

CHAPTER 1

EVIDENCE-BASED PRACTICES IN LEARNING AND BEHAVIORAL DISABILITIES: THE SEARCH FOR EFFECTIVE INSTRUCTION

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ABSTRACT

The gap between research and practice in special education places an artificial ceiling on the achievement of students with learning and behavioral disabilities. Evidence-based practices (EBPs) are instructional practices shown by bodies of sound research to be generally effective. They represent a possible means to address the research-to-practice gap by identifying, and subsequently implementing, the most effective instructional practices on the basis of reliable, scientific research. In this chapter, we provide a context for the subsequent chapters in this volume by (a) defining and describing EBPs, (b) recognizing some of important limitations to EBPs, (c) introducing a number of ongoing issues related to EBPs in the field of learning and behavioral disabilities that are addressed by chapter authors in this volume, and (d) briefly considering

Evidence-Based Practices

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a few emerging issues related to EBPs that we believe will become increasingly prominent in the near future.

In this 26th volume of *Advances in Learning and Behavioral Disabilities* we address one of the most important educational reforms of recent years – evidence-based practices (EBPs). As detailed in the chapters in the volume, EBPs and evidence-based education are multifaceted and ambitious concepts with broad implications for education generally, and for the education of students with learning and behavioral disabilities in particular. In this introductory chapter, we provide a context for the subsequent chapters by describing EBPs and evidence-based education, discussing their importance and potential, and noting some significant limitations related to EBPs. Additionally, we preview the chapters in the volume and examine future developments in research and practice related to EBPs in the field of learning and behavioral disorders.

WHAT ARE EVIDENCE-BASED PRACTICES?

The concept of EBPs emerged out of medicine in the latter decades of the 20th century. The field recognized a history of variable and often ineffective practices that were not aligned with research findings – referred to in medicine as the bench-to-bedside gap. Thus, medical researchers began to synthesize research findings across high-quality studies to be used in conjunction with clinical expertise to identify the most effective practices for individual patients (Sackett, Rosenberg, Gray, Haynes, & Richardson, 1996). Many other fields, including education generally and special education in particular, are faced with the same issue of highly variable and frequently ineffective practices being used despite a wealth of research findings as to what works. Accordingly, reforms related to EBPs have become prevalent in fields including agriculture, transportation, technology, and education (Slavin, 2002).

We use EBPs in this chapter to refer specific, empirically validated practices. In other words, EBPs are programs or practices shown by sound research to meaningfully and positively impact student outcomes. Although EBP is sometimes used generically to indicate practices with empirical support, organizations (e.g., Best Evidence Encyclopedia, National Autism Center, National Professional Development Center on Autism Spectrum

Disorders, National Secondary Transition Technical Assistance Center, [What Works Clearinghouse \[WWC\]](#)) are increasingly utilizing systematic standards to identify EBPs to be prioritized in evidence-based education.

Although the specific standards for EBPs vary across organizations within and between fields (Cook, Smith, & Tankersley, 2012), scholars identify EBPs by applying systematic criteria to the research base on a practice. The criteria applied are usually related to the (a) research design of studies (many approaches consider only group comparison and single-case research designs, from which causality can be reasonably inferred), (b) methodological quality of studies (many approaches consider only studies that meet certain quality indicators associated with internal validity), and (c) quantity of studies (recognizing that no study is perfect, many approaches require that EBPs be supported by multiple sound studies using appropriate research designs) (see Cook, Tankersley, Cook, & Landrum, 2008). Gersten et al. (2005) and Horner et al. (2005) outline standards frequently used to identify EBPs in special education based on group experimental and single-case research studies, respectively.

EBP standards are applied to the research on a practice through systematic reviews, sometimes referred to as evidence-based reviews. An evidence-based review is a specific type of literature review in which standards related to the design, quality, and quantity (and oftentimes effect size) of studies conducted on the effectiveness of a particular practice are applied to a body of research on a practice to determine whether the practice is evidence-based. Note that rather than classifying practices as evidence-based or not, some approaches for conducting evidence-based reviews (e.g., WWC, 2011) utilize a variety of categorizations that represent the strength of the research base supporting the practice. For example, the WWC classifies practices as having positive effects, potentially positive effects, mixed effects, indeterminate effects, potentially negative effects, or negative effects.

