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Evidence-Based, Empirically Supported, or Scientifically Unsupported? An Overview of the Research to Practice Gap in Early Childhood Special Education

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ABSTRACT

Valid research is crucial for evaluating the effects of utilized practices, strategies, and interventions on learners with exceptionalities. In the United States, for the past several decades, considerable research and policies have focused on developing evidence-based practices (EBPs), evidence-informed programs, and other research-supported initiatives that intend to produce better outcomes for children with disabilities. However, past and current efforts to translate, transport, and close the research to practice gap have not successfully disseminated the growing list of evidence-based interventions, strategies, and programs routinely into practice. The gap between research and practice is particularly problematic in special education and early childhood special education (ECSE). Children and students with disabilities require highly effective instruction to reach their potential. This conceptual review paper provides an overview of EBPs in ECSE and elaborates on the research to practice gap and the related issues. The paper discusses the identification, implementation, and dissemination of EBPs that have been regarded as the challenges the field of ECSE faces in closing the research to practice gap. Finally, implications and recommendations for future research, practice, and policy are discussed.

Keywords: Evidence-based practices, special education, early childhood special education, research to practice gap



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Introduction

Emerging from medicine in the early 1990s (Sackett et al., 1996), evidence-based practices (EBPs) in education refer to the practices supported by high-quality research and result in meaningful positive outcomes. In special education, EBPs intend to focus on the most effective practices that positively impact the developmental and educational achievement of children and students with disabilities (Cook & Odom, 2013). Although EBPs are needed in all areas of education, special education research has dedicated a substantial amount of attention and focus on identifying and implementing EBPs for children and students with disabilities. The adoption of EBPs for students with disabilities is a step in the right direction to ensure that teachers and practitioners use research supported strategies and interventions based on the individual child or student's needs and make informed decisions that have high chances of achieving positive educational and developmental outcomes for which there is scientific evidence that they work, as opposed to only anecdotal evidence for their effectiveness (Reichow, 2016). Implementing EBPs in special education can increase the likelihood of positive outcomes and increase accountability because there are data to back up selecting a practice or program, which in turn facilitates support from administrators, parents, and others, resulting in less wasted time (Cook et al., 2016). Implementation of EBPs also results in fewer wasted resources because educators start with an effective practice or program and are not forced to find one that works through trial and error, increase the likelihood of being responsive to an individual child or student's needs and increase the chances of convincing students to try it because there is evidence that it works. The overall rationale for evidence-based practices is to close the research to practice gap by highlighting the role of scientifically based research (Cook & Odom, 2013). In the United States (U.S.), past legislation (e.g., Individuals With Disabilities Education Act, 2004; No Child Left Behind, 2002) emphasizes scientific, valid research for training and instruction in special education and require teachers and practitioners to use, to the greatest extent possible, practices and programs that are grounded in scientifically based research.

In early childhood special education (ECSE), the evidence-based movement focuses on identifying effective interventions, practices, and strategies that can generate positive outcomes for children who have or are at risk for developmental disabilities/delays (Cook & Odom, 2013). The main advantages of using EBPs in ECSE include an increased likelihood of positive outcomes and social change, an increased chance of being responsive to family needs, and increased accountability and support from administrators, parents, and other stakeholders. The increase in accountability results in an increase in efficiency by choosing a practice shown to be effective rather than implementing a practice that might work through trial and error (Snyder et al., 2015). In the U.S., some leading organizations have articulated recommended practices to improve educational and developmental outcomes for children with disabilities (Copple & Bredekamp, 2009; DEC, 2014). Division for Early Childhood (DEC) of Council for Exceptional Children (CEC) is the largest organization in the U.S. that promotes policies and advances evidence-based practices to support families and enhance the optimal development of young children (0-8) with disabilities. DEC developed recommended practices in early intervention (EI) and ECSE to ensure that children with disabilities, their families, and the workforce who support them have access to valid, scientific practices that result in better outcomes (Barton & Smith, 2015; DEC, 2014). This paper aims to provide an overview of EBPs in ECSE and elaborate on the challenges and issues that the field is currently facing to implement EBPs in educational settings effectively. The paper also includes practical implications for policy, research, and practice that can increase the effective implementation of EBPs and thus reduce the research-to-practice gap.

