TOWARDS AN UNDERSTANDING OF EVIDENCE-BASED PRACTICE

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The past two decades have seen a rise in the use of the term "evidence-based practice" and a simultaneous increase in the variations in its definition and evaluation. Subsequently, this rise in interest for evidence-based practices has become a double-edged sword for practitioners—that is, while there are a number of interpretations on the definition of the term "evidence-based practice," these numerous contradictory interpretations may actually impede the ethical application of empirically-supported treatments. The general aim of the present paper is to offer the reader an overview of the current state of affairs of the evidence-based practice literature which will culminate into areas for future research and professional debate.

    Key words: evidence-based practice, empirically-supported treatment

The past two decades have seen a rise in the use of the term "evidence-based practice" and a simultaneous increase in the variations in its definition and evaluation. Some of the variability may be attributed to differing, but related, conceptualizations of what constitutes an evidence-based practice across disciplines. Review of the literature reveals that a wide variety of professions and professional organizations are wrestling with this topic area. Such disciplines include, but are not limited to, medicine, clinical psychology, school psychology, counseling, behavior analysis, education, and nursing (Kazdin, 2006). Using our backgrounds as an example, it is clear that we—like many of the readers of *Journal of Early Intensive Behavior Intervention*—have training and experience that involves numerous disciplines. Specifically, we both received training in experimental psychology before entering a school psychology doctoral program where we were intertwined in both regular and special education. We were fortunate to receive additional training in a clinical psychology internship and have worked in early intervention settings, school-aged programs, and with adults receiving residential services. In addition, we are also Board Certified Behavior Analysts. Thus, for demonstration purposes, we focused our attention to our governing organizations for insight and clarification regarding evidence-based practices.

The *National Association of School Psychologists' (NASP) Professional Conduct Manual* states that school psychologists are expected to engage in services which are "delivered following the completion of a strategic planning process based on the needs of the consumers and an empirically supported program evaluation model" (NASP, 2000, pg. 51). Moreover, federal regulations now mandate the use of "scientifically based research" in the selection and design of instructional strategies (Individuals with Disabilities Education Improvement Act of 2004; No Child Left Behind Act of 2001). The American Psychological Association (APA) Presidential Task Force on Evidence-Based Practice—which evolved from an APA Division 12 (Clinical Psychology) Task

Force—defines evidence-based practice in its position paper as "the integration of the best available research with clinical expertise in the context of patient characteristics, culture, and preferences" (APA, 2006, p. 273). Finally, as Board Certified Behavior Analysts, we operate under the *Behavior Analyst Certification Board Guidelines for Responsible Conduct for Behavior Analysts* which explicitly states that a behavior analyst "has the responsibility to recommend scientifically supported most effective treatment procedures. Effective treatment procedures have been validated as having both long-term and short-term benefits to clients and society" (BACB, 2004, Section 2.09a). Although these guidelines may imply a united front across disciplines with regards to an interest in utilizing treatments that "work," implementation is a challenge since these terms are too vague to actually prescribe criteria to one's practice.

Within the broader scope of psychology and education, various other groups are attempting to delineate evidence-based practices further. For instance, both Divisions 17 (Society of Counseling Psychology) and 29 (Psychotherapy) of APA have established task forces to arrive at standards of evidence-based practice (APA, 2006). The Society for Behavioral Medicine has also established similar criteria (Davidson, Trudeau, Ockene, Orleans, & Kaplan, 2003). In addition, the Council for Exceptional Children (CEC) called upon its Professional Standards & Practice Committee, as well as its Division for Research, to make proposals for evidence-based practice criteria (CEC, 2006). Finally, the Association for Behavior Analysis International recently launched the Evidence-Based Practices Special Interest Group (EBP SIG) aimed at translating behavioral research to practice in an effort to provide evidence-based practices to the general public. It is our belief that this recent spark in interest for evidence-based practices has become a double-edged sword for practitioners—that

is, while there is certainly no shortage of interpretations of what evidence-based practice means, the myriad of loosely related interpretations may actually be counterproductive in guiding ethical practice.

The general aim of the present paper is to offer the reader an overview of the current state of affairs of the evidence-based practice literature. Within this aim, the specific goals of this paper are to: (1) introduce readers to the history and evolution of evidence-based practice in our field; (2) delineate between the terms "evidence-based practice," "empirically-supported," "scientifically-validated" and others; (3) briefly highlight some of the accepted and popularized criteria for what constitutes as evidence; (4) discuss some of the remaining questions and controversies regarding evidence-based practice; (5) provide resources which practitioners and educators may use as starting points in their attempt to identify and/or classify treatment strategies and other professional activities as evidence-based.

