

# Identifying Essential Instructional Components of Literacy Tutoring for Struggling Beginning Readers

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*This study examined the components of a one-on-one literacy tutoring model to identify the necessary and sufficient elements for helping struggling beginning readers. The tutoring components of interest included word work using manipulative letters, written word work, and a generalization component. Reading assessment data from 100 first-grade students, randomly assigned to four tutoring conditions and a control group, were analyzed. Following the treatment period, groups were evaluated on phonological awareness, sight word knowledge, decoding, and word attack. Results indicated that children who received all of the tutoring components performed better than those in the control condition across all four reading performance indicators under consideration.*

**Keywords** manipulative letters, reading intervention, struggling readers, tutoring, UFLI

## Introduction

Much debate continues about how to ensure that all children reach the fundamental accomplishment of success in early literacy. The topic has garnered the national spotlight as several influential committees have reviewed recent research and made recommendations about how to address the needs of children in the primary grades (National Reading Panel, 2000; Snow, Burns, & Griffin, 1998). Despite the attention to beginning reading, a large percentage of school-age children—particularly poor children and children of color—experience

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tremendous difficulty learning to read through the instructional methods typically employed in schools (National Center for Educational Statistics, 2006; Snow et al., 1998).

The ever-increasing demand for high levels of literacy in our technological society makes this problem even more pressing (Snow et al., 1998; Torgesen, 2000). Learning to read early and well is a critical element in a child's success in school and in life. In fact, eventual social and economic achievements are closely linked to reading achievement (Baydar, Brooks-Gunn, & Furstenberg, 1993; Blaunstein & Lyon, 2006). Because our society assigns such significance to reading abilities, educators have an obligation to children to employ the most effective methods available during beginning reading instruction.

Stanovich (1986) described a phenomenon that he called the Matthew effect in reading. He explained that children who experience early success in reading are likely to read more and, subsequently, become even better readers. Children who experience difficulty during early reading, however, spend less time reading and, therefore, achieve less progress. The gap between the reading achievement of those who experience early success and those who experience early failure widens as these children progress through school. Because reading achievement during initial instruction is highly predictive of later reading success or failure (Juel, 1988; Stanovich, 1986; Torgesen, 2004), the importance of early intervention is quite clear. The notion that early, intensive reading instruction could alleviate early reading failures and narrow the achievement gap warrants further attention.

As beginning reading research reveals solutions to reading problems, a concern about what to do with "treatment resisters" persists (Torgesen, 2000). To address this issue, consideration of what constitutes effective beginning reading instruction is necessary, and there is growing consensus on this topic. According to the Committee on the Prevention of Reading Difficulties in Young Children, beginning reading instruction requires an emphasis on (a) using reading to obtain meaning from print, (b) the phonological and morphological structure of words, (c) the orthographic system, (d) regular spelling-sound relationships, and (e) frequent opportunities to read and write (Snow et al., 1998; Foorman & Torgesen, 2001). Phonological awareness, letter recognition facility, familiarity with spelling patterns, spelling-sound relations, and individual words must be developed in concert with real reading and real writing and with deliberate reflection on the forms, functions, and meanings of texts (Adams, 1990). Additional research is essential to identify the conditions under which specific methods are most effective and with which kinds of reading difficulties.

## **Purpose of the Study**

To enhance the potential for children in the primary grades to succeed in early reading instruction, we examined the use of a beginning reading intervention that employs a specific set of instructional strategies designed to provide individualized assistance to the struggling beginning reader. This early literacy intervention, the *University of Florida Literacy Initiative* (UFLI, pronounced "you fly"), tutoring model, was designed to enhance literacy achievement for struggling beginning readers. We examined UFLI to address the following research questions:

1. Is the UFLI tutoring model an effective method for promoting early literacy skills of struggling beginning readers?
2. Which components of UFLI are necessary and sufficient to increase the reading skills of children who are struggling to learn to read?

## **Essential Knowledge and Skills Developed During the UFLI Session**

The UFLI tutoring session was designed with careful consideration of recent research in early literacy development and intervention for struggling beginning readers and recommendations from leading researchers (e.g., Adams, 1990; Clay, 1993; NRP, 2000; Snow et al., 1998). The session was designed to enhance the development of the student's phonemic awareness, print awareness, and decoding skills. The session also promotes development of reading fluency, comprehension, and strategy use.