Scholars in many fields have also used the phrase evidence-based practice to refer to a broad decision-making approach to instruction that prioritizes empirically validated practices while also considering factors such as practitioner expertise and consumer needs and values (Sackett et al., 1996; Spencer, Detrich, & Slocum, 2012). As applied to education, this use of the phrase suggests that instructional choices should be made by selecting practices supported by the best available evidence (e.g., EBPs) that also (a) meet consumers' needs and values and (b) align with practitioners' experience and appraisals. In this way, empirical evidence plays an important role in guiding instruction, but practice is not tyrannized by research evidence (Sackett et al., 1996). This is a sensible and appropriate

use of the term EBP. However, to avoid confusion we use evidence-based education (or evidence-based special education when used specifically for learners with disabilities) when referring to a broad instructional decision-making approach that utilizes practices with meaningful empirical support.

In addition to the field's lack of consensus regarding the meaning of EBP, a hodge-podge of terms is used synonymously with EBP to refer to practices validated as effective by bodies of sound research (e.g., research-based practice, scientifically based intervention, empirically validated treatment; see [Mazzotti, Rowe, & Test, 2013](#)). The lack of clarity regarding EBP terminology no doubt is a source of confusion to educational stakeholders (see [Cook & Cook, in press](#)). Accordingly, we encourage educators to clarify what exactly they mean when using EBP and related terminology. But we perceive these as largely semantic issues that can be addressed with relative ease. The underlying theme of EBPs and evidence-based education is important and clear, and should not be lost due to inconsistent terminology. That is, the best research available should play a prominent role in making instructional decisions and determining which instructional practices are prioritized in schools and classrooms regardless of the terms used. Indeed, these two common meanings of EBP are interrelated and complementary – evidence-based education utilizes EBPs, and EBPs are used as part of evidence-based education; and both reflect the important role that high-quality research findings should play in education.

Although the inconsistent terminology may be less than clear at times, we are comfortable with educational stakeholders using different terms for EBPs and using EBP in different ways (as chapters authors do in this volume) – so long as the notion that rigorous research underlies educational decisions and instruction is the clear intent. The real danger and confusion lies when EBPs are used inappropriately to refer to practices and processes based loosely, or not at all, on sound research. Unfortunately, EBPs are becoming victims of their own success. That is, a practice being called an EBP has become a selling point for many promoters of practices, materials, and curricular programs. Thus, we've seen practices with dubious research support (e.g., supported by few studies, studies using designs from which causality cannot be inferred, low-quality studies) or no research support at all touted as evidence-based primarily on the basis of theory and personal experience. Such inappropriate use of EBP not only contradicts the true meaning of the term, it sours educators on the idea of EBPs and evidence-based education, making them appear as if they are just the latest in a long list of hollow and ineffectual educational reforms.

WHY AND HOW ARE EVIDENCE-BASED PRACTICES IMPORTANT?

EBPs are a logical means to address two fundamental problems in modern education: (a) low and unsatisfactory student achievement and (b) the research-to-practice gap. As Maheady, Smith, and Jabot (this volume) note, the driving force in contemporary schools is to maximize student achievement. Dating back to at least the [National Commission on Excellence in Education's \(1983\) *A Nation at Risk*](#) report, American politicians and educators have been striving to increase student achievement (see also [National Education Goals Panel, 1999](#); [No Child Left Behind Act of 2001](#)). Assuming that EBPs are not consistently implemented in contemporary schools and classrooms, their regular use can be expected to increase student achievement.

In addition to the problem of generally low achievement, persistent gaps between the achievement of typical learners and different at-risk groups (e.g., culturally and linguistically diverse learners, learners living in poverty, learners with disabilities) exist ([Aron & Loprest, 2012](#); [Vanneman, Hamilton, Baldwin Anderson, & Rahman, 2009](#)). Although the achievement of all types of learners would be generally improved by the application of EBPs, their application may be particularly important for students with disabilities and other at-risk learners ([Dammann & Vaughn, 2001](#)). Typical learners and high-achieving students will likely make progress even in the absence of highly effective instruction. However, at-risk learners, such as students with learning and behavioral disabilities, require the most effective instruction to succeed in school and reach their potential.

