Communication and Language Intervention Series

Treatment of Language Disorders in Children

Second Edition

edited by

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Contents

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1

Introduction to *Treatment of Language Disorders in Children, Second Edition*

Rebecca J. McCauley, Marc E. Fey, and Ronald B. Gillam

ABSTRACT

In this chapter, we introduce this book's organization and the template used by contributing authors to structure the 14 chapters that address individual interventions. In addition to reviewing a model of intervention structure, we summarize trends in treatment development and implementation that serve as a backdrop for current and future actions by both researchers and clinicians. We also suggest ways that different audiences can take advantage of the book for their own purposes—placing greatest emphasis on how to use the intervention descriptions to inform decisions about whether and how to incorporate each intervention into plans for the management of language disorders in children.

THE PURPOSE OF THIS BOOK

The main purpose of this second edition of *Treatment of Language Disorders in Children,* as in the first edition, is to make it easier for readers to learn about and evaluate current treatments for children with language disorders. We introduce 14 evidence-based language interventions for children, and we provide specific information on how to conduct each treatment. Furthermore, we highlight claims of value associated with each treatment approach and facilitate readers' evaluations and comparisons of the interventions in terms of their clinical procedures and the extent of their research base. We want to help readers develop strategies for accessing and interpreting the complex web of information that constitutes evidence that does and does not support the value of an intervention. We consequently have planned the book's organization carefully, recruited outstanding researchers as chapter authors, and diligently edited what they produced with the intent of giving readers the information they need regarding when a decision to use an intervention may be judged "evidence based" and how the intervention can be successfully implemented.

Although beginning and seasoned speech-language pathologists (SLPs) form the principal audiences of this volume, we also hope this book serves professionals in other fields, such as education and psychology, who want to know more about interventions used with children with language problems whom they serve. Furthermore, families of affected children may find this a useful tool for investigating one or more interventions proposed for use with their child. To serve these broader purposes, we offer recommendations regarding how members of these differing audiences might select sections to read or ways to use and supplement the information they obtain.

THE BOOK'S ORGANIZATION

Although the major structure of the 14 treatment chapters in the book is very similar to that used in the first edition published in 2006, the organization of sections and the treatments included in them have changed, sometimes considerably. An entire section from the earlier edition that included nonlanguage interventions (e.g., sensory integration) has been omitted. This means that the book now contains just two sections, with one addressing language problems characteristic of infants, toddlers, and preschoolers and the other targeting problems found in school-age children.

We have made significant changes in the interventions included in each section as well. Seven of the original chapters have been updated to reflect ongoing developments as the interventions have continued to be studied and implemented (Chapters 2, 3, 4, 5, 6, 8, and 10). Eight of the interventions from the first edition were not carried over to this edition, for reasons including insufficient fit with the new sectional organization, a lack of new research exploring their use, or their recent description in related volumes. In their place, seven different interventions have been added. Three of these new chapters expand the book's attention to literacy and its precursors, including chapters on print referencing (Chapter 7), word decoding, reading comprehension (Chapter 11), and narration (Chapter 13). In addition, two of the new chapters target more complex language (Chapter 12) and social communication skills (Chapter 14) and two others address bilingualism (Chapter 9) and service delivery models (Chapter 15).

As noted previously, we have included more interventions dealing with written language in this volume. In so doing, we have tried to maintain our focus on children who exhibit or have histories of spoken language disorders and the relationship between these early problems and reading disabilities. Though we have intentionally paid greater attention to interventions targeting skills associated with early reading development, this is not designed to be a book on intervention for children with reading disabilities, per se.

HOW TREATMENTS ARE DESCRIBED IN THIS BOOK

Table 1.1 describes the template adhered to by the authors of the intervention chapters. The template—a description of content areas and headings used to signal them—was devised to focus on theoretical and empirical information supporting an intervention's use as well as practical and procedural information that can help clinicians determine the intervention's feasibility for their setting and client population and, possibly, set the clinician on the path to learning and using it. Several relatively small adjustments to the earlier template version are noted in the description that follows.

Following a very brief **Abstract**, a longer **Introduction** section provides more extensive, but still concise background information. The next section, **Target**

Table 1.1. Content specifications of the template followed within each chapter

Section	Content
Abstract and Introduction	Overview and broader introduction to the intervention and the chapter itself, including the specific individuals for whom the intervention is designed, the intervention's basic focus, and its key methods
Target Populations	Description of populations for which empirical and/or theoretical support is available with regard to variables such as age, diagnosis, and prerequisite skills
Theoretical Basis	Outline of the dominant rationale for the intervention, including assumptions about the deficit, compensatory strategy or strength that is targeted and the nature of the desired outcomes (e.g., improvement in social participation, acquisition of specific morphosyntactic forms)
Empirical Basis	Detailed discussion of research studies supporting the treatment or components of it for use with target population, including as a new component, and a level of evidence table that provides a quick reference regarding the strength of designs and outcomes included in cited studies
Overview of Assessment and Decision Making	Description of the major assessments and assessment points used to reach decisions regarding 1) the appropriateness of the intervention, 2) initial and subsequent treatment targets, 3) advancement through treatment, and 4) treatment termination. New to this edition is the inclusion of a flowchart to illustrate these processes.
Practical Requirements	Time and personnel demands, including training for all intervention agents (e.g., clinicians, family members, aides), types of sessions (e.g., group/individual) and dosage information (e.g., number of teaching sessions, total intensity duration)
Key Components	A description of the approach that may include discussion of the type of goals targeted; strategy for addressing multiple goals (e.g., sequential, cyclic, simultaneous); procedures (therapeutic actions by the intervention agent); activities (interactional context in which procedures are embedded, e.g., conversation, storybook reading); materials and roles of secondary intervention agents
Considerations for Children from Culturally and Linguistically Diverse Backgrounds	Descriptions of the applicability of the treatment to children from linguistically or culturally diverse backgrounds and ways in which it might be modified to be more appropriate for such children
Application to an Individual Child	Description of one or more children for whom the intervention could be expected to be helpful, used to illustrate children's responses to intervention and ongoing decision making
Future Directions	Description of research needed to support and extend existing claims of treatment effectiveness for the current population as well as those for whom it has suspected, but untried, value
Video Clip Description(s)	One or more video clips selected to illustrate components of the intervention, thus providing viewers with a richer understanding of the nature of the intervention and its demands
Recommended Readings	A small group of references directing readers to pertinent additional information about the intervention
Learning Activities	A set of questions or activities designed to help readers make the best use of the text or video content associated with the chapter

Populations, identifies the client populations for whom the intervention has been developed and child characteristics that might either enhance or detract from the intervention's appropriateness. Whereas in the earlier edition, discussion of assessments used to identify candidates for an intervention was included in this section,

that content has now been consolidated in a single later section related to the ongoing processes of assessment.

