

## Research Article

# Language Outcomes of Contextualized and Decontextualized Language Intervention: Results of an Early Efficacy Study

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**Purpose:** The purpose of this early efficacy study (Fey & Finestack, 2009) was to determine whether a new contextualized language intervention (CLI) or an existing decontextualized language intervention (DLI) resulted in greater changes in children's language and narration in comparison to a no-treatment condition (CON).

**Method:** Sixteen children between the ages of 6;0 (years; months) and 9;0 were randomly assigned to the CLI and DLI groups. Eight similar-age children from the no-treatment phase of a separate study acted as a control group. Children in the CLI and DLI conditions received 50-min group intervention sessions 3 times per week for 6 weeks. Sentence- and discourse-level measures were administered to assess intervention outcomes.

**Results:** Both interventions were associated with statistically significant gains on sentence- and discourse-level measures when compared to a no-treatment condition. Effect size analyses demonstrated that the CLI group outperformed the DLI group on all outcome measures.

**Conclusion:** The results revealed signs of efficacy in an intervention approach in which clinicians treated multiple linguistic targets using meaningful activities with high levels of topic continuity. With some minor revisions, this intervention should be ready to be tested in a larger, more costly, and more internally valid efficacy study.

**Key Words:** intervention, school-age, language, narration

School-age children with specific language impairments (SLI) often demonstrate difficulty in comprehending and producing narratives. For example, these children are less accurate at answering literal and inferential questions than their same-age peers (Gillam, Fargo, & Robertson, 2009; Laing & Kamhi, 2002; Trabasso & Magliano, 1996). In addition, their spoken and written narratives may contain fewer words, more ungrammatical utterances, and fewer story grammar elements than those of their same-age peers (Bishop & Edmundson, 1987; Boudreau, 2008; Boudreau

& Hedberg, 1999; Fey, Catts, Proctor-Williams, Tomblin, & Zhang, 2004; Gillam & Johnston, 1998; Greenhalgh & Strong, 2000; McFadden & Gillam, 1996; Wagner, Sahlen, & Nettelbladt, 1999). Unfortunately, it is rare for children with language impairments (LI) to demonstrate any one of these problems in isolation (Nippold, Hesketh, Duthie, & Mansfield, 2005). Difficulties in one area (e.g., comprehension) often impact performance in another (e.g., literate language use). These deficits negatively impact the ability of children with SLI to profit from instruction in the classroom without some form of intervention (Johnson et al., 1999; Stothard, Snowling, Bishop, Chipchase, & Kaplan, 1998).

Approaches to language intervention may be categorized as being contextualized or decontextualized in nature. *Contextualized language intervention* (CLI) is a term that has been used to describe treatment approaches in which specific teaching steps are used to train multiple linguistic targets or curriculum-related skills within activities that involve rich, meaningful, and coherent references to people, objects, and actions (Ukrainetz, 2006; Whitmire, 2002). Like Ukrainetz (2006), we use CLI to refer to hybrid approaches

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(Fey, 1986) in which clinicians model and elicit target language structures during functional and/or curriculum-related activities that promote a great deal of clinician–child interaction. Topic continuity across activities is a key component of CLI. Theoretically, CLI arises from social–interactionist views that language is best learned when children engage in activities with more skilled participants who provide them with models and support within authentic communicative interactions (Vygotsky, 1978). Under these conditions, a variety of linguistic, social, and cognitive skills may be learned simultaneously rather than in isolation (Norris & Hoffman, 1993; Whitmire, 2002). The notion of contextualized instruction is consistent with current frameworks supporting the use of curriculum-based instructional approaches to language intervention (Justice, 2006; Staskowski & Rivera, 2005; Whitmire, 2002).

Ukrainetz (2006) suggested that language intervention for school-age children should be “contextually based, educationally relevant, and collaborative” (p. 10). Results of multiple studies have shown that children with learning disabilities and/or SLI often require explicit skill instruction before they are able to generalize new knowledge in contextually relevant contexts (Fuchs & Fuchs, 2001; Palincsar, 1998). Thus, there exists a delicate balance between teaching specific linguistic structures and maintaining the integrity of the “basic character of language” (Johnston, 1985, p. 128) within intervention contexts. CLI has been shown to be an effective approach for simultaneously treating multiple linguistic abilities in meaningful contexts in toddlers and preschoolers with LI (Cole, 1995; Kaiser, Yoder, & Keets, 1992), and more recently, in adolescents and college students with LI (Heller & Greenleaf, 2007; Lee & Spratley, 2010; Perrin, 2011).

In *decontextualized language intervention* (DLI), children are taught language skills in discrete, teacher-directed activities with minimal topic continuity across the activities. For example, children may define “describing” words in one activity, followed by an activity in which they use past-tense verbs to create sentences to describe pictures on cards, followed by an activity in which they explain how two words are alike or different. In each activity, the topics and interactive contexts are different. Thus, a DLI session typically consists of a series of short clinician-led activities that focus on a variety of specific skills with minimal continuity across the topics of the interactions that occur between the clinician and child.

There is relatively little evidence about the comparative outcomes of contextualized versus decontextualized instructional approaches to improving language skills in school-age children. In one representative study, Swanson, Fey, Mills, and Hood (2005) implemented an intervention program with elementary schoolchildren with SLI that combined contextualized (interactive, meaning-based activities that targeted narration) and decontextualized (sentence-imitation activities that targeted grammar) intervention contexts. Children in this study participated in individual,

50-min sessions three times per week for 6 weeks (a total of 15 hr of intervention). Almost all of the children (80%) made clinically significant improvements in the quality of their stories but not in their knowledge of syntax, providing some evidence for the use of contextualized instruction for narrative targets. The study provides preliminary evidence that sentence imitation, the decontextualized aspect of the intervention approach, was not effective in improving the use of targeted grammatical forms for school-age children with SLI.

We could locate only one study that made a direct comparison between a contextualized intervention and a decontextualized intervention to teach language targets. Gillam, McFadden, and van Kleeck (1995) examined whether CLI and DLI were related to improvements in general language abilities (e.g., mean length of utterance [MLU], grammatical accuracy, use of conjunctions, and narrative production skills) for eight children with language-based learning disabilities over the course of a 2-year period. Half of the children received CLI, and half received DLI. Results showed that the children who received DLI demonstrated greater changes in MLU, percentage of grammatically acceptable utterances, and number of conjunctions used in spoken narratives than the children who received CLI. In contrast, the children who received DLI used more semantic propositions per utterance and created stories with a greater number of episodes and embedded episodes than the children who received CLI.

More recently, Gillam et al. (2008) conducted a large-scale clinical trial to examine the effects of a computerized language intervention program (Fast ForWord Language; FFW–L; Scientific Learning Corporation, 1998) that contained modified speech. A total of 216 school-age children with LI were randomly assigned to one of four groups: two DLIs, a CLI, or an academic enrichment program that served as an “attention control” condition. The DLIs included FFW–L and Computer Assisted Language Intervention (CALI; Cognitive Concepts, 2000a, 2000b; Semel, 2000; Wilson & Fox, 1997). FFW–L consisted of seven computer games that used modified, synthesized speech to train a variety of linguistic and nonlinguistic skills. The CALI consisted of Earobics software and Laureate Learning software games that were designed to improve linguistic and nonlinguistic language skills similar to those trained in FFW–L. The CLI, called Individual Language Intervention (ILI), was a literature-based program that targeted vocabulary, grammatical morphology, complex syntax, phonological awareness, and narrative skills within the context of activities that were related to the content of children’s storybooks. Children in all four groups participated in 100-min intervention sessions 5 days per week for 6 weeks.