Unfortunately, as Maheady et al. (this volume) summarized, educators tend to receive little training about identifying and using EBPs and infrequently implement EBPs with their learners. Although we believe the situation may be slowly improving, [Kauffman \(1996\)](#) conjectured that an inverse relation may actually exist between the frequency of implementation of many practices and their research support. This disjoint between research knowledge and the actual instruction occurring in schools and classrooms has been dubbed the research-to-practice gap (e.g., [Carnine, 1997](#)), which [Donovan and Cross \(2002\)](#) suggested should actually be called a chasm. This gap between research and practice represents one of the underlying causes of low student achievement that is largely under the control of educators. That is, in contrast to issues such as student poverty, school funding, and family support, educators have considerable control over the instructional practices used in schools and classrooms.

Despite educators' desire to maximize student performance and use effective practices, most have received mixed and sometimes misleading messages during pre- and in-service training as to what instruction is the most effective. In the absence of a firm understanding of the research literature, educators typically prioritize personal experiences and the advice of other teachers – which is prone to error (Cook & Smith, 2012). Thus, it appears that the first steps in bridging the research-to-practice gap and improving student achievement involve identifying and disseminating EBPs, with the broader goal of broad and appropriate implementation of EBPs (i.e., evidence-based education).

Because of the significant potential of EBPs and evidence-based education to raise student achievement and bridge the research-to-practice gap, recent educational legislation has emphasized and promoted research-based practices (Yell, this volume). For example, “the phrase ‘scientifically based research’ appears more than 100 times throughout the No Child Left Behind Act and ... is woven into the fabric of virtually every program in the law” (Hess & Petrilli, 2006, p. 94). And given the importance of EBPs for learners with disabilities, it is no surprise the IDEA2004 added language requiring that students' special education services noted in their individualized education programs be based on peer-reviewed research. In addition to legislation, the importance of EBPs and evidence-based education can be seen in the growing number of organizations involved in identifying, disseminating, and applying EBPs (e.g., Best Evidence Encyclopedia, Campbell Collaboration, Doing What Works, Promising Practices Network, What Works Clearinghouse, Wing Institute), many of which focus on learners with disabilities (e.g., National Autism Center, National Center for Intensive Intervention, National Center on Response to Intervention, National Secondary Transition Technical Assistance Center, National Professional Development Center on Autism Spectrum Disorders).

EBP advocates tend to emphasize the benefits of identifying and implementing EBPs on student performance. However, a focus on EBPs also positively affects a number of related areas, such as teacher education, policy, and research. As Slavin (2002) suggested, EBP reforms place education “on the brink of a scientific revolution that has the potential to profoundly transform policy, practice, and research” (p. 15). To generate evidence that meets the rigorous standards required in evidence-based reviews, researchers are beginning to design and conduct studies with greater rigor. These research findings will then drive improved teacher education and educational policies, which will help bring about evidence-based education and heightened student achievement.

Despite the considerable potential for EBPs and evidence-based education to positively impact student outcomes and other aspects of education, it is important that educational stakeholders be aware of the fundamental limitations of EBPs.

LIMITATIONS OF EVIDENCE-BASED PRACTICES

EBPs are not panaceas and their use should be tempered by a number of inherent realities. Although a full discussion of the many limitations of EBPs and evidence-based education is beyond the scope of this chapter, we focus on three fundamental limitations: EBPs are not effective for all learners, identification of EBPs does not imply their implementation; evidence-based classifications depend on the standards applied and research reviewed.

EBPs are not effective for all learners; nothing works for everyone. Although EBPs, by definition, are effective for the vast majority of learners, a relatively small proportion of learners, referred to as nonresponders and treatment resisters, fail to respond to these generally effective practices. For example, [Torgesen \(2000\)](#) estimated that 2–6% of learners do not respond to the most effective early reading interventions. Importantly, learners with disabilities are overrepresented among treatment resisters ([Al Otaiba & Fuchs, 2006](#)). Thus, despite the critical importance of using EBPs, educators cannot assume that EBPs will automatically be effective, especially for learners with disabilities, and therefore need to take measures to maximize the effectiveness of instruction even when using EBPs.