There are many terms that are used by the chapter authors to refer to children who experience significant difficulties learning and using language. The World Health Organization (2001) uses the word *impairment* to refer to any loss or abnormality of psychological, physiological, or anatomic structure or function. With respect to child language development, most authors have used the term *language impairment* to refer to describe children with significant delays in the development of language comprehension or use. The term *specific language impairment* (SLI) is often used to refer to delays or deficits in language that cannot be attributed to hearing, intellectual, emotional, or acquired neurological impairments (Bishop, 2014). There are two classification categories in the Individuals with Disabilities Education Improvement Act (IDEA) of 2004 (PL 108–446) that are used for children who present significant language learning difficulties (U.S. Department of Education, 2014). Children who present with developmental language difficulties that primarily affect communication and socialization are referred to as having language impairment (LI) during the preschool years or when they are in kindergarten or first grade. Over time, children with LI often demonstrate significant academic problems including poor reading comprehension and written composition skills (Catts, Bridges, Little, & Tomblin, 2008; Scott, 2011) that can continue into adulthood (Johnson, Beitchman, & Brownlie, 2010; Young et al., 2002). Children with a learning disability (LD) primarily present with academic problems that appear during the school-age years. Students with LD are characterized by persistent and intractable difficulties in academic areas, such as literacy, that are often associated with underlying language learning difficulties (Vaughn & Bos, 2014), making them an appropriate target population for study and treatment. Some authors have argued that LI and LD represent a continuum of deficits in language learning (Bashir, Kuban, Kleinman, & Scavuzzo, 1984; Sun & Wallach, 2014). However, most of the authors of the chapters in this volume have decided to refer to these groups separately because they are often treated that way by school assessment teams across the nation. The LI or SLI diagnosis is more commonly used for children in preschool, kindergarten, and first grade who are at the earliest stages of academic learning, whereas the LD diagnosis is more commonly used for children in second grade or beyond who have not profited from academic instruction after having sufficient educational opportunity to do so. The fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (*DSM-5;* American Psychiatric Association, 2013) uses the term *language disorder* to refer to children whose language abilities (comprehension or production) are "substantially and quantifiably" below age expectations.

Careful readers will note that the terms *language impairment, specific language impairment, primary language impairment, language disorder,* and *language learning disability* are used by the authors of the chapters of this book. Rather than restrict all the authors to the use of one term and, more importantly, to assign meanings to these terms that are not well recognized in the field, we have allowed authors to use terms of their own preference and to define the terms explicitly when they have used them to refer to distinctive subgroups of children who have difficulties with language development. Although we risk adding to the terminology confusion, we believe that our use of multiple terms for developmental language difficulties is reflective of the current state of the literature in this area.

These introductory sections are followed by two of the most critical sections of each chapter—the sections on the intervention's theoretical and empirical basis. The **Theoretical Basis** section describes the conceptual roots of the intervention. Interventions often, if not always, are designed in light of more, or less, well-defined models or theories addressing the nature of problems underlying children's delays or abnormalities in language acquisition and/or the mechanisms by which those problems may be mitigated, resolved, or circumvented to improve a child's language and communication function. In the Theoretical Basis section, authors are asked to explicate these foundations for their intervention. This section can help a reader determine whether an intervention seems of likely value on a rational basis in the absence of a long history of research or a history that fails to include research specific to the clinician's caseload or context.

The **Empirical Basis** section presents a summary of the current evidence supporting an intervention's efficacy and effectiveness for specific populations. Thus, it is one of the most important sections for readers wanting to identify interventions with stronger rather than weaker research portfolios (a central tenet of evidence-based practice). When considered by itself, this section admittedly constitutes a narrative review written by committed developers or proponents of the intervention and, as such, is therefore necessarily subject to bias. However, the empirical summaries can orient readers to recent research on the intervention being addressed and provide preliminary accounts of the nature of existing support. In this edition, to bolster the transparency and accessibility of information about the quality of studies being cited, we have asked authors to tabulate levels of evidence for the studies they cite. To be specific, authors were asked to describe studies in terms of an adaptation of the Scottish Intercollegiate Guidelines Network (SIGN) system, which is also used by the American Speech-Language-Hearing Association web site for content related to appraisal of research evidence. In the SIGN system, a study along with its resulting outcomes (evidence) is appraised in terms of the extent to which the research design it uses can support causal interpretations and rule out alternative explanations for the results (see Table 1.2 for a brief introduction).

Despite the potential value of an evidence table based on a system such as that offered by SIGN, readers should be alert to the fact that empirical support for an intervention will sometimes be derived from indirect evidence—for example, when an intervention or manipulation of one component of the intervention is studied and supported in one population and then used for thinking about potential effects on another. It has even been argued that parallel evidence from related fields may sometimes prove valuable (e.g., Bernstein Ratner, 2006). Furthermore, because the SIGN levels are described generally, various readers may differ in the level of evidence they assign to the same study; no reliability data were obtained as part of our editorial process. Although it is always the case that generalizing from research on a group or even a well-described individual (e.g., in a single-subject experimental design) to an actual client or patient requires something of a leap of faith (Ylvisaker et al., 2002), this leap is larger when the evidence is based on studies of a sample of children drawn from one population (e.g., children with Down syndrome) and the specific decision being addressed by the practitioner involves a child drawn from another (e.g., a child with SLI or with intellectual disability but not Down syndrome). Such decisions require greater scrutiny and usually warrant less influence on decision making. On the other hand, strong evidence is usually in short supply; clinicians who have strong evidence supporting use of an

Table 1.2. American Speech-Language-Hearing Association (ASHA) adaptation of the Scottish Intercollegiate Guidelines Network (SIGN) system used in appraising evidence quality

Level	Description
Ia	Well-designed meta-analysis of > 1 randomized controlled trial
Ib	Well-designed randomized controlled trial
IIa	Well-designed controlled study without randomization
IIb	Well-designed quasi-experimental study
III	Well-designed nonexperimental studies (i.e., correlational and case studies)
IV	Expert committee report, consensus conference, clinical experience of respected authorities

From American Speech-Language-Hearing Association (ASHA). (n.d.). *Step 3. Assessing the evidence.* Retrieved from http://www.asha.org/Research/EBP/Assessing-the-Evidence/; reprinted by permission. Originally adapted from Scottish Intercollegiate Guidelines Network. (n.d.). *SIGN grading system 1999–2012.* Retrieved from http://www.sign.ac.uk/guidelines/fulltext/50/annexoldb.html

intervention approach with a group of children that differs from their client's group must ask, "Why would these results *not* apply to individuals like those in my client's group?" and keep careful records of the client's response to the intervention.

The section titled **Overview of Assessment and Decision Making** is intended to allow authors to identify measures and methods for determining that a child is a likely candidate for the intervention and for examining how the child is responding to the intervention. Treatment data (which are sometimes referred to as internal evidence) are critical to clinical decision making for a given child, beginning with initial decisions about enrollment to ongoing decisions about changes in goals or methods within an intervention, to more final decisions regarding dismissal. Because of the importance of such decision making, we also asked authors to construct a flowchart describing major decision points arising during the use of their intervention. The inspiration for this graphic addition came from a book edited by Yoder and Kent (1988) that was a collection of annotated flowcharts illustrating a variety of clinical processes. In this book, flowcharts are used to augment the prose descriptions of stages in the intervention process as well as to indicate how assessments and decisions are connected over the course of the intervention.

Two later sections of each treatment chapter—**Practical Requirements** and **Key Components**—are designed to illustrate, in much greater detail than is possible in research reports in professional journals, how the intervention should be implemented. In the Practical Requirements section, authors identify resources necessary to carry out the intervention in terms of personnel, training, time, and materials important for the treatment's implementation. In the Key Components section, authors describe the structure of the treatment in greater detail, including the procedures used by all of those involved in administering the intervention, the types of activities within which the procedures have been implemented, and the service delivery models in which the intervention has been successfully tested. More information is provided as well about the nature of treatment goals in this section. These two sections along with the video clips that accompany the book may help clinicians judge the feasibility of the intervention for their particular setting, knowledge base, and practice conditions.