The children who participated in the three intervention conditions made similar improvements in their general language and narrative abilities. The Gillam et al. (2008) study was not designed to be a direct comparison of CLI and DLI

because the intervention targets varied among the FFW–L, CALI, and ILI conditions. Nevertheless, the results of this randomized controlled trial suggested that children with LI might benefit from intensive instruction to improve language and narration whether it is contextualized or decontextualized in nature.

For our study, we decided to revise the ILI initiative used in the Gillam et al. (2008) study in significant ways. The ILI initiative in Gillam et al. included a number of minimally contextualized activities that focused on specific language targets. We decided that our CLI would include fewer and less complex stories as models, incorporate more reading and writing into the activities, include content from the children's literature in all minilessons, and focus on specific language targets. Additionally, we provided the revised intervention to groups of students instead of in 1:1 (clinician: child) sessions. It is rarely feasible for school-based clinicians to provide children on their caseloads with 1:1 therapy sessions for 50+ hr during the academic school year. We believed it was important to explore the potential impact of less intensive intervention options.

Fey and Finestack (2009) refer to small-scale studies that are designed to assess the effects of a new intervention as "early efficacy studies." These studies often employ smaller sample sizes and less generalizable designs (such as the use of nonrandomized comparison groups) to provide initial evidence of the efficacy of a new treatment. We decided to conduct a small-scale study to directly compare the language outcomes of our CLI that was designed to teach language skills during authentic, topic-centered discussions of children's literature to the outcomes of a DLI that was designed to teach language skills in drill-based contexts with minimal topic continuity across activities.

We employed a nonrandomized, parallel groups design to provide a low-cost test of our revised intervention in order to pave the way for a larger, more costly, and more internally valid investigation. The specific research question was: Will children who receive CLI or DLI present greater improvement on sentence-level or narrative-level language measures than children in a no-treatment control group (CON)?

## METHOD

### Participants

Twenty-four children with LI participated in the study. Children were eligible to participate if they obtained a standard score of  $\leq 85$  on the Clinical Evaluation of Language Fundamentals, Fourth Edition (CELF–4; Semel, Wiig, & Secord, 2005). None of the participants presented with hearing impairment, visual impairment, gross neurological impairment, oral–structural anomalies, or emotional or social disorders. All children had received a measure of nonverbal reasoning (Test of Nonverbal Intelligence–3; TONI–3,

Brown, Sherbenou, & Johnsen, 1998; or the Kaufman Brief Intelligence Test, KBIT, Kaufman & Kaufman, 1990) in order to rule out intellectual disabilities (see Table 1 for descriptive data).

**Experimental groups.** Sixteen children with LI were recruited from a school district in Alabama. All children in the first and second grade who were receiving treatment for LI were given informed consent forms and were asked to take them home to their parents. Children whose parents signed and returned the consent forms were randomly assigned to the CLI or DLI conditions. Eight children between the ages of 72 and 105 months ( $M_{\text{age}} = 7;8$ ) received CLI, and eight children between the ages of 86 and 105 months ( $M_{\text{age}} = 7;11$ ) received DLI. There were six males and two females in the CLI group and four males and four females in the DLI group.

**CON group.** We drew a same-age CON group of eight children between the ages of 75 and 108 months ( $M_{\text{age}} = 7;10$ ) from a sample of children with LI who were in the no-treatment phase of a study in Utah. There were four males and four females in the CON group. Testing was conducted during the summer, so the children in the CON group were not receiving language intervention or school instruction. Children in the CON group were given the same measures as the children in the treatment groups, separated by a 6- to 8-week period of time. Pre- and posttest assessments for all three groups were administered and were scored by a team of evaluators who were blind to group assignment and to the goals of the study.

### Intervention Procedure

**CLI.** Children who were randomly assigned to the CLI group participated in a literature-based, narrative intervention that was adapted from procedures described in Gillam et al. (2008) and Gillam and Ukrainetz (2006). The CLI was structured around children's literature and incorporated oral and written language whenever possible. A sample lesson is provided in Appendix A. Children were provided with multiple opportunities to talk about and share knowledge of the story content, use vocabulary and grammatical structures from the model stories, answer comprehension questions, and retell the stories. Four different children's trade books were used. The books were related to two overarching topics: bedtime and parties. The clinician delivering the CLI encouraged the children to link relevant world knowledge and experiences to the vocabulary and sentence structures that were taught in each session. The key point is that clinician–child discussions in the CLI sessions centered on topics that were related to the children's storybooks.

The specific intervention activities in the CLI included listening to stories, answering comprehension questions, generating inferences, comparing/contrasting characters and actions across stories, discussing and defining the meanings of Tier 2 vocabulary, and brainstorming solutions to problems inherent in the stories. Tier 2 vocabulary includes words

**Table 1.** Pre-intervention means and standard deviations for descriptive and dependent measures for the three participant groups: children receiving contextualized language intervention (CLI), children receiving decontextualized language intervention (DLI), and a no-treatment control group (CON).

|                              | Group             |      |                   |      |                    |      |
|------------------------------|-------------------|------|-------------------|------|--------------------|------|
|                              | CLI               |      | DLI               |      | CON                |      |
|                              | M                 | SD   | M                 | SD   | M                  | SD   |
| Descriptive measures         |                   |      |                   |      |                    |      |
| Age in months                | 91.5              | 11.1 | 94.5              | 6.9  | 93.6               | 12.0 |
| Nonverbal IQ                 | 87.6 <sup>a</sup> | 18.5 | 89.9 <sup>a</sup> | 14.5 | 100.6 <sup>b</sup> | 7.6  |
| Sentence measures            |                   |      |                   |      |                    |      |
| CELF-4 Recalling Sentences   | 5.6               | 1.2  | 4.0               | 1.9  | 3.6                | 1.5  |
| CELF-4 Formulated Sentences  | 5.3               | 2.4  | 5.3               | 1.7  | 6.3                | 2.7  |
| Narrative discourse measures |                   |      |                   |      |                    |      |
| TNL Narrative Language Index | 72.6              | 10.5 | 74.5              | 11.6 | 80.9               | 12.6 |
| TNL Narrative Comprehension  | 6.5               | 1.4  | 6.6               | 1.9  | 7.3                | 3.2  |
| MISL macrostructure          | 3.9               | 2.4  | 5.25              | 3.6  | 3.63               | 3.6  |
| MISL microstructure          | 2.0               | 1.7  | 2.25              | 1.3  | 2.0                | 0.9  |

**Note.** CELF-4 = Clinical Evaluation of Language Fundamentals—Fourth Edition (Semel, Wiig, & Secord, 2005), TNL = The Test of Narrative Language (Gillam & Pearson, 2004), MISL = Monitoring Indicators of Scholarly Language (Gillam & Gillam, 2008).