Defining Evidence-Based Practices and Related Terms

EBPs are defined differently in different disciplines. In education, EBPs refer to practices supported by multiple, high-quality research studies that can demonstrate a meaningful positive impact on achievement of positive developmental, educational and behavioral outcomes (Cook et al., 2016). The evidence-based strategies, techniques, and skills have been proven to work through experimental research studies or large-scale field studies. EBPs are identified through a process often referred to as

an evidence-based review process (Reichow, 2016). While various agencies and organizations use different names to specify the most rigorously tested programs, they share similar criteria for these programs. In particular, practices that are theory-based and have been experimentally tested using randomized controlled trials and reported in peer-reviewed journals are viewed as most rigorous. Other criteria may include replication in different settings and implementation with a high degree of integrity to the original model. Table 1(adapted from Reichow, 2016) outlines the primary quality indicators in the evidence-based review process. In special education, the What Works Clearinghouse, and the CEC's Standards for evidence-based practices require all evidence-based practices to meet all the quality indicators outlined in Table 1.

Table 1. Primary Quality Indicators

Group design	Single-subject experimental design	A high-quality rating is awarded to a study that
Participant characteristics	Participant Characteristics	Includes participants' age, gender, diagnosis, interventionists' characteristics
Independent Variable (IV)	Independent Variable	Defines I.V.s with replicable precision
Comparison Condition (1)	Dependent variable (DV) (2)	1.Defines the conditions for the comparison group with replicable precision 2.Defines the DV with operational precision
Dependent variable (1)	Baseline condition (2)	1.Defines the DV with operational precision 2. Encompasses at least three measurement points, appear through visual analysis to be stable, have no trend or a counter-therapeutic trend, have conditions that are operationally defined with replicable precision
Link between research question and data analysis (1)	Visual analysis: (2)	1. Data analysis is strongly linked to the research questions and uses correct units of measure 2. Have data that are stable (level or trend), contain less than 25% overlap of data, show a significant shift in level or trend between adjacent conditions that coincide with the implementation or removal of the IV.
Statistical analysis (1)	Experimental control (2)	1.Proper statistical analyses are conducted with adequate power and sample size (n > 10) for each statistical measure 2. Contains at least three demonstrations of the experimental effect, occurring at three different points in time and changes in the D.V.s, vary with the manipulation of the IV in all instances of replication.

Note. Adapted from Reichow, B. (2016). Evidence-Based Practice in the Context of Early Childhood Special Education. In *Handbook of Early Childhood Special Education*. Springer International Publishing.

Research to Practice Gap in Early Childhood Special Education

The research to practice gap refers to instances where research struggles to apply to practical contexts such as the classrooms and other educational settings. Some of the most prominent areas where the gap might occur are when research is too theoretical to have any practical application and when research gets misinterpreted and applied wrong (Dunst & Trivette, 2009; Hebbeler et al., 2012; Strain, 2018).

There are terms such as research-based practices, best practices, promising practices, and recommended practices that are sometimes used synonymously along EBPs, creating confusion about the differences between the terms. Research-based practices refer to data-based, research-supported, or empirically validated practices that imply endorsement of an intervention, strategy, or instructional technique by loose research support (Snyder et al., 2015). Best and recommended practices are mainly promoted as best or recommended based on tradition, expert opinion, theory, and moral values, regardless of whether they are validated empirically or having reliable research support (Cook et al., 2016). Promising practices are those for which there is considerable evidence or expert consensus but are not yet supported by the most substantial scientific evidence. Some characteristics of promising practices include: the research design does not demonstrate that the practice led to improved outcomes, studies indicate that the practice might be effective in producing desired outcomes, research studies might have mixed-results on the practice's effectiveness on desired outcomes, and insufficient number of studies conducted to demonstrate the efficacy (Reichow, 2016). Therefore, the difference between EBPs and the associating terms should be considered when referring to the practice as evidence-based. Despite the development of many EBPs and the existing need in the field of ECSE to specify what works for whom under what conditions, there is still a significant gap in translating research findings to the everyday practices in everyday settings and classrooms. Few EBPs have been implemented and sustained by practitioners in schools and educational settings, that might be attributed to many proximal factors, including inadequate practitioner training, a poor fit between treatment requirements and existing organizational structures, insufficient administrative support, and practitioner resistance to change (Snyder et al., 2015). There have been numerous attempts to bridge the research to practice gap (Moster & Crockett, 1999-2000; Snyder et al., 2015). However, there is not enough evidence suggesting that the gap has been meaningfully reduced and is argued to be mainly associated with identification, implementation, and dissemination of EBPs (e.g., US Department of Education (2021); Cook & Odom, 2013; Dunst et al., 2013; Harn et al., 2013; Snyder et al., 2015).