The section entitled **Considerations for Children from Culturally and Linguistically Diverse Backgrounds** allows chapter authors to share general

recommendations for adapting the intervention based on knowledge of cultural differences in parenting, language use with children, and attitudes toward literacy, as well as specific adaptations developed during the course of research or clinical use. Although several of the intervention authors were able to point to studied adaptations, many were not. In fact, it is widely recognized that the field of speech-language pathology is still in the early stages of understanding how to provide interventions that can readily be distributed across cultures and languages in ways that retain treatment efficacy and effectiveness (e.g., Thordardottir, Cloutier, Ménard, Pelland-Blais, & Rvachew, 2015). Substantial barriers to the goal of more universal intervention design include continuing challenges in identifying disorder rather than difference in nonmainstream cultures and language groups (e.g., Dollaghan & Horner, 2011; Mills, 2015; Peña, Gillam, & Bedore, 2014) and the recognition that multiple factors (many of which are probably influenced by culture) affect the implementation fidelity of interventions (e.g., Dingfelder & Mandell, 2011; Justice, Logan, & Damschroder, 2015; Olswang & Prelock, 2015).

The **Application to an Individual Child** section provides information that supplements earlier descriptions of intervention methodology through the use of an extended example. The greater specificity and personal focus of this section may help some readers develop a clearer sense of what the treatment "feels like." Although this type of information adds little scientific weight to the process of choosing a particular treatment based on evidence of its efficacy, it may nonetheless prove helpful to readers as they assess a treatment's fit with their client families' values and clinician preferences.

In **Future Directions**, authors share their vision of the additional research needed to advance and broaden the efficacy and effectiveness claims that can be made on behalf of their intervention. In addition to promoting research by other investigators, this section should provide additional insight into the strengths and limitations of the existing evidence base for an intervention.

The **Video Clip Description** section has been included in order to further enrich readers' understanding of the treatment chapters. To accompany this volume, authors have contributed one or more video segments that appear on the Brookes web site (see About the Video Clips in the front matter). Although relatively short contributions were encouraged, contributors to the book were otherwise given considerable latitude in how they structured their video content.

Recommended Readings are designed to point readers to a small number of particularly valuable and often more comprehensive descriptions of the intervention. **Learning Activities** that appear at the end of each chapter are intended for use by instructors or especially dedicated independent learners to promote active engagement with the content described in each chapter. Please note also that authors have identified key terms shown in bold where they first appear in text. These terms are included in the glossary that appears at the end of the book.

A STRUCTURAL MODEL OF INTERVENTION

In this section, we present a model that identifies components that must be addressed explicitly or implicitly in the development of a language intervention approach. Authors of the chapters were not instructed to use this model in their description of

their interventions. Nevertheless, we present it because it can help readers to identify areas in which treatment decisions need to be made and to compare and contrast multiple interventions. It can also help with planning systematic modifications to an existing intervention—either for purposes of advancing research designed to improve it or for purposes of meeting the clinical needs of an individual child for whom it is a close, but imperfect, fit as currently specified. The model, represented graphically in Figure 1.1, is based on work by Fey and colleagues over almost 30 years (Fey, 1986, 1990, 1992; Fey, Catts, & Larrivee, 1995; Fey & Cleave, 1990). This figure reflects small but important modifications from the version that appeared in the first edition of this book.

Because the model focuses on the structure of intervention, the same components can be used to describe interventions based on different theories of the nature of the problem being addressed and on different hypotheses regarding the mechanisms by which intervention can effect improvement or compensation. Its use by readers may facilitate an appreciation of not only how basic theoretical differences lead to greater elaboration of some components over others but also of how different theoretical perspectives can converge on common structural components. In succeeding subsections, each of these components is described briefly.

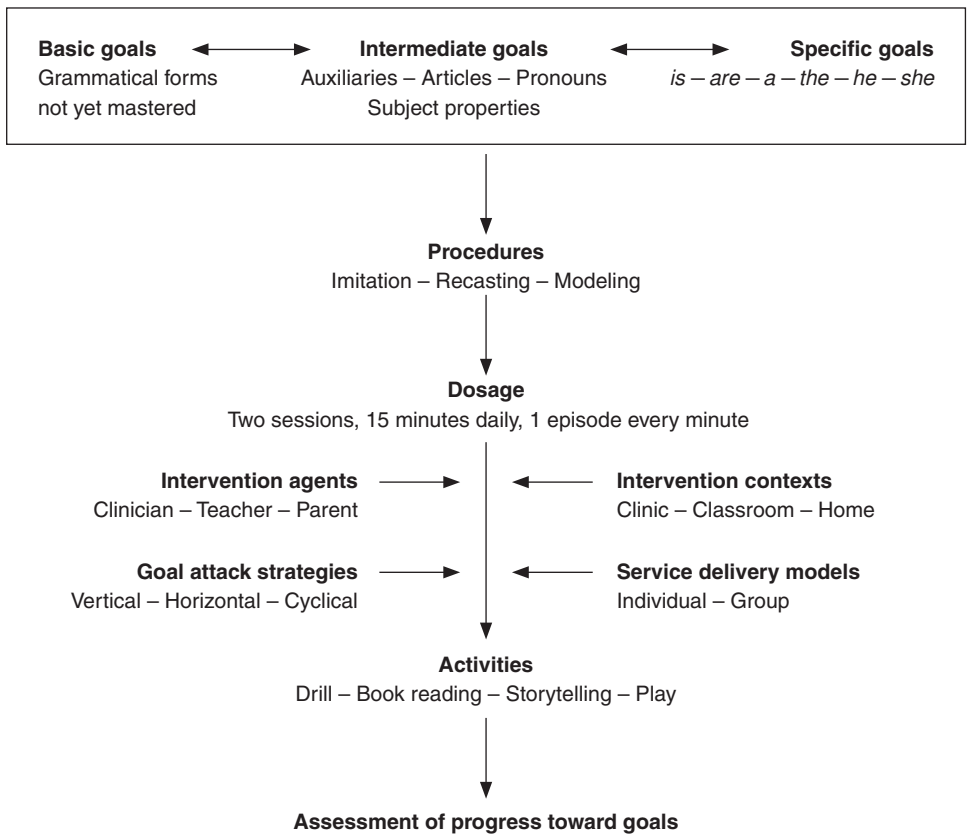

Figure 1.1. A model illustrating the multidimensionality of intervention focused on grammar.

Intervention Goals

Intervention goals were represented in the first part of the model within a hierarchy of increasing specificity, with four levels: basic goals, intermediate goals, specific goals, and subgoals (Fey, 1992). The use of four levels with an inflexible ordering has resulted in some interesting debates with our students and colleagues. First, it is often unclear as to whether a particular goal is best represented as one level rather than another—for example, is a semantic relation, like agent + action, better schematized as a specific goal or an intermediate goal? Second, in many forms of intervention (e.g., those based on operant theory), it is easy to identify many more than four levels of goals. Third, the hierarchical ordering sends a strong suggestion that decisions about goals always follow in the order shown: Basic goals are developed prior to intermediate goals, which are determined before specific goals, and so forth, when, in our own experience, this ordering was not inviolable.