EVOLUTION OF INTEREST IN EVIDENCE-BASED PRACTICES

The search for "what works" with regards to the education and treatment of children began over a century ago when Lightner Witmer broke ground on the first psychological clinic where the initial scrutinization of teaching practices was conducted through the use of rigorous experimentation (Witmer, 1907). Parallel to Witmer, G. Stanley Hall's work in the Department of Scientific Pedagogy and Child Studies in the Chicago Public Schools during the late 19th and early 20th centuries offered psychology a nomothetic approach to the identification and classification of experimental procedures which produced meaningful change in students' behavior and performance (Fagan & Wise, 2000). Collectively, these early scientist-practitioners—along with their respective research teams—bridged the gap between

psychology and education and launched the impetus for rigorous examination of efficacious psychological and instructional techniques.

Despite psychology's early interest in the area of research-supported techniques, the formal inquiry into evidence-based practice was not proposed until the latter part of the 20th century by the field of medicine. The medical field is credited with the institution of the first professional task force aimed at the identification and classification of evidence-based practices for medical patients (Sox & Woolf, 1993). Paramount to the conclusions of this task force was the resolution that evidence-based practice be regarded as the selection of treatments with the best empirical evidence regarding efficacy which are implemented with considerations of the best interests of the patient (Sackett, Rosenberg, Gray, Haynes, & Richardson, 1996). This consideration of the interaction between best available research and the best interest of the consumer was the impetus for the 1992 joint task force of the Board of Scientific Affairs, the Board of Professional Affairs, and the Committee for the Advancement of Professional Practice formed under the guidance and direction of the APA (APA, 2006). Based upon the findings from this collaborative effort, the APA published the *Template for Developing Guidelines: Interventions for Mental Disorders and Psychosocial Aspects of Physical Disorders* (a.k.a. *"Template"*, APA, 1995).

With the APA's *Template* delineating an approved set of standards and guidelines on what defines empirically-supported psychological treatment, Division 12 of the APA (Clinical Psychology) formed the Task Force on Psychological Interventions to generate a preliminary list of research supported treatment options for clinical psychologists (Chambless et al., 1996, 1998). As results began to emerge regarding the efficacy and appropriateness of commonly accepted treatments, psychologists interested

in this topic area separated into two general groups—those looking to extend and generalize these guidelines to more practice areas, and those looking to rectify what they believed were flaws and limitations to these guidelines (APA, 2006). As a result, the APA launched the 2005 Presidential Task Force on Evidence-Based Practice, aimed at uniting the field to arrive at an accepted set of standards which could be applied across all disciplines within the larger field of psychology.

Expanding upon the definition of evidence-based practices for medicine, the APA 2005 Presidential Task Force on Evidence-Based Practice suggested that best-practices be applied to *all* forms of psychological service delivery—not just direct intervention (APA, 2006). Moreover, in an effort to ensure consideration of consumers' individual differences, the APA 2005 Task Force also expanded upon the definition of the consumer by suggesting that any individual interacting or associating with a psychologist be afforded evidence-based practice—not just the client receiving intervention. These definitional considerations were then coupled with the original work of the Task Force on Psychological Interventions of Division 12 of the APA (Chambless et al., 1996, 1998; see below) to round out the APA 2005 Task Force position paper published in the May-June 2006 issue of *American Psychologist* (APA, 2006).

Our field's interest in the topic area of evidence-based practice has dramatically increased during the past 20 years as demonstrated in an increasing rate of evidence-based practice publications. We conducted PsycINFO searches of the keyword phrase "evidence-based practice" for each publication year from 1987 to 2007. Figure 1 depicts a cumulative record of publications associated with the keyword phrase. These data suggest a rapid increase in the number of publications in the past ten years. Along these same lines, professional organizations and
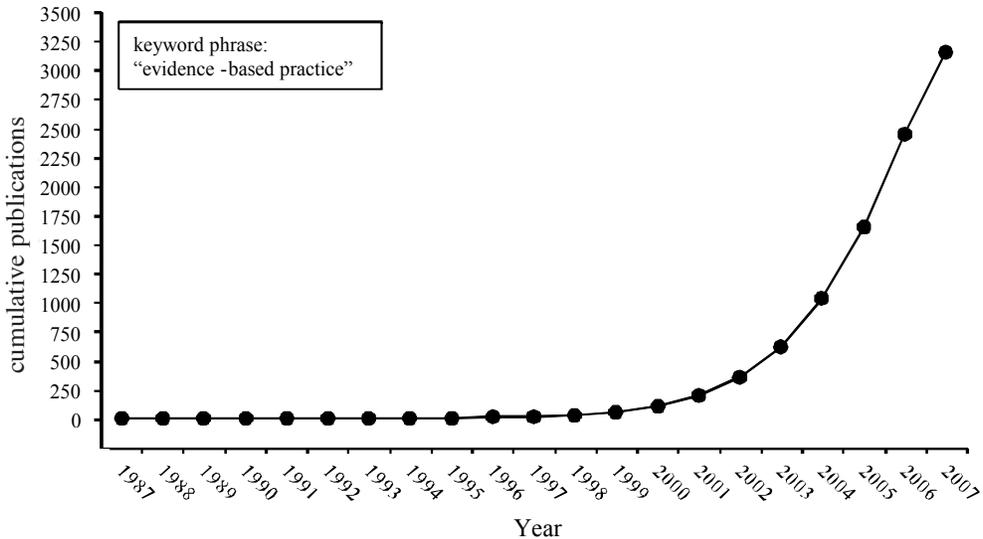
Figure 1. Cumulative record of publications in the PsycINFO database under the keyword phrase "evidence-based practice" from the years 1987 to 2007.

