ☐
10. Research Methods	☐ Observation ☐ Interview ☐ Document Review
11. Researcher Role	Is there a statement locating the researcher culturally or theoretically? ☐ Yes ☐ No Is the influence of the researcher on the research, and vice versa, addressed? ☐ Yes ☐ No
12. Participant Selection	**Sampling strategy** ☐ Extreme case ☐ Typical case ☐ Maximum variation ☐ Snowball or chain ☐ Purposeful ☐ Convenience ☐ Combination/Mixed ☐ Other: _____
13. Length of Study	Period of data collection: Data saturation described ☐ Yes ☐ No
14. Credibility of Study	**Techniques used to establish credibility** ☐ Triangulation ☐ Reflexivity ☐ Member checking ☐ Prolonged field experience ☐ Negative case analysis ☐ Audit trail ☐ Peer examination ☐ External audit ☐ Code-recode ☐ Description of researcher bias ☐ Rich, thick description ☐ Dense description of sample

	☐ Other _____
15. Data Analysis and Interpretation	**Strategies** ☐ Deductive (e.g., coding from previous research or a theoretical framework) ☐ Inductive (e.g., domain analysis, taxanomic analysis, componential analysis, constant comparative analysis) ☐ Process/Holistic (e.g., vignettes, stories, other narrative forms) Are detailed descriptions of coding systems and the development of categories, patterns, and themes provided? ☐ Yes ☐ No
16. Comparability / Transferability	Are descriptions of the site and research procedures detailed enough for readers to understand how findings can be generalized to other settings? ☐ Yes ☐ No Are data reported indicating the variations in settings, interactions, etc.? ☐ Yes ☐ No
17. Findings	Describe findings: Are rich, thick descriptions and interpretations provided? ☐ Yes ☐ No Are participants, and their voices, adequately represented? ☐ Yes ☐ No Are findings adequately described in terms of related literature? ☐ Yes ☐ No Do conclusions flow from the analysis and interpretation of data? ☐ Yes ☐ No

Appendix D

Screening Criteria Checklist



National Dropout Prevention Center for
Students with Disabilities
Clemson University
209 Martin Street
Clemson, SC 29631-1555
Telephone: (800) 443-6392
TDD/TDY: (866) 212-2775
Fax: (864) 656-0136
Email: NDPCSD-L@clemson.edu
Web site: www.ndpc-sd.org

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