### ***Phonemic Awareness***

Phonemic awareness is developed during the UFLI intervention through the use of Elkonin boxes, counting phonemes, and phoneme blending and segmenting activities with manipulative letters. There is strong research evidence that most people with reading disabilities have an underlying problem processing the sounds of language (Badian, 1997; Blachman, 1994; NRP, 2000; Shaywitz, 1996; Torgesen, Wagner, & Rashotte, 1997) and a child's phonemic awareness is the single most powerful predictor of later reading success (Adams, 1990; Torgesen, Wagner, Rashotte, Alexander, & Conway, 1997). In numerous studies with diverse student populations, phonological awareness instruction significantly improved students' reading skills (see, e.g., Foorman, Francis, Beeler, Winikates, & Fletcher, 1997; Jackson, Paratore, Chard, & Garnick, 1999; Smith, Simmons, & Kame'enui, 1998).

### ***Print Awareness***

Learning to read is a lengthy process that begins for many children long before school entrance, as their families engage in print play and experiences. Learning the forms and functions of print, the enjoyment of text, and conventional book handling skills is critical to success in learning to read (Adams, 1990; Clay, 1991; Gunn, Simmons, & Kame'enui, 1998; Snow et al., 1998). A research review of 24 descriptive and quantitative studies (Gunn et al., 1998) revealed that students performed significantly better on measures of concepts about print after direct teaching and experience with books and literacy activities. During the UFLI intervention, print awareness is developed as the student controls the books, turns the pages, and points during reading. In addition, the writing component helps students master numerous conventions of print, including concept of word, spacing, and directionality. Finally, the extending literacy component exposes students to print's many forms and functions.

### ***Decoding***

To learn to read an alphabetic language such as English, one must develop an understanding of the alphabetic principle—that fundamental insight that letters and sounds work together in systematic ways to form words (Adams, 1990; Chard, Simmons, & Kame'enui, 1998; Snow et al., 1998). Throughout the UFLI intervention, an understanding of the alphabetic principle is promoted through word work with manipulative letters, encoding practice, and decoding strategy instruction in connected text.

As children develop an understanding of the alphabetic principle, they become consistent in their use of letters and sounds to figure out unfamiliar words (Adams, 1990; Ehri, 1997). Most children need explicit phonics instruction in order to unlock print and become good readers (Beck & Juel, 1995; Foorman, Francis, Fletcher, Schatschneider, &

Mehta, 1998), and mastery of the cipher is critical to early reading success (Adams, 1990; Henry, 1993; Signorini, 1997). A continuing problem in much reading instruction is the failure to develop automaticity with decoding skills (Fawcett & Nicolson, 1994). Within the UFLI intervention, decoding skills are developed through reading, writing, and manipulative letter activities. Students practice decoding and encoding words during word work with manipulative letters and during written word work. They apply their phonological skills and their understanding of the alphabetic principle by reading connected text.

### ***Fluency***

Reading fluency, defined as a combination of word reading accuracy and automaticity, reading rate, and prosody, is vital to reading proficiency (Hudson, Lane, & Pullen, 2005), because there is a strong correlation between fluency and comprehension (e.g., Breznitz, 1987, 1991; Dowhower, 1987; Pinnell et al., 1995; Schatschneider et al., 2004). One of the primary components of UFLI is repeated reading of connected text. As students read and reread books at an appropriate level, their fluency improves (LaBerge & Samuels, 1974). When students reach criterion in reading books, they begin timed readings of passages to increase their reading rate. During each UFLI tutoring session, students spend approximately 20 minutes reading connected text with appropriate scaffolding from the instructor. The focus of fluency instruction shifts as the reader develops. In the early lessons, instruction focuses on accuracy. As the child becomes accurate, the focus shifts to automaticity at the word level and at the connected text level. Once the reader reaches the benchmark in reading accuracy and rate, the focus of fluency instruction shifts to prosody.