government agencies have investigated this further resulting in a number of websites (see Table 1) and position statements regarding evidence-based practice.

DEFINITIONAL ISSUES

Within the ever-growing literature base on evidence-based practices there also exists variability in the use of terminology with respect to the procedures and interventions that have research supporting their effectiveness. Terms such as *empirically-supported treatment* and *empirically-validated therapy* can be found in the literature. Other sources reference *scientifically-validated* or *research-validated interventions*. More recently, the term *evidence-based education* has begun to be used to describe informed decision-making where educational professionals select interventions that have empirical evidence (www.winginstitute.org). These terms, in combination with *evidence-based practice*, are often used interchangeably and clarification regarding their meaning is warranted.

Essentially, the goal is to answer the question, "does the evidence support continued implementation of a treatment?" In order to determine the scientific basis for a particular treatment, it has become customary to generate a set of standards against which the intervention/treatment will be evaluated. For example, the Task Force on Promotion and Dissemination of Psychological Procedures of Division 12 of the APA was charged with the responsibility of designating treatments as empirically-validated (i.e., empirically-supported). In order to accomplish this, they focused on well-controlled studies (efficacy research) at the exclusion of evaluating more applied research (effectiveness studies). The criteria used by the task force to determine the category of the treatment (e.g., well-established, probably efficacious, or experimental) was altered over time and is published elsewhere (c.f. Chambless & Ollendick, 2001). Generally, the task force considered the quality (e.g., research design and methodological rigor) and the quantity of the investigations. This hierarchical approach allows the strength of

evidence to be placed along some type of continuum (Detrich, 2008). Another approach to categorizing the evidence of interventions focuses on the number and size of the studies (i.e., threshold method). This approach assumes that a sufficient quantity of research for a particular treatment approach demonstrates evidence of that treatment's effectiveness. As an example, the What Works Clearinghouse (established by the Institute of Education Sciences of the U.S. Department of Education; http://ies.ed.gov/ncee/wwc/) has two ranking categories: the evidence is moderate/large or small. The evidence for a particular intervention domain may be classified as moderate/large if there is more than one study across more than one school with a sample size of 350 students or more (or at least 25 students across at least 14 classrooms). The evidence for a particular intervention domain may be classified as small if the intervention domain only includes one study, one school, or if the sample size is less than 350 students (and if there is less than 14 classrooms with at least 25 students per class). Other examples of different criteria exist (e.g., Holland et al., 2005; New York State Department of Health Early Intervention Program, 1999; Romanczyk, Gillis, White, & DiGennaro, in press) with the goals of generating a determination of the strength of evidence and demonstrating efficacy. If a particular treatment is shown to be efficacious, then it may be referred to as *empirically-supported* (Levant, 2005). Similarly, the treatment may be thought of as having a scientific basis (i.e., *scientifically-* or *research-supported*). Researchers have argued that these terms are superior to the term *empirically-validated treatment* since the latter denotes that research in that area is complete (Chambless et al., 1996) and most would argue that this situation rarely, if ever, happens. The reader is advised that state and federal agencies, professional organizations, and researchers use differing definitions for similar terminology (Kazdin, 2008). In

addition, a problem arises when a particular intervention may be considered efficacious by one set of standards, but fails to meet criteria by another set of standards (Detrich, 2008).