Identification

In special education, EBPs were developed due to the concerns about the poor performance of children and students on assessment procedures and shifted the focus of research to justify to what extent research studies were scientifically based (Buisse et al., 2006; Snyder et al., 2015). The Institute for Education Sciences (IES) in the U.S. has invested considerable effort in developing practice guides and intervention reports to assist the field in identifying evidence-based practices, strategies, and interventions (e.g., Mayer, 2011; Thurlow et al., 2010). EBPs generally include quality indicators related to research design, methodological quality, quantity of supporting research, and magnitude of effect size. However, reasonable differences of opinion exist regarding exactly how much and what type of research support is necessary for a practice to be considered evidence-based (Copple & Bredekamp, 2009; Slavin, 2008).

Different organizations (e.g., Council for Exceptional Children, What Works Clearing House) utilize various approaches to identify EBPs in education and related disciplines, each with specific criteria for a practice to be considered evidence-based (Mayer, 2011; Slavin, 2008; Strain, 2018). Despite the general affinity for the concept of EBPs, as Odom et al. (2005) suggested, the difficulty of identifying EBPs lies in the details (e.g., how many studies must support an EBP? What should research designs be considered? What are quality indicators necessary for trustworthy research? What effects must a practice have to be considered an EBP? and impacts many details involved with implementing EBPs).

At one level, the lack of uniform procedure in identifying EBPs might add to the complexity of identifying the EBPs and determining their effectiveness. Such differences may also create confusion and frustration among practitioners and educators who deal with practices that are considered evidence-based by one organization and not another (Odom et al., 2005). For example, Direct Instruction is reported by the Best Evidence Encyclopedia (n.d.) to be a program with solid evidence of effectiveness (its highest category) for struggling readers. In contrast, it is considered to be a promising (but not proven practice) by the Promising Practices Network (n.d.) and is reported to have no discernible effects by the What Works Clearing House (WWC) (2007). Also, there is still the assumption that other

effective practices have not been subjected to rigorous research or have been inadequately researched (Cook et al., 2016; Strain, 2018). This leaves the educators hesitant to utilize the practices that do not have evidence support but proved to work for an individual child or when an evidence-based intervention is inconsistent with the goals and objectives of a child or student's instructional plan (Thurlow et al., 2010). Please see Table 2 for an outline of the level of evidence for established and promising EBPs.

Table 2. Criteria for Interventions to be Considered EBP

Level of Evidence	The criterion for research to support a practice
Established	<ul style="list-style-type: none"> • Five SSED studies of strong research report strength with a total sample size of at least 15 participants across studies conducted by at least three research teams in three different geographic locations • Ten SSED studies of adequate research report strength with a total sample size of at least 30 different participants across studies conducted by at least three research teams in three different geographic locations • Two group design studies of strong research report strength conducted in different geographic locations • Four group design studies of at least adequate research report strength conducted in at least two different research teams • One group design study of strong research report strength and three SSED studies of strong research report strength with at least eight different participants • Two group design studies of at least adequate research report strength and six SSED studies of at least 8 participants
Promising	<ul style="list-style-type: none"> • Five SSED studies of at least adequate research report strength with a total sample size of at least 16 different participants across studies conducted by at least two research teams in two different geographic locations • Two group design studies of at least adequate research report strength • One group research report of at least adequate research report strength rating and at least three SSED studies of at least adequate strength rating with at least 8 participants

*SSED: Single-subject experimental design.

Note. Adapted from Reichow, B. (2016). Evidence-Based Practice in the Context of Early Childhood Special Education. In *Handbook of Early Childhood Special Education*. Springer International Publishing.

