

Clinical Forum

Improving Clinical Practices for Children With Language and Learning Disorders

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Purpose: This lead article of the Clinical Forum addresses some of the gaps that exist between clinical practice and current knowledge about instructional factors that influence learning and language development.

Method: Topics reviewed and discussed include principles of learning, generalization, treatment intensity, processing interventions, components of language therapy, grammar goals, and goal prioritization for students with language and learning difficulties.

Conclusion: The gaps that exist between current knowledge about learning, language development, and clinical practice

often do not receive as much attention as the gaps in the evidence base that addresses the efficacy and effectiveness of language intervention practices and service delivery models. Fortunately, clinicians do not have to wait for future intervention studies to apply their knowledge of learning and language development to clinical practices.

Key Words: intervention, language, language disorders

Recent systematic reviews of intervention practices for children with language disorders have revealed significant gaps in the body of literature that addresses the efficacy and effectiveness of language intervention practices and service delivery models (Cirrin et al., 2010; Cirrin & Gillam, 2008; Law, Garrett, & Nye, 2004). Despite the gaps in the research literature, articles and textbooks on language disorders indicate a general consensus on the basic principles and procedures of language therapy (Ellis-Weismer, 1990–1991; Fey, Long, & Finestack, 2003; Lahey, 1988; Paul & Norbury, 2011; Nelson, 2010; Owens, 2014; Reed, 2012). Most clinicians are familiar with the process of evidence-based practice. They know that clinical decisions should not be based solely on research evidence; client values, clinical expertise, internal client-based evidence, and the constraints of the clinical setting also need to be considered. Many excellent articles have discussed how the process of evidence-based practice can improve clinical decision making (see, e.g., Bernstein Ratner, 2006; Cirrin & Gillam, 2008; Dollaghan, 2004; Gillam & Gillam, 2006; Kamhi, 2006, 2011a).

The gaps that I am concerned with in this article involve the frequent disconnect in current knowledge about learning,

language development, and clinical practice. The following is a short, 10-item, true–false quiz to help readers familiarize themselves with some aspects of learning and language therapy:

1. Learning is easier than generalization.
2. Instruction that is constant and predictable is more effective than instruction that varies the conditions of learning and practice.
3. Focused stimulation (massed practice) is a more effective teaching strategy than varied stimulation (distributed practice).
4. The more feedback, the better.
5. Repeated reading of passages is the best way to learn text information.
6. More therapy is always better.
7. The most effective language and literacy interventions target processing limitations rather than knowledge deficits.
8. Telegraphic utterances (e.g., *push ball, mommy sock*) should not be provided as input for children with limited language.
9. Appropriate language goals include increasing levels of mean length of utterance (MLU) and targeting Brown's (1973) 14 grammatical morphemes.
10. Sequencing is an important skill for narrative competence.

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Statement 8 is true; all the others are false. The first five statements consider aspects of instruction that every practitioner has confronted. Much has been learned in the past few decades about how people learn and the types of conditions that optimize long-term retention and transfer (E. Bjork, 2004; R. Bjork, 1994, 2011; Diemand-Vauman, Oppenheimer, & Vaughn, 2011). R. Bjork and others have found in experiments of adult learning that conditions of instruction that make performance improve rapidly often fail to result in long-term retention and transfer, whereas conditions of instruction that appear to create difficulties for the learner, often slowing the rate of apparent learning, can actually optimize long-term retention and transfer. R. Bjork (1994) referred to these conditions as “desirable difficulties.” In recent years, there have been a growing number of studies applying these principles to students with language and learning difficulties (see, e.g., Austermann Hula, Robin, Maas, Ballard, & Schmidt, 2008; Riches, Tomasello, & Conti-Ramsden, 2005).

The statement about treatment intensity has been addressed by a number of researchers in recent years (see, e.g., Fey, Yoder, Warren, & Bredin-Oja, 2013; McGinty, Breit-Smith, Fan, Justice, & Kaderavek, 2011; Ukrainetz, Ross, & Harm, 2009). The title of Fey et al.’s (2013) article on the effects of milieu teaching was actually prefaced with “Is More Better?”

The four statements about appropriate language models and goals are arguably the most important ones on the list. Statement 7 considers the appeal that targeting processing limitations has for many practitioners. In a previous article (Kamhi, 2011b), I argued that therapy that targets basic perceptual or cognitive processes, such as attention, auditory processing, or memory, are appealing because they promise more rapid gains than knowledge-based interventions. In the section on processing interventions, I raise the question about recent research that purports to show the benefits of working memory training.

The next statement on the list (No. 8) considers whether clinician language models should be grammatically correct (in the adult form) or reflect the child’s language level. Clinicians often provide telegraphic speech models (e.g., *baby shoe, mommy sock*) to expand children’s one-word utterance or echo children’s two-word utterances. A potential problem with ungrammatical language models is that language learning is facilitated by the presence of weak syllable–strong syllable alternation patterns (Bedore & Leonard, 1995). For example, the presence of an adjacent weak syllable (e.g., *the ball*) makes the strong syllable stand out more perceptually.