### ***Comprehension***

To develop good reading comprehension, children need early experiences carefully designed to teach strategies, encourage vocabulary development, expand background knowledge, increase the ability to understand relationships between concepts, and actively use strategies to ensure understanding (Adams, 1990; Pressley, 2000; Snow et al., 1998). Readers can interpret and evaluate textual messages only as much as they possess and use the vocabulary, syntactic, rhetorical, topical, analytic, and social knowledge that is required in understanding text (Adams, 1990; RAND Reading Study Group, 2001). During a UFLI session, the development of comprehension strategies occurs before, during, and after reading connected text. Before reading a new book, the child and instructor preview and engage in a discussion about the book, during which they examine illustrations and unusual features of the print, make predictions about the story, and link the events depicted in the pictures to the child's life. During the reading of any text, the instructor models and encourages self-monitoring for comprehension and using meaning to support decoding. After reading, the instructor poses a variety of literal, inferential, and evaluative questions. The child summarizes part of the story, and the instructor helps the child write a sentence from the summary. An understanding of how various genres of texts are structured also facilitates comprehension. Students develop an understanding of multiple text structures through the extending literacy component of the tutoring session.

### ***Strategies***

In the UFLI intervention, students learn to use a variety of strategies to identify words and to check their accuracy. Information from multiple sources is used to identify a word. The

letters and sounds serve as the primary source of information used for word identification, while meaning and syntax help the child predict or confirm the accuracy of their decoding. Clay (1987) recommends teaching children to monitor, search for cues, cross-check, and self-correct their errors. Orchestration of these multiple strategies is the foundation for skilled, independent reading, and each of these strategies is emphasized during the UFLI lesson. Tutors also consider the development of the struggling reader. UFLI uses the mnemonic “ABC,” which stands for “Acquire, Build, Control,” to remind the tutor to adjust the amount of support provided as the child develops to promote independence in strategy use. To help a child *acquire* a new strategy, the tutor demonstrates, models, and explains how to use the strategy. As the child begins to *build* his or her strategy repertoire, the tutor’s role turns to prompting the use of specific strategies. Eventually, through sufficient practice, children reach the point where they *control* their application of strategies—selecting the appropriate strategy to use and applying it effectively. As the child reaches this point, the tutor observes the child’s strategy use and asks the child to explain how he or she figured out an unfamiliar word. When a child uses a strategy without prompting and can explain that strategy, the tutor can be confident that the child is capable of using the strategy independently.

### ***One-on-One Tutoring***

It is clear from the existing research base that many of the most effective early literacy interventions are provided through one-on-one tutoring (Cohen, Kulik, & Kulik, 1982; Juel, 1996; Pinnell, 1989; Wasik & Slavin, 1993). Tutoring programs as varied as Reading Recovery (Clay, 1993; Pinnell, 1989), Success for All (Slavin, 2002), Book Buddies (Invernizzi, Rosemary, Juel, & Richards, 1997), Early Steps (Morris, Tyner, & Perney, 2000), Accelerated Literacy Learning (King & Homan, 2003), and Great Leaps (Mercer, Campbell, Miller, Mercer, & Lane, 2000) are implemented in one-on-one sessions and researchers credit this instructional arrangement for at least a portion of the success of the programs. Although small-group intervention may produce similar gains (Elbaum, Vaughn, Hughes, & Moody, 2000; King & Homan, 2003), one-on-one tutoring provides unparalleled opportunities for targeting instruction to address individual student needs.

### ***Other Essential Program Components***

The previous research base demonstrates that providing modeling, scaffolding, specific feedback, and much opportunity for supported reading are keys to success (Adams, 1990; Allington, 2001; Chard & Osborn, 1999; Gunn et al., 1998; Snow et al., 1998). In addition to directly teaching literacy skills, effective instruction should take place in a rich, natural language context (Gersten, Brengelman, & Jiménez, 1994; Gersten & Woodward, 1994), with clear connections between skill instruction and contextual application of those skills, especially for struggling students (Lane, 1994). Each of these components is part of the implementation of UFLI.

### **The University of Florida Literacy Initiative**

Initially, UFLI was designed as a teacher education tool. Through a structured tutoring experience, we hoped to help our preservice teachers develop an understanding of (a) the reading process, (b) how children typically acquire that process, (c) the difficulties that many children experience while learning to read, and (d) effective methods for helping

children overcome those difficulties. As our preservice teachers implemented the tutoring model in local schools as part of their field experiences, we received numerous inquiries from teachers and principals about the instructional methods these preservice teachers were employing. It seems that the struggling readers with whom they were working were making substantial reading gains. In fact, two principals reported that these struggling readers were making better progress than those receiving tutoring from certified teachers. Although we knew we had developed a strong model, this unexpected response to the implementation of the model by novices piqued our interest in determining exactly what about the tutoring methods made them so successful.

