Grammar Intervention
Content and Procedures for Facilitating Children's Language Development

Sarita L. Eisenberg

Children with language impairment (LI) show an overall immaturity in grammatical structure. This includes difficulties with basic sentence constituents, pronouns, verb form elaboration, negative and interrogative sentences, noun phrase elaboration, and complex sentences. This article describes explicit instruction and scaffolding strategies, based on a review of current research, that can be used to expand the range of grammatical structures produced by children with LI. A plan for combining explicit instruction drills and use of scaffolding within embedded therapy activities is suggested. Research is needed to test the efficacy of this recommended approach. **Keywords:** *child language*, *language therapy*, *syntax*

AN IMPORTANT FOCUS for therapy for children with language impairments (LI) is to address deficits in the grammatical system. Children with LI produce higher rates of errors on grammatical morphemes than children with typical language (Eisenberg, Guo, & Germezi, 2012; King & Fletcher, 1993). They also show an overall immaturity in grammatical structure, producing shorter, less elaborated sentences and fewer complex sentences than their age peers (Fletcher, 1991; Leonard, 1998).

This article focuses on therapy procedures that can be used to increase the range of grammatical forms produced by children with LI beyond the 14 grammatical morphemes iden-

Author Affiliation: *Department of Communication Sciences and Disorders, Montclair State University, Montclair, New Jersey.*

The author has disclosed that she has no significant relationships with, or financial interest in, any commercial companies pertaining to this article.

Corresponding Author: *Sarita Eisenberg, PhD, Department of Communication Sciences and Disorders, Montclair State University, 1515 Broad St, Bloomfield, NJ 07003 (eisenbergs@mail.montclair.edu).*

tified by Brown (1973). Before considering therapy approaches, I explore potential intervention targets for children at the developing language stage on the basis of a review of the literature, including my own research, and clinical experience. This stage occurs between 3 and 5 years of age for typical children when mean length of utterance (MLU) in morphemes increases from two to five or six morphemes (Paul & Norbury, 2012), extending into the early school age for children with LI.

TARGETS FOR LANGUAGE INTERVENTION

As a general principle, Fey, Long, and Finestack (2003) suggested focusing on *intermediate goals*, which are broad targets that reflect categories of related forms. The rationale was to trigger broader learning beyond individual linguistic forms. Clinicians can target an entire category together or sequentially target forms within a category, checking for generalization as the child achieves the previously targeted forms within that category. I have, accordingly, grouped the linguistic forms addressed within this article into the following categories: sentence constituents, pronouns, verb form elaboration, negative and

165

interrogative sentences, noun phrase elaboration, and complex sentences.

Sentence constituents

Two types of constituents are used in building sentences. *Arguments* are required sentence constituents that must be produced in order for a sentence to be grammatical; *adjuncts* are optional elements that add information but are not required. All sentences in English require a main clause. Some verbs, called transitive verbs, require a direct object or patient (e.g., *the boy hit a ball*). A smaller group of ditransitive verbs require both a direct object and an indirect object or dative that can be expressed as a noun phrase (e.g., *the boy gave his mother a card*) or a prepositional phrase (e.g., *the boy gave a card to his mother*). There are also complex transitive verbs that require a locative constituent as well as the direct object (e.g., *the man put the car in the garage*). Locative prepositions can be used optionally as adjuncts as well (e.g., *the boy jumped over the fence*; *the girl found her ball under the bed*).

The basic sentence constituents of the subject and object emerge within two-word utterances, although initially they may be semantically generated as agents and patients rather than as grammatical constituents (Brown, 1973). Emerging production of [subject + verb] combinations is an important achievement, as it lays the foundation for learning verb-tense marking (Hadley & Rispoli, 2010), which presents a well-documented problem for children with LI (see Leonard, 1998). Children with LI have been found to omit subject arguments, and they do so at rates that are higher than for MLU-matched younger children (Grela & Leonard, 1997). Production of subjects was also affected by the total number of arguments and adjuncts in the sentence. Children omitted subjects more frequently in sentences with three arguments (subject, patient, and dative as in *The pig is giving the cup to the mouse*) than sentences requiring two arguments (subject and patient as in *The cow is biting the boy*). According to Grela (2003), children omitted subjects more frequently in

sentences that included adjunct prepositional phrases (e.g., *The bear is running through the woods*) than in sentences that did not include an adjunct phrase (e.g., *The bear is running*). A recommendation for clinicians, therefore, is to work on subject argument inclusion in sentences with varying numbers of arguments and adjuncts, perhaps proceeding through a hierarchy that starts with just a subject argument (e.g., *The boy is jumping*) and then adds other arguments and/or adjuncts one at a time.

Difficulties during the developing language period with sentence constituents other than subject arguments are less well-attested. However, Thordardottir and Ellis Weismer (2002) found that school-aged children with LI produced a more limited range of argument types than children with typical language. This limitation included post–verbal noun phrases and prepositional phrases coding a beneficiary (e.g., *I'll pour you a glass of milk*), also termed dative or indirect object, and locations involving the source or goal of an action (e.g., *Put them in the drawer*). King and Fletcher (1993) reported argument omissions by school-aged children with LI, including object arguments (e.g., *I told Ø already*) and required locatives (e.g., *put the chair Ø*), as well as less frequent use of optional locatives (e.g. *I can't fit him __*).