Statements 9 and 10 consider goals commonly targeted to improve children’s language. Much has been learned about grammatical development in the past 30 years but, as Schuele (2013) recently pointed out, “For too many clinicians, grammatical development begins and ends with (or does not move far beyond) MLU and 14 grammatical morphemes” (p. 118). Complex syntax is rarely targeted in therapy—in particular with preschoolers. In the same vein, instruction to improve narrative discourse and comprehension

often focuses too much on sequencing abilities rather than on conceptual understanding of the topic and ways to improve discourse cohesion and coherence. In the sections that follow, I discuss and review the research that addresses these 10 statements. The article concludes with a consideration of how to prioritize goals for students who have deficiencies in multiple areas of language and literacy.

Reconceptualizing Learning and Generalization as Performance and Learning

A key notion in current views of learning is a new twist on an old distinction in psychology—the distinction between performance and learning. *Performance* is the short-term context-specific occurrence of some behavior, whereas *learning* is the long-term context-independent occurrence of the particular behavior (E. Bjork, 2004). In education and speech-language pathology, short-term, context-specific performance typically is characterized as learning, whereas the long-term, context-independent occurrence of the particular behavior is viewed as generalization. This outdated behavioral view of learning mischaracterizes learning problems as entailing a difficulty with generalization (Kamhi, 1988). It is not particularly useful, theoretically or clinically, to characterize children’s learning difficulties as a problem with generalization. A generalization problem implies that there is some deficiency in the transfer mechanism or in the ability to transfer knowledge from one domain to another or from one context to another. However, even young children have no difficulty transferring broad-based rules and principles to new situations (Brown, Kane, & Echols, 1986). What children—and everyone else—have difficulty with is transferring narrow limited rules to new situations. In applying this notion to language, one sees that language rules with a limited scope have more of a restricted use than do rules with a broader scope (see Kamhi, 1988, for examples). Children with language and learning problems will have difficulty acquiring broad-based rules and modifying these rules once acquired, and they also will be more vulnerable to performance demands on speech production and comprehension (Kamhi, 1988).

As Fey (1988) appropriately noted in his introduction to an *LSHSS* Clinical Forum on generalization, there are two broad issues here: First, is it reasonable to expect children to use a language target consistently after a brief period of intervention? Second, can language intervention be designed to lead children with language disorders to acquire broad-based language rules?

The answer to the first question is an unequivocal “No,” whereas the answer to the second question is “We certainly hope so.” The expectation that brief periods of intervention will lead to widespread use of adult-level language rules is based on two assumptions: (a) that language intervention techniques have enormous, almost magical, teaching power and (b) that the language learning abilities in children with language impairments are somehow better than those of typically developing children (Fey, 1988). There is no evidence to support either of these assumptions. Fey (1988) recognized the challenge involved in designing

language interventions to facilitate the acquisition of broad-based language rules, but he was optimistic that it is possible. Indeed, it must be possible because “language serves too many functions, expresses too many meanings, provides too many lexical and syntactic options, and is formally too complex for us to ‘teach’ everything to a language-impaired child (sic) that is necessary to be a competent language user” (Fey, 1988, p. 278).

Instructional Factors

As indicated previously, there has been a considerable amount of research that has examined instructional factors that influence learning. Five of these factors are considered in this section.

Varying the Conditions of Instruction and Practice

When instruction occurs under conditions that are constant and predictable, learning becomes “contextualized”—that is, the learning looks very good in that context, but it does not transfer well to different contexts (E. Bjork, 2004). Context change across repetitions of to-be-learned information induces forgetting because current cues differ from prior cues (R. Bjork, 2011). At the same time, changing the instructional contexts also enhances learning because the information becomes linked with a greater range of contextual cues and encoded in more than one way (R. Bjork, 2011). To enhance long-term learning and transfer to novel contexts, the conditions of instruction and practice should be varied.

Clinicians are well aware of the importance of generalization/transfer. Paul and Norbury (2011), for example, described the notion of *sequential modification* that happens when the intervention environment is extended from one place to another until spontaneous generalization/transfer to new environments occurs. They suggested that one or two sessions in one of two alternate environments every few months may be adequate.

Distributing and Spacing Study and Practice

A large body of literature indicates that distributed practice, which is characterized by long intervals between learning episodes, is more effective than massed learning (for reviews, see Dempster, 1988, and Baddeley, 1997). According to Bruce and Bahrck (1992), over the past 100 years, the benefits of distributed learning have been investigated in more than 300 studies. *Spacing effects* have been observed in a variety of different cognitive domains, ranging from motor learning (Baddeley & Longman, 1978) to the acquisition of spelling and multiplication tables (Rea & Modigliani, 1985). The existence of a spacing effect across different cognitive domains suggests that it exploits fundamental domain-general learning mechanisms. Another interesting characteristic of distributed practice is that, in addition to boosting initial performance, it leads to better retention (e.g., Bahrck & Phelps, 1987).