<sup>a</sup>Nonverbal IQ was measured with the Test of Nonverbal Intelligence (Brown, Sherbenou & Johnsen, 1998).

<sup>b</sup>Nonverbal IQ was measured with the Kaufman Brief Intelligence Test (Kaufman & Kaufman, 1990).

that are likely to be unfamiliar to children but that represent “concepts” that children are familiar with. For example, the word *explore* would be an example of a Tier 2 vocabulary word for children who understand the notion of “looking around” to learn about something. During minilessons, children were asked to define Tier 2 words from the stories and to generate sentences containing the target Tier 2 words (e.g., nouns, verbs, adjectives, and adverbs) contained in the books. Children also practiced using conjunctions (e.g., *and*, *or*, *but*, *so*), modals, and question forms (e.g., auxiliary inversion) as they discussed and retold the stories.

This type of language intervention was considered “contextualized” because multiple language targets were taught in authentic, curriculum-related discourse activities that drew topics or themes from children’s literature. For example, during weeks 1 and 2, the CLI activities focused on two books, *How Do Dinosaurs Say Goodnight?* (Yolen, 2000) and *Bedtime for Zachary* (Blaustein, 1987). These books were about animals that disliked bedtime. During weeks 3, 4, and 5, the CLI activities focused on two other books, *Saturday Night at the Dinosaur Stomp* (Shields, 1997) and *If You Give a Pig a Party* (Numeroff, 2005). These books were about animals that attended parties. *Saturday Night at the Dinosaur Stomp* contained many new vocabulary words and complex syntactic structures. In addition, children were very interested in determining the actual names of the dinosaurs that were illustrated on the pages. Therefore, discussion of these books was extended for 3 weeks rather than 2.

During week 6, the clinician reviewed all of the books and summarized the lessons that had been presented in weeks 1–5, highlighting salient comparisons (intertextual ties) between various aspects of the books. For example, the clinician asked the children to think, talk, draw, and write about how characters were similar or different from one book to the next; to identify synonyms, antonyms, and multiple-meaning words; and to make associations between books. Characters were compared on the basis of their physical attributes and personalities, the actions they took, and the consequences of those actions. Children were encouraged to think about how they (or people they knew) were similar to or different from the characters in the four books.

Each book was discussed in a similar manner. During the first session, children listened to and/or read the book with the clinician and discussed the new vocabulary words. Children defined words, acted them out, wrote them on a whiteboard, and related them to concepts and words that they already knew. In the second session, children listened to and read the book again, reviewed the vocabulary words, retold the story, and worked on specific grammatical targets (e.g., tense, conjunctions). The third session involved creating a parallel story; the children were encouraged to generate a story that was very similar to the one they had been discussing. During the parallel story creation activity, the clinician encouraged the children to create a story that followed the same general story line as the model book but with different characters and somewhat different actions.

The clinician incorporated the use of various language facilitation strategies (e.g., focused stimulation, growth-relevant recasts, and vertical structures) into all activities. A sample unit planning form for use in developing a CLI unit is provided in Appendix B.

**DLI.** Children who were randomly assigned to the DLI group answered questions and played games from the No-Glamour series published by LinguiSystems (LoGiudice, 2002, 2004; LoGiudice, McConnell, & Warner, 2004; McConnell & LoGiudice, 2003). The materials included a commercially packaged grammar game and situational drill cards designed to improve vocabulary, sentence complexity, and social language. Clinicians were instructed to engage the children in each game or card set for an average of 12.5 min. Care was taken to ensure that each child had an equal number of turns. Clinicians were also instructed to provide “therapeutic” feedback in the form of focused stimulation, explanations, growth-relevant recasts, and vertical structures, much like the feedback that occurred in the CLI condition.

The No-Glamour grammar cards (LoGiudice, 2004) target basic grammatical structures including the use of possessives; plurals; pronouns; present, past, and future tense; adjectives; adverbs; prepositions; subjects; predicates; conjunctions; negatives; and questions. The instructions with the card sets encourage clinicians to give children an explanation of each grammatical target, an example of how to use each target, and opportunities to identify and use the grammatical targets within a variety of question and answer activities.

The No-Glamour social language/behavior cards (LoGiudice et al., 2004) offer realistic illustrations of social situations and are grouped into categories such as school, eating, feelings and self-control, getting along, conversations, being responsible, solving problems, and role playing. Each card relates to a new topic. Clinicians were directed to select cards in one of the categories, read the situation on the card, and ask the children to paraphrase it before answering. Clinicians accepted all appropriate and logical answers and encouraged the children to share their own experiences related to the questions that were asked. For example, for an “eating” card, children were asked, “Why do some people slurp milk shakes or other drinks through straws when there is almost nothing left?” Answers are provided on the back of the cards, but clinicians were encouraged to accept and facilitate discussion around answers that were reasonable and appropriate even if they did not match the answers presented on the cards.

The No-Glamour category/definition cards (McConnell & LoGiudice, 2003) target categories such as functions, attributes, associations, comparisons, compound words, synonyms, antonyms, multiple-meaning words, and absurdities. For example, one category of questions centers on helping children learn to detect absurdities. For one card, the clinician was supposed to ask, “Does this make sense? An angry brush.”

The No-Glamour language cards (LoGiudice, 2002) are designed to improve a variety of skills, including asking and answering questions, exclusion, negatives, listening, semantics, grammar, making inferences, comparing and contrasting, paraphrasing, retelling, social communication, and problem solving. In one example of a “listening card,” children were told a brief story about a child whose tooth was loose and then fell out. Children were asked factual questions about the story and then were asked to retell the story. For exclusion/negatives, children could be asked, “True or false: Corn has ears, but it can’t hear.” These sets were chosen for the DLI program because they incorporated vocabulary, grammar, and narrative discourse targets that were similar to the targets of the CLI program.

As noted earlier, a critical difference between the DLI and CLI programs related to topic continuity versus discontinuity. In the DLI program, topics were discontinuous. Each question on each card had its own topic. For example, in the DLI condition, one group of children was asked to discuss the following three questions from the social language card set during a 12-min time frame: (a) “What would you do if you lost your gloves at school?” (b) “What do you do when your peers make fun of you?” and (c) “What do you say to a friend whose cat died?”

## Measures

The Recalling Sentences and Formulated Sentences subtests of the Clinical Evaluation of Language Fundamentals—Fourth Edition (CELF-4; Semel et al., 2005) were selected as sentence-level outcome measures because they assess the type of memory and sentence production skills that were taught and practiced in the DLI sessions.

