From the Editors…

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Needles in Haystacks: Searching for Evidence

Evidence-based decisions comprise three critical components: the external evidence, the client's needs, and professional judgment (Sackett et al., 1996). Of all three components, the external evidence may arguably be the most daunting for clinicians. External evidence cannot be culled from information learned in graduate school, nor can it be obtained by consulting with former mentors or professional experts on a particular subject (see Ratner, 2006). Rather, external evidence is information gleaned from original research articles that inform a particular clinical question. In this editors' note, we explore how to search for relevant external evidence and identify resources available to speech-language pathologists to facilitate using evidence-based practices.

The first step in conducting a search for external evidence is generating a well-defined question (see Schmitt and Justice, 2008). As an example, consider the following clinical question: "Does more intensive therapy result in improved outcomes for children with language impairment?" From this question, brainstorm all possible words and word combinations that capture the desired information. For this example, there are three key components: intensity, children, and language impairment. Brainstorming possible words and word combinations may result in the following keywords:

Intensity	Children	Language Impairment
Dose/Dosage	Child	Language Disorders
Frequency	Pediatric	Language
Treatment Intensity	Preschoolers	LI
Scheduling	School-age	Specific Language Impairment

Once a list of possible keywords has been generated, identify an appropriate research database. A research database is an electronic catalog of information—often journals, books, or other publications (e.g., dissertations, newsletters)—accessed from a library. The challenge in searching for external evidence is that each database serves a different purpose and provides access to different journals. For instance, the PubMed database, sponsored by the National Library of Medicine, links readers to medically based journals. The ERIC (Education Resources Information Center) database, sponsored by the Institute of Educational Sciences, provides readers with access to educationally relevant journals. A search for ideal intensity parameters for children with language impairment will generate very different information from a search in PubMed versus ERIC. For this reason, you may want to conduct your search in a few different databases to ensure you find all relevant information for each clinical question.

Once the keywords have been generated and the databases identified, you should include combinations of your keywords in the search boxes. Let's consider the role of keywords with the intensity example. In the ERIC database, if you only include "intensity" in the search boxes, the database returns over 3,800 hits across a myriad of topics including physical fitness, college enrollment patterns, and moral judgments. However, a search in the same database using "intensity AND child AND language impairment" results in only 33 hits more narrowly focused on the intended topic of treatment intensity for children with LI. Identifying appropriate keywords and using combinations of these words can effectively limit the search results to those most applicable to the clinical question.

Next, scan the titles and abstracts for relevance to the clinical question. The title gives a high-level look into the topic of the article and the abstract provides a synopsis of the study; both are useful in determining whether a particular article is worth reading as a source of external evidence for a particular clinical question. The databases will also highlight the search terms within the titles and abstracts. If none of the keywords appear in the title or the abstract, or if too many titles seem irrelevant to the clinical question, then try a different combination of terms. There is no need to read the entire article if the title and abstract do not inform the clinical question. When you find an article that is a good fit for the clinical question, you can use that article to lead to other relevant articles in a couple ways. First, many databases will offer an "as cited by" link that will take you to other recent articles that cited the source found in the initial search. Other databases have a "find similar" link that looks for other articles with content similar to the one originally identified. Finally, use the reference list from the original article to identify other published research articles related to the search topics. Always consider findings from multiple research articles to better understand the current state of evidence for a given topic.

In addition, there are several resources available for SLPs and other professionals in which the evidence-based information has already been assimilated. These sources are useful to SLPs who need immediate information on a specific topic but don't have the time or access to libraries to conduct their own searches. These resources include:

Resource	**Website**
Compendium of EBP Guidelines and Systematic Reviews	http://www.asha.org/members/ebp/compendium/
Practice Portal	http://www.asha.org/practice-portal/
What Works Clearinghouse	http://ies.ed.gov/ncee/wwc/
EBP Briefs	http://www.speechandlanguage.com/ebp-briefs

The mandate to conduct evidence-based practice comes with much responsibility. You must be willing to continuously update your clinical knowledge beyond what you learned in graduate school, question the opinion of experts in the field, and integrate new-found information into your practice. Although there are many steps in conducting an evidence-based search—including asking a clinical question and considering the findings in light of client and professional needs—one critical step is finding appropriate tools and resources to collect external evidence to inform your clinical questions. We hope that the information presented here will enable you to conduct efficient and effective searches for evidence.

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