There is reason to believe that spacing and distribution of teaching episodes might be particularly beneficial for children with language learning difficulties (Riches et al., 2005). Yoder, Fey, and Warren (2012) recently suggested that the spacing and distribution of teaching episodes have more of an impact on treatment outcomes than treatment intensity. A study by Riches, Tomasello, and Conti-Ramsden (2005) on verb learning in children with specific language impairment supports this claim. Children with specific language impairment, like their typically developing peers, performed better in the distributed condition for initial learning as well as retention in production and comprehension. The spacing effect was also greater and more influential than the effect of the number of presentations. Performance after only 12 presentations in the distributed training condition was better than performance after 18 presentations in the massed training condition.

Reducing Evaluative Feedback to the Learner

The idea that reducing evaluative feedback to the learner during acquisition could be a desirable difficulty seems counterintuitive. Yet, recent studies have shown that reductions in evaluative feedback actually may enhance long-term retention and generalization of motor skills (Schmidt & Bjork, 1992; Schmidt & Young, 1991), including speech production (Austermann Hula et al., 2008). Austermann Hula et al. (2008) found that reduced evaluative feedback led to greater long-term retention of motor skills than feedback provided after every trial. There is no reason to believe that language learning would not also benefit from evaluative feedback that is spaced out or less consistent. Evaluating every language production not only disrupts the flow of the conversational interaction but also may cause students to stop paying attention to the feedback and tune out.

Retrieval and Recall Facilitate Learning

Retrieval attempts that require a person to recall and produce information, even when no corrective feedback is provided, are often more effective for long-term learning than re-reading texts (E. Bjork, 2004). Most students spend too much time reading a text over and over again and too little time trying to retrieve information and discussing it with someone else. R. Bjork (2011) showed that retrieving information from memory facilitates long-term retention. It is important to note that the more difficult the act of a successful retrieval, the greater the learning benefit (E. Bjork, 2004) and, conversely, the easier it is to retrieve something, the less long-term learning there will be. The impact that spelling and writing have on reading supports this principle. Research has consistently shown that spelling and writing, which are both difficult retrieval tasks, benefit reading (Graham & Hebert, 2010; Shahar-Yames & Share, 2008), but the reverse is not true. For example, spelling has been shown to be a powerful self-teaching tool for the formation of word-specific orthographic information necessary for fluent reading (Shahar-Yames & Share, 2008), and writing has been shown to have a positive impact on learning to read (Graham & Hebert, 2010).

Treatment Intensity

It is generally thought that a higher dose of instruction (e.g., five 45-min sessions/week) will result in better learning outcomes than a lower dose (e.g., two 30-min sessions/week). Brandel and Frome Loeb (2011) found support for this belief in a survey showing that clinicians in schools provide more intensive treatment to children with more severe communication problems. This widespread belief about treatment intensity is inconsistent, however, with findings of learning plateaus and threshold effects in language and literacy (e.g., Ambridge, Theakston, Lieven, & Tomasello, 2006; Riches et al., 2005; Scarborough & Dobrich, 1994). For example, the benefits of joint book reading have a threshold of three to four times a week (Scarborough & Dobrich, 1994). Beyond this point, the quantity or quality of joint book reading has little effect on literacy outcomes.

The prevalence of thresholds and learning plateaus suggests that the relationship between treatment intensity and outcomes might not be as straightforward as most educators and clinicians believe. Indeed, a number of recent studies (Denton et al., 2011; Fey et al., 2013; Ukrainetz et al., 2009) have found that increasing the frequency of treatment did not result in better language and reading outcomes. In a recent study by McGinty and colleagues (2011) on the effects of print referencing, higher dose frequencies actually made outcomes worse under certain circumstances. An increase in dose frequency from two to four sessions per week led to better print knowledge outcomes only when print-referencing teaching episodes were kept low. There was no significant advantage of frequent sessions without a reduction in teaching episodes in individual sessions.

Taken together, the body of research on treatment intensity indicates that more is not always better. More frequent instructional episodes will not always be associated with better treatment outcomes. At some point, increased intensity is likely to be associated with diminishing treatment benefits. Plateau effects are more likely with repetitive interventions such as the one used for print referencing. Spacing the intervention sessions may help, as may the use of less repetitive interventions, but the relationship between intensity and learning is unlikely to be consistent across individual children, different areas of development, and different points in the learning trajectory (McGinty et al., 2011).

The Case Against Processing Interventions

Acquiring the language, conceptual knowledge, and reasoning skills necessary to be competent language users, readers, and writers is challenging even for typical learners. For students with language and learning disabilities, acquiring these skills may often appear insurmountable to families, teachers, and the individual student. Given these challenges, it is not surprising that families and teachers are often attracted to simple solutions to language and learning problems. Interventions that target processing skills are particularly appealing because they offer the promise of improving language and learning deficits without having to

directly target the specific knowledge and skills required to be a proficient speaker, listener, reader, and writer. The most appealing processing interventions target auditory skills and working memory. Because the benefits of auditory interventions have been addressed in several recent articles (Fey et al., 2011; Fey, Kamhi, & Richard, 2012; Kamhi, 2004, 2011b; Wallach, 2011), in this section I focus on working memory training.