To maximize the positive impact of EBPs, educators should select EBPs that have been shown by high-quality research studies to work with students similar to those they teach. EBPs should not be thought of as effective for all groups of students, but rather for those populations for which they have been validated by high-quality research. For example, a teacher of elementary students with learning disabilities should select an EBP shown to work with learners with these characteristics rather than nondisabled high school students. Another way to maximize the effectiveness of EBPs is to adapt them to fit the unique needs of learners in ways that do not alter the critical elements of the EBP that make it effective (see [Johnson & McMaster, this volume](#)). Regardless of how well participants in the research validating an EBP match one's targeted learners and how well an EBP is adapted, the maxim that no practice is effective for everyone still adheres. Consequently, when using EBPs the progress of learners should be regularly

monitored with reliable and valid formative assessments (e.g., curriculum-based measurements) and used as the basis for instructional decisions. This is especially true for individuals with learning and behavioral disabilities because of their propensity to be nonresponders. And, although it may be patently obvious, we believe it bears emphasizing – EBPs must be delivered in a context in which effective teaching is routine (e.g., clear, quick-paced instruction with appropriate time allocated to active teaching in a variety of large and small-group arrangements, with many opportunities for learners to respond and engage, provided in a positive and well-managed setting, see Brophy & Good, 1986).

Another truism regarding EBPs is that their identification is a separate matter from their implementation. That is, just because EBPs have been identified does not imply that they will automatically be implemented (Cook & Odom, 2013; Fixsen, Naoom, Blase, Friedman, & Wallace, 2005). Indeed, effective dissemination and implementation of the most effective instructional practices has long vexed the educational field. The translation of research to practice is often conceptualized as consisting of two distinct phases (e.g., Hiss, 2004). The first phase involves conducting and synthesizing high-quality research to identify EBPs. Identification of EBPs is a necessary but far from sufficient condition for the regular and appropriate application of EBPs, which is where the rubber meets the road and student outcomes are actually improved. Research on the second phase of research translation – identifying reliable means for facilitating the broad and sustained implementation of EBPs – is messy (i.e., replete with variables that are difficult to control) and only in its infancy. Thus, advocates of EBPs should realize that their work is not done when EBPs are identified; in fact, it is just beginning.

The final inherent limitation of EBPs that we discuss here is that the evidence-based classification of a practice needs to be understood within the context of the standards used and the research reviewed. For example, we fear that some educators might disregard practices if they are not listed as an EBP. Yet a practice not being denoted as an EBP can be due to many reasons. If a practice is shown to have no effects or negative effects on student outcomes by a number of high-quality studies, educators should indeed avoid using it in almost all situations. However, many practices that are effective are not listed as EBPs simply because an evidence-based review has not yet been conducted on the practice; or because a review has been completed and found that insufficient high-quality research has been conducted on the practice to determine whether a practice is an EBP (Cook & Cook, *in press*). Alternatively, a practice might be listed as an EBP,

but some organizations have relatively low standards (e.g., only requiring a single study to support the practice) that might not engender strong confidence that the practice is truly evidence-based. We therefore recommend that educators (a) go beyond labels and investigate the standards applied and research reviewed to more fully understand the research base supporting practices, and (b) periodically review sources of EBPs for updated information as more research is conducted and reviewed.

In addition to the inherent limitations associated with EBPs, a number of ongoing issues exist related to EBPs, particularly in relation to learners with learning and behavioral disabilities. As educators gain experience with EBPs and evidence-based education some issues are being addressed (e.g., the need to identify EBPs using systematic standards), but quite often that just opens a host of new issues (e.g., how to deal with conflicting evidence-based classifications for the same practice, how to broadly adopt and implement EBPs once they are identified). In the following section, we identify some of those issues and briefly preview how the subsequent chapters in this volume address them.