We also administered narrative discourse measures. The Test of Narrative Language (TNL; Gillam & Pearson, 2004) served as a general measure of narrative language. Narrative ability can be divided into narrative comprehension and narrative production. The narrative comprehension scale of the TNL was selected as an outcome measure because it assesses comprehension in a manner that is similar to the activities within the CLI sessions. Assessment of narrative production often includes analyses of narrative macrostructure and narrative microstructure (Hughes, McGillivray, & Schmidek, 1997). On the TNL, items that assess macrostructure and microstructure are combined to form the Oral Narration scale. In this study, we wanted to be able to differentiate between narrative structure (macrostructure) and sentence-level aspects (microstructure) of the children’s stories. In order to assess narrative macrostructure and microstructure separately, we decided to score the aliens story from the TNL using a progress-monitoring tool called Monitoring Indicators of Scholarly Language (MISL; Gillam & Gillam, 2008). The MISL is a revision of the Index of Narrative Complexity (Petersen, Gillam, & Gillam, 2008) that rates the complexity of story elements (macrostructure) and literate language

(microstructure) contained in children's narratives. The MISL scoring form is provided in Appendix C. Interrater reliability of the MISL, calculated on 10% of the data for each group by two independent, trained raters, was 88%.

To summarize, there were two sentence-level measures (Recalling Sentences and Formulated Sentences) and four narrative discourse-level measures (TNL Narrative Language Index, TNL Narrative comprehension, MISL macrostructure, and MISL microstructure) that were used to assess language outcomes.

## Dosage and Attendance

Intervention was provided in a public school in 50-min sessions, three times per week for 6 weeks (a total of 15 hr of intervention spread across 18 sessions). Intervention was provided in small groups of three or four students by a certified speech-language pathologist (SLP) who was employed by the public school system and graduate students in speech-language pathology who were directly supervised by the SLP.

Children in the CLI group attended an average of 17 of the 18 sessions ( $SD = 1.773$ ). One child attended 13 sessions, one attended 16 sessions, one attended 17 sessions, and five children attended all 18 sessions. Children in the DLI group attended an average of 15.5 sessions ( $SD = 2.07$ ). One child attended 12 sessions, one attended 13 sessions, two attended 15 sessions, three attended 17 sessions, and one attended 18 sessions. The child in the DLI group who attended 12 sessions moved during the study, so that child was excluded from further analyses. With that child excluded, the average attendance of the DLI group was 16 sessions ( $SD = 1.63$ ), which was not statistically different from the average attendance of the CLI group.

## Treatment Fidelity

Before implementing the language intervention programs, the clinicians who were providing the treatment participated in a training session with the first author, who familiarized them with the intervention procedures. The CLI and DLI sessions were audio-recorded. A 10-item checklist that was used to train the clinicians was also used to measure the fidelity of the DLI sessions. The checklist asked whether the clinicians adhered to the time criterion (12.5 min per game/card set), read cards to the children, included all of the children, managed behavior, had children read cards, engaged the children in equal turns, and provided appropriate feedback (negative and positive) after the children's responses. Three trained raters scored four sessions for fidelity with the first author, achieving 95% interrater reliability. Raters then scored 10% of the randomly selected intervention sessions independently. A score of 1 or 0 was given for each of the checklist items. A mean fidelity score of 90% was obtained across the selected DLI sessions. The only checklist item that

was violated was the time criterion. Each game/card set was to be played for 12.5 min. The average time actually spent using each game/card set for the randomly selected sessions was as follows: vocabulary cards = 9 min (range = 6–14), social language cards = 12 min (range = 7–20), grammar cards = 13 min (range = 9–18), and language cards = 14 min (range = 10–20). The raters noted that the clinicians sometimes got "into an activity" with the group, and rather than end the activity abruptly, they allowed the children to complete the round of cards before moving on.

A script was provided to the clinicians to ensure fidelity of implementation for the CLI sessions. Any deviations from the scripted sessions were noted using a checklist. For example, on day 1, week 1, clinicians were to (a) conduct a pre-story presentation; (b) review target words; (c) review story grammar elements; (d) take a picture walk through the book; (e) read the story to the children; (f) ask the children to identify the characters and the beginning, middle, and ending actions; (g) ask specific comprehension questions (scripted) regarding the story; (h) use therapeutic discourse; (i) maintain the specified topic; and (j) manage behavior. During the lesson in which the children created a parallel story, the clinicians were to (a) assist the children in creating a new story based on the one they were discussing (i.e., Dinosaur Stomp), (b) use therapeutic discourse, (c) maintain the specified topic, and (d) manage behavior. Raters assessed each session according to the activities that were supposed to occur.

A total of 10% of the day 1, day 2, and day 3 CLI sessions across weeks 1–6, selected at random, were scored for fidelity by three trained raters. The mean fidelity score was 90%. The only item that was rated as "violated" and received a score of 0 (did not occur) by any rater was "managing behavior." Coders ranked the clinician as "managing behavior" in less than 10% of the selected sessions. When the children were off-task, the clinician was observed to "manage behavior" as necessary. Children in the CLI group were not observed to require as many behavioral prompts from the clinician to engage in the activities compared to children in the DLI group.

## Data Analyses

Pre-intervention means and standard deviations for the descriptive measures and the dependent measures are shown in Table 1. A preliminary analysis of variance (ANOVA) indicated no reliable group differences for the descriptive measures of age or nonverbal IQ before intervention. Mean nonverbal IQ scores were within normal limits for each group, but the  $\eta_p^2$  value of .153 indicated that nonverbal IQ had a moderately large effect on group variance that was nevertheless nonsignificant. Given this effect size, we decided to build nonverbal IQ into the statistical model to control for potential effects that differences in a general

factor related to intelligence could have had on the children's responsiveness to intervention.

Of the six dependent measures, only the Recalling Sentences subtest of the CELF-4 differed significantly among the groups before intervention,  $F(2,20) = 5.17, p < .05, \eta_p^2 = .340$ . Post hoc analyses indicated that the mean Recalling Sentences score for the children in the CLI group was significantly higher than the mean score for the children in the CON group ( $p < .05$ ). There were no significant differences between the children in the CLI and DLI groups or between the children in the DLI and CON groups on this measure. Pretest scores often predict a large portion of the variance in posttest scores, whether there are significant group differences at pretest or not. For all of the dependent measures, we used pretest performance as a covariate in the statistical models to control for the effects of prior ability.

## RESULTS

The overall goal of this early efficacy study was to assess the feasibility of a revised approach to CLI. The dependent variables were two sentence-level language measures (Recalling Sentences and Formulated Sentences) and four narrative discourse-level measures (TNL Narrative Language Index, TNL Narrative Comprehension, MISL macrostructure, and MISL microstructure). Mixed-model analyses of covariance (ANCOVAs) were conducted on the six dependent variables. In each case, the independent variable was group (CLI, DLI, and CON). The pretest score on the dependent measures and nonverbal IQ were entered into the analysis

models as covariates. Following Fey, Finestack, Gajewski, Popescu, and Lweine (2010), the alpha level for this early efficacy study was set at .1 to increase power. Preliminary tests of the homogeneity-of-slopes assumption for the six dependent variables were all nonsignificant, suggesting that the data met the critical assumptions of ANCOVA.

Two pairwise comparisons (CLI vs. CON and DLI vs. CON) were used to assess potential group differences as a follow-up to each ANCOVA. Keeping the measurement-wise alpha level at .1, the two pairwise comparisons for each measure were tested at the .05 level. Estimates of the effect size of the differences between the treatment and control groups were computed for each dependent measure using an approximation of Cohen's  $d$  effect size that accounted for the mean square error,  $F$  for the covariate, raw score means, total sample size, and group size. This method has been shown to yield an excellent estimate of Cohen's  $d$  from ANCOVA analyses (Shadish, Robinson, & Lu, 1999). Following Cohen (1988), a  $d$  value of .8 was considered to be large, a value of .5 was considered to be medium, and a value of .2 was considered to be small.