DEC recommended practices were developed out of the recognized division between research and practice (Cople & Bredekamp, 2009; DEC, 2014). The practices are organized into eight topic areas that are expected to be viewed holistically, including leadership, assessment, environment, family, instruction, interaction, teaming and collaboration, and transition. The eight topic areas aim to facilitate children's access and participation in inclusive settings and natural environments and assist teachers and practitioners about the most effective ways to improve young children's development and learning outcomes, birth through five years. A significant revision of the DEC recommended practices began in late 2010, and DEC published the most current recommended practices in 2014. Since their development, the DEC recommended practices have been a frequently used tool for providing education and training for practitioners who work with young children with disabilities and their families and provided them with the skills and knowledge they need to create positive intervention programs. The term "recommended practice" is used instead of evidence-based practices to realize that all practices will not be appropriate for all children and that the practices are likely to change as the knowledge base evolves in the field (Reichow, 2016). Buisse et al. (2006) highlighted two critical differences between EBPs and the recommended practices. First, EBPs are identified through an ongoing process of incorporating different steps that include formulating a guiding question, evidence retrieval, evidence appraisal, intervention selection, performance monitoring, and data-based decision making. Simultaneously, although the recommended practices are based on research knowledge, not all practices would meet the standards or criteria to be designated as evidence-based. Second, EBPs make individualized recommendations for individual children, whereas the recommended practices provide global guidance about what works for most children. Even though DEC

recommended practices are not a set of practices that have been deemed evidence-based, they do guide best practices in many areas and have been a beneficial guiding tool for practitioners who work with young children with disabilities and their families (Odom et al., 2005; Reichow, 2016).

Implementation

The effectiveness of EBPs is bounded by the quality, reach, and implementation. The recent emphasis on EBPs in special education is encouraging and necessary. However, identifying EBPs is insufficient without supporting their implementation and use in practice settings (Odom, 2009). Implementation is the critical link between research and practice (Cook & Odom, 2013; Dunst et al., 2013; Harn et al., 2013). Implementation of EBPs involves a myriad of complex and interrelated steps such as the relevance of the practice to the target environment, efficiency and practicality of the practice, available time, knowledge of EBPs and skills among the users, and the institutional context (Tseng, 2012). This has been addressed through the emerging field of implementation science by focusing on promoting end-users' (e.g., teachers, practitioners, or families) access, understanding, and utilization of EBPs (Eccles, & Mittman, 2006). According to Kelly and Perkins (2012), implementation science includes an understanding of the processes, procedures, and conditions that promote or impede the utilization of evidence-based strategies, interventions, and practices in everyday practice settings. Eccles et al. (2009) also refer to implementation research as the "scientific study of methods to promote the systematic uptake of clinical research findings and other evidence-based practices into routine practice (p.32)." According to Fixsen et al. (2013), the simple formula below represents the critical correlation of research efficacy and practice implementation in achieving positive outcomes:

Effective intervention × effective implementation = improved outcomes

This formula aligns well with an earlier conceptualization of implementation science by Glasgow et al. (2000), who developed REAIM framework. This framework represents multiple dimensions of implementation in determining the real-world impact of practice, including Reach-the proportion of the target population reached by a practice, Efficacy-the success rate of practice when implemented appropriately, Adoption-the balance of targeted settings that adopt the practice implementation, the proportion of interventionists who implement the practice with fidelity in real-world settings, and Maintenance-proportion of organizations (e.g., schools) and interventionists (e.g., teachers) who maintain implementation of the practice over time.

Fixsen et al. (2005) argue that to implement EBPs with fidelity, multi-level strategies are needed to succeed. The authors highlighted seven core implementation components that can impact improvement in practitioners' and end-users' behavior related to the implementation of EBPs. The seven core elements include staff selection, preservice and in-service training, ongoing consultation and coaching, staff evaluation, program evaluation, facilitative administrative support, and systems interventions (i.e., strategies to work with external systems to ensure the availability of the financial, organizational, and human resources required to support the work of the practitioners) (p. 29). These core components are critical to identifying and addressing obstacles to implementation and save the practitioners and end-users from the paradox of non-evidence-based implementation of evidence-based programs (Drake, Gorman, & Torrey; as cited in Fixsen et al., 2005).