In addition to difficulties with specific types of constituents, children with LI show limitations on the number of constituents they produce. In a study by Thordardottir and Ellis Weismer (2002), children with LI produced fewer utterances with three constituents (e.g., *You gave this guy a letter; We can boil something on the stove*) and four constituents (e.g., *His mother bought a present for the boy at the mall*) than children with typical language. Thus, it may not be sufficient to target different types of arguments and adjuncts (subjects, patients, datives, locatives) but it may also be necessary to target production of sentences with an increasing number of constituents, regardless of constituent type. A goal of targeting three-constituent sentences, for instance, would

include imperatives with three post–verbal constituents (e.g., *Draw a circle under the box with the red crayon*) and declaratives with a subject and two post-verbal constituents (e.g., *The boy drew a circle with the red crayon*).

There is also evidence that the number of sentence constituents affects usage of other linguistic features. Grela and Leonard (2000) reported that children with LI had a higher rate of omissions for auxiliary verbs with ditransitive verbs (i.e., verbs such as *give* and *put* that require two post-verbal arguments in addition to the subject argument) than in sentences with either intransitive verbs (i.e., verbs such as *jump* that require only a subject argument) or transitive verbs (i.e., verbs such as *bite* that require both a patient and a subject). Auxiliary verb use also was slightly reduced for all three types of verbs in sentences that included an optional locative prepositional phrase. This has implications for how clinicians target auxiliary *be* and other morphemes. It would not be sufficient to work on morpheme use in short sentences that include only a subject and verb. Rather, to ensure generalization of morpheme use to longer sentences, therapy should target sentences that include additional arguments and adjuncts.

Pronouns

Children with LI produce fewer subject case pronouns (e.g., *he*, *she*) than children with typical language (Loeb & Leonard, 1991), typically substituting object case pronouns for subject case pronouns (e.g., *him* for *he*, *her* for *she*). Loeb and Leonard also reported a correlation between use of subject case pronouns and verb tense marking. Children were more likely to produce pronoun case errors with verbs that were not marked for verb tense. A possible implication would be to target subject case pronouns and verb tense marking as part of a single goal rather than as separate goals. Loeb and Leonard also reported gender errors by some of the children with LI. Interestingly, the children who showed gender errors did not produce case errors, and vice versa. Depending on a particular child's language sample profile, clinicians might, therefore, want to target case or gender as an intermediate goal rather than targeting production of individual pronouns.

Verb form elaboration

As noted earlier, difficulty with verb tense markers (regular past tense *-ed*, regular third person present tense *-s*, auxiliary *be*, copula *be*, and auxiliary *do*) by children with LI has been well documented (Leonard, 1998; Rice, Wexler, & Hershberger, 1998). There is less information about difficulty with other types of verb form elaboration. Two studies by Leonard and colleagues (Leonard, Deevy, Wong, Stokes, & Fletcher, 2007; Leonard et al., 2003) suggest that children with LI may use modals (e.g., *can, will, could, would*) less frequently than children with typical language. Modals in English code a variety of meanings, such as ability and permission. Modals also involve tense marking. *Can*, for instance, is a present tense modal, whereas *could* is a past tense form. Leonard et al. (2003) reported limited use of the modal *can* by some children with LI. A subsequent study by Leonard et al. (2007) found limited or no use of the modal *could* by an even larger proportion of children with LI. Leonard et al. (2007) also considered children's ability to express different modality functions. Most of the children with LI used *can* to express both ability and permission, but there were individual children with LI who restricted use of *can* to only one of these meanings. Leonard et al. (2007) suggested a three-step plan for working on modals. The first step is to provide a single-modal form for each modality function (e.g., *can* for ability, *may* for permission, *will* for volition, *could* for possibility, *should* for obligation). The second step is to work on coding different functions with the same modal (e.g., *can* to express permission as well as ability). The third step is to contrast present and past forms for the same function (e.g., *can* and *could* to express ability).

English has a variety of verb forms that involve premodification of the verb with

auxiliaries and modals. The simplest of these verb forms, and the ones expected from children at the developing language stage, involve combining a single modal with a bare verb (e.g., *could bake*), or combining an auxiliary with an inflected verb to form the progressive (e.g., *was baking*), passive (e.g., *was baked*), or, less frequently, perfect verb form (e.g., *had baked*). School-aged children with LI have been reported to show reduced use of these forms (Fletcher, 1991), as well as later developing verb forms involving combinations of auxiliaries and modals (e.g., *had been sleeping*; *might have liked*). Clinicians, thus, may want to target these verb forms collectively as a larger intermediate goal rather than focusing solely on the use of individual auxiliary and modal morphemes.

Negative and interrogative sentences

Both negatives and interrogatives involve modification of the basic declarative sentence. Production of these sentence forms is linked to children's learning of both the copula and auxiliary/modal system and different verb forms. For instance, a study of *wh*-questions produced by children with typical language found that order of acquisition and accuracy were influenced not only by the *wh*-word but also by the auxiliary or modal (Rowland, Pine, Lieven, & Theakston, 2005). Children produced more grammatical questions with the copula than with auxiliary *be* or *have.* For both the copula and auxiliary *be*, there were more grammatical questions with *is* than with *are* (Rowland et al., 2005).

Menyuk and Looney (1972) reported that children with LI were less accurate in repeating negative and interrogative sentences and made more errors on these sentence types than they did on declarative and imperative sentences. In a later study of *wh*-questions by Leonard (1995), children with LI produced a higher rate of noninverted questions than children with typical language. I found no study that investigated production of yes/no questions by children with LI, but it seems likely that children with LI will have similar difficulty achieving inverted yes/no ques-

tions with a range of auxiliaries, modals, and copula forms. In working on sentence types, clinicians could focus on intermediate goals involving variations on each sentence type—negatives, yes/no questions, *wh*-questions. Alternatively, intermediate goals could be developed that focus on production of auxiliaries or modals within a specific verb form, such as the progressive, but across a range of sentence types that include negatives and interrogatives, as well as declaratives.