Memory is inextricably tied with language, so it should not be surprising that there is a long history of research relating memory and language (for recent reviews, see Boudreau & Costanza-Smith, 2011, and Montgomery, Magimairaj, & Finney, 2010). In the 1960s and 1970s, it was common for therapy to focus on improving visual and auditory memory because the Illinois Test of Psycholinguistic Abilities (ITPA; Kirk, McCarthy, & Kirk, 1968) was used often to diagnose language and learning problems. ITPA-driven therapy was eventually replaced by therapy that directly targeted language and communication abilities.

The resurgence of interest in memory training in recent years can be attributed in part to the large body of evidence showing that children with language and learning disorders typically perform below age norms on measures of phonological short-term memory and working memory (Boudreau & Costanza-Smith, 2011; Leonard et al., 2007; Montgomery et al., 2010; Montgomery & Evans, 2009). If working memory is a primary cause of language and learning problems, it seemed reasonable to consider the possibility that improvements in working memory would lead to significant changes in language function. Practitioners thus began to look for working memory training programs that showed positive results in improving language and learning.

They didn't have to wait long. About 5 years ago, an Italian team of researchers (Jaeggi, Buschkuhl, Jonides, & Perrig, 2008) published a provocative study showing that training working memory using dual *n*-back tasks led to significant improvement in fluid intelligence in adults. *Fluid intelligence* is the ability to reason and to solve new problems independently of previously acquired knowledge. The significance of the study is that previous attempts to improve fluid intelligence by any type of cognitive or memory training had not been successful. In an *n*-back task, variable-length series of items (digits, words, pictures) are presented in which an item is repeated at specific intervals relative to other stimuli. Successful performance requires the listener to remember short sequences while counting back one, two, or three letters to identify a letter match. For example, for an auditory three-back test, the test-taker must indicate which letters correspond to letters that he or she read three steps earlier. The letters in boldface type below are the ones that should be named. The first two letters in bold are Cs because there is a C three letters back from each of them. The final letter in bold is an L because there is an L three letters back:

T L H C H O C Q L C K L H C Q T R R K C H R

Subsequent studies have reported that working memory training is also effective with typically developing children and children with attention-deficit/hyperactivity

disorder (ADHD; S. Beck, Hanson, Puffenberger, Benninger, & Benninger, 2010; Holmes, Gathercole, & Dunning, 2009; Klingberg, Forssberg, & Westerberg, 2002). These studies have found that training improves attention and executive control abilities in children with ADHD. On the basis of these findings, speech-language pathologists (SLPs) are being encouraged to use working memory training programs with dual *n*-back tasks to improve phonological short-term memory and working memory (Boudreau & Costanza-Smith, 2011; Montgomery et al., 2010).

I am not as enthusiastic as some of my colleagues about the benefits of these training programs. A recent meta-analysis (Melby-Lervåg & Hulme, 2013) of 23 working memory training studies found no evidence that memory training was an effective intervention for children with ADHD or dyslexia. Most damaging to the previous claims was the finding that working memory training did not lead to better performance outside of the tasks presented within the memory tests. The findings “cast strong doubt on claims that working memory training is effective in improving cognitive ability and scholastic attainment” (Melby-Lervåg, 2013, p. 282). In light of such evidence, it is difficult to justify the use of working memory training programs for children with language and reading disorders. As with previous claims about the benefits of targeting processing limitations, practitioners should be highly skeptical of interventions that promise quick fixes for language and learning disabilities.

Components of Language Therapy

One of the most important components of therapy is the models of language provided by the clinician to the client. Models can vary in intensity and specificity. One end of the continuum therapy would involve clinician-directed focused stimulation (mass practice) of specific language structures such as auxiliary *is* + *l-ingl*. At the other end, child-directed therapy would consist of recasts and expansions of child-initiated language. Clinicians also need to consider whether language models should always be well-formed grammatically correct utterances. Statement 8 in the quiz listed earlier in this article questioned whether telegraphic utterances (e.g., *push ball*, *mommy sock*) were appropriate language models. Bedore and Leonard (1995) addressed this question by showing how the prosodic cues of weak syllable–strong syllable alternation patterns that characterize well-formed utterances help children identify the boundaries of clauses, phrases, and even words.

Bedore and Leonard (1995) reviewed research demonstrating that young children pick out strong syllables from the input that correspond to open-class content words. The presence of an adjacent weak syllable (e.g., *the ball*) makes the strong syllable stand out more perceptually. The problem with telegraphic utterances is that they may have two or more syllables (e.g., *open door*, *eat cookie*), which means they have at least one weak syllable that will be associated with a content word. “Although this association might help children pick out the stressed syllables in an utterance, it could lead children to associate all weak syllables with content

words, which would make the subsequent learning of function words very difficult (Bedore & Leonard, 1995). The weak syllable–strong syllable alternation patterns also may provide children a way to predict the grammatical category of new words. For example, strong syllables in the middle of a sentence with adjacent weak syllables would indicate main verbs.