ONGOING ISSUES RELATED TO EVIDENCE-BASED PRACTICES

Issues related to EBPs arise and persist in part because of the relative recency of the movement in education, but also because of the complexities involved with identifying and implementing EBPs. Indeed, although some of the terminology and specific procedures associated with EBPs may be new to the field, how to identify and implement what really works is among the most elemental and confounding issues in education. And as with most educational matters, the individualized and challenging learning traits of individuals with learning and behavioral disabilities make the application of EBPs in special education that much more difficult and nuanced, yet even more important. The chapters in this volume, as briefly reviewed here, provide readers with the latest thinking on a variety of issues related to EBPs in different areas of special education.

One of the fundamental issues related to evidence-based education is what kinds of evidence should educators consider when making instructional decisions. Setting a high bar for evidence standards is one of the hallmarks of EBPs, as most approaches for establishing EBPs involve rigorous standards related to research design, quality, and quantity of supporting

research studies. In this way, educators can be sure that they are not making decisions based on misleading evidence derived from poorly conceived or implemented research. However, setting the bar too high risks disregarding meaningful research findings. It is also important to consider that, for many practices in many areas of special education, little or no high-quality research that uses designs from which causality can be inferred exists. In these situations it seems wiser to be guided by the best available evidence, even if it does not meet rigorous evidence standards, than by personal experience or fiat. Detrich, Slocum, and Spencer (this volume) take up this issue in Chapter 2. The authors argue that all evidence is imperfect and that uncertainty always exists when making instructional decisions. Educators should, then, ascertain the best available evidence to guide their thinking. Detrich et al. outline different types of evidence and highlight the uncertainties associated with each of which educators should be aware.

As the number of researchers and organizations identifying EBPs continues to expand, it is important to realize that evidence-based reviews vary in rigor and quality. Although many educators may just want to know which practices are evidence-based and which are not, the issue is not that simple – which practices get labeled EBPs depends on what standards of research quality are used and what research is reviewed. Indeed, different evidence-based reviews can and do reach contrasting findings regarding whether a particular practice is evidence-based (because they use different standards, review different research studies, or both). However, practitioners and many other educational stakeholders (e.g., parents) typically do not have the training or time to critically assess the quality of different evidence-based reviews and determine which is most trustworthy. In Chapter 3, Schlosser, Raghavendra, and Sigafos (this volume) discuss how synopses of evidence-based reviews, which use systematic criteria to appraise reviews, can provide guidance regarding the quality of reviews that educators can use to determine the confidence with which they should treat EBP identifications.

Treatment fidelity is becoming one of the most intensely researched and debated issues in education research. For researchers investigating the effects of a practice, the concept is relatively straightforward. To meaningfully determine whether a practice works, it has to be implemented as designed, or with fidelity. For example, if critical elements of the practice are not implemented, if the practice is not administered as frequently as it should be, or if students are not involved as they should be, findings that a practice was not effective may actually reflect inappropriate implementation rather than indicate that the practice is ineffective. To ensure that an EBP is

as effective in the classroom as it was shown to be in research, it is generally recommended that practitioners implement them with high fidelity. But as Johnson and McMaster explore in Chapter 4, it may not be that simple. Treatment fidelity is a nuanced and multifaceted construct that defies simple solutions. In fact, some level of adaptation appears to be important to make the practice fit the unique learning needs of students. However, adaptations should not fundamentally alter the critical elements of an EBP that make it effective. Johnson and McMaster discuss approaches for balancing fidelity and adaptation across multiple dimensions of treatment fidelity in order to optimize learner outcomes.

Because (a) causality can be reasonably inferred from well-designed single-case research studies and (b) the unique settings and characteristics of learners in special education often makes group research difficult or impossible, most approaches for identifying EBPs in special education consider single-case research (e.g., Horner et al., 2005). However, effectiveness of single-case research studies has traditionally been determined by visual analysis of graphed data, making study outcomes less than fully objective and difficult to synthesize across studies (as is necessary to identify EBPs). In Chapter 5, Vannest and Davis (this volume) make a compelling argument for why single-case research should be used to help identify EBPs for individuals with learning and behavioral disabilities and provide an overview of advances in using effect sizes in single-case research. Using effect sizes in single-case research facilitates meaningful aggregation of findings across multiple single-case research studies on a practice, enabling better informed decisions about which practices are evidence-based.