Noun phrase elaboration

Elaboration of the noun phrase involves both premodification of a noun with determiners and adjectives (e.g., *this ball*; *my big ball*) and postmodification with prepositional phrases and relative clauses (e.g., *the boy with the curly hair*; *the glass that I broke*). Difficulties with article use by children with LI have been documented (e.g., Leonard, Eyer, Bedore, & Grela, 1997). Children with LI show a lower frequency of use of articles (i.e., they omit articles) in obligatory contexts than both age- and MLU-matched younger children (Leonard, Bortolini, Caselli, McGregor, & Sabbadini, 1992). In a study by Gavin, Klee, and Membrino (1993), usage of three-element noun phrases (i.e., noun phrases such as *a red hat* with a determiner and an adjective) discriminated between children with LI and children with typical language. Difficulties with noun phrase elaboration continue into the school years. In a study by Eisenberg and Hsu (2008), children with LI produced fewer two- and three-element noun phrases and fewer noun phrases with postmodification (e.g., *a family of octopuses*; *a dog that had fur*) than same-age peers. Greenhalgh and Strong (2001) also found a reduced frequency for elaborated noun phrases involving pre- and/or postmodification. Intermediate goals could target noun phrases with an increasing number of pre–noun modifiers that would include articles, rather than focusing solely on article usage, as well as post–noun modification with both phrasal and clausal modifiers.

Complex sentences

Complex and coordinated sentences (hereafter termed complex sentences) are sentences with more than one clause. There are four basic types of complex sentences: coordination, complementation, relativization, and subordination. Coordination involves the linking of two clauses by a coordinating conjunction (*and*, *but*, or *or*). The second clause can be a full independent clause with a subject and a verb (e.g., *I got my dog and I got my dinosaur*), or it can have an ellipted (coreferential) subject that is shared with the main clause verb (e.g., *The driver can go in the car and drive home*). Complementation involves embedded clauses that serve as the subject or object of the main clause verb. The complement clauses produced by young children are mostly object complements. That is, they function as the object of the main clause verb. These can take several forms including infinitives (e.g., *I'm gonna try to put it in*), full propositions (e.g., *I think I need some orange juice*), and, less commonly, gerunds (e.g., *The boy liked playing with his daddy's tools*). Both infinitives and propositional complements can be headed with a *wh*-word (e.g., *I know where to go*; *I don't know what it is*). Infinitives can be further divided into simple infinitives (e.g., *I want to do it*) and infinitives with a different subject (e.g., *I want you to do it*). Relativization involves clauses that are embedded within a noun phrase. Relative clauses can be full (e.g., *There is the dog that was barking so loud*) or reduced (e.g., *There is the dog barking so loud*). Subordination involves embedded clauses that are introduced by a subordinating conjunction (such as *because*, *if*, or *after*). Subordinate clauses occur more frequently after the main clause (e.g., *You guy aren't safe because you're in T-rex world*) but can be preposed to occur before the main clause (e.g., *If you say please, I won't do it*).

A few studies have addressed complex syntax in children with LI. Schuele and Dykes (2005) reported a delay in the emergence of complex sentences and a subsequently slower rate of development for complex sentences in their longitudinal case study of one child with LI. In a study I conducted (Eisenberg, 2003), some 5-year-old children with LI were not producing infinitival complements, although infinitives are the earliest type of complex sentence to emerge for typical children (Limber, 1973).

Difficulties with complex sentences continue into the school years. Both Fletcher (1991) and Marinellie (2004), for instance, reported reduced production of complex sentences by school-aged children with LI. Complex sentences could be targeted by function, with separate intermediate goals for coordination, complementation, relativization, and subordination, or by specific complex grammatical structure (e.g., *wh*-complement clause, full propositional complements; see Barako Arndt & Schuele, 2013). Note that because relative clauses serve to modify a noun, this complex sentence type could be targeted as part of a goal for noun phrase elaboration.

PROCEDURES FOR TARGETING GRAMMATICAL FORMS

I have divided recommendations for therapy procedures into two types of strategies—explicit instruction and scaffolding in context. Explicit instruction provides models of a target form and opportunities for the child to practice that form in a concentrated way in isolation from usage in context. Scaffolding procedures help the child to use a target form in a meaningful way during contextualized interactive exchanges.

Explicit instruction

Explicit instruction typically takes place during drill activities; it focuses on discrete skills. Explicit instruction activities are highly structured and clinician directed. They allow the target form to be isolated and to appear in multiple grouped exemplars. The rationale is to make the form of the targeted structure more salient for the child. The models and target sentences can be unrelated to each other, or they can be part of a story or other

cohesive text. There have been numerous studies documenting the success of explicit instruction drills in general for getting children to produce linguistic forms that were absent or infrequent prior to therapy (see Fey, 1986, for a review). However, efficacy data for specific types of explicit instruction training are limited. Explicit instruction can be conducted with a variety of techniques, including imitation training, partial imitation, modeling, corrected practice, contrastive modeling, and juxtaposition.