The arguments made by Bedore and Leonard (1995) suggest that clinicians should always provide well-formed language models. A recent study conducted by Bredin-Oja and Fey (2014) that directly compared the effects of telegraphic versus grammatically complete models supports this suggestion. Three of the five children with language delay who were studied produced significantly more grammatical morphemes when presented with grammatically complete imitation prompts. The other two children did not include a function word in either condition. Providing a telegraphic prompt to imitate thus did not offer any advantage as an intervention technique. Children were just as likely to respond to a grammatically complete imitation prompt.

It is important to note that providing grammatically complete models does not mean that clinicians should not respond positively to children’s ungrammatical productions. The following exchange illustrates how appropriate feedback can be coupled with a grammatically complete language model.

Child: Ball.

Clinician: You want the ball?

Child: Want ball.

Clinician: Good (or some other praise for the two-word utterance). Here’s the ball.

The other basic components of therapy are the client’s response to the language models, the feedback the clinician provides to the client after a response, and the events or actions the clinician provides to maintain the client’s attention and motivation. Client responses can vary from no response to an exact repetition of the model. Appropriate responses are not necessarily verbal. Examples of appropriate nonverbal responses would include carrying out a requested action (“Put the spoon in the cup”) or pointing to the cup after being asked “Where is the cup?” Inappropriate or insufficient responses depend on the targeted goal.

A clinician’s response to the client’s communicative attempt can provide an evaluation of the attempt—was it appropriate and well formed?—or it can reflect an appropriate communicative response. Examples of evaluative feedback are “I like the way you said that” and “That wasn’t quite right; let’s try that again.” Evaluative feedback is a common component of therapy but, as discussed earlier, reducing evaluative feedback to learners has actually been found to be a desirable difficulty that enhances long-term retention and generalization of speech (Austermann Hula, et al., 2008) and language skills (Proctor-Williams & Fey, 2007). These findings suggest that clinicians should consider reducing the frequency of evaluative feedback and expand or comment on what clients are saying rather than how they are saying it. For example, in describing a picture in a

storybook, a child may say, “The elephant looking for her babies.” Instead of responding, “No, the elephant IS (stress) looking for her babies,” the clinician would respond “Yes, the elephant is looking for her babies. Where do you think they are?” The clinician might choose to provide added stress to the auxiliary *is* in her response to call attention to this morpheme, but this is not necessary.

Grammar Goals

In previous articles, I have argued that *what* is treated as more important than *how* it is taught (Kamhi, 2006, 2011b). There are two compelling reasons for the primacy of goals over procedures. First and foremost, targeting the wrong goal means that the more appropriate goals are not being targeted. As a result, the client falls farther behind his or her typically developing peers in language and literacy skills. Second, as noted at the outset of this article, there are significant gaps in the body of literature that addresses the efficacy and effectiveness of language intervention practices and service delivery models (Cirrin et al., 2010; Cirrin & Gillam, 2008; Law et al., 2004). There is little that clinicians can do about the paucity of high-quality treatment studies, but there is a lot that they can do to better align their clinical practices with current literature on language development and learning. Familiarity with current literature, especially information about the development of complex syntax, is crucial for selecting the most appropriate treatment goals. As noted previously, for many clinicians, grammar development does not go beyond mean length of utterance and Brown’s 14 grammatical morphemes (Schuele, 2013). The effect of this narrow interpretation of grammatical development is that the language needs of children with grammatical problems may not be adequately addressed in therapy. In the next section, I discuss how common misconceptions about the development of grammatical morphemes and complex syntax affect assessment and treatment decisions.

Grammatical Morphemes

Professionals often assume that children with language impairments have difficulty acquiring all grammatical morphemes. We have known for at least 20 years, however, that children with language impairments do not have difficulty learning *–ing/*, plural */s/*, or the locatives *in* and *on*. They do have difficulty learning grammatical morphemes that reflect tense and agreement (T/A; e.g., Bedore & Leonard, 1998; Rice, Wexler, & Cleave, 1995). These include third person singular */s/*, past tense *–ed/*, the auxiliary *do* forms (*do*, *does*, *did*), and both finite copula and auxiliary *be* forms (*is*, *are*, *am*, *was*, *were*).

Productivity of T/A morphemes has been shown to have good diagnostic accuracy differentiating children with specific language impairment from their typically developing peers (e.g., Gladfelter & Leonard, 2013). Gladfelter and Leonard (2013) found that two T/A measures developed by Hadley and her colleagues (Hadley & Holt, 2006; Hadley & Short, 2005) provide clinically useful information about

specific T/A morphemes and major T/A categories. The two measures are (a) Tense Marker Total, which assesses the diversity of T/A morpheme use, and (b) Productivity Score, which assesses the productivity of major T/A categories. Although it is probably unrealistic to expect that T/A measures will permeate clinical practice, clinicians should at least recognize the multiple limitations of continuing to focus narrowly and individually on Brown’s 14 morphemes.