Fidelity. The other very important factor within implementation science is fidelity. Fidelity refers to how a practice or practice model is delivered as intended by the researchers or developers. This is also commonly referred to as treatment integrity, procedural fidelity, intervention integrity, procedural reliability, or procedural adherence. High fidelity in the implementation of EBPs produces superior outcomes (Sharp et al., 2020). Generally, to implement a practice or program with fidelity, it is recommended to understand how to implement the EBP as intended, gather and organize the resources necessary for the implementation and adhere to the implementation procedures of the practice or program (Fixsen et al., 2005).

In ECSE, the lack of emphasis on implementation fidelity is more concerning in home visiting programs and practices (Azzi-Lessing, 2011). Home visiting program models include methods and procedures expected to promote parents' adoption of intervention practices with their children in their natural environment (Korfmacher et al., 2008). However, the absence of intentionally targeted training to promote practitioners' use of the home visiting practices and models are intended results in the large numbers of home visioning practices that are not implemented with fidelity (Hebbeler et al., 2012;

Odom, 2009). For example, in a study by Dunst et al. (2014), the authors reported that only half of the home visitors engaged parents in home visiting practices that included capacity-building characteristics as intended. Such findings result in the fact that if the practitioners are not implementing the home visiting practices with fidelity, parents should not be expected to use the home-based early intervention practices with fidelity.

Dissemination

There have been significant advances in ECSE in defining and establishing guidelines for identifying EBPs (Cook et al., 2016). However, communicating the research findings on EBPs to teachers, parents, and other stakeholders in meaningful and valuable ways has been the researchers' concerns in special education and ECSE (Cook, Cook, & Landrum, 2013). The research's ultimate goal is to develop knowledge to improve practice (Cook & Odom, 2013). If practitioners don't see the research implications, they will not utilize the research, and consequently, no practice improvement occurs. The audience for current research in the field is often other researchers rather than end-users such as teachers, practitioners, and families. Besides, most research findings are disseminated in a non-teacher/practitioner-friendly way or via traditional and passive methods (e.g., journal articles, research briefs) that are not often utilized by the practitioners who implement these practices (Thurlow et al., 2010). The traditional approaches and venues for the dissemination of research findings usually target like-minded researchers and scholars. These dissemination venues make it difficult for people closer to practice to connect with the result, comprehend, and quickly focus on the utility and feasibility of the practices. This might be one reason why many teachers and practitioners obtain most of what they need from the Internet in general, not specifically through valid and proven databases (Cook et al., 2013; Thurlow et al., 2010).

Also, the lack of teachers' and practitioners' informed opinions during the EBP review process imposes another missing piece. Educators and practitioners were left to sort through research that was not explicitly written for them in the past. In recent years, accessible and helpful resources have emerged to help educators narrow down their search for scientifically supported practices (e.g., What Works Clearing House (WWC), RTI Action Network, Best Evidence Encyclopedia). Even though these resources provide a better way to narrow down information on the numerous available practices, strategies, and interventions, they do not include practitioners and educators' reflection and judgment about the value, outcomes, and feasibility of those interventions and practices. There need to be opportunities for practitioners and teachers to include their informed opinions or professional judgment about the effectiveness of EBPs (Cook, 2014; Thurlow et al., 2010). Unless disseminating research is addressed in ways that are end user-friendly, the EBPs won't have the intended impact on achieving positive outcomes (Russo-Campisi, 2017). For instance, in ECSE, although the DEC recommended practices have been a helpful resource for practitioners, lack of dissemination due to a different mindset between researchers and practitioners has hindered effective widespread utilization of these practices.

Implications for Practice

Existing difficulties with identifying, implementing, and disseminating EBPs are not just an issue with educators, practitioners, and families. It is also a lack of understanding of the researchers and policymakers' part on making research more accessible and meaningful for classrooms outside of a controlled research setting (e.g., Mandell et al., 2013; Strain, 2018). Just because a practice has been identified as evidence-based does not necessarily mean that many teachers and practitioners will use it as designed over time. Although it is vital to determine which practices are evidence-based, it is just as crucial that researchers choose whether teachers and practitioners find EBPs acceptable, which aspects of EBPs teachers find problematic, and how they successfully adapt EBPs to work in their classroom and practice settings. To address these issues, there needs to be more investment in the trustworthiness, usability, and accessibility of EBPs. Through trustworthiness, the field needs to improve the confidence teachers, and practitioners can have in EBPs and their connections between the EBPs' conclusions and their job realities. Usability can enhance the practicality of the EBPs' findings for professionals closer to practice, and accessibility can facilitate making the findings of EBPs available in ways that are more convenient to families, teachers, and practitioners.