Imitation training

In imitation training, the clinician presents sentences containing the target form and asks the child to repeat each sentence immediately. During imitation training, it is important that the sentences be presented so that the child can see the connection between the target form and its meaning. Linking form and meaning can be accomplished by pairing each sentence with a picture, as in the following example targeting production of sentences with three arguments:

Adult: *This is a story about Jimmy's birthday. I'll tell you part of the story and you say it after me. Mommy baked Jimmy a birthday cake.*

Child: *Mommy baked a cake.*

Adult: *Let's try it again. Remember to say who the cake was for. Mommy baked Jimmy a birthday cake.*

Child: *Mommy baked Jimmy a cake.*

Adult: *Very good. Let's look at the next picture. Mommy gave Jimmy a birthday present.*

Child: *Mommy gave Jimmy a present.*

Adult: *Very good. You remembered that the present was for Jimmy. Let's see what happens next. Mommy read Jimmy the birthday card.*

Child: *Mommy read the card.*

Adult: *Uh oh, you forgot to say who the card was for. Listen again. Mommy read Jimmy the birthday card.*

Child: *Mommy read Jimmy the card.*

Adult: *Excellent. You said who she read the card to.*

Connell (1987) and Connell and Stone (1992) compared generalization of an invented noun morpheme in two conditions, one involving imitation of a model and one involving listening to models of the target without imitation. In both studies, children with LI showed higher generalization rates of the morpheme to untrained nouns after imitation training than after the listening only condition.

Partial imitation

As in imitation training, partial imitations alternate between the clinician's model and the child's production. However, in partial imitation, the child produces sentences that replicate the structure of the modeled sentence with different content. To accomplish this, the clinician can talk about one picture and then ask the child to talk about a different picture. Books can be used here as well, with the clinician and the child telling the next part of the story as pages are turned. The following is an example of partial imitation for two argument utterances that include a locative prepositional phrase:

Adult: *How did the children get to school? I'll talk about the girl and then you tell me about the boy. The girl rode on the bus.*

Child: *The boy rode in a car.*

To investigate this method, Ellis Weismer and Murray-Branch (1989) compared accuracy following the partial imitation condition with accuracy following a listening only condition. Therapy targets consisted of grammatical morphemes and subject case pronouns. They found no difference in posttherapy accuracy between the two conditions. However, the learning pattern within the partial imitation condition was more stable, with fewer fluctuations in performance from session to session.

Modeling

In modeling, the child first listens to the entire set of models while looking at the pictures before being asked to talk about the same set of pictures. This strategy is similar to

the auditory bombardment suggested by Hodson and Paden (1991) for phonological intervention. As for imitation training, it is important in modeling that the sentences be paired with pictures so that the child can make the connection between the target form and its meaning. After hearing the models, the child is asked to talk about the same set of pictures or a new set of pictures. The following is an example of modeling for noun phrase elaboration with a reduced relative clause (adapted from Fey & Proctor-Williams, 2000):

Step 1: Modeling

Adult: *Here's a boy wearing a raincoat. Here's another boy wearing a sweatshirt. This girl knows the boy wearing the raincoat. She doesn't know the boy wearing the sweatshirt. She says hi to the boy wearing the raincoat. Now you tell me the story.*

Step 2: Production

Adult {pointing to first boy}: *Who's here?*

Child: *The boy is wearing a raincoat.*

Adult: *Here's a boy wearing a raincoat. You say that.*

Child: *Here's a boy wearing a raincoat.*

Adult: *Very good.* {pointing to second boy} *And here?*

Child: *That's a boy wearing a sweatshirt.*

Adult: *Yes, that is a boy wearing a sweatshirt. Who does the girl know?*

Child: *The boy wearing the raincoat.*

Adult: *That's right. Can you say the whole thing? She~*

Child: *She knows the boy wearing the raincoat.*

Adult: *And this boy? She~*

Child: *She doesn't know him.*

Adult: *She doesn't know the boy~*

Child: *Wearing the raincoat.*

Adult: *Say the whole thing. She~*

Child: *She doesn't know the boy wearing the raincoat.*

Adult: *So which boy does she say hi to? She~*

Child: *She says hi to the boy wearing the raincoat.*

Adult: *You did a great job telling the story.*

Courtright and Courtright (1976) compared production accuracy for subject case pronouns achieved during three sessions of modeling and therapy involving immediate exact imitations of adult models (as discussed earlier in Connell, 1987). The imitation condition resulted in a higher rate of target production after the first session than did the modeling condition. However, the imitation condition yielded little subsequent change in accuracy after the first session. In contrast, accuracy within the modeling condition showed a steady increase over the three sessions and, at the second session, surpassed the accuracy level in the imitation condition.

Corrected practice

In corrected practice, responses are elicited from the child and models are provided only after unsuccessful attempts at the target form. This is illustrated with the following example for the passive verb form:

Adult: *Look how pretty this cat is. Tell me all the things that happened to make the cat so pretty. Start with the cat~*

Child: *The cat washed.*

Adult: *Oops, something's missing. Say it like this. The cat was washed.*

Child: *The cat was washed.*

Adult: *And next?*

Child: *The cat rinsed off.*

Adult: *Listen to how I say it. The cat WAS rinsed off. You say that.*

Child: *The cat was rinsed off.*

Adult: *Great, you said all the words. And then what?*

Child: *The cat dried.*

Adult: *Oops, something's missing. Listen. The cat WAS dried off. You say that.*

Child: *The cat was rinsed off.*

Adult: *Excellent and then?*

Child: *The cat was brushed.*

Adult: *Yes, you did a great job getting all the words in the sentence.*

Goldstein (1984) compared children's production of two-constituent utterances (with an agent and action) and three-constituent utterances (with an agent, action, and object) during a corrected practice condition with an alternate therapy condition. The alternate condition was initially intended to involve listening only. However, this was changed to imitation training for two of the five participants who showed no increase in usage in the listening-only condition. Production levels after the entire course of treatment were the same in both conditions. However, all children showed a faster rate for learning the target forms in the corrected practice condition.