Evidence-based practice is a broader conceptualization of professional activities (Levant, 2005). Although some argue that it is a "shorthand term that denotes, the quality, robustness, or validity of scientific evidence" (Hoagwood, Burns, Kiser, Ringeisen, & Schoenwald, 2001, p. 1180), others propose that evidence-based practice should move beyond evaluating empirical support and consider the "dissemination, implementation, and sustainability of effective interventions" (EBP SIG, 2007, p. 1). Specifically, use of empirically-supported treatment may be necessary, but not sufficient for evidence-based practice.

Detrich (2008) outlined an interesting approach to evidence-based practice based on his work and that of his colleagues at The Wing Institute, which is a non-profit organization whose self-described mission is "to promote 'evidence-based' education policy and practice" (www.winginstitute.org). His framework for evidence-based practice includes three interrelated tasks: identifying, implementing, and evaluating interventions with empirical support. Detrich proposed that following the identification of an empirically-supported intervention, its implementation should be measured. That is, treatment integrity (or procedural fidelity) data should be collected. Treatment integrity refers to the degree to which an intervention is implemented as intended (Gresham, 1989). A body of research devoted to this topic has shown that, despite best intentions, treatment implementers often fail to implement interventions with integrity over time (e.g., Noell, Witt, Gilbertson, Ranier, & Freeland, 1997; DiGennaro, Martens & Kleinmann, 2007; DiGennaro, Martens & McIntyre, 2005). Fortunately, strategies exist in order to promote treatment integrity; however, without

direct measurement of this variable it would be difficult to evaluate the impact of an intervention (McIntyre, Gresham, DiGennaro, & Reed, 2007). That is, if we do not know the extent to which the treatment was actually implemented, we cannot confidently state that the treatment is responsible for any change in behavior or what variables might be contributing to little or no behavior change. This brings us to the last component of Detrich's model—evaluating interventions. In order to determine whether the intended effects of the treatment were obtained, practitioners must measure the behavior targeted for change. That is, progress monitoring is paramount to evidence-based practice.

SOME REMAINING QUESTIONS

As we have previously reported, the literature base on evidence-based practice continues to grow at a rapid rate. Despite widespread interest, evidence-based practice remains a controversial topic area and a number of questions regarding the evaluation and clinical application of empirically-supported treatments and evidence-based practices have yet to be answered. In addition to generating at least some consensus on the standards used across psychology and education, the following questions and concerns are areas for future professional debate and research.

1. Although there are a number of summary papers available free-of-charge on various internet websites (see Table 1), the exact research methodology used in the articles might not be available to clinicians who do not have access to search engines such as PsycINFO, PsycARTICLES, or ERIC. Although APA allows some access for certain member categories, practicing behavior analysts, teachers, and others may not be members and paying for each article separately is costly. Thus,

how might clinicians and educators stay up-to-date on this information in an effort to promote their own evidence-based practice?

2. As Detrich (2008) points out, there may be instances where one organization's standards of evidence classifies an intervention as efficacious when this same intervention fails to meet standards established by another organization. To whom should a clinician defer when presented with conflicting classifications? Others (e.g., Drake, Latimer, Leff, McHugo, & Burns, 2004; Evans, 2003; Odom et al., 2005) have discussed general considerations when facing this situation (e.g., the standards used, consumer needs, etc); however, these guidelines remain vague.

3. Given that many of the published studies included as part of the supporting evidence for a particular intervention are classified as efficacy studies (i.e., highly controlled) there is much concern about ways in which the research-to-practice gap can be bridged under these circumstances. Specifically, when effectiveness studies (i.e., applied studies) are lacking for a particular clinical need to what extent can efficacy studies inform clinical practice (Hunsley, 2007)? More importantly, how does the translation from research to practice facilitate improved patient or client functioning (Kazdin, 2006)?

4. Relatedly, effectiveness studies might wish to consider the relevance of the procedures used in well-controlled efficacy studies and systematically examine their impact on behavior when implemented "under routine practice conditions" (Hoagwood et al., 2001, p. 1186)?

5. As Ruscio and Holohan (2006) discuss, there may be times when idiosyncratic aspects of a case necessitate the need for modifications to an empirically

supported treatment. However, we do not know the degree to which deviations from the original treatment procedures render the treatment no longer empirically supported. How much variation is acceptable?

6. Under Detrich's (2008) model, treatment integrity and progress monitoring comprise evidence-based practice. How frequently should these measurements take place to ensure informed decision-making? In clinical settings where it is often a challenge to balance feasibility with best practice, how often do these data need to be collected in order to optimize the cost-benefit (e.g., resources expended-information gleaned) ratio?