In this newest rendition of our language intervention model, we list only three levels of goals, not even attempting to capture all the steps that are possible. They are represented horizontally with bidirectional arrows indicating that, although goals typically follow conceptually from basic to intermediate to specific goals, this is not always the ordering employed for decisions about goals. The bidirectional arrows are intended to show that, whatever their order in the decision-making chain, at every step of the intervention, the clinician is ultimately emphasizing functional objectives that should make notable changes in the child's communication abilities and quality of life.

Basic goals are the most general type. They identify the areas of a child's communication system or related domains on which the treatment will center. These areas are selected because they represent areas of the greatest importance from the standpoint of functionality or severity of deficit. For example, in a preschool child who is demonstrating little verbal output, the primary basic goal may be an increase in the frequency of communication attempts (e.g., to use existing words and multiword combinations more frequently). Another basic goal for the same child may be to increase the length and complexity of multiword constructions (i.e., learning new words and semantic relations) and/or increasing intelligibility. As an alternative, in a child of school age whose written narratives lack detail and semantic coherency, a basic goal might be greater use of standard story structural components in writing products.

Intermediate goals provide greater specification of areas within one or more basic goals that will be addressed during treatment. Intermediate goals can be seen as representing choices about the clinician's theoretical view of how information can be organized within the domain represented in the basic goal. Often, there are numerous levels of intermediate goals associated with a single basic goal. Because they are written at a level that is broader than goals considered to be specific, we regard them all as intermediate. For the preschooler with little verbal output and the basic goals of increasing verbalizations and increasing the length and complexity of multiword combinations, an intermediate goal might include increased use of words and multiword combinations that serve to request objects and services and/or to protest. For an individual child with few verbalizations of any kind, a clinician might reason that this goal should take precedence over the production of words that serve a commenting or other more purely social function. For example, it is relatively easy for the clinician to help the child learn and use target words and multiword constructions to obtain objects and services the child clearly desires. In this way, the clinician

can focus on the instrumental function of early word and phrase production. In fact, the clinician might hypothesize that if the intermediate objective of increasing the frequency of verbal requests is reached, the child might also increase productions of comments and other acts of joint attention without the clinician placing clinical emphasis directly on these nonrequestive speech acts. Furthermore, if the child increases word usage to perform requests, this might facilitate the child's use of new speech sounds, thus improving intelligibility. From the outset, then, the clinician may decide to target requests. If resulting increases in word usage are limited to requests, or if anticipated changes in the child's speech sound system do not arise, the clinician would raise the priority of other intermediate goals associated with joint attention and intelligibility and target them more directly.

For the school-age child producing deficient written narratives, an intermediate goal might be increased use of standard story grammar elements (e.g., introduction of characters, an initiating event, an attempt to respond to the initiating event and the consequences of the attempt) in retold oral narratives. If resulting increases in story grammar elements within student compositions include the generation of oral and written narratives the child is assigned to produce but fail to extend to personal narratives, the clinician may switch focus toward intermediate goals consistent with this basic goal, such as spontaneous production of key components of personal narratives.

Specific goals target specific exemplars of the language forms (e.g., words, grammatical forms, story structure), content (e.g., specific semantic relations, elements of story plot), or use (e.g., communication acts, aspects of topic management) that have been identified as intermediate goals. For example, specific goals for the preschooler in our ongoing example might focus on increased use of specific nouns to make requests to get things during a given routine, such as mealtime (e.g., *milk*, *banana*, *juice*). At least in the early stages, specific goals might include mostly nouns, but a focus on verbs and social words would be necessary if the child did not begin to use some of these forms spontaneously. The goals for the school-age child might similarly focus on increased inclusion or elaboration of setting, characters, and problem/initiating event in written narratives. Because of the interaction of related goals, specific goals imply more general goals, even when general goals are unstated (Fey & Cleave, 1990); that is, specific goals are never ultimate goals themselves. They are, rather, important steps along a path to their broader and more functional objectives (i.e., intermediate and basic goals). Selection of specific goals implies the clinician's assumption that the child will progress more rapidly on intermediate and basic goals if the intervention provides some type of focus on the specific targets. The clinician consequently must develop activities that will provide high concentrations of models and/or opportunities for use of the specific behavior or skill being targeted as a goal. This logic is clearly reflected in most of the treatments described in this book. A rare but clear exception is the focus on parental responsiveness to child communication in responsivity education (Chapter 3). In this part of responsivity education/prelinguistic milieu teaching, parents are taught to respond positively to most child communication attempts. There is no effort to focus on any specific child communication acts—that is, because there are no specific goals for this parent component, parents place no special emphasis on the child's acquisition and use of any particular language form or communication act.

In some intervention approaches, specific goals also imply multiple levels of *subgoals,* a carefully constructed set of measurable steps by which specific goals are achieved. Subgoals often incorporate operational measures of achievement that

relate more to the activities used in treatment than to the overall functional outcomes that represent the larger aspirations associated with more abstract levels of goal planning. In fact, subgoals are usually developed after choices are made about other components of the intervention, such as goal attack strategies and particular procedures (Fey et al., 1995). Thus, an early subgoal for our preschool child with limited verbal communication might be three to five uses of verbal or nonverbal requests during a snack activity with a verbal prompt, or even an imitative stimulus. As the child begins more consistent use of this type of word production with prompts, the prompts would be faded until the same words are used spontaneously to request common objects. At this point, the specific goal would have been reached, and other subgoals, requiring progressively more independence from the child, may be developed where necessary. A specific subgoal for an older child with limited skills at constructing adequate written narrative might be increased inclusion of characters at the beginning of all child-generated stories with graphic reminders of story elements provided. As the child becomes more proficient at including information about the characters, the visual icons representing story components would be faded until the child consistently included a character description in self-generated stories without cuing, thereby meeting the specific goal. These types of objectives are especially characteristic of interventions that are based to some degree on operant conditioning and were the hallmark of operant approaches from the 1960s and 1970s (e.g., Gray & Ryan, 1973).

Goal Attack Strategies

Consider a case in which a clinician identifies three semantic relations—agent + action, action + object, and attribute + object—as goals for a preschooler limited to single-word productions. A key question in this case is "How do I help the child to reach all three of these goals most efficiently, given that each is developmentally appropriate and that development of these three relations could lead to spontaneous facilitation of other multiword constructions?" Goal attack strategies offer methods for managing multiple goals at the same level (e.g., specific goals, subgoals) within a child's intervention. Fey (1986, 1990, 1992) identified three general strategies that provide options in the answer to this question, although there are many possible variations of each, and we know very little about how they affect treatment outcomes. *Vertical strategies* involve a progression from one goal to another, and advancement to the next goal is based on the child's attainment of a predetermined level of performance on an outcome variable. In our example, the clinician would prioritize the three goals and attack them one at a time, waiting for some criterion on the first goal before attacking the second goal, and so forth. *Horizontal strategies* involve simultaneous attention to multiple specific goals within a single session. Within this strategy, all three semantic relations would receive focus in each intervention session. This strategy may increase the time it takes for a child to reach criterion for a single target, but it may shorten the time it takes for the child to learn all three relations, and it may hasten the child's development of other multiword relations and combinations of relations. *Cyclical strategies* involve clinical focus on one goal for a period of time, followed by movement to another goal whether or not the child makes progress on the first goal. In our example, agent + action might be the focus of the Week 1 sessions, followed by attribute + object during Week 2 and action + object during Week 3.

At Week 4, the cycle is continued by starting again with the Week 1 goal. This strategy is based on the assumption that the child will continue learning, even when a goal is no longer serving as a focus of treatment (Hodson & Paden, 1991). Thus, over time, the child would be expected to acquire more language forms with the cyclical approach than the more traditional vertical approach.