Contrastive modeling

Connell (1982) described a variation of modeling that exposes the child to the target form and to another form that is semantically and/or grammatically related to the target. Connell suggested alternating between the target and contrast and having the child produce each form immediately after the model, as shown by the following example for targeting an infinitive with a different subject:

Adult: *Mickey wants to swim. Tell me that.*

Child: *Mickey wants to swim.*

Adult: *Good, you can make Mickey swim. Now Mickey wants Donald to swim.*

Child: *Mickey wants to swim.*

Adult: *Try it again. Mickey wants DONALD to swim.*

Child: *Mickey wants Donald to swim.*

Adult: *Excellent. You can make Donald swim.*

Connell (1982) hypothesized that the contrast would make the target more salient and meaningful. However, he provided no empirical support for this hypothesis. In their treatment studies, Fey and his colleagues (Fey, Cleave, & Long, 1997; Fey, Cleave, Long, & Hughes, 1993) included contrast modeling as one component of the treatment package. However, they did not isolate the contribution of this procedure to therapy outcome (i.e., differentiate the effect of this treatment component from other components).

Juxtapositions

In my own therapy, I have used a type of contrast that I call juxtapositions. The contrast here is between a simpler form and a more sophisticated form. One way to do this is to present two simpler sentences followed by a more elaborate sentence that combines the content from those two simpler sentences. Another way to do this is, as illustrated in the following example for targeting subordination, is to present a simpler sentence followed by a more elaborate sentence that builds on that first simpler sentence.

Adult: *Johnny is crying. Why? Johnny is crying because he hurt his knee. Tell me about Johnny.*

Child: *He hurt his knee. He's crying.*

Adult: *Put it all together. Johnny is crying BECAUSE he hurt his knee.*

Child: *Johnny is crying because he hurt his knee.*

The evidence for this strategy is anecdotal, based only on my clinical experience. There has been no study documenting the effectiveness of juxtaposition in increasing usage of more elaborated sentences.

Scaffolding procedures

Scaffolding techniques differ from direct instruction in that scaffolding is provided immediately after a child produces an utterance that provides an opportunity for using the target form. The rationale for scaffolding includes helping the child to recognize contextual cues for using the target form in a meaningful way. In contrast to explicit instruction activities that target linguistic forms out of context, scaffolding is provided within embedded skills activities, activities that target authentic use of the target (Ukrainetz, 2006). As with explicit instruction, there is overall evidence that the

use of scaffolding within embedded activities is effective (see, for instance, Delprato, 2001). However, there is limited and sometimes contradictory evidence for specific scaffolding procedures.

Recasting

Recasts provide a complete model immediately following the child's truncated attempts at the target form. There are several types of recasts. Expansions add grammatical elements to the child's utterance as in the following example of recasting after the child's omission of the *to* infinitive marker:

> Adult: *Look at what the boy is doing.*
>
> Child: *He's trying climb the tree.*
>
> Adult: *He's trying to climb the tree.*

Extensions add content—words, phrases, or clauses—to the child's original utterance, as shown following with a recast that adds a post–noun modifying prepositional phrase to the child's utterance:

> Child: *He has ice cream.*
>
> Adult: *He has ice cream with sprinkles.*

Children may spontaneously repeat the recast, or they can be prompted to do so.

In a series of studies, Camarata and Nelson and their colleagues (Camarata, Nelson, & Camarata, 1994; Nelson, Camarata, Welsh, Butkovsky, & Camarata, 1996) compared outcomes for conversational recast versus imitation training for a variety of targets, including grammatical morphemes, verb forms, and complex sentences. Although both therapy conditions resulted in increased usage of the target forms, the researchers found several advantages for the conversational recast treatment. These advantages included fewer trials to achieve spontaneous production and greater generalization to situations outside of therapy.

In contrast, Proctor-Williams, Fey, and Loeb (2001) found no correlation between parental recasting and later use of the copula by children with LI. They attributed this to the lower rates of recasting by parents than were used in

the recast intervention studies and suggested that recasting will be effective only if provided with sufficient density.

Vertical structuring

In vertical structuring, the clinician follows up on the child's utterance by asking for additional information. This strategy can be implemented by asking questions that indicate the specific information to be provided or through directives that request specific information. After the child responds to the question or directive, the clinician presents a model that adds the child's new information to the child's original utterance as in this example for subordination:

> Child: *It don't fit.*
>
> Adult: *Why not?*
>
> Child: *It's too big.*
>
> Adult: *It doesn't fit because it's too big. Let's find a bigger box.*

As for recasting, the clinician can choose whether or not to prompt the child to repeat the longer utterance. Alternatively, the clinician can start the target sentence and prompt the child to complete it with the new content after the child responds to the question or directive.

Schwartz, Chapman, Terrell, Prelock, and Rowan (1985) compared use of vertical structuring for targeting word combinations with a no-treatment condition involving a book reading activity. There was a large increase in the use of word combinations by most of the children in the vertical structuring condition. In contrast, children in the control group did not show an increase in production of word combinations.

Multiple-choice modeling

Another form of scaffolding that I have used in therapy is to prompt the child to elaborate by offering choices. This modeling can be done by asking multiple-choice questions as in this example for a three-element noun phrase. There are two features that I have found to be important in giving this type of

cue. One is to limit the number of choices so that the child does not become confused. The second is to present the choices so that the target response is not last, so a delayed, rather than immediate, imitation is elicited.