Table 2 presents unadjusted group means and standard deviations, the group main effects from mixed-model ANCOVAs on sentence and narrative discourse measures,  $p$  values for post hoc pairwise comparisons, and corresponding effect sizes. There were significant group main effects for each of the sentence-level language measures (Recalling Sentences and Formulated Sentences) and for three of the four narrative discourse measures (TNL Narrative Language Index, TNL Narrative Comprehension, and MISL microstructure scores). The  $\eta_p^2$  values for the significant group

**Table 2.** Unadjusted means and standard deviations (in parentheses) for the posttest scores for the three groups with post hoc pairwise least significant difference comparison  $p$  values and estimated Cohen's  $d$  effect sizes (in parentheses).

|  | Group   |        |         | Comparisons    |                 |
|--|---------|--------|---------|----------------|-----------------|
|  | CLI     | DLI    | CON     | CLI vs. CON    | DLI vs. CON     |
| Sentence measures                            |         |        |         |                |                 |
| CELF-4 Recalling Sentences                   | 8.88    | 6.29   | 3.87    | .004*          | .054            |
| $F(2, 18) = 5.41, p = .014, \eta_p^2 = .379$ | (1.36)  | (1.89) | (1.55)  | ( $d = 3.08$ ) | ( $d = 1.48$ )  |
| CELF-4 Formulated Sentences                  | 9.88    | 9.14   | 6.63    | .013*          | .042*           |
| $F(2, 18) = 4.11, p = .034, \eta_p^2 = .314$ | (2.35)  | (3.23) | (3.92)  | ( $d = 0.99$ ) | ( $d = 0.76$ )  |
| Narrative discourse measures                 |         |        |         |                |                 |
| TNL Narrative Language Index                 | 86.10   | 81.60  | 82.00   | .021*          | .257            |
| $F(2, 18) = 3.24, p = .06, \eta_p^2 = .265$  | (11.30) | (8.60) | (11.20) | ( $d = 0.43$ ) | ( $d = -0.04$ ) |
| TNL Narrative Comprehension                  | 9.25    | 8.00   | 7.38    | .015*          | .265            |
| $F(2, 18) = 3.65, p = .047, \eta_p^2 = .289$ | (1.90)  | (2.16) | (2.06)  | ( $d = 0.93$ ) | ( $d = 0.30$ )  |
| MISL macrostructure                          | 5.88    | 4.14   | 4.75    | .270           | .525            |
| $F(2, 18) = 1.85, p = .185, \eta_p^2 = .171$ | (2.41)  | (.90)  | (3.49)  | ( $d = 0.45$ ) | ( $d = -0.24$ ) |
| MISL microstructure                          | 2.62    | 2.43   | 1.63    | .003*          | .012*           |
| $F(2, 18) = 6.46, p = .008, \eta_p^2 = .418$ | (1.30)  | (.97)  | (.74)   | ( $d = 1.19$ ) | ( $d = 0.97$ )  |

*Note.* Post hoc tests = least significant differences with alpha level at .05\* and Cohen's  $d$  values.

main effects ranged between .265 and .418, indicating a strong relationship between group membership and the posttest scores for each significant group effect.

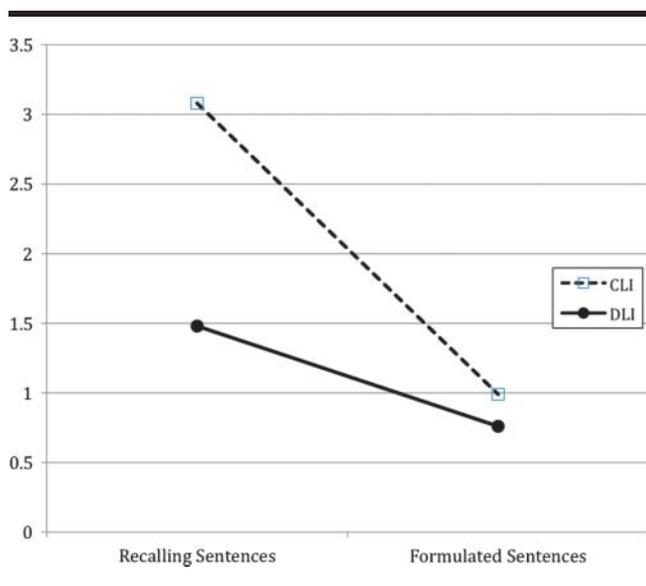
### Sentence-Level Measures

Post hoc pairwise comparisons for the sentence-level measures revealed that the CLI group’s posttest scores on the Recalling Sentences and Formulated Sentences subtests were significantly larger than the control group’s posttest scores. The effect sizes of the CLI versus CON differences were large for both Recalling Sentences ( $d = 3.08$ ) and Formulated Sentences ( $d = .99$ ). The DLI group’s posttest scores were significantly higher than the CON group’s scores for Formulated Sentences but not for Recalling Sentences. The effect sizes of the DLI versus CON differences were large for Recalling Sentences ( $d = 1.48$ ) and moderately large for Formulated Sentences ( $d = .76$ ). Across the two sentence-level measures, the effect sizes for the CLI intervention were 81% larger on average than the effect sizes for the DLI intervention (see Figure 1).

### Narrative Discourse Measures

Post hoc pairwise comparisons for each of the narrative discourse measures revealed a pattern of results that clearly favored the CLI group. At posttest, there were significant differences between the CLI and CON groups for the TNL Narrative Language Index, the TNL Narrative Comprehension score, and the MISL microstructure score. The only significant difference between the narrative performance

**Figure 1.** Effect-size comparisons for the contextualized language intervention (CLI) and decontextualized language intervention (DLI) groups versus the no-treatment control (CON) group on the sentence-level language measures at posttest.



of the DLI and CON groups occurred for the MISL microstructure score.

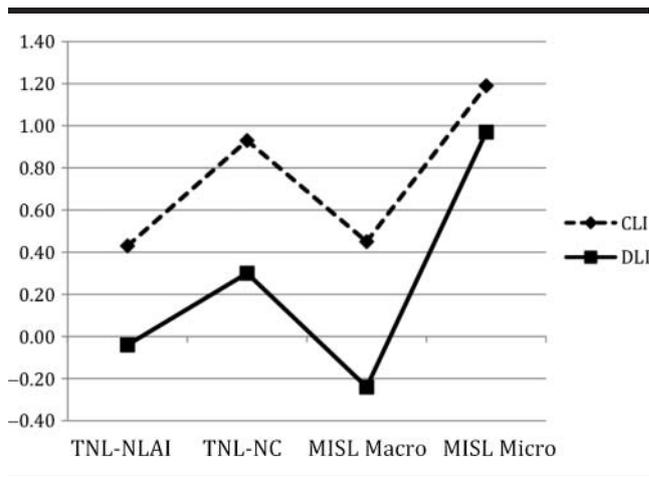
The effect-size analyses yielded a similar pattern. For the TNL Narrative Language Index, there was a moderate effect size ( $d = .43$ ) for the difference between the CLI and CON groups and a negligible effect size ( $d = -.04$ ) for the difference between the DLI and CON groups. For the TNL Narrative Comprehension measure, the CLI group had a large advantage over the CON group ( $d = .93$ ), and the DLI group had a small advantage over the CON group ( $d = .30$ ). For the MISL macrostructure measure, the CLI group had a moderate advantage over the CON group ( $d = .45$ ), and the DLI group had a small negative effect as compared to the CON group ( $d = -.24$ ). For the MISL microstructure measure, both the CLI and DLI interventions yielded large effect sizes ( $d = 1.19$  and  $d = .97$ , respectively). For the four narrative measures combined, the effect sizes for the CLI were nearly three times larger on average than the effect sizes for the DLI (see Figure 2).