Complex Syntax

A common misconception about the production of complex syntax is that it is a later developing language achievement that occurs after children have mastered grammatical morphology and basic clausal structure (Arndt & Schuele, 2013). Consistent with this view, the Common Core State Standards do not expect complex sentences to be used until third grade. Typical learners, however, begin to produce complex syntax (utterances with one or more dependent clauses) when they are 2 years old, soon after they begin combining words (Limber, 1973). By age 3 they are producing conjoined sentences and the three categories of subordinate or dependent clauses: (a) adverbials, (b) relatives, and (c) nominals (Paul, 1981; Tyack & Gottsleben, 1986). This typical developmental trajectory means that a focus on complex syntax needs to begin in the preschool years (see Clark, 2009, and Diessel, 2004, for a review of normal development of complex syntax). Clinicians should not wait for children to master basic clause structure and grammatical morphology before targeting complex syntax.

Having a framework of how sentences become complex would seem to be a prerequisite for targeting complex syntax in therapy. There are three basic ways to make sentences more complex: (a) *noun phrase elaboration*, (b) *verb phrase elaboration*, and (c) *conjoined and embedded clauses*. Noun phrase elaboration involves the use of determiners and adjectives to modify a noun (*this table*; *my big, round, bouncy ball*) and prepositional phrases and relative clauses (*the girl with the red dress*; *the movie that I saw*). Verb phrase elaboration occurs by adding auxiliaries, secondary verbs, and adverbs (e.g., *She likes to walk quickly to school*. *He had been studying for a long time*. *They should have won the game*.)

Complex sentences are formed by embedding nominal and adverbial clauses in main clauses. Nominal clauses can be object clauses (e.g., “John thinks *he’s getting an A in the class*”) or relative clauses (“John, *who is tall*, is getting an A in the class”; “Mary wants the book *that I read*”). Adverbial clauses, also called *subordinate* or *dependent clauses*, modify independent clauses (e.g., “They walked to the beach *because there was no parking*”; “*If you build it*, he will come”). Compound sentences are formed by conjoining clauses by the coordinating conjunctions *and*, *but*, and *or*.

My general principle for targeting complex syntax in therapy is this: Target the meanings and/or functions conveyed by the syntactic structure rather than the structure itself. For example, rather than targeting the specific syntax of object-modifying relative clauses (NP + VP + NP + object modifying clause), the focus should be on the function

or purpose of relative clauses to clarify (object or subject) nouns. Relative clauses thus serve the same function as adjectives: They specify and disambiguate nouns. To illustrate, consider the following example. A clinician places three different-colored cups in front of a student and asks for a cup. Not knowing which cup the clinician wants, the student should respond, “Which one?” The clinician responds, “The blue one”/“I want the one that’s blue.” After providing other examples of adjectives that can go before the noun and after the noun in relative clauses (e.g., “large drink,” “the drink that is large”), the clinician should provide examples of relative clauses that cannot be turned into adjectives: “Give me the ball that’s on the table” (*Give me the table ball), “Give me the cup that fell on the floor” (*Give me the floor ball).

In the same vein, rather than targeting the structure of object clauses or complements (NP + VP + subject), the focus should be on the expression of various mental state verbs (e.g., *know*, *hope*, *wish*, *think*) that lead to object clauses. This would lead to exchanges such as the following:

Would you like to have a big sister?
Yes, I wish I had a big sister.
Do you want a dog?
Yes, I hope I get a dog for my birthday.
Do you think it’s raining out?
Yeah, I think it is.

For object clauses with *wh*-embedding, goals would focus on the meanings of the *wh*- words *what*, *where*, *who*, *why*, and *how*. Examples of these sentences are as follows:

I know what you’re doing.
I know where you’re going.
I know who you are.
I know why you’re here.
I know how you’re doing.

To increase the use of conjoined and embedded clauses, the focus should be on expressing the meanings of coordinating (e.g., *and*, *but*) and subordinating conjunctions (e.g., *because*, *if*, *so* [*that*], *before*, *when*) and conjunctive adverbs (e.g., *then*, *yet*). Using these conjunctions and conjunctive adverbs will require producing conjoined sentences and adverbial (subordinate/dependent) clauses, such as the following examples:

Conjoined sentences
I ate dinner and then watched TV.
She wanted to do her homework but was too tired.

Adverbial (subordinate/dependent) clauses
He couldn’t play tennis because it was raining.
They walked home after they played in the park.
If you build it, they will come.

The specific goals associated with NP elaboration, VP elaboration, and conjoining/embedding would look something like this:

The student will elaborate noun phrases with adjectives and relative clauses given verbal prompts to describe pictures. For example:

Tell me what the boy is wearing.

He’s wearing a blue shirt that has lots of stripes.

The student will elaborate verb phrases with present and past tense modals (*can*, *could*, *will*, *would*, *may*, *might*) and catenatives (*gonna*, *gotta*, *wanna*, *hafta*) in conversations with an adult and peers.

The student will use the terms *and*, *but*, and *or* to link clauses in the retellings of stories and relating events.

The student will use the mental state verbs *think*, *wish*, *hope*, and *know* with object clauses when asked questions about the mental states of characters in books.