Adult: *Mickey is hungry. What should we give him to eat?*

Child: *A cookie.*

Adult: *Hm, there are two cookies. Which one should we give to Mickey? The big cookie or the little cookie?*

Child: *The big cookie.*

Adult: *Okay, give Mickey the big cookie.*

The evidence for this strategy is anecdotal, based only on clinical experience. There has been no study documenting the effectiveness of multiple-choice cueing in increasing usage of target features.

COMBINING EXPLICIT INSTRUCTION AND SCAFFOLDING

Explicit instruction and embedded therapy can be conceptualized as existing on a continuum of naturalness (Fey, 1986). At one end of the continuum, explicit instruction focuses on specific grammatical features within highly structured drill activities. Toward the other end of the continuum are embedded activities, such as play and book reading, which focus on the use of scaffolding to elicit targeted grammatical features within a meaningful interaction.

An advantage to explicit instruction drills is that they maximize and concentrate opportunities for the child to both hear and produce the target form. This may be important in light of evidence that children with LI may require more teaching episodes than typical children to learn linguistic forms. Gray (2003), for instance, found that children with LI required more trials to reach criterion for both comprehension and production of new words. Decontextualized practice may not, however, be the best technique for encouraging generalization of new forms. Although explicit instruction drills may result in achievement of

a high rate of elicited productions of the target in a fairly short period of time, children may not carry over production to spontaneous (i.e., nonelicited, less structured) production or to production outside of therapy activities (see Peterson, 2004, for a review). On the contrary, scaffolding techniques have the limitation of making it more difficult to achieve a high concentration of exposures and production attempts within embedded activities. The learning trajectory under a scaffolding approach may, consequently, be initially slower. However, as noted earlier, subsequent spontaneous use of target forms and generalization of those forms to other settings could occur sooner and at higher levels with embedded therapy (Nelson et al., 1996).

Because explicit instruction drills result in rapid increases in production of target forms, it is common practice to work first on language goals during explicit instruction activities. Therapy targets are subsequently incorporated into embedded activities once the child achieves some criterion level of performance during drill in order to achieve generalization to spontaneous speech and carry over to nontherapy contexts, (see, for instance, Paul & Norbury, 2012).

An alternative to this is to combine explicit instruction and embedded instruction activities in a complementary way within the same treatment sessions. Fey et al. (2003) suggested 10 principles for therapy to facilitate the development of grammar in children with LI. Among the principles are these two seemingly contradictory principles that advocate the use of explicit instruction on the one hand (Principle 10) and embedded instruction with scaffolding on the other (Principle 8).

Principle 8: "*Systematically contrast forms used by the child with more mature forms from the adult grammar, using sentence recasts.*" (p. 11)

Principle 10: "*Use elicited imitation to make target forms more salient and to give the child practice with phonological patterns that are difficult to access or produce.*" (p. 9).

To reconcile this potential conflict, I (Eisenberg, 2006) suggested a program for combining the two instructional types that is consistent with both of these principles. The combined approach includes starting sessions with a brief explicit instruction activity (called *mini-lessons*) to highlight the target grammatical form. This instruction is immediately followed with an embedded activity that scaffolds use of the grammatical form in conversation or some other discourse modality. Explicit instruction can also be used if the child experiences continued difficulty in using the target feature within the embedded activity. These even briefer explicit instruction lessons (called *micro-lessons*) interrupt the embedded activity to refocus the child on the target before going back to the embedded activity.

A number of studies recently have demonstrated the importance of providing a high number of teaching episodes (termed *dose*) in therapy (Proctor-Williams, 2009; Warren, Fey, & Yoder, 2007). The explicit instruction mini- and micro-lessons enable clinicians to achieve a high and concentrated dose of teaching episodes (termed *massed practice*). Mini- and micro-lessons also take advantage of structural priming, the influence that exposure to a particular linguistic form has on the sentence forms that are subsequently selected or produced (Leonard, 2011). Structural priming was first demonstrated by Bock (1986). In the original study, adults listened to and repeated sentences that were either active or passive and to sentences that had either a double object or an object and prepositional phrase. After this priming phase, participants were asked to describe pictures. Bock found that the sentences used to describe the pictures reflected the forms to which the participants had been exposed. Subsequent studies have documented the structural priming effect for children as well (e.g., Huttenlocher, Vasilyeva, & Shimpi, 2004).

Because embedded therapies rely largely on consequent instruction (i.e., instruction delivered after a child has attempted the target form), a possible problem for embedded therapy is the low dose of teaching episodes if a child never or infrequently attempts the target form. This is a particularly acute problem for indirect language stimulation, during which the clinician waits for the child to attempt the target, but it can also be a problem for quasi-naturalistic interactions that involve explicit prompting for the target by the clinician. The structural priming provided from mini-lessons may be helpful in influencing the child to attempt the primed target during the subsequent embedded interaction. Because the priming effect may be short-lived, micro-lessons can be used as needed to reprime the target form.

Although I have presented theoretical support for an integrated approach to language therapy, direct evidence from intervention studies is currently lacking. Such studies are needed to compare the proposed approach with both explicit instruction approaches and embedded therapies with scaffolding.

CONCLUSION

There is evidence that children with LI have difficulties with a wide range of grammatical forms other than grammatical morphemes. These include sentence constituents, pronouns, verb form elaboration, negative and interrogative sentences, noun phrase elaboration, and complex sentences. Even where direct evidence of difficulty is lacking for preschool children, studies documenting difficulties during the school years suggest that early intervention for these forms would be beneficial. Targeting related forms rather than focusing on isolated linguistic features seems likely to achieve more efficient language learning.