In the design of the intervention, we considered the vast body of research about beginning reading instruction and analyzed this research to identify necessary features of an effective intervention for struggling beginning readers. We examined programs that have been found to be successful with struggling readers (e.g., *Reading Recovery*, *Success for All*), and we identified what we considered and what reviews reported to be both the strengths and weaknesses of these programs. We also considered instructional strategies that have been found to be effective with students with learning problems and, as a result, incorporated an explicit approach to teaching reading skills and to promoting generalization of those skills (Stokes & Baer, 1977).

All components of the intervention and the reading skills developed during these components are clearly linked to meaningful context. Within the one-on-one intervention, the tutor helps the student develop phonological awareness, concepts about print, an understanding of the alphabetic principle, decoding skills, reading fluency, comprehension strategies, and a variety of strategies for successfully negotiating through text. The tutor uses leveled books (leveled by the *Reading Recovery* leveling system) to ensure that the text matches the needs of the developing reader. The tutoring session includes five steps: (a) Gaining Fluency, (b) Measuring Progress, (c) Writing for Reading, (d) Reading a New Book, and (e) Extending Literacy.

### ***Step 1: Gaining Fluency (8–9 Minutes)***

The student reads familiar text in order to gain word reading accuracy and automaticity, to increase reading rate, to practice reading strategies, and to increase confidence. The tutoring session begins with this activity to provide the student with immediate success. During the Gaining Fluency step, the tutor selects text that the student has read before and is able to read with 90–100% accuracy. The student then reads with minimal assistance from the tutor. As the student becomes comfortable reading familiar connected text, the tutor begins timed readings of selections of text from the leveled books to promote automaticity and improve reading rate. The tutor graphs correct and incorrect words per minute and monitors the student's reading rate and accuracy. These results are shared with the student, and together the tutor and student set goals for increasing reading rate and accuracy. Once the student is consistently reading with an appropriate degree of accuracy and at a fluent rate, the shift of this lesson step shifts to prosody. The tutor scaffolds the student's use of inflection and expression and teaches the student to notice phrase boundaries in text.

In addition to timed and untimed repeated readings of familiar text, the tutor spends approximately half of the time in Step 1 helping the student use manipulative letters to work with familiar words, to learn new words, and to reinforce knowledge about letters and sounds. The tutor selects a target word that is familiar to the student and manipulates the word by making changes at the onset-rime and phoneme level. The tutor guides the

student in both decoding and encoding practice and points out how changing even one letter can change the meaning of the word. Based on observations and notes from previous lessons, the tutor selects target words and sounds systematically following a sequence from easier to more difficult sounds. For example, early word work focuses on words with continuous sounds in the initial position. When students are able to blend words with continuous sounds, the tutor introduces stop sounds in the final position. As the student's skills develop, words that contain unvoiced stop sounds at the beginning are included and, eventually, voiced stop sounds in the initial position are introduced. The purpose of the word work at this step of the session is to help students acquire automatic word recognition skills. By beginning with known words and building new words, the student begins to see connections, recognize familiar letter patterns, and generalize their decoding skills to untaught words.

### ***Step 2: Measuring Progress (3–4 Minutes)***

The tutor takes a running record of the child's reading of the previous session's new book to determine the appropriate level for today's new book and to identify areas for future coaching and instruction. A running record with accuracy of between 90 and 95% indicates that the student's current level is appropriate. If the student reads a book with 95% accuracy or better, the tutor introduces a book from the next level. A score below 90% requires further decisions by the tutor (i.e., the tutor can keep the student at the same level or move them back a level). Another purpose of this step is to determine what strategies the reader is using to figure out words and what strategies the child is failing to use. The tutor uses this information to plan for the next session. After the running record, the tutor provides brief and encouraging feedback about strategy use and, if appropriate, asks the student to identify what strategies he or she used to figure out a difficult word.