Procedures and Activities

Procedures consist of all of the acts performed by the intervention agent that are expected to lead the child directly to the intervention goals. They make up what may be hypothesized to be the "active ingredients" of the intervention and include a variety of acts, such as modeling the child's target, giving the child structured practice with the target, reinforcement of the child's use of target behaviors, systematic responses to child utterances or actions, and even explicit description of the target (Fey, 1990).

Activities create the social and physical conditions within which the intervention agent may apply the procedures. They fall along a continuum that moves from a high level of adult intrusiveness toward less structure and greater similarity to the child's life outside of treatment (Fey et al., 1995). The most intrusive activities tend to be some form of drill. In the middle of the continuum, we include gamelike interactions that are selected or are structured to provide some emphasis on the child's specific goals. The least intrusive activities are those that occur outside the context of conventional therapy, including play, bath time, and snack time for younger children and art class, group writing assignments, or even reading group for school-age children. Although the activity is virtually the same as the procedure in some cases, such as drill, it is fruitful to keep these constructs distinct. For example, a child may gain no special language or communication benefit from dinnertime or play during the bath. The same activity, however, may provide multiple opportunities for the intervention agent to model the target, for the child to attempt it, and for the adult to respond to the child's attempts. Language intervention takes place only when special procedures, designed to instruct and provide opportunities for use and mastery, are applied during the course of activities, which may in turn require the adult to intrude to varying degrees on the child's agenda.

Activities are the most obvious aspect of treatment because they are the part that can easily be described by an observer with little knowledge of the intervention. Lay observers, and at times even beginning clinicians, can sometimes confuse an activity with an intervention as a whole. That is, the observer recognizes the activity but fails to take note of the procedural steps taken by the interventionist. Selecting or creating the appropriate activity, however, requires considerable skill. It is not easy to create activities that are meaningful and motivating for the child yet provide many opportunities for the application of intervention procedures directed toward specific goals. In fact, successful activity planning requires attention to many other elements of intervention, including the goals of the intervention (at all levels), the assumed mechanism by which learning will take place most efficiently, and the availability of particular agents and materials.

Dosage

According to Warren, Fey, and Yoder (2007), language intervention dosage relates to dose, or the amount of time the intervention procedures are applied at a single setting

(e.g., 30 minutes per day at an average rate of one teaching episode per minute), dose frequency, or the number of times a dose is applied over a fixed period (e.g., three times weekly) and dose duration, or the amount of time over which the intervention is applied (e.g., the 16-week semester). Because group interventions necessarily reduce the number of teacher episodes that are possible in an individual session, we also view consideration of service delivery individually or in groups as a dosage issue. As a topic in communication disorders, an interest in the role of dosage has grown dramatically over the past few decades (e.g., Baker, 2012; Cherney, Patterson, Raymer, Frymark, & Schooling, 2008; Fey, Yoder, Warren, & Bredin-Oja, 2013; Law & Conti-Ramsden, 2000; Schmitt & Justice, 2012; Zeng, Law, & Lindsay, 2012).

Anyone who has pursued the acquisition of an unfamiliar skill as an adult, such as playing the piano or learning to golf, has probably developed the suspicion that, at least in general, more attempts at learning result in "better" learning than do fewer efforts: Practice makes perfect, after all. On the basis of available evidence from various forms of human learning (e.g., Manes & Robin, 2012; Schmidt & Wrisberg, 2008), we can further infer that dosage may have huge effects on outcomes. There is a broad literature indicating that learning based on trials that are spaced over time is better, in the sense of more lasting and more likely to generalize, than learning that occurs with massed trials (e.g., Magill, 1998). This literature makes clear that more may not always be better. However, although dosage differences have been raised as an explanation for the better results of some treatment approaches over others (Kamhi, 1999; Law & Conti-Ramsden, 2000), there has been very limited systematic study of this aspect of treatment among children with language disorders (see Chapters 3, 5, and 15 for some exceptions and for some evidence that more is not always better). In clinical practice, scheduling the frequency of treatment sessions is often guided by no stronger a principle than the notion that children with more severe impairments are generally seen more frequently than those with less severe impairments (Brandel & Loeb, 2011). Still, clinicians who use the results of published studies to support their intervention choices must attend closely to dosage. They should be concerned whenever they choose or are forced to select a treatment intensity that differs significantly from that used in published research reports (as is often the case).

Intervention Agents

Intervention agents are typically individuals who interact with the child for the purpose of realizing treatment goals. SLPs, parents, other caregivers, teachers, paraprofessionals, and, less frequently, peers can act as agents in interventions proposed for children with communication disorders. Although SLPs are typically the most active in planning details of an intervention, the actual implementation of the intervention may rest in the hands of other competent communicators who are taught to carry out activities and use procedures deemed helpful to the child's attainment of intervention goals (see Chapters 2, 3, 4, 5, 8, and 15).

Intervention Context(s)

Contexts are the social and physical environments in which interventions take place. Physical contexts include the child's home, classroom, or clinic room. Contexts in which interventions are carried out may be selected on theoretical grounds because of their functional value to the child (Bronfenbrenner & Morris, 1998) or because of increased

expectations of generalization and maintenance of behaviors. Contexts are often selected on practical grounds; for example, participation by parents is often feasible only in some settings, such as the child's home. When the context is forced by such circumstances, there are often ramifications in other components of intervention. For example, it may be possible to utilize certain procedures, such as recasts (Chapter 5), within the typical classroom setting or when children are working in small in-class groups. It may not be possible, however, to implement certain procedures, such as imitative drill or observational modeling, in a discreet manner within the classroom setting.

Comprehensive Assessment of the Intervention

Within the structural model of intervention described thus far, the child's achievement of subgoals represents an integrated and handy method by which the effects of the intervention can begin to be gauged for an individual child. In general, performance-related goals that are more specific and represented more to the right in Figure 1.1 are easier to measure than more functional goals farther to the left in the figure. There is an inherent danger here, however. Because subgoals are so highly particular to specific procedures and outcomes, progress on subgoals may or may not lead to predictable achievement on the higher level goals that prompted intervention in the first place (Fey & Cleave, 1990). Because the intent of intervention is to effect positive change in a child's life, it is important to determine whether goals that are relatively less abstract and less functional (e.g., subgoals/specific goals) are having the desired effect of helping the child to attain broader, more functional goals (e.g., intermediate/basic goals). Attainment of basic goals should ultimately lead to meaningful changes in the child's life, and those changes should be (and increasingly are) carefully measured (Bain & Dollaghan, 1991; Bothe & Richardson, 2011; Kazdin, 2001; McCauley, 2001).

EVIDENCE-BASED PRACTICE AND TREATMENT OF CHILDREN WITH LANGUAGE DISORDERS

Evidence-based practice—an outgrowth of evidence-based medicine, which began in the 1990s (Sackett et al., 2000)—has blossomed into arguably the dominant framework for the discussion of decision making within professions that both claim a scientific base and an overriding goal of providing help to others. These include professions such as psychology, social work, physical and occupational therapy, and speech-language pathology. In its various formulations (e.g., Dollaghan, 2007; Meline & Paradiso, 2003; Gillam & Gillam, 2006; Straus, Glasziou, Richardson, & Haynes, 2011), evidence-based practice (EBP) is generally intended to help structure discussions about what general categories of information (i.e., research evidence, clinical expertise and preferences, and client values and preferences) should be used in decision making and how that information (especially in the instance of research evidence) should be prioritized. Since the American Speech-Language-Hearing Association (2005) first began to promulgate this framework in the mid-2000s with the publication of a position statement on the topic, EBP has been embraced by researchers and by educators involved in clinical training (Togher et al., 2011). Although not without its detractors and controversies about how it should be realized "on the ground" (Roulstone, 2011), we feel confident that it can help readers make use of this book.