Rather than a sequential strategy of first targeting linguistic forms in drill and then incorporating production of the forms into embedded activities, a plan of integrating these approaches throughout therapy was recommended. Although there are no empirical studies documenting its efficacy, this integrated plan capitalizes on the documented strengths of each approach—The

ability within explicit instruction drills to achieve a high dose of teaching episodes and rapid emergence of the target form and the faster achievement within embedded therapy activities of meaningful spontaneous use in varied contexts. Difficulty with achieving generalization has led some authors to reject explicit instruction. However, incorporating drill as a part of therapy could potentially enhance the effectiveness of embedded therapies through structural priming.

REFERENCES

Barako Arndt, K., & Schuele, C. M. (2013). Complex syntax is not just for big kids: A framework for analysis of complex syntax production in spoken language of preschool and early school-age children. *Topics in Language Disorders*, *33*(2), 125-139.

Bock, J. K. (1986). Syntactic persistence in language production. *Cognitive Psychology*, *18*, 355-387.

Brown, R. (1973). *A first language: The early stages*. Cambridge, MA: Harvard University Press.

Camarata, S. M., Nelson, K. E., & Camarata, M. N. (1994). Comparison of conversational recasting and imitative procedures for training grammatical structures in children with specific language impairment. *Journal of Speech and Hearing Research*, *37*, 1414-1423.

Connell, P. J. (1982). On training language rules. *Language, Speech, and Hearing Services in Schools*, *13*, 231-248.

Connell, P. J. (1987). An effect of modeling and imitation teaching procedures on children with and without specific language impairment. *Journal of Speech and Hearing Research*, *30*, 105-113.

Connell, P. J., & Stone, C. A. (1992). Morpheme learning of children with specific language impairment under controlled instructional conditions. *Journal of Speech and Hearing Research*, *35*, 844-852.

Courtright, J. A., & Courtright, I. C. (1976). Imitative modeling as a theoretical base for instructing language-disordered children. *Journal of Speech and Hearing Research*, *19*, 655-663.

Delprato, D. (2001). Comparison of discrete-trial and normalized behavioral language intervention for young children with autism. *Journal of Autism and Developmental Disorders*, *31*, 315-325.

Eisenberg, S. (2003). Production of infinitival object complements in the conversational speech of 5-year-old children with language impairment. *First Language*, *23*, 327-341.

Eisenberg, S. (2006). Grammar: How can I say it better? In T. Ukrainetz (Ed.), *Contextualized language intervention: Scaffolding preK-12 literacy achievement* (pp. 145-194). Eau Claire, WI: Thinking Publications.

Eisenberg, S., Guo, L., & Germezi, M. (2012). How grammatical are three-year-olds? *Language, Speech, and Hearing Services in Schools*, *43*, 36-52.

Eisenberg, S., & Hsu, J. (2008). Presence and degree of noun phrase elaboration by children with language impairment. Paper presented at the Symposium on Research in Child Language Disorders, University of Wisconsin–Madison.

Ellis Weismer, S., & Murray-Branch, J. (1989). Modeling versus modeling plus evoked production training: A comparison of two language intervention methods. *Journal of Speech and Hearing Disorders*, *54*, 269-281.

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

Fey, M. E., Cleave, P. L., & Long, S. H. (1997). Two models of the facilitation of grammar in children with language impairment: Phase 2. *Journal of Speech, Language, and Hearing Research*, *40*, 5-19.

Fey, M. E., Cleave, P. L., Long, S. H., & Hughes, D. L. (1993). Two approaches to the facilitation of grammar in children with language impairment: An experimental evaluation. *Journal of Speech, Language, and Hearing Research*, *36*, 141-157.

Fey, M. E., Long, S. H., & Finestack, L. H. (2003). Ten principles of grammar facilitation for children with specific language impairments. *American Journal of Speech-Language Pathology*, *12*, 3-15.

Fey, M. E., & Proctor-Williams, K. (2000). Recasting, elicited imitation, and modeling in grammar intervention for specific language impairment. In D. V. H. Bishop, & L. B. Leonard (Eds.), *Speech and language impairments in children: Causes, characteristicsm intervention, and outcome* (pp. 177-194). East Sussex, England: Psychology Press.

Fletcher, P. (1991). Evidence from syntax for language impairment. In J. Miller (Ed.), *Research on child language disorder: A decade of progress* (pp. 177-194). East Sussex, England: Psychology Press.

Gavin, W. J., Klee, T., & Membrino, I. (1993). Differentiating specific language impairment from normal language development using grammatical analysis. *Clinical Linguistics and Phonetics*, *7*, 191-206.

Goldstein, H. (1984). Effects of modeling and corrected practice on generative language learning of preschool children. *Journal of Speech and Hearing Disorders*, *49*, 389-398.

Gray, S. (2003). Word-learning by preschoolers with specific language impairment: What predicts success? *Journal of Speech, Language, and Hearing Research*, *46*, 56-67.

Greenhalgh, K. S., & Strong, C. J. (2001). Literate language features in spoken narratives of children with

typical language and children with language impairments. *Language, Speech, and Hearing Services in Schools*, *32*, 114–125.

Grela, B. (2003). The omission of subject arguments in children with specific language impairment. *Clinical Linguistics and Phonetics, 17*, 153–169.