However, the trustworthiness, usability, and accessibility of EBPs cannot result in positive outcomes if the end-users and primary research stakeholders (teachers, practitioners, and families of children with disabilities) are absent during the process. This highlights the need for an effective partnership with people closer to practice. To invest more in trustworthiness, usability, and accessibility, the field needs to include these primary stakeholders as partners when deciding and conducting research. It seems that they are missing at the table when such decisions are being made. They are not well-informed about the implications and connections of the conducted research and EBPs to the realities of their profession and/or life. The field needs to make EBPs more relevant to the needs of end-users and people closer to practices who are implementing and/or utilizing these practices in an everyday setting and prove that the demands and achieved outcomes for implementation and use of these practices are feasible and reasonable.

Considering that research findings are more available to teachers and professionals during their preservice preparation and not so often when they are in service, losing to follow up with the practicing teachers and professionals is an area of concern that the field needs to address. In-service teachers and professionals need to have ready access to trustworthy information through multiple resources and professional development experiences. Accessibility has to include more than just the different distribution avenues like journal articles, presentations, etc. It should be offered through routes that are teacher/practitioner friendly. Those avenues might include local workshops, summits, and professional development activities and academies to disseminate the findings of EBPs and provide implementation support and resources to teachers and practitioners in an understandable manner. Addressing questions that are grounded in practice, involving practitioners and teachers in the evidence-based practices review process, collaborating with practitioners to establish the feasibility of implementation and focusing on interventions and practices that are efficient and manageable to implement, broadening the context for successful research demonstrations in everyday practice settings, and increasing interest in doing action research, center-based and school-based research provides an excellent basis for efforts to improve the perceived and actual usability of research. Such an effort would also enhance teachers' and practitioners' connection with the research outcomes and research findings' values.

If teacher and practitioner researches become a part of the profession, they can become more aware and conscious about their practices and build on their trust and acceptance of broader research that is being conducted in the field, use their research and reflections better to inform their practice in a cycle of continuous improvement and use teacher research to uncover explanations to their questions about the best way to improve implementation of EBPs that will result in positive outcomes for learners. Reflection on one's experience is an essential method of improving and building professional knowledge. It can result in a workforce that can critically influence the future of quality early childhood education. However, considering the EC profession's realities (e.g., low pay, burnout, high turnover, and attrition), there is a need for massive investment and incentives. Besides, teachers and practitioners often do not have much space and flexibility to modify interventions without compromising the integrity of the practice. Implementation of EBPs may also require that many teachers and practitioners change their instructional routines and adopt new techniques, a transformation many will find challenging. Such limitations usually result in the obstacles, and constraints teachers and practitioners face when implementing EBPs in the classroom and practice settings (Russo-Campisi, 2017).

The contradictions between fidelity of implementation and individualized instruction for students with disabilities have also been a barrier in special education. This issue can be solved by replacing the assumption that EBPs must be implemented with fidelity with the idea that educators have space and authority to make modifications and accommodations for students based on individual needs and available resources. Using the potential framework outlined by Fixsen et al. (2013), researchers, teachers, and practitioners could work together to design interventions that apply to the classroom based on available resources and training. Professional organizations should inventory of EBPs available to their members, including implementation toolkits, explicit descriptions, and modeling of how the practice(s) should be implemented (Snyder et al., 2015). Policies and systems should also be developed to ensure that ECSE teachers and practitioners have access to research-based, job-embedded supports, consultation, and coaching for high-fidelity implementation of effective practices and eliminating implementation obstacles (Korfmacher et al., 2008).