As Maheady, Smith, and Jabot point out in Chapter 6, although EBPs have become a fixture in the contemporary educational landscape, they have not made significant inroads into teacher preparation. Yet teacher preparation is where teaching patterns that last through careers are established. Simply stated, without teacher preparation embracing EBPs, the research-to-practice gap is likely to remain wide. Educating teachers about which practices are evidence-based and how to make instructional decisions based on sound evidence at the beginning of their careers is considerably more feasible than changing the established practices of in-service teachers one at a time. Toward that end, Maheady et al. discuss how EBPs and evidence-based education can be infused into teacher preparation, and include examples of their own work successfully training inclusive pre-service educators to implement EBPs and make evidence-based instructional decisions.

Policy and legislation circumscribe how (special) education is conducted. Thus, how EBP is defined, supported, and mandated in education legislation

is an important indicator of how EBP reforms will play out. Most educators are confused as to how legislation such as the No Child Left Behind Act and the Individuals with Disabilities Education Act (IDEA) define EBPs and just what they require of educators. Yell and Rozalski (this volume) address this issue in Chapter 7 by providing an overview of legislative requirements regarding EBPs, with special attention paid to IDEA's requirement to base students' special education services in their individualized education programs on peer-reviewed research. As part of their analysis, Yell and Rozalski also review the U.S. Department of Education's interpretation of IDEA's peer-reviewed research requirement as well as relevant administrative hearings and court cases.

As we noted previously, one of the limitations of EBPs is that identification does not necessarily result in implementation. Meaningful supports appear necessary to translate research into practice. Although the emerging field of implementation science is beginning to empirically investigate how to move research into practice (see Cook & Odom, 2013), the research base regarding supports and guidelines for implementing EBPs is sparse. Accordingly, "we are faced with the paradox of nonevidence-based implementation of evidence-based programs" (Drake, Gorman, & Torrey, as cited in Fixsen et al., 2005, p. 35). In addition to providing an overview of sources of evidence in the field of early childhood intervention, in Chapter 8 Trivette and Dunst (this volume) describe four types of translation research needed to build the bridge between research and practice: (a) developing EBPs from research findings, (b) establishing evidence-based implementation practices (e.g., coaching, mentoring) to support the adoption and use of EBPs, (c) evaluating the effectiveness of EBPs in real-world settings by various users, and (d) establishing effective procedures for disseminating, diffusing, and scaling-up information gained in the first three types of translation research to achieve the broad implementation of EBPs.

As Simpson and Crutchfield (this volume) note in Chapter 9, the field of autism spectrum disorders (ASD) is rife with alternative and questionable treatments, and thus awareness of EBPs is particularly important for the stakeholders working with children and youth with ASD. Simpson and Crutchfield therefore describe EBPs and various sources for EBPs in the field of ASD. Importantly, though, they caution that educators should not select and adopt EBPs for learners with ASD, a population with highly variable and unique learning needs and characteristics, indiscriminately or expect them to work in ineffective and dysfunctional environments. To optimize the appropriateness and effectiveness of EBPs the authors propose

that educators select and implement EBPs within the context of the individual learning needs of targeted learners with ASD; a collaborative decision-making process representing the perspectives, preferences, and judgments of major stakeholders (e.g., the learner, parents, teachers); and a foundation of effective teaching (e.g., consistent routines, commitment to using EBPs, sufficient resources).

A critical but often overlooked step in realizing the benefits of EBPs is effectively disseminating EBPs to practitioners and other stakeholders so that they can select and apply them. Most organizations that identify EBPs make their findings available on publicly accessible websites. However, these websites are typically set up by researchers, contain a wealth of information related to research methods and statistics in which most practitioners have little or no training (e.g., effect sizes, descriptions of research designs and samples in supporting studies, ratings of methodological quality), and often review scores of practices. Therefore, a website containing information on EBPs can be confusing and overwhelming to practitioners who are typically pressed for time. Moreover, many different websites exist with different approaches for identifying EBPs. Faced with the challenge of navigating this EBP maze, many practitioners understandably opt to continue with what they have been doing or use the first credible suggestion they come by. To address this situation, Santangelo, Ruhaak, Kama, and Cook provide a “one-step shopping experience” for EBPs related to students with learning disabilities. Chapter 10 contains straightforward information on EBPs in the area of learning disabilities from prominent organizations.