The student will produce adverbial clauses with the subordinate conjunctions *because*, *if*, *when*, *after*, and *before* in response to questions about a story, event, or play situation. For example:

Why is the boy sad?

Because someone stole his favorite toy.

There is no shortage of information on the development, assessment, and treatment of complex syntax. Marilyn Nippold and Cheryl Scott have written books, chapters, and articles on the topic (Balthazar & Scott, in press; Nippold, 2007; Nippold & Scott, 2010; Scott, 1988). Most recently, Melanie Schuele (2013) edited an issue of *Topics in Language Disorders* on promoting the development of grammatical skills, including complex syntax. Articles by Arndt and Schuele (2013) and Eisenberg (2013) provide a wealth of information about assessment and intervention.

Difficulties with grammar rarely occur in isolation.

Most students who struggle with grammar often have difficulties in other areas of language and literacy, and it is these other aspects of language—semantics, pragmatics, social skills, narrative/expository discourse, phonological awareness, spelling, reading, and writing—that are typically given priority in therapy. In the final section of this article, I consider the problem of prioritizing goals for students who have deficiencies in multiple areas of language and literacy.

Prioritizing Goals

Since the late 1960s, when SLPs first began to serve children with language disorders, the knowledge base and our scope of practice have undergone dramatic changes. Goal selection decisions were much easier 40 years ago, when the scope of language was limited to grammatical morphology, syntax, early semantic relations, and processing abilities measured by the ITPA. Today, clinicians are faced with an expanded scope of practice for language that includes not only pragmatics, different discourses (conversation, narrative, expository), and processing limitations (working memory, auditory, attention) but also all of the components of literacy. How does a clinician prioritize goals for a student who has deficiencies in syntax-morphology (grammar), semantics, conversational and narrative discourse, reading, spelling, writing, and comprehension of spoken and written language?

There is no simple, straightforward answer to this question because a number of factors influence the prioritization of goals. Four of these factors include (a) clinician

experience and competencies; (b) degree of collaboration with other professionals; (c) type of service delivery model (pullout, response to intervention, classroom based); and (d) client/student factors (e.g., nature and severity of the disorder). For illustrative purposes, let us consider a hypothetical case of a knowledgeable, experienced, collaborative clinician who works in a response-to-intervention school with like-minded teachers and other professionals. Working in such an environment changes the question from “How do I decide what to prioritize?” to “How can we, the team of professionals, best serve this student?” The team decides that the reading specialist will target phoneme awareness and word-level reading; the special educator will target reading comprehension, spelling, and writing; and the SLP will focus on narrative discourse and comprehension.

Narrative discourse is an important area of expertise for SLPs. Producing and understanding narratives provides an important bridge between spoken and written language (e.g., Dunst, Williams, Trivette, Simkus, & Hamby, 2012; Kamhi & Catts, 2012). Telling or writing stories and relating events can be used to teach all aspects of language and literacy (syntax, morphology, vocabulary, discourse cohesion, narrative structure, reading, writing, and spelling). Narratives also can be made communicatively relevant by focusing on scripts and relating events (e.g., going to the movies on vacation or playing a soccer game). Recent research (Gillam, Gillam, & Reese, 2012) suggests that a contextualized language intervention (CLI) approach is an effective way to improve discourse-level language. CLI provides a therapeutic focus within a purposeful and meaningful activity (Ukrainetz, 2006). Topic continuity across activities is a key component of contextualized intervention (Gillam et al., 2012). The specific intervention activities in CLI include listening to stories, answering comprehension questions, generating inferences, comparing/contrasting characters across stories, discussing and defining meanings of Tier 2 vocabulary, and brainstorming solutions to problems in the stories. Tier 2 vocabulary includes words that are often unfamiliar to children but represent familiar concepts (cf. I. Beck, McKeown, & Kucan, 2013). Children are also encouraged to use conjunctions, modals, and question forms as they discuss and retell the stories.

It is important to note that improving narrative discourse and comprehension does not require the targeting of sequencing abilities. The ability to understand and recall events in a story or script depends on conceptual understanding of the topic and attentional/memory abilities, not sequencing ability. Sequencing is not a basic cognitive process; no model of cognitive processing includes sequencing as a distinct cognitive process. The idea that sequencing is a distinct processing skill can be traced to subtests on the ITPA that measure auditory and visual sequencing ability. Unfortunately, many educators continue to believe that sequencing is a distinct processing skill that needs to be assessed and treated.

To illustrate the knowledge and processing skills involved in narrative comprehension and recall, consider

these two passages adapted from the Qualitative Reading Inventory—5 (Leslie & Caldwell, 2011):

Summer and Winter

Michael likes summer.
He goes camping.
He plays with his friends.
He swims and plays in the lake.
Michael also likes winter.
He enjoys Christmas and New Years Day.
He likes skiing and sledding.
He likes wearing his hat and gloves.

A Night in the City

It was Saturday night in the city.
Ben and Ruth wanted something to do.
They heard a noise from outside.
They ran to their bedroom window.
They saw people in the street.
A woman was playing a guitar.
A man began playing the harmonica.
The people began to sing.