Following the “intention to treat” principle (Montori & Guyatt, 2001), we re-analyzed the data, including the child who moved from the district after attending 12 DLI sessions. Following a conservative standard procedure, we imputed this child’s missing scores as the mean scores for his group. The patterns of significant results for the “intention to treat” analysis were exactly the same as those for the analysis reported above.

## DISCUSSION

This study assessed the language outcomes of children who participated in a CLI and those who participated in a DLI.

**Figure 2.** Effect-size comparisons for the CLI versus CON group and DLI versus CON group on the narrative language measures at posttest.



**Note.** TNL-NLAI = Test of Narrative Language Narrative Language Index; TNL-NC = Test of Narrative Language Narrative Comprehension; MISL = Monitoring Indicators of Scholarly Language Macrostructure; MISL Micro = MISL Microstructure.

There were some important similarities in the two language interventions. Both the CLI and DLI programs incorporated activities that involved listening to short stories, asking or answering questions, and brainstorming solutions to problems. In addition, children in both groups were asked to define words and to generate sentences containing vocabulary words (i.e., nouns, verbs, adjectives, and adverbs). The primary difference between the interventions was that the CLI condition provided more “topic continuity” across activities that were presented in functional, narrative-based intervention contexts. In the CLI program, children and clinicians engaged in discussions and therapeutic interactions that centered on themes that were introduced in children’s literature. These themes (topics) were included in all of the language activities across multiple sessions. In the DLI program, there were also therapeutic interactions between the children and their clinicians. However, the topic of the interaction changed when each new card was introduced. There were some topics that were continued across several turns, as when an activity included the use of social language cards. Although there were aspects of DLI that were not entirely “decontextualized,” the DLI condition differed substantially from the CLI condition in terms of the “level of decontextualization” that children experienced within and across sessions.

To compare the language outcomes of the two interventions, we administered two sentence-level measures and four narrative discourse-level measures before and after treatment. We administered the same set of measures to a CON group containing similar-age children with LI who were participating in the delayed intervention phase of a different study.

Children in all three groups earned similar scores on five of the six measures before intervention. The only exception was the Recalling Sentences subtest, in which the children in the CLI group had significantly higher values than the children in the CON group. Our statistical model adjusted the posttest results for potential group differences on each dependent measure and on a general measure of intelligence by treating the pretest scores and nonverbal IQ as covariates.

After intervention, children in the CLI group earned significantly higher scores than children in the CON group on Recalling Sentences and Formulated Sentences. Children in the DLI group earned higher scores than children in the CON group on Formulated Sentences but not Recalling Sentences. Thus, both procedures were effective for improving some sentence-level abilities that were measured in isolation. We also compared the two interventions on their impact on children’s narrative ability. Only the CLI group performed significantly differently from the CON group on the TNL Narrative Language Ability Index, which is a general measure of narration. We used the TNL Narrative Comprehension measure, a progress monitoring measure of microstructure (MISL Microstructure Scale), and a progress monitoring measure of macrostructure (MISL Macrostructure Scale) to assess three important components

of narrative production. The CLI group performed significantly better than the CON group on the comprehension measure and the microstructure measure but not on the macrostructure measure. The DLI group did not perform differently from the CON group on either the comprehension or the macrostructure measure. Thus, only the children in the CLI group performed differently from the CON group on a general measure of narrative language ability and on measures of narrative comprehension and narrative microstructure.

We used a calculation that estimated Cohen’s *d* effect sizes from ANCOVA (Shadish et al., 1999) to assess the clinical significance of the results. For the sentence-level measures, there were large or very large effect sizes for both the CLI and DLI groups over the CON group. On the basis of this information, one could argue that both interventions were effective for improving children’s sentence-level language skills. However, there were important group differences in the size of the effects. On average, the effect sizes for the DLI group were 81% larger than the effect sizes for the CLI group. In terms of the size of the clinical effects, CLI yielded larger clinical outcomes than DLI on two decontextualized measures of sentence-level language.

CLI also yielded better clinical outcomes than DLI on the narrative measures. Looking closely at the effect sizes, the CLI approach yielded moderate effects ( $d = .43$ ) on the general measure of narrative language ability (the TNL Narrative Language Index). Looking at the three measures of narration, the CLI approach yielded moderate effects for the MISL macrostructure scale ( $d = .45$ ), but large effects for the TNL Comprehension scale ( $d = .93$ ) and the MISL microstructure scale ( $d = 1.19$ ). The DLI approach yielded negligible effects for the general measure of narrative ability ( $d = -.04$ ), small effects for the comprehension measure ( $d = .30$ ), and negative effects for the macrostructure measure ( $d = -.24$ ). Across the four narrative measures, the outcomes of the CLI approach were five times greater than those of the DLI approach.

Recall that we were interested in evaluating a revised approach to a CLI that had been used in a randomized controlled trial (Gillam et al., 2008). In comparison to our earlier studies of CLI (Gillam et al., 1995; Gillam et al., 2008), the current approach included fewer and less complex stories as models, incorporated more reading and writing into the activities, and contained fewer minilessons that focused on specific language targets. The revised CLI condition resulted in large, clinically significant gains on the two sentence-level measures and on three of the four narrative measures. Our revised approach to CLI appears to have had a moderately large, statistically reliable impact on narrative comprehension and narrative microstructure in children with SLI.

The revised CLI approach had a moderately small, statistically unreliable impact on the macrostructure of the children’s narratives. The CLI program included instruction on telling stories with a “beginning, middle and end.” The clinician did not focus on critical story elements such as

settings, initiating events, attempts, or consequences. Attending to the beginning, middle, and end of stories has been a recommended instructional approach for teaching story structure to children in primary-grade classrooms (Black, 2008; Miller & Pennycuff, 2008) and has been associated with improvements in the identification and use of story elements by young typically developing children (Isbell, Sobol, Lindauer, & Lowrance, 2004). However, this approach was not shown to be particularly beneficial for improving the macrostructure of stories told by the children with SLI who participated in our study.