### ***Step 3: Writing for Reading (8–10 Minutes)***

Because writing helps the reader learn how print works and develops phonemic awareness, understanding of the alphabetic principle, automaticity with sound–symbol relationships, and familiarity with word patterns, each UFLI session includes a writing component. The tutor engages the child in a discussion about the books read thus far in the session and elicits a sentence or two from the child's own language. Together, the tutor and reader analyze words and construct their spellings. First, the tutor helps the child segment and the phonemes in the word. The tutor then uses Elkonin boxes to help the child connect the sounds with the letters to spell the word. To increase familiarity with high frequency words, the tutor helps the child write the word several times. Sentences are written on blank, unlined paper to help the student develop an understanding of concepts about print, such as directionality, spacing between letters, and spacing between words. Finally, the student rereads, cuts apart, and reassembles the sentence from the previous tutoring session.

### ***Step 4: Reading a New Book (7–9 Minutes)***

During each session, the student reads a new, somewhat challenging book. Reading a new book provides a chance for the child to learn new reading strategies and to practice the application of previously learned strategies with progressively more difficult text. This step includes the most intensive and applied reading instruction of the tutoring session.

There are several phases within this session step. The tutor first selects a book based on information gathered during the running record. The tutor then introduces the book to prepare the child for reading with a picture walk through the book, along with discussion that highlights new vocabulary and unusual or repeated language patterns from the text. During the introduction, the tutor encourages the child to make predictions about the book, and during the reading of the book, they confirm or refute those predictions. Next, the tutor coaches the student through the text using scaffolding to support the student's efforts to read words and to monitor and construct understanding.

During or after reading the new book, the tutor provides practice building new words with manipulative letters. The word work in this step of the lesson differs from the word work in *Step 1* in that, instead of beginning with a known word and using it to learn new words, the tutor begins with an unfamiliar word and helps the child connect it to letters, sounds, syllables, or chunks of words they already know. First, the tutor selects a word or two from the new book that the child had difficulty decoding. The tutor uses the manipulative letters to help the child learn the new word(s). The tutor demonstrates how the letters come together to form the word and points out similarities and differences between the new word and words the child already knows. This word work is designed to extend the child's strategies for approaching new words.

#### ***Step 5: Extending Literacy (4–8 Minutes)***

In the final step of the tutoring session, the tutor and child explore a variety of text genres (e.g., nonfiction topic books, reference books, how-to books, newspapers) to develop an awareness of numerous text structures and the many functions of print. The tutor helps the child develop an understanding of the purpose of the particular text genre and how a reader would approach that type of text. The tutor selects a genre of text with which the student is unfamiliar, introduces the text, and carries out an activity to highlight a form or function of the genre. For example, using a nonfiction book about insects, the tutor could help the student find a topic of interest in the table of contents, locate the selected portion of the book, and use headings, captions, and other textual features to find interesting or important information. An important aspect of this step is that the student generalizes strategies beyond the leveled books. This step of the lessons opens the child's eyes to all that learning to read offers. For struggling students, using genres other than the narratives they most frequently encounter can make reading more enjoyable and provide extra motivation.

### **Method**

The purpose of this study was to examine the effectiveness of UFLI, a beginning reading intervention that employs a specific set of instructional strategies designed to provide individualized assistance to the struggling beginning reader. In addition, we were interested in whether each of what we considered the key lesson components was necessary for the model to be successful. The study was, therefore, designed to examine the efficacy of the tutoring model, and to determine the relative contributions of each component. Toward this goal, the UFLI tutoring program was implemented in several variations to determine which components were necessary and sufficient for successful tutoring of a struggling reader. Specifically, we examined the effectiveness of the program (a) implemented in its entirety as designed, (b) implemented without the manipulative letter component, (c) implemented without the sentence writing strategy, and (d) implemented without the



extending literacy component. A no-treatment control group was also included. Students were randomly assigned to one of the five conditions. By implementing the program with key components removed and compared to a no-treatment control group, we were able to determine which strategies were necessary and sufficient for the overall effectiveness of the model.

We left several components intact in each tutoring condition. Introducing and coaching children through the new book was important to ensure frequent exposure to unfamiliar text and to maintain a focus on comprehension. Each session included the assessment component (i.e., a running record) to help the tutor select appropriate text. Finally, the component that included repeated readings of familiar text was left intact, because this already has been thoroughly documented as an effective strategy (see Kuhn & Stahl, 2003; National Reading Panel, 2000; Rashotte & Torgesen, 1985; Samuels, 1979; Sindelar, Monda, & O'Shea, 1990; Therrien, 2004).