7. What are the boundaries of external validity of a particular empirically-supported treatment? For example, can an intervention that is efficacious or effective with children with autism be ethically applied to an adult with brain injury? Are these applications considered clinical research and subjected to protections afforded to research participants? At what point does the clinician move away from evidence-based practice in this type of application if treatment integrity and progress monitoring data are also collected?

8. What are the variables associated with the selection of an empirically-supported treatment when multiple options are available? How might this be related to treatment integrity and intervention outcomes?

9. Although Horner and colleagues (2005) outlined a set of criteria for examining single case research designs in the pursuit of evidence-based practice, the field of applied behavior analysis has not come to a consensus about how best to evaluate behavior analytic research. Future discussion should follow.

10. A demonstration of statistical significance or large effect sizes do not necessarily imply that clinically significant or socially valid changes have occurred from the client's perspective (Kazdin, 2006). Thus, the practitioner is encouraged to consider this when examining research. In addition, effectiveness studies would benefit consumers by incorporating measures allowing demonstrations of statistical and clinical significance.

ADDITIONAL RESOURCES

As outlined above, the transportability of empirically-supported treatments to clinicians may be limited due to the lack of institutional access to databases or from limited funding. However, there are several worthwhile resources which are commercially available to the public. For example, the edited volume *Evidence-Based Psychotherapies for Children and Youth* by Kazdin and Weisz (2003) introduces readers to efficacious treatments for social, behavioral, and emotional problems in children. Moreover, Luiselli, Russo, Christian, and Wilczysnki offer the edited volume *Effective Practices for Children with Autism: Educational and Behavioral Support Interventions that Work* (2008) as a compendium of thoughts and discussion on evidence-based practices for the treatment of autism. While Luiselli et al.'s volume specifically targets autism, its logic and guidelines may be applied to a variety of other psychological and behavioral problems. Interested readers may also wish to subscribe to *Journal of Evidence-Based Practices in Schools* which identifies and describes in non-technical language empirically-supported treatments for school-related problems. Finally, readers should anticipate publication of the results of the National Autism Center's National Standards Project—a large-scale project aimed exclusively at developing a source on empirically-supported treatment

for autism—sometime in 2008 (Wilczynski, Christian, & the National Autism Center, 2008).

In addition to these print resources, information on evidence-based practices is available at no cost via the worldwide web. Numerous agencies have compiled websites and clearinghouses aimed at identifying and disseminating empirically-supported treatments. Table 1 provides a directory of some of the most comprehensive and reputable websites on this topic.

Concluding Thoughts

The zeitgeist of psychological inquiry of the 21st century has undeniably become the issue of evidence-based practice in service delivery. In a relatively short timeframe, the topic of evidence-based practice has emerged from a theoretical model of best practice to an entire classification system for the integration and utilization of empirically-supported treatments to meet the individual needs of the consumers of our services. In just 20 years,

Organization	Target Population	Web Address
Evidence-Based Treatments for Children and Adolescents	Children and adolescents	http://sccap.tamu.edu/EST/
National Autism Center	Children and adolescents with autism	www.nationalautismcenter.org/
National Dissemination Center for Children with Disabilities	Children with various disabilities	http://research.nichcy.org/
Promising Practices Network	Children and family	www.promisingpractices.net/
Evidence-Based Program Database	General	www.alted-mh.org/ebpd/
National Guideline Clearinghouse	General	www.guideline.gov/
Task Force on Psychological Interventions Guidelines	General	www.apa.org/divisions/div12/cppi.html
American Psychiatric Association Practice Guidelines	Individuals with psychiatric disorders	www.psych.org/mainmenu/psychiatricpractice/practiceguidelines_1.aspx
The Access Center	K-8 children	www.k8accesscenter.org/training_resources/
Center on Instruction	K-12 children	www.centeroninstruction.org/
Education Commission of the States: Research Studies Database	K-12 children	www.ecs.org/rs/
The Wing Institute	School-aged children	www.winginstitute.org/
UCLA School Mental Health Project	School-aged children	http://smhp.psych.ucla.edu/clearing.htm
What Works Clearinghouse	School-aged children	http://ies.ed.gov/ncee/wwc/

Table 1.
List of free online resources regarding evidence-based treatments

over 3500 publications on the topic of evidence-based practice have been offered to researchers and clinicians who are expected—if not federally mandated—to synthesize this entire literature base into practice. Despite a seemingly rich body of literature on this issue, many questions and issues remain which preclude an efficient and succinct understanding of this topic. In addition, the impact on the individuals we serve might well be that they are not receiving the quality of services afforded by evidence-base practice. It is our hope that this paper will provide a rudimentary understanding of this complex issue and offer suggestions for additional research and/or practice considerations.

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