Grela, B. G., & Leonard, L. B. (1997). The use of subject arguments by children with specific language impairment. *Clinical Linguistics and Phonetics*, *11*(6), 443–453.

Grela, B. G., & Leonard, L. B. (2000). The influence of argument-structure complexity on the use of auxiliary verbs by children with SLI. *Journal of Speech, Language, and Hearing Research*, *43*, 1115–1125.

Hadley, P. A., & Rispoli, M. (2010, November). Grammar is for toddlers too! Paper presented at the American Speech-Language-Hearing convention, Philadelphia, PA.

Hodson, B. W., & Paden, E. P. (1991). *Targeting intelligible speech: A phonological approach to remediation* (2nd ed.). Austin, TX: Pro-Ed.

Huttenlocher, J., Vasilyeva, M., & Shimpi, P. (2004). Syntactic priming in young children. *Journal of Memory and Language*, *50*, 182–195.

King, G., & Fletcher, P. (1993). Grammatical problems in school-aged children with specific language impairment. *Clinical Linguistics and Phonetics*, 7, 339–352.

Leonard, L. B. (1995). Functional categories in the grammars of children with specific language impairment. *Journal of Speech, Language, and Hearing Research*, *38*, 1270–1283.

Leonard, L. B. (1998). *Children with specific language impairment*. Cambridge, MA: MIT Press.

Leonard, L. B. (2011). The primacy of priming in grammatical learning and intervention: A tutorial. *Journal of Speech, Language, and Hearing Research*, *54*, 608–621.

Leonard, L. B., Bortolini, U., Caselli, M. C., McGregor, K. K., & Sabbadini, L. (1992). Morphological deficits in children with specific language impairment: The status of features in the underlying grammar. *Language Acquisition*, *2*, 151–179.

Leonard, L. B., Deevy, P., Miller, C., Charest, M., Kurtz, R., & Rauf, L. (2003). The use of grammatical morphemes reflecting aspect and modality by children with specific language impairment. *Journal of Child Language*, *30*, 769–795.

Leonard, L. B., Eyer, J. A., Bedore, L. M., & Grela, B. G. (1997). Three accounts of the grammatical morpheme difficulties of English-speaking children with specific language impairment. *Journal of Speech and Hearing Research*, *34*, 741–753.

Leonard, L. B., Wong, A. M.-Y., Deevy, P., Stokes, S., & Fletcher, P. (2007). Modal verbs with and without tense: A study of English- and Cantonese-speaking children with specific language impairment. *International Journal of Language and Communication Disorders*, *42*, 209–228.

Limber, J. (1973). The genesis of complex sentences. In: T. E. Moore (Ed.), *Cognitive development and the acquisition of language* (pp. 169–185). New York: National Academies Press.

Loeb, D. F., & Leonard, L. B. (1991). Subject case marking and verb morphology in normally developing and specifically language-impaired children. *Journal of Speech, Language, and Hearing Research*, *40*, 724–753.

Marinellie, S. A. (2004). Complex syntax used by school-age children with specific language impairment (SLI) in child-adult conversation. *Journal of Communication Disorders*, *37*, 517–533.

Menyuk, M., & Looney, P. L. (1972). A problem of language disorder: Length versus structure. *Journal of Speech and Hearing Research*, *15*, 264–279.

Nelson, K. E., Camarata, S. M., Welsh, J., Butkovsky, L., & Camarata, M. (1996). Effects of imitative and conversational recast treatment on the acquisition of grammar in children with specific language impairment and younger normal children. *Journal of Speech and Hearing Research*, *39*, 850–859.

Paul, R., & Norbury, C. F. (2012). *Language disorders from infancy through adolescence* (4th ed.). St Louis, MO: Mosby Elsevier.

Peterson, P. (2004). Naturalistic language teaching procedures for children at risk for language delays. *The Behavior Analyst Today*, *5*, 404–424.

Proctor-Williams, K. (2009). Dosage and distribution in morphosyntax intervention: Current evidence and future needs. *Topics in Language Disorders*, *29*, 294–311.

Proctor-Williams, K., Fey, M. E., & Loeb, D. F. (2001). Parental recasts and production of copulas and articles by children with specific language impairment and typical language. *American Journal of Speech-Language Pathology*, *10*, 155–168.

Rice, M. L., Wexler, K., & Hershberger, S. (1998). Tense over time: The longitudinal course of tense acquisition in children with specific language impairment. *Journal of Speech, Language, and Hearing Research*, *41*, 1412–1431.

Rowland, C. F., Pine, J. M., Lieven, E. V. M., & Theakston, A. L. (2005). The incidence of error in young children's wh-questions. *Journal of Speech, Language, and Hearing Research*, *48*, 384–404.

Schuele, C. M., & Dykes, J. C. (2005). Complex sentence acquisition: A longitudinal case study of a child with specific language impairment. *Clinical Linguistics and Phonetics*, *19*, 295–318.

Schwartz, R., Chapman, K., Terrell, B., Prelock, P., & Rowan, L. (1985). Facilitating word combinations in language-impaired children through discourse structure. *Journal of Speech and Hearing Disorders*, *50*, 31–39.

Thordardottir, E. T., & Ellis Weismer, S. (2002). Verb argument structure weaknesses in specific language

impairment in relation to age and utterance length. *Clinical Linguistics and Phonetics*, *16*, 233–250.

Ukrainetz, T. A. (2006). Assessment and intervention within a contextualized skill framework. In T. Ukrainetz (Ed.), *Contextualized language intervention: Scaffolding preK-12 literacy achieve-ment* (pp. 7-58). Eau Claire, WI: Thinking Publications.

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