### **Measures**

We administered a measure of invented spelling to identify first-grade students struggling to acquire beginning reading skills. Children's attempts to spell unknown words provide insight into their understanding of the sound structure of language and the alphabetic principle (Brady, 1997; Treiman & Bourassa, 2000). Measures of invented spelling have also been found to predict reliably reading ability in first grade (Gentry, 2000; Mann, Tobin, & Wilson, 1987). This measure has been administered to over 2,000 children in kindergarten, first, and second grade and scored using a scale of phonological accuracy (interscorer reliability = .97). Students scoring below the 30th percentile were identified as potential participants for the current study.

The effectiveness of the treatment conditions was evaluated in relation to four measures of student reading achievement. Three of these were developed by the authors, and one measure was a well-known standardized assessment appropriate for use with this group of students.

In order to provide more detailed information about participants' literacy development at this developmental stage than is typically afforded by most standardized measures, we used informal assessment instruments to measure phonological awareness, decoding skills, and sight word knowledge. The assessment of phonological awareness was individually administered and measured skills at the word, syllable, onset-rime, and phoneme levels. Tasks included segmenting and deleting words; blending, segmenting, and deleting syllables; matching rhymes, generating rhymes, and blending onsets and rimes; and blending and segmenting phonemes. A composite score of all tasks was obtained for each student.

The nonword decoding assessment was designed to measure the student's ability to decode short vowel nonwords. Nonwords were selected so that the student must rely on decoding skill rather than word recognition. A series of 20 consonant-vowel-consonant nonwords were provided on small cards; students were asked to read the word on the card. A description of each of these informal instruments is provided in Table 1.

The availability of useful individual standardized assessments for struggling beginning readers is somewhat limited, because most standardized tests lack the sensitivity required to accurately measure short-term growth in the skills of a beginning reader. However, to provide an easily recognizable measure and to make our study more replicable, we examined the performance of students on the Word Attack subtest of the *Woodcock Diagnostic Reading Battery* (WDRB; Woodcock, 1997). This subtest enabled us to

**Table 1**  
Description of informal assessment measures

Measure	Description
Phonological Awareness	This individually administered measure assessed phonological awareness at the word, syllable, onset-rime, and phoneme levels. Tasks included segmenting and deleting words; blending, segmenting, and deleting syllables; matching rhymes, generating rhymes, and blending onsets and rimes; and blending and segmenting phonemes. A composite score of all tasks was obtained for each student. Spearman-Brown Reliability Coefficient for this measure is .72.
Nonword Decoding	The purpose of this assessment is to measure the student's ability to decode short vowel nonwords. Nonwords were selected so that the student must rely on decoding skill rather than word recognition. A series of 20 consonant-vowel-consonant nonwords were provided on small cards; students were asked to read the word on the card. Spearman-Brown Reliability Coefficient for this measure is .88.
Sight Words	This measure assessed students' ability to recognize words automatically. High-frequency word lists were divided into three lists (preprimer, primer, and first-grade levels). Students were asked to read the word from a word card. Each card was exposed for approximately two seconds to limit the opportunity for decoding. Spearman-Brown Reliability Coefficient for this measure is .80.

evaluate the reading scores of the students in this study using a well-known standardized measure that was expected to be sensitive to the treatment effects of the current design.

### *Schools and Participants*

Twelve elementary schools in a medium-sized district in the southeastern United States participated in the study. Demographic data for the schools is provided in Table 2. All of the first-grade students in these 12 schools were screened in January using a measure of invented spelling to identify those eligible for participation. Students' spellings were scored by two trained scorers (interrater reliability  $>.97$ ). Those students who scored below the 30th percentile were considered eligible for participation, and parents of 126 students consented to their participation in the tutoring phase of the study. These students were randomly assigned to conditions (see Table 3 for summary of group characteristics). Through attrition due to student mobility and absences, 26 participants were dropped from the study, leaving 100 participants. The resulting sample included a large percentage of students from racial or ethnic minority groups (73.4%). Most of the students were from low-income homes (80.1% received free or reduced-price lunch). All the students in the sample demonstrated substantial weaknesses in literacy skills at pretest. One notable characteristic of the study sample was the very low average score on the Peabody Picture Vocabulary Test (Mean = 67.64,  $SD = 14.77$ ).