As an EBP may differentially affect learners with different characteristics, one of the more critical and vexing issues related to EBPs is “effective for whom?” For example, a practice shown to work for high school students without disabilities may not be similarly effective for young children with behavioral disabilities. Accordingly, scholars conducting evidence-based reviews must determine clear and meaningful parameters for their review, which typically include an age range and disability type (e.g., elementary students identified as having emotional and behavioral disorders). Likewise, to determine the degree to which their students are similar to participants in the research studies demonstrating a practice’s effectiveness practitioners often focus on disability type. In Chapter 11, Landrum and Tankersley propose that disability identification may not be a particularly fruitful consideration when determining for whom an EBP works. Rather, the authors suggest that specific skill deficits and behavioral excesses should be used when thinking about EBPs. For example, rather than search for practices that are effective for students with emotional and behavioral

disorders, scholars should identify practices that are effective for aggression, compliance, and attention to task. Landrum and Tankersley provide readers with information on practices shown to be effective for some of the major skill deficits and behavioral excesses associated with behavioral disorders (e.g., noncompliance, disruptive behavior, task engagement, academic skill deficits).

As special education scholars in the United States, we have focused on issues related to EBPs in that context. We suspect that different countries' experiences and challenges related to EBP will overlap significantly. Nonetheless, each country's unique systems, histories, philosophies, legal contexts, and resources related to special education research and practice will no doubt affect the identification and application of EBPs for learners with learning and behavioral disabilities in distinct ways. In Chapter 12, Stephenson, Carter, and O'Neill (this volume) examine the role of EBPs in national and state policies, teacher accreditation standards, teacher education, and research in Australia. Although Stephenson et al. report little evidence of EBPs in the Australian education system, they do indicate a growing recognition of the importance of using empirical evidence in special education that portends optimism regarding the future of EBPs in that country.

FUTURE DIRECTIONS IN EVIDENCE-BASED PRACTICES

Undoubtedly, as special educators continue down the road toward evidence-based special education, some issues will be solved, others will persist, and new ones arise. We close this chapter with a brief description of some of the issues that we see looming on the horizon related to EBPs in special education.

The need for more high-quality research studies and evidence-based reviews will continue. High-quality, experimental studies are the foundation of EBPs and there are simply not enough of them (e.g., [Seethaler & Fuchs, 2005](#)). And researchers in the area of learning and behavioral disorders have only recently begun conducting evidence-based reviews and more are needed to comprehensively determine which practices are and are not evidence-based. Moreover, evidence-based reviews need to be updated regularly as new research is published that may alter the evidence-based status of practices. Another important function of evidence-based reviews is

highlighting what types of research need to be conducted to answer the critical question of whether a practice is evidence-based. For example, researchers might find that a high proportion of research studies are being excluded from evidence-based reviews because they do not assess treatment fidelity, thereby alerting the research community to the need to design future studies such that treatment fidelity is assessed appropriately.

As more evidence-based reviews are conducted by a growing number of organizations and individuals, we foresee the need to critically analyze and synthesize these findings. The logic of the EBP movement suggests that instructional decisions are too important to be made on the basis of a single study or low-quality studies. Rather, research findings are considered sufficiently credible to influence practice when derived from bodies of high-quality studies. Similarly, given the variability that exists regarding how evidence-based reviews are conducted (e.g., different standards for high-quality research, different guidelines for which studies to include in a review), determination of evidence-based status may best be made on the basis of multiple, high-quality reviews. We recommend that researchers continue to develop and determine the psychometrics of instruments, such as those discussed by Schlosser et al. (this volume), to systematically evaluate the quality of evidence-based reviews.