There have been a number of studies that have reported significant changes in story structure after intervention (Hayward & Schneider, 2000; Nathanson, Crank, Saywitz, & Ruegg, 2007; Swanson, Fey, Mills, & Hood, 2005). In one study, Hayward and Schneider (2000) conducted a mixed group, single-subject exploratory study to examine the effects of explicit teaching of story elements on improving oral narration skills of 13 children (ages 4;8 to 6;4) with LI. In this study, children participated in story element intervention in groups of two to three. Some children ( $n = 8$ ) received intervention twice weekly for 20-min sessions over 12 sessions; others ( $n = 7$ ) participated in eight intervention sessions. Intervention involved the use of cue cards to identify story elements, identify missing story elements, and reformulate stories that were out of sequence. The cue cards were color-coded with line drawings and contained the words, (1) *When*, (2) *What + what doing*, (3) *What happens 1-2-3*, and (4) *Who + feelings + action*. Results indicated that more than half of the children demonstrated significant improvements in the structural complexity and amount of information that they included in their oral narratives regardless of whether they received the short or long intervention. The inclusion of graphic organizers to assist children in focusing on particular story elements may have been important for positive outcomes in narrative production skills. We did not incorporate this kind of explicit instruction on story elements in either the CLI or DLI condition. However, we plan to incorporate specific instruction on story structure in a revised version of this intervention.

## Clinical Significance

This study is an example of an early efficacy study according to Fey and Finestack's (2009) five-phase model of clinical research. Because we wanted to assess the potential benefits of changes that we made to an intervention that we developed for an earlier study (Gillam et al., 2008), we took a number of steps to minimize the research costs. For example, children who participated in this study were not randomly assigned to all three conditions. The group was assembled by convenience from a group of children who were participating in another study that happened to include a delayed treatment condition. Even though the children in the three groups were the same age and had similar language

skills, it is possible that there were unknown and unanticipated differences between the groups that interfered with the results of the study. Additionally, with only eight children in each group, the study was underpowered. It is possible that the true range of abilities in children with LI was not represented in the sample, and that could have distorted the results. If a larger sample of children had been randomly assigned to the three conditions, the results of this study would be more compelling. Therefore, the results of this study should be regarded as providing preliminary evidence of the benefits of a revised approach to CLI.

As Fey and Finestack (2009) noted, even if studies like the one reported here yield relatively low levels of internal validity, that does not mean that the results are unimportant. In fact, Fey and Finestack argued that early phases of clinical research are essential because they address key intervention questions at relatively low cost. We would argue that the results of this study could be important because they suggest that interventions that incorporate contextualized activities could have larger effects on children's sentential and narrative language abilities than interventions that incorporate decontextualized activities. The results of this study alone should not compel a clinician to change from using a decontextualized approach to language intervention. However, if a clinician who is using language cards like the ones used in our DLI approach notes that children are not making desired progress in grammatical complexity or narrative comprehension, he or she might consider trying an approach that is similar to the CLI.

The results of this study motivate additional changes to our CLI. Given our findings of smaller effects on narrative macrostructure, clinicians and researchers may want to incorporate direct instruction of story grammar elements in CLI programs like the one we used in order to effect larger changes in the complexity of children's oral narratives. We are conducting studies now that examine such revised practices.

Although both intervention contexts were shown to yield favorable outcomes for various targets, the contextualized skill instruction may fit more easily into the flow of ongoing academic instruction. For example, teachers and SLPs may collaborate to incorporate specific linguistic targets into reading, math, and science lessons. It may be preferable to provide services to children in inclusive settings than to pull them from classrooms. Children are less likely to feel singled out when they are taught in their classroom, and skills are more likely to generalize into classroom activities if they are taught in that context. In future studies, we plan to assess the outcomes of our approach to CLI in classroom intervention contexts.

The children with SLI who participated in this study benefitted from intervention that was provided in small group settings under moderately intensive conditions (<3 hr per week for 6 weeks) during their regular school day. The majority of school-age children who participated in intervention

studies conducted over the past 20 years received individual therapy (Cirrin & Gillam, 2007; Gillam et al., 2008). Many school-based SLPs are limited in terms of the length and number of sessions they can provide for children on a weekly basis during the academic school year. Their schedules may be better equipped to accommodate three, 50-min group sessions per week than four or five, 1-hr individual sessions per week. A finding of positive outcomes for children who received group therapy is promising news for clinicians whose caseload considerations prohibit or restrict the provision of individual treatment to children with LI.

## Conclusion

Although there has been interest in the concept of contextualized approaches to language intervention with school-age children (e.g., Ukrainetz, 2006; Whitmire, 2002), there have been few experimental studies documenting the efficacy of specific contextualized approaches. This study was designed to assess a revised version of a narrative-based approach to CLI that was included in a randomized controlled trial by Gillam et al. (2008). Our revised approach to CLI and a DLI using LinguSystems cards yielded statistically significant gains on sentence- and discourse-level measures when compared to the CON group. However, effect-size analyses indicated larger effects for the CLI group in comparison to the DLI group. The results revealed early signs of efficacy for an intervention approach in which clinicians treated multiple linguistic targets in meaningful activities with high levels of topic continuity. With some additional revisions related to the way narrative macrostructure is taught, this intervention should be ready to be tested in a larger, more costly, and more internally valid efficacy study.

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## APPENDIX A. SAMPLE CONTEXTUALIZED LANGUAGE INTERVENTION LESSON

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### How Do Dinosaurs Say Goodnight?

**Pre-story presentation** (5 minutes) Show the picture and ask children to read the title. Point out each word as you read it. Then, point out random words in the title and have the children take turns reading them. Go slowly as you point and make it a funny game.

**Word review** (10 minutes) Review the words in the story children might not know. They are [slam, pout, stomp, shout, roar, swing, piggyback ride, mope, moan, sulk, sigh, whisper]. The words are written on index cards. Show the word, have the children read it (read it for them) and then act out what the words mean. Be very animated and have the children take turns demonstrating the meanings of the words. Then have them take turns writing the words on the board, copying by looking at the index card. Let the other children shout out the letters for the “writer”.

**Story grammar elements** (5 minutes) Listen to the story for a beginning first. How does the story start? Does it say “Once upon a time, or does it tell you about where the story takes place, does it ask a question? Listen for how the story starts. Then, listen and look for the actors or the characters (*say “they are the people and animals in the story” and then write the word “characters” on the board*). Tell them, “The characters in this story will be dinosaurs. They have funny names, and we’ll be learning their names”.

The things that the characters do are called actions (*write the word actions on the board*), the actions will happen all in the middle of the story. Actions are things that you can do like, sleep, or cry, or run or eat. The dinosaurs will be doing some of the new words that we’ve talked about like swinging, moping, and riding. Then, you listen for the way the story ends (*Write “ending” on the board*). It might say “the end” it might not, but every story has an ending. So, remember, the story will have a beginning, characters, actions, and an ending (point to each word on the board as you summarize the story grammar elements). You listen for all of these things in the story we will read today.

**Tell children what the story will be about.** (1 minute) The book tells about how dinosaurs might get ready for bed. Remember to listen for a beginning, characters, actions, and an ending.

*Show the picture of the book again. Tell the children you will give them hints about the story.* The dinosaur is not ready to go to sleep when Papa comes to tuck him in. The dinosaur throws a temper tantrum (compare temper tantrum to “throwing a fit”) to avoid going to sleep. When Mama comes to tuck him in he’s still not ready to fall asleep and continues to pout. Then the book points out that this is not how dinosaurs say good night at all. The dinosaur then turns off the light, gives a kiss and says good night.