**Table 2**  
Demographics of participating schools

School	1	2	3	4	5	6	7	8	9	10	11	12
Students receiving free or reduced price lunch	33.2	75.2	50.8	55.0	41.8	78.1	56.4	25.4	92.1	50.4	69.6	86.7
Race/ethnicity of student population												
White, non-Hispanic	63.4	40.6	54.4	65.0	58.4	23.9	73.3	68.6	5.6	54.0	76.5	10.9
Black, non-Hispanic	24.2	47.3	38.1	28.8	32.5	70.6	19.4	17.5	91.4	34.5	19.6	77.2
Hispanic	5.1	4.2	3.4	4.5	4.3	1.5	3.5	5.7	1.7	6.1	1.0	4.9
Asian or Pacific Islander	2.9	1.7	.7	.2	1.7	1.1	.9	4.1	.7	2.8	—	6.2
American Indian	.1	.3	—	—	—	—	.9	.7	—	.2	.5	—
Multiracial	4.2	5.9	3.4	1.5	3.1	2.9	2.0	3.4	.7	2.4	2.5	—
Number of study participants	9	6	3	12	9	2	7	12	15	15	3	13

*Note.* All data are presented in percentages.

**Table 3**  
Summary of sample characteristics by group

Condition	1 <i>n</i> = 17	2 <i>n</i> = 18	3 <i>n</i> = 19	4 <i>n</i> = 22	5 <i>n</i> = 24	All <i>n</i> = 100
Gender						
<i>Male</i>	12	11	13	10	15	61 (57.5%)
<i>Female</i>	8	8	8	12	9	45 (42.5%)
Ethnicity						
<i>African American</i>	13	15	16	15	13	72 (67.9%)
<i>Caucasian</i>	5	4	4	5	8	26 (24.5%)
<i>Hispanic</i>	1	0	1	1	1	4 (3.7%)
<i>Asian</i>	0	0	0	0	0	0 (0.0%)
<i>Other</i>	0	0	0	0	2	2 (1.8%)
Lunch Status						
<i>Free</i>	15	12	18	17	17	79 (74.5%)
<i>Reduced Price</i>	2	3	0	0	1	6 (5.6%)
<i>Regular Price</i>	3	4	3	5	6	21 (19.8%)

### **Tutoring**

Each student in a treatment condition received individual tutoring. Although each student was scheduled to receive 40 tutoring sessions, this was not always possible due to student absences. Make-up sessions were scheduled for students who had missed tutoring sessions, and only those who received a minimum total of 35 sessions were included in the analysis. The average number of sessions per child in the tutoring conditions was 39.1 ( $SD = 1.5$ ). Tutoring sessions occurred three or four days each week.

The study included five conditions. Instruction in each tutoring condition was supplemental to regular classroom reading instruction. In *Condition 1*, the program was implemented in its entirety, as it was designed with all of the components. In the three other conditions, one component of the lesson was eliminated. In *Condition 2*, the program was implemented without any word work using manipulative letters. All of the other components were implemented as designed. In *Condition 3*, the program was implemented without the sentence-writing portion of the lesson. In *Condition 4*, the program was implemented without the extending literacy portion of the lesson. *Condition 5* was a no-treatment control group, who received only their regular reading instruction with no intervention. By examining reading skills of students in each of these conditions, we were able to determine which components were necessary and sufficient to promote reading achievement with struggling beginning readers.

The length of the sessions varied slightly based on the condition assigned. That is, sessions in *Condition 1* (the entire UFLI model) were designed to last approximately 38 minutes. Sessions in *Condition 2* (UFLI minus manipulative letters) were designed to last approximately 35 minutes, sessions in *Condition 3* (UFLI minus the sentence-writing component) approximately 32 minutes, and sessions in *Condition 4* (UFLI minus the extending literacy component) approximately 34 minutes. Table 4 provides a summary of the lesson components with time allocations for each step.