Research has found that teachers are more likely to adopt and sustain effective practices when

supports include ongoing professional development, feedback on the implementation of the practice, collaborative support of others implementing the practices, and student outcome data to assess and demonstrate the impact of the practice (e.g., Rush & Shelden, 2011; Snyder et al., 2015). To yield desirable child outcomes in ECSE, the field must continue to identify efficient and practical components for improvements in the identification of EBPs, the dissemination of EBPs, and the use of EBPs in everyday settings. Therefore, developing methods for increasing the utilization of these EBPs should be embraced and strengthened.

Primary support that underlies implementation is professional development. Enlightened approaches to professional development offer great promise for translating effective practices from the research settings to the classrooms, homes, and communities (Odom, 2009). Surveys, observational research, and qualitative interviews with teachers and practitioners are great avenues to provide this critical information. When designing professional development activities, it is essential to consider how implementation science can be best utilized to help ensure achieving optimal outcomes (Reichow, 2016). EBPs are not guaranteed to work for everyone and do not result in optimal outcomes for all children and students. Even when implemented with fidelity and over time, EBPs have relatively low rates of non-responders. Therefore, when selecting practices to be used in ECSE programs, teachers and practitioners must validate each practice's effectiveness according to the population they work with (Reichow, 2016).

Implications for Future Research

Implementation science plays a pivotal role in translating the promise of EBPs into positive outcomes for children with disabilities. These practices' potential benefit depends heavily on the quality, reach, and maintenance of implementation (Cook et al., 2013). Researchers need to continue to build relationships with teachers and practitioners in various settings and value the real-life experiences of professionals closer to practice (practice-based evidence) regarding what works in the classrooms and practice settings. The research-to-practice gap cannot be eliminated without considering and working through the differences between researchers' and teachers' experiences and practices. All voices must be valued and heard and represented in the literature to improve the identification, implementation, and dissemination of EBPs in the field of ECSE.

Future studies should also seek to understand how empirical and theoretical knowledge and literature outside of special education offer relevant insight into the effective implementation and dissemination of EBPs in ECSE and the field of special education in general (Cook & Odom, 2013). Such understanding can determine whether implementation and dissemination strategies that are shown to be effective in other fields with different populations also work in ECSE and special education to adapt and refine the existing strategy and optimize their effectiveness (Cook et al., 2013).