Which passage is easier to understand and remember?

Both passages are relatively short and seem well within the memory constraints of young school-age children. The difference in the two passages is that the first passage has no conceptual or temporal logic to help with the ordering of the events. Going camping, playing with friends, and going swimming have no logical connection. Correctly recalling the sequence of events thus depends solely on attention and memory processes. In contrast, the second passage tells a story with a logical temporal order of events (hear a noise, go to window, see a woman playing guitar, man with harmonica, everyone sings). The logical, conceptually coherent order of events (macrostructure) reduces memory demands and aids recall. Incorrectly ordering these events (e.g., “Ben and Ruth saw people singing and then went to the window”) would reflect conceptual difficulties rather than attentional/memory limitations. Attention and memory limitations would result in the omission of sentences/events and difficulty responding to comprehension questions about event order (e.g., “What did Michael do first, go camping or play with his friends?” “Did the man play the harmonica before the woman played the guitar?”).

To reiterate, ordering and sequencing errors are caused by limitations in attention, working memory, and/or conceptual knowledge. For assessment, this means that clinicians need to consider the logical and temporal connection of sentences/events in various language tasks. Even something as routine as following a two-part command is affected by these connections. The command “Put the ball in the box and the pen in the can” is more likely to have an ordering error than “Put the ball in the box and close the lid” because you can’t put something in a box with the lid closed. The therapy implications should be clear: There should never be a separate therapy goal targeting sequencing ability. Goals should target the specific concepts and language of the narrative discourse using a therapy approach such as CLI

that reduces attentional and memory demands through activities that engage the learner and facilitate recall.

The use of contextualized language approaches and narrative interventions are well suited for the Common Core State Standards (CCSS) that have now been adopted by almost every state. The CCSS include specific content standards for speaking and listening; this is the first time that spoken language skills have been included in the standard course of study for elementary school children. These standards include goals for the production and understanding of simple and complex sentences as well as goals for conversation and narrative discourse (see the Appendix). The development of assessments to monitor student attainment of the CCSS is already underway (Schraeder, 2012). While awaiting these assessments and full implementation of the CCSS, SLPs should consider replacing current language goals with standards-based individualized education plan (IEP) goals. Recent articles by Power-de Fur and Flynn (2012) and Rudebusch (2012) provide several case examples of standards-based IEPs. Developing standards-based IEPs should help all SLPs recognize that they play an integral role in the implementation of the CCSS and are not simply a related service provider.

Summary

In this article, I have attempted to address some of the gaps that exist between current knowledge about learning, language development, and clinical practice. These gaps often do not receive as much attention as the gaps in the body of literature that addresses the efficacy and effectiveness of language intervention practices and service delivery models. Fortunately, clinicians do not have to wait for future intervention studies before applying current knowledge of learning and language development to clinical practices. In the first half of this article, I provided a reconceptualization of learning and generalization, reviewed some basic principles of learning, and discussed the problem with processing interventions. In the second half of the article, I discussed the basic components of therapy as well as how to select grammar goals and prioritize goals for students who have difficulties in multiple areas of language and literacy. The response articles that follow provide other examples of learning principles and language development that can be applied to clinical practice. These articles also address important questions, such as the role of evidence-based practice in the application of learning principles, the role of learner engagement in learning, and the order in which goals are selected.

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Appendix

First-Grade Speaking and Listening Common Core State Standards

1. Participate in collaborative conversations with diverse partners about Grade 1 topics and texts with peers and adults in small and larger groups. Follow agreed-upon rules for discussions (e.g., listening to others with care, speaking one at a time about the topics and texts under discussion). Build on others' talk in conversations by responding to the comments of others through multiple exchanges. Ask questions to clear up any confusion about the topics and texts under discussion.
 2. Ask and answer questions about key details in a text read aloud or information presented orally or through other media.
 3. Ask and answer questions about what a speaker says in order to gather additional information or clarify something that is not understood.
 4. Describe people, places, things, and events with relevant details, expressing ideas and feelings clearly.
 5. Add drawings or other visual displays to descriptions when appropriate to clarify ideas, thoughts, and feelings.
 6. Produce complete sentences when appropriate to task and situation.
 7. Use Standard English grammar and usage when writing or speaking. Print all upper- and lowercase letters. Use common, proper, and possessive nouns. Use singular and plural nouns with matching verbs in basic sentences (e.g., he hops; we hop). Use personal, possessive, and indefinite pronouns (e.g., I, me, my; they, them, their; anyone, everything). Use verbs to convey a sense of past, present, and future (e.g., yesterday I walked home; today I walk home; tomorrow I will walk home). Use frequently occurring adjectives. Use frequently occurring conjunctions (e.g., and, but, or, so, because). Use determiners (e.g., articles, demonstratives). Use frequently occurring prepositions (e.g., during, beyond, toward). Produce and expand complete simple and compound declarative, interrogative, imperative, and exclamatory sentences in response to prompts.
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Note. Excerpted from the Common Core State Standards Initiative (n.d.), publicly available at www.corestandards.org/ELA-Literacy/SL/1/