**Take a picture walk** (10 minutes). Have the children talk about every page. Use expansions, expatiations, and vertical structures to make the child’s language more complete and complex. Focus on unfamiliar vocabulary, behavior, verbs.

**Read the entire story** (10 minutes) – stop occasionally to comment on the book. Discuss and summarize the story after every stop. Talk about the names of each dinosaur. Do the summary in the group and encourage as much discussion as you can. Let the children talk about the words and pictures, keeping them on topic as much as you can. Summarize the story up to that page (Do this cumulatively) and then go to the next page. Let the children help you with the summary. Be sure and use expansions, expatiations, and vertical structures to make the child’s language more complete and complex.

**Story grammar element identification** (10 minutes). Who can remember the parts of a story? (beginning, characters, actions, ending) As you guide the children in remembering, write them on the board. Then ask: What happened at the beginning? (Write it on the board). Who were the characters? (Help them remember some of the names of the dinosaur types). Go back through the index cards and have children read them. What are some things that happened (actions) in the middle (Write them on the board). Use index cards. What happened at the end? (Write on the board). If children can’t remember do a “mini-picture walk” and go through the pages looking at the pictures. Remind children of the new words they’ve learned, because many of them constitute the “actions” in the story. Which dinosaur was on most of the pages? (T–rex). Go through and count the number of times T-rex was shown.

**Post story presentation** (10 minutes) On index cards. Have children read the questions (You read if they can’t, but make sure they see the words, you point to them) and then they answer the questions. They can look back in the book if they want to.

#### Discussion Questions

- a. What was it time for dinosaur to do?
  - b. How did dinosaur feel about going to bed?
  - c. Who came in first to get him ready for bed?
  - d. Was dinosaur ready to go to bed?
  - e. What are some of the things dinosaur did that let us know he didn’t want to go to bed?
  - f. What happened when Papa could not get dinosaur to go to bed?
  - g. How did dinosaur behave when mama came to tuck him in?
  - h. Is this really how dinosaurs say goodnight?
  - i. How does the book say dinosaurs really act at bedtime?
  - j. How do you get ready for bedtime? How do you behave?
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## APPENDIX B. UNIT PLANNING SHEET

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**Theme** \_\_\_\_\_

**Book Title Week** () \_\_\_\_\_

**Book Title Week** () \_\_\_\_\_

**Book Title Week** () \_\_\_\_\_

**Group Members** \_\_\_\_\_

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**Target Vocabulary** (choose nouns and verbs from story that children may not know)

**Discussion Questions** (develop questions related to story grammar elements, ask one or two questions that will assist student in integrating story information with existing background knowledge – (i.e., how do you...or why do you...have you ever...))

**Target syntactic structure(s)** (identify structures you will train within the context of the book)

**Target phonological/phonemic contrasts** (identify words to use in training sound-symbol correspondences and phonological/phonemic awareness)

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**APPENDIX C. MONITORING INDICATORS OF SCHOLARLY LANGUAGE (MISL) SCORING FORM**

|                         | <i>0 points</i> | <i>1 point</i> | <i>2 point</i> | <i>3 points</i> | <i>Total</i> |
|-------------------------|-----------------|----------------|----------------|-----------------|--------------|
| Macrostructure          |                 |                |                |                 |              |
| Character               |                 |                |                |                 |              |
| Setting                 |                 |                |                |                 |              |
| Initiating Event        |                 |                |                |                 |              |
| Internal Response       |                 |                |                |                 |              |
| Plan                    |                 |                |                |                 |              |
| Action/Attempt          |                 |                |                |                 |              |
| Consequence             |                 |                |                |                 |              |
| Macrostructure total    |                 |                |                |                 |              |
| Microstructure          |                 |                |                |                 |              |
| Conjunctions            |                 | Coordinating   | Temporal       | Causal          |              |
| Mental/linguistic verbs |                 |                |                |                 |              |
| Adverbs                 |                 |                |                |                 |              |
| Elaborated noun phrases |                 |                |                |                 |              |
| Microstructure total    |                 |                |                |                 |              |

**Note.** The MISL macrostructure score consists of ratings for seven story elements, including character (agents performing actions), setting (time or place), initiating event (problem or event that motivated the character into action), internal response (feelings of characters with regard to the initiating event), plan (stated intention to solve a problem using words such as *thought*, or *decided*), attempt (actions related to the initiating event), and consequence (successful or unsuccessful resolution of the problem or event that started the story). The microstructure score consists of ratings for four literate language elements, including conjunctions (e.g., coordinating, temporal, causal), mental/linguistic verbs (e.g., *said*, *thought*), adverbs, and elaborated noun phrases. Criterion validity was calculated with the TNL (total narrative language composite) using a Pearson product-moment correlation coefficient and was  $r = .71$ . This tool has since been revised and may be found at [www.childlanguageresearch.com](http://www.childlanguageresearch.com).

## Erratum

**Title: Language Outcomes of Contextualized and Decontextualized Language Intervention: Results of an Early Efficacy Study**

**Authors: Sandra Laing Gillam, Ronald B. Gillam, and Kellie Reece**

*Language, Speech, and Hearing Services in Schools* (2012), 43, 276–291.

DOI: 10.1044/0161-1461(2011/11-0022)

In this article, an instance of DLI on p. 277 should have instead been CLI.

Incorrect version:

“In contrast, the children who received DLI used more semantic propositions per utterance and created stories with a greater number of episodes and embedded episodes than the children who received DLI.”

Correct version:

“In contrast, the children who received CLI used more semantic propositions per utterance and created stories with a greater number of episodes and embedded episodes than the children who received DLI.”

There is also an instance on p. 284 in which DLI and CLI should switch places.

Incorrect version:

“However there were important group differences in the size of the effects. On average, the effect sizes for the DLI group were 81% larger than the effect sizes for the CLI group. In terms of the size of the clinical effects, CLI yielded larger clinical outcomes than DLI on two decontextualized measures of sentence-level language.”

Correct version:

“However there were important group differences in the size of the effects. On average, the effect sizes for the CLI group were 81% larger than the effect sizes for the DLI group. In terms of the size of the clinical effects, CLI yielded larger clinical outcomes than DLI on two decontextualized measures of sentence-level language.”

We regret any problems or misunderstandings that these errors may have caused.

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DOI: 10.1044/0161-1461(2012/er-0904)

**Language Outcomes of Contextualized and Decontextualized Language Intervention: Results of an Early Efficacy Study**

Sandra Laing Gillam, Ronald B. Gillam, and Kellie Reece  
*Lang Speech Hear Serv Sch* 2012;43;276-291; originally published online Jan 23, 2012;  
DOI: 10.1044/0161-1461(2011/11-0022)

A correction for this article has been published. It can be found at:  
<http://lshss.asha.org/cgi/content/full/43/4/552>

**This information is current as of October 30, 2012**

This article, along with updated information and services, is located on the World Wide Web at:  
<http://lshss.asha.org/cgi/content/full/43/3/276>



AMERICAN  
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