Table 1.3 offers a very simple overview of the steps recommended in an EBP approach to treatment selection (Dollaghan, 2007; Gillam & Gillam, 2006; McCauley

Table 1.3. Steps involved in an evidence-based practice approach to treatment selection

Step 1. Formulating the clinical question: treatment selection
Step 2. Finding relevant evidence
Step 3. Evaluating and synthesizing the evidence
Step 4. Integrating research evidence with client- and clinician-specific information and values to make and implement the treatment selection decision
Step 5. Evaluating the process

& Hargrove, 2004). A detailed elaboration of each of the steps displayed in Table 1.3 is beyond the scope of this book; however, we wish to make two crucial points here. First, Steps 1 and 4 require clinicians to carefully consider both the individual child and the child's family, as well as their interests, desires, and values in making decisions regarding intervention options. Clinicians must also consider their own experience, expertise, and preferences in the decision-making process. Although we do not examine these crucial elements in detail in this volume, attempts to exclude them from treatment decisions are not likely to be successful and do not represent sincere efforts to practice EBP. Second, we believe this volume can be useful in beginning the processes found in Steps 2 and 3 of the EBP treatment selection process: finding, evaluating, and synthesizing the evidence.

How can a book make such a contribution? Truly, many advocates of EBP see textbooks as vehicles for the perpetuation of unattested or repudiated traditional clinical methods that fail to promote newer, more appropriate methods. In fact, Sackett et al. (2000, p. 30) implored their readers to "Burn your (traditional) textbooks!" in favor of peer-reviewed journals containing original efficacy and effectiveness studies and/or systematic reviews and meta-analyses of treatment studies. Nonetheless, books can still retain value in providing information about more basic concepts, in introducing specific skills with a presumed longer shelf life, and in providing a historic context for a broad area of study. In addition, they can provide a more detailed account of theoretical underpinnings and clinical procedures than is often possible in other types of publications. All of these potential advantages of textbook descriptions of child language interventions can be found in the chapters represented in this volume. Furthermore, despite their strong negative views on traditional textbooks, Sackett and his colleagues acknowledged that some textbooks are organized with an eye toward clinical use and that much of the information they contain will actually be current because newer, contradictory information has not yet appeared. To minimize their potential weaknesses, however, Sackett and colleagues recommended that textbooks be revised frequently, be heavily referenced with regard to clinical recommendations so that outdated information can be more readily spotted, and be constructed with an eye to explicit principles of evidence. Although a 10-year separation between the first and second editions of this volume means we may not have fully lived up to Sackett and his colleagues' first piece of advice, we have made our best efforts to adhere to the remainder.

The present volume has been constructed as much as possible to approach the ideals mapped out by Sackett and colleagues (2000). For example, numerous references are provided to establish the time frame of particular ideas and pieces of information. Through the use of the standard template described previously in this chapter, authors were encouraged to discuss the quality of the evidence they provided

and to do so in a comprehensive manner. In addition, because EBP calls for clinicians to use the highest level of evidence possible for a specific topic, it is not inconceivable that for some topics, a book chapter or book may provide the highest quality available. Nonetheless, all readers are cautioned that this volume is more likely to remain a useful resource for a reasonable period of time if viewed as a preliminary, rather than exhaustive, source of information and if its chapters are recognized as narrative reviews written by advocates of the approaches they describe rather than as systematic reviews, meta-analyses, or practice guidelines.

Since the first edition of this book, not only has *evidence-based practice* become a term that is familiar to almost all clinicians, its wholehearted adoption by the American Speech-Language-Hearing Association has led to the development of many informational resources designed to ease access to sources of research evidence. Although an exhaustive list of such resources is beyond the scope of this chapter and might be overwhelming to the point of diminishing value in any case, Table 1.4 lists several sources selected to enhance readers' access to information about specific interventions included in this text as well as providing a set of tools for readers pursuing evidence-based practice more generally.

Table 1.4. Information sources that focus on or include information on interventions for language disorders in children

Source	Description and comments
American Speech-Language-Hearing Association (ASHA) compendium of evidence-based practice guidelines and systematic reviews (http://www.asha.org/members/ebp/compendium/)	Links are provided on this web site to evidence-based practice guidelines and systematic reviews on various topics that include issues related to language disorders in children, including subgroups (e.g., autism spectrum disorders, late talkers) and specific interventions (e.g., natural language paradigm) as well as areas of intervention (e.g., written language). Prepared by ASHA's National Center for Evidence-Based Practice in Communication disorders (N-CEP), this source provide guidelines that are more specific to our field than those available through sources such as the National Guideline Clearinghouse (http://www.guideline.gov).
ASHA's evidence maps (http://ncepmaps.org/using-evidence-maps/)	Evidence maps are intended to provide access to external scientific information for a wide range of audiences (clinicians, researchers, clients, and families). Organized by categories of disorders (e.g., autism spectrum disorder, spoken language disorders) external scientific evidence is summarized, rated in terms of quality, and linked to original documents. Available information on client/patient/caregiver perspectives and clinical expertise/expert opinion are also provided for each disorder category.
SpeechBite: Speech pathology database for best interventions and treatment efficacy (http://speechbite.com/)	A searchable database of interventions covering the entire field that provides references to studies whose quality has have been described using the PEDro-P rating scale (an alternative to the Scottish Intercollegiate Guidelines Network [SIGN] system). A link to an interactive training program for using the PEDro-P rating scale appears on the homepage of the web site. Supporters of the web site include the University of Sydney and the professional organizations for speech-language pathologists in Australia, the United States (ASHA), and the United Kingdom.
Evidence-based Practice Briefs (http://www.speechandlanguage.com/ebp-briefs)	A journal appearing in both print and online forms that contains critically appraised topics (CATS) for selected clinical questions. Although not considered to be as strong a source of evidence as a systematic review, each article demonstrates the kinds of questions and results obtained through a similar, but abbreviated review process.

AUDIENCE

For SLPs who are currently in practice, we have five broad recommendations as they consider any intervention represented in the volume or if they wish to compare potential outcomes from one of the represented interventions with another treatment option. First, consider the information in the Target Populations and the Empirical Basis sections of each chapter as an initial, possibly biased, and almost certainly nonexhaustive survey of the available research literature. Second, from this skeptical perspective, determine whether evidence presented in these same sections is applicable to a specific child you are considering as a potential candidate for the treatment. If it is not, is there any theoretical reason that would make the intervention more or less effective with the target child? Third, based on the information in the Practical Requirements, Key Components, and Application to an Individual Child sections and from an examination of the video clips, is the approach feasible for the target child under existing circumstances? Do you have the resources to implement the approach at an intensity level close enough to that observed in studies cited to make a successful outcome likely? Fourth, identify at least one of the articles used by the authors as strong support for the methods they describe and critically examine the original research report. Does the evidence presented in the research report support a decision to attempt the technique with the target child in the manner and to the degree anticipated based on the conclusions of the chapter authors? Fifth, do an additional computer-based search for at least one article that is more recent than the literature cited in the article and potentially relevant for the target child. If such an article is identified, read and evaluate the study critically. Are the results of this study consistent with a decision to use the approach or to try some alternative?