Reasonable scholars will continue to disagree on what specific quality indicators must be present in high-quality, credible studies; from which research designs causality can be reasonably inferred; and how many quality studies must support a practice to trust that it really works. Nonetheless, the field of education can reduce the variability in the standards used to identify EBPs by demanding empirical justification for criteria. That is, rather than rely on expert opinion or theory to determine what constitutes a credible study, meta-analyses are beginning to reveal which methodological elements are associated with effect sizes. For example, in their meta-analysis of intervention research in the field of learning disabilities, [Simmernan and Swanson \(2001\)](#) found that not reporting the reliability and validity of outcome measures was associated with larger effect sizes. This suggests using unreliable and invalid outcome measures inflates effects and that studies included in evidence-based reviews should be required to report psychometrics for their outcome measures. Just as the EBP movement expects practitioners to base their decisions on sound empirical findings, so should scholars when determining criteria for EBPs.

As noted by Santangelo et al. (this volume) many practitioners do not access information on EBPs through the websites, journal articles, and

technical reports in which they are often found. In medicine, computerized systems for providing practitioners with relevant and patient-specific information on EBPs in real time have been developed and are in use. [Sim et al. \(2001\)](#) defined computerized clinical decision support systems as

software that [is] designed to be a direct aid to clinical decision-making, in which the characteristics of an individual patient are matched to a computerized clinical knowledge base and patient-specific assessments or recommendations are then presented to the clinician or the patient for a decision. (p. 528)

Although it will represent a significant undertaking to develop and maintain, we hope that researchers will begin work on developing computerized clinical decision support systems in education to facilitate the accessibility and application of EBPs in schools and classrooms.

As the field of education refines its approach to identifying and disseminating EBPs, ongoing efforts to identify conditions and supports associated with broad and sustained EBP implementation become of increasing importance. After all, the time, effort, and expertise devoted to researching, identifying, and disseminating EBPs is basically meaningless unless they are implemented. Research on implementation will likely look much different than that conducted to establish EBPs; it will have to be both relevant and rigorous, and involve practitioners and researchers working together such that the lines between research and practice are blurred ([Smith, Schmidt, Edelen-Smith, & Cook, 2013](#)).

In terms of policy and practice, we expect a continued emphasis on using EBPs as a matter of course, with EBPs slowly making inroads into teacher education. However, we hope to see EBPs treated in a nuanced way that permits teachers leeway to use their expertise and meet students' individual needs. EBPs, and research evidence more broadly, should be thought of as integral tools to be used in the decision-making process to improve teacher effectiveness and learner outcomes, not as rigid prescriptions to which educators must adhere. We envision teachers creating practice-based evidence to provide guidance as to the most effective and efficient ways to incorporate EBPs into their daily routine and instructional decisions ([Smith et al., 2013](#)). The intersections of EBPs and special education practice, which are addressed at some level by each of the chapters in this volume, perhaps represent a new face on the time honored foundation of special education – using high-quality empirical evidence to inform and improve (rather than dictate) instructional practices in order to meet the unique needs of learners with learning and behavioral disabilities.

SUMMARY

Special education has resulted in considerable benefits for individuals with learning and behavioral disabilities and society at large. However, the research-to-practice gap causes the outcomes of these learners to be unnecessarily low and the gap between their achievement and that of their nondisabled peers to be unnecessarily large. EBPs, or instructional practices shown by bodies of sound research to be generally effective, represent a logical means to address the research-to-practice gap in special education and improve the outcomes of learners with disabilities. Despite the significant potential of EBPs, educators should recognize a number of important limitations to EBPs (e.g., EBPs are not universally effective, implementation of EBPs does not automatically follow their identification, and EBPs must be considered in the context of the standards applied and research reviewed). Moreover, EBPs and evidence-based education involve fundamental and complex matters in education (e.g., What is an effective practice? What counts as high-quality research? How can teaching practices be changed and change sustained? What is the balance between adaptation and fidelity?). Accordingly, educational stakeholders have encountered a number of thorny issues as they have begun to identify and implement EBPs for individuals with learning and behavioral disabilities, many of which chapter authors describe in this volume. We envision that EBPs will continue to evolve and will play an increasingly important role in helping special education fulfill its mission of effectively meeting the educational needs of individuals with learning and behavioral disabilities.

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