Implications for Future Policy

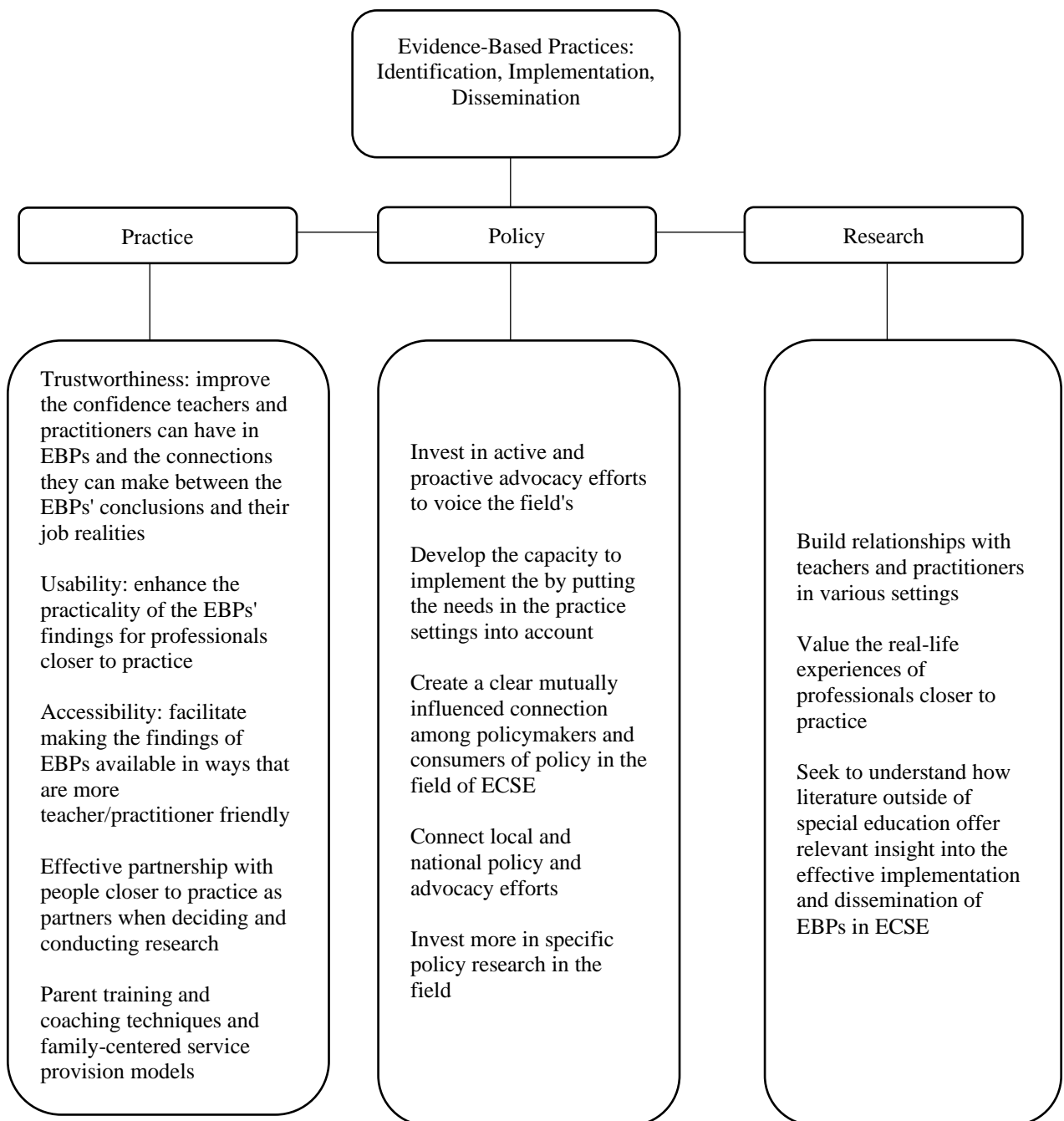
What has been discussed so far in terms of identification, implementation, and dissemination of EBPs highlights the importance of backward mapping and how that can make a meaningful contribution to fundamental changes needed in the field. Backward mapping will require active and proactive advocacy efforts to voice the field's needs regarding EBPs that result in positive outcomes for children with disabilities and encourage local and federal policymakers to rethink their decisions before they settle on a course of action.

Policymakers should fund evidence-based programs and need to invest in developing the capacity to implement the programs properly. Policy decisions in the field should put the needs in the practice settings into account. This can be achieved by providing program-level professionals opportunities to voice their opinions. The closer one is to the source of the problem, the greater is one's ability to influence it. The problem-solving capacity of complex systems depends not on hierarchical control but on maximizing discretion at the point where the problem is most immediate. This needs a clear, mutually influenced connection among policymakers and consumers of policy in the field of ECSE. Developing such a capacity would require educational settings to ensure that teachers and practitioners have the necessary support and training to implement EBPs and have ongoing

communication and collaboration with policymakers to discuss the outcomes and the need for further help.

It is also important to connect local and national policy and advocacy efforts and consciously develop policies that have high potentials to impact the field at the practice level. Such connection can be enhanced through allied organizations and committees that work as liaisons between practitioners, teachers, researchers, and policymakers to bridge research and practice gaps. Also, the field should invest more in specific policy research in the field. One of the contributions of research is to impact policy. Creating a targeted research line that investigates questions in need of urgent policy actions can help collect data to advocate for changes in the policy and, consequently, in practice. Please refer to Figure 1 for a summary of the implications.

Figure 1. Implications for Effective Identification, Implementation, and Dissemination of EBPs



Conclusion

This paper provided an overview of the EBPs in ECSE and addressed related issues and problems in identifying, implementing, and disseminating these practices. Moving toward achieving the goals of evidence-based ECSE may depend on the foundation of clear understanding, communication, and effective implementation and dissemination of science. As the gap between research and practice still exists, it becomes clear that bridging the research to the practice gap is a complex issue with many contributing factors. Although the field of ECSE has made considerable progress over the last decade and continues to translate evidence-based research into practice, a more open and informative discussion between researchers, policymakers, and practice level professionals is needed to ensure that all stakeholders are well-informed to direct the future steps toward the more efficient translation of EBPs into everyday practice settings.

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