The types of critical evaluations associated with our fourth and fifth recommendations are referred to as critically appraised topics (or CATs) by Sackett and colleagues (2000). At a minimum, the clinician should address each of the following questions as part of this critical evaluation: 1) Does the research report include children like the one being considered for treatment? 2) Does the study report gains that are substantial and clinically meaningful? 3) Does the study apply adequate controls over maturation and the effects of other nonintervention factors? This could include multiple baselines for treated *and* untreated goals in single-subject experiments, or the use of a control group in a group design. If a group design is used, were subjects assigned randomly to groups? 4) Does the study employ methods to limit experimenter bias, such as steps to keep the testers or coders blind to the groups to which the children were assigned?

For students who are interested in learning about interventions for children with language disorders, we have one overriding recommendation. We urge them to adopt the perspective described previously for practicing clinicians, anticipating that although they may not have their own clients yet, they soon will have. We recognize that learning in the abstract about treatment theory, evidence, and structure is a daunting and less rewarding task than framing such work in terms of an individual; therefore, we recommend that as much as possible they consider the content they are reading in light of case descriptions provided by their instructors or included in each chapter. It may even be helpful to view the intervention's video content or read the Application to an Individual Child section as a first step before tackling an intervention chapter from

beginning to end. In addition, the next section on Learning Activities has been created to suggest exercises that may promote critical thinking and clinical problem solving.

LEARNING ACTIVITIES

1. Choose two interventions that interest you in general or that might interest you because both might be considered for use with a given child. Using information from their respective chapters, compare these interventions in terms of factors such as 1) the strength of evidence supporting their efficacy and effectiveness, 2) their practical demands, and 3) how easy they might be to learn. How would you weight the importance of each of these factors in helping you make a decision about using the interventions? Would this weighting be the same for all children and clinical situations? Are there additional factors that you would need to consider before making a decision to use the intervention?
2. For an individual treatment chapter, look at one or two studies listed at each level in the chapter's levels of evidence tables. Using a description of these levels that you can find at http://www.asha.org/Research/EBP/Assessing-the-Evidence/, see if you would agree with the levels assigned by the authors. If you disagree on more than one or two, what strategies might you use to get additional information about how well this intervention is supported by external evidence? If you found this task difficult, identify one step that you might take to improve your understanding of such systems.
3. Look for an individual treatment chapter that seems to have fewer studies that provide higher levels of support than other chapters in the book. If you were to decide to use that intervention, what repercussions does this lower level of research support have for *how* you would use it? Also, how would that lower level of evidence affect what you would say to families or other colleagues about that decision?
4. Look at the Theoretical Basis sections of several or even all of the treatment chapters. Do any theories get mentioned frequently? Are there other theories that are mentioned only in relation to one or two interventions? What treatment-related processes do the different theories attempt to account for; for example, are the theories addressing typical development, learning, the nature of the disorder or specific symptom, or the use of strengths to compensate for challenges?
5. Choose a single intervention. Look at the video clip associated with it and then reread the chapter's section on the intervention's key elements. Were all of the elements described in the text apparent in the video? If some elements were not described in the text, why not? Also, were there elements that were *not* identified in the chapter that you saw as distinctive or important features of the therapeutic interaction in the video?

REFERENCES

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders: DSM–V* (5th ed.). Arlington, VA: Author.

American Speech-Language-Hearing Association (ASHA). (n.d.). *Step 3. Assessing the evidence.* Retrieved from http://www.asha.org/Research/EBP/Assessing-the-Evidence/

American Speech-Language-Hearing Association. (2005). *Evidence-based practice in communication disorders* [Position statement]. Retrieved from http://www.asha.org/policy/PS2005–00221/

Bain, B.A., & Dollaghan, C. (1991). The notion of clinically significant change. *Language, Speech, and Hearing Services in Schools, 22,* 264–270.

Baker, E. (2012). Optimal intervention intensity in speech-language pathology: Discoveries, challenges, and unchartered territories. *International Journal of Speech-Language Pathology, 14*(5), 478–485.

Bashir, A.S., Kuban, K.C., Kleinman, S., & Scavuzzo, A. (1984). Issues in language disorders: Considerations of cause, maintenance and change. *ASHA Reports*, *12,* 92–106.

Bernstein Ratner, N. (2006). Evidence-based practice: An examination of its ramifications for the practice of speech-language pathology. *Language, Speech, and Hearing Services in Schools, 37,* 257–267.

Bishop, D.V.M. (2014). Ten questions about terminology for children with unexplained language problems. *International Journal of Language & Communication Disorders*, *49*(4), 381–397.

Bothe, A.K., & Richardson, J.D. (2011). Statistical, practical, clinical, and personal significance: Definitions and applications in speech-language pathology. *American Journal of Speech-Language Pathology, 20,* 233–242.

Brandel, J., & Loeb, D.F. (2011). Program intensity and service delivery models in the schools: SLP survey results. *Language, Speech, and Hearing Services in Schools, 42,* 461–490. doi:10.1044/0161–1461(2011/10–0019)

Bronfenbrenner, U., & Morris, P. (1998). The ecology of developmental processes. In W. Damon & R.M. Lerner (Eds.), *Handbook of child psychology, Vol. 1. Theoretical models of human development* (5th ed., pp. 993–1028). New York, NY: Wiley.

Catts, H., Bridges, M.S., Little, T.D., & Tomblin, J.B. (2008). Reading achievement growth in children with language impairments. *Journal of Speech, Language & Hearing Research, 51*(6), 1569–1579. doi:10.1044/1092–4388(2008/07–0259)

Cherney, L.R., Patterson, J.P., Raymer, A., Frymark, T., & Schooling, T. (2008). Evidence-based systematic review: Effects of intensity of treatment and constraint-induced language therapy for individuals with stroke induced aphasia. *Journal of Speech, Language, and Hearing Research, 51,* 1282–1299. doi:10.1044/1092–4388(2008/07–0206)

Dingfelder, H.E., & Mandell, D.S. (2011). Bridging the research-to-practice gap in autism intervention: An application of diffusion of innovation theory. *Journal of Autism and Developmental Disorders, 41,* 597–609. doi:10.1007/s10803–010–1081–0

Dollaghan, C.A. (2007). *The handbook for evidence-based practice in communication disorders.* Baltimore, MD: Paul H. Brookes Publishing Co.

Dollaghan, C.A., & Horner, E.A. (2011). Bilingual language assessment: A meta-analysis of diagnostic accuracy. *Journal of Speech, Language, and Hearing Research, 54,* 1077–1088.

Fey, M.E. (1986). *Language intervention with children*. Boston, MA: Allyn & Bacon.

Fey, M.E. (1990). Understanding and narrowing the gap between treatment research and clinical practice with language impaired children. *ASHA Reports*, *20,* 31–40.

Fey, M.E. (1992). Articulation and phonology: An addendum. *Language, Speech, and Hearing Services in Schools, 23,* 277–282.

Fey, M.E., Catts, H.W., & Larrivee, L.S. (1995). Preparing preschoolers for the academic and social challenges of school. In M.E. Fey, J. Windsor, & S.F. Warren (Eds.), *Language intervention: Preschool through the elementary years* (pp. 3–37). Baltimore, MD: Paul H. Brookes Publishing Co.

Fey, M.E., & Cleave, P.L. (1990). Efficacy of intervention in speech-language pathology: Early language disorders. *Seminars in Speech and Language, 11,* 165–182.

Fey, M.E., Yoder, P.J., Warren, S.F., & Bredin-Oja, S.L. (2013). Is more better?: Milieu communication teaching in toddlers with intellectual disabilities. *Journal of Speech, Language, and Hearing Research, 56,* 679–693. doi:10.1044/1092–4388(2010/09–0130)

Gillam, S.L., & Gillam, R.B. (2006). Making evidence-based decisions about child language intervention in schools. *Language, Speech, and Hearing Services in Schools, 37,* 304–315.

Gray, B.B., & Ryan, B.P. (1973). *A language program for the nonlanguage child*. Champaign, IL: Research Press.

Hodson, B., & Paden, E. (1991). *Targeting intelligible speech: A phonological approach to remediation.* Austin, TX: PRO-ED.

Individuals with Disabilities Education Improvement Act (IDEA) of 2004, PL 108–446, 20 U.S.C. §§ 1400 *et seq.*

Johnson, C.J., Beitchman, J.H., & Brownlie, E.B. (2010). Twenty-year follow-up of children with and without speech-language impairments: Family, educational, occupational and quality of life outcomes. *American Journal of Speech-Language Pathology, 19,* 51–65.

Justice, L.M., Logan, J.R., & Damschroder, L. (2015). Designing caregiver-implemented shared reading interventions to overcome implementation barriers. *Journal of Speech, Language, and Hearing Research.*

Kamhi, A.G. (1999). To use or not to use: Factors that influence the selection of new treatment approaches. *Language, Speech, and Hearing Services in Schools, 30,* 92–98.

Kazdin, A.E. (2001). Almost clinically significant ($p < .10$), Current measures may only approach clinical significance. *Clinical Psychology: Science and Practice, 8*(4), 455–462.

Law, J., & Conti-Ramsden, G. (2000). Treating children with speech and language impairments: Six hours of therapy is not enough. *British Medical Journal, 321,* 908–909.

Magill, R.A. (1998). *Motor learning: Concepts and applications* (5th ed.). Boston, MA: McGraw-Hill.

Manes, J., & Robin, D.A. (2012). A motor learning perspective for optimizing intervention intensity. *International Journal of Speech-Language Pathology, 14,* 447–450.

McCauley, R.J. (2001). *Assessment of language disorders in children*. Mahwah, NJ: Lawrence Erlbaum Associates.

McCauley, R.J., & Hargrove, P. (2004). A clinician's introduction to systematic reviews in communication disorders: The course review paper with muscle. *Contemporary Issues in Communication Science and Disorders, 31,* 173–181.

Meline, T., & Paradiso, T. (2003). Evidence-based practice in schools: Evaluating research and reducing barriers. *Language, Speech, and Hearing Services in Schools, 34,* 273–283.

Mills, M.T. (2015). The effects of visual stimuli on the spoken narrative performance of school-age African American children. *Language, Speech, and Hearing Services in Schools.*

Olswang, L., & Prelock, P.A. (2015). Bridging the gap between research and practice: Implementation science. *Journal of Speech, Language, and Hearing Research, 58*(6), S1818–S1826.

Peña, E.D., Gillam, R.B., & Bedore, L.M. (2014). Dynamic assessment of narrative ability in English accurately identifies language impairment in English language learners. *Journal of Speech, Language, and Hearing Research, 57,* 2208–2220.

Roulstone, S. (2011). Evidence, expertise, and patient preference in speech-language pathology. *International Journal of Speech-Language Pathology, 13*(1), 43–48.

Sackett, D.L., Straus, S.E., Richardson, W.S., Rosenberg, W., & Haynes, R.B. (2000). *Evidence-based medicine: How to practice and teach EBM* (2nd ed.). New York, NY: Churchill Livingstone.

Schmidt, R.A., & Wrisberg, C.A. (2008). *Motor learning and performance* (4th ed.). Champaign, IL: Human Kinetics Publishers.

Schmitt, M.B., & Justice, L.M. (2012). Optimal intervention intensity for emergent literacy: What we know and need to learn. *International Journal of Speech-Language Pathology, 14,* 462–466.

Scott, C. (2011). Assessment of language and literacy disorders: A process of hypothesis testing for individual differences. *Topics in Language Disorders*, *31*(1), 24–39.

Scottish Intercollegiate Guidelines Network. (n.d.). *SIGN grading system 1999–2012.* Retrieved from http://www.sign.ac.uk/guidelines/fulltext/50/annexoldb.html

Scottish Intercollegiate Guidelines Network. (2004). *Glossary of key terms*. Retrieved from http://www.sign.ac.uk/pdf/sign50annexg.pdf

Straus, S.E., Glasziou, P., Richardson, W.S., & Haynes, R.B. (2011). *Evidence-based medicine: How to practice and teach it* (4th ed.). New York, NY: Churchill Livingston/Elsevier.

Sun, L., & Wallach, G.P. (2014). Language disorders are learning disabilities: Challenges on the divergent and diverse paths to language learning disability. *Topics in Language Disorders, 34,* 25–38.

Thordardottir, E., Cloutier, G., Ménard, S., Pelland-Blais, E., & Rvachew, S. (2015). Monolingual or bilingual intervention for primary language impairment: A randomized

control trial. *Journal of Speech, Language, and Hearing Research, 58*(2), 287–300. doi:10.1044/214_JSLHR-L-13–0277

Togher, L., Yiannoukas, C., Lincoln, M., Power, E., Munro, N., McCabe, P., . . . Douglas, J. (2011). Evidence-based practice in speech-language pathology curricula: A scoping study. *International Journal of Speech-Language Pathology, 13*(6), 459–468.

U.S. Department of Education. (2014). *Children and youth with disabilities*. Retrieved from http://nces.ed.gov/programs/coe/indicator_cgg.asp

Vaughn, S.R., & Bos, C.S. (2014). *Strategies for teaching students with learning and behavior problems* (9th ed.). Boston, MA: Pearson.

Warren, S.F., Fey, M.E., & Yoder, P.J. (2007). Differential treatment intensity research: A missing link to creating optimally effective communication interventions. *Mental Retardation and Developmental Disabilities Research Reviews, 13,* 70–77.

World Health Organization. (2001). *ICF: International classification of functioning, disability and health.* Geneva, Switzerland: Author.

Ylvisaker, M., Coelho, C., Kennedy, M., Sohlberg, M.M., Turkstra, L., Avery, J., & Yorkston, K. (2002). Reflections on evidence-based practice and rational clinical decision making. *Journal of Medical Speech Language Pathology, 10,* xxv–xxviii.

Yoder, D.E., & Kent, R.D. (Eds.). (1988). *Decision making in speech-language pathology.* Toronto, Canada: B.C. Decker Publishing.

Young, A.R., Beitchman, J.H., Johnson, C.E., Douglas, L., Atkinson, L., Escobar, M., & Wilson, B. (2002). Young adult academic outcomes in a longitudinal sample of early identified language impaired and control children. *Journal of Child Psychology and Psychiatry, 43*(5), 635–645.

Zeng, B., Law, J., & Lindsay, G. (2012). Characterizing optimal intervention intensity: The relationship between dosage and effect size in interventions for children with developmental speech and language difficulties. *International Journal of Speech-Language Pathology, 14*(5), 471–477.