**Table 4**  
Summary of UFLI session steps with time allocations

Session step	Activity	Time
Step 1: Gaining Fluency	Student reads familiar book(s) with tutor's coaching.	4–5 minutes
	Tutor guides student in word work with manipulative letters, including encoding and decoding at onset-rime and phoneme levels, beginning with familiar words.	3–4 minutes
Step 2: Measuring Progress	Tutor takes a running record.	3–4 minutes
	Tutor provides reinforcement for effective strategy use.	30 seconds
Step 3: Writing for Reading	Tutor and student discuss the book from step 2 and generate a sentence or two.	30 seconds
	Student writes sentence(s) with tutor's coaching, using Elkonin boxes and repeated writing practice to learn new words.	6–8 minutes
	Student reassembles a cut-up sentence from the previous session.	1–2 minutes
Step 4: Reading a New Book	Tutor introduces student to book by leading student on a "picture walk."	1-2 minutes
	Student reads book with tutor's coaching.	5–6 minutes
	Tutor guides student in word work with manipulative letters, including encoding and decoding words at onset-rime and phoneme levels, using new words.	2–3 minutes
Step 5: Extending Literacy	Tutor introduces a new text genre, emphasizing its purpose and the strategies a good reader uses to read the genre.	5–7 minutes

### ***Tutors***

Thirty-two master's-level graduate students in elementary and special education, communication disorders, and psychology were recruited and hired as UFLI tutors. Tutors participated in 12 hours of training before beginning tutoring and attended weekly one-hour follow-up training sessions throughout the tutoring period. Training included demonstrations, review of videotaped lessons, and extensive practice of each lesson step. Each tutor demonstrated mastery of the tutoring model in a simulated lesson before beginning work with children. Each tutor was observed by a member of the research team during at least two tutoring sessions as a check of treatment fidelity. Overall, tutors were observed to implement the model as designed. An average of 93% of the session components were implemented correctly across observed sessions, and 100% of the appropriate components

were omitted as necessary for the study. Each tutor worked with between one and five children, and most tutors were assigned to more than one condition to reduce teacher effects.

## Results

Unadjusted (for model covariates described below) means and standard deviations are provided in Table 5 for all variables under investigation. These measures are provided for both the overall sample and separately for each group. Data from the three non-standardized measures of reading achievement (phonological awareness, sight words, and decoding) were analyzed through a multivariate analysis of covariance with the three pre-test measures serving as covariates and the post-test measures serving as the primary outcome measures. The five group conditions, to which participants were randomly assigned, served as fixed-effect factors in the model. Results indicated a statistically significant difference among groups on the combination of adjusted group means, Wilks' multivariate  $F(2,238) = 2.21, p = .012$ . Moreover, results indicated a moderate association between the groups and the combination of adjusted group means,  $\eta^2_{\text{Adjusted}} = .09$ .

Follow-up comparisons were conducted through univariate analysis of covariance (ANCOVA) models on each of the aforementioned three dependent variables. Here, each of the respective pre-test measures served as covariates. Results indicated a statistically significant difference between groups on the adjusted post-test phonological awareness means,  $F(4,94) = 5.82, p < .001$ ; wherein, 20% of the variance in phonological awareness scores was accounted for the group differences,  $\eta^2_{\text{Adjusted}} = .20$ . Post-hoc contrasts between each of the four treatment conditions with the no treatment control were evaluated with a per comparison alpha of .01 in order to control for Type I error inflation. Statistically significant differences were observed for Condition 1 ( $M_{\text{adj}} = 51.7, p < .001$ ), Condition 2 ( $M_{\text{adj}} = 50.3, p = .001$ ), Condition 3 ( $M_{\text{adj}} = 49.7, p = .004$ ), and Condition 4 ( $M_{\text{adj}} = 51.2, p < .001$ ) when contrasted with Condition 5 ( $M_{\text{adj}} = 45.2$ ), the no treatment control group.

The second dependent variable to be evaluated in isolation through an ANCOVA design was sight words. Results indicated a statistically significant difference between groups on the adjusted post-test sight word means,  $F(4,94) = 2.47, p = .05$ ; and approximately 10% of the variance in sight word scores was accounted for the group differences,  $\eta^2_{\text{Adjusted}} = .095$ . Post-hoc contrasts between each of the four treatment conditions with the no treatment control were evaluated with a per comparison alpha of .01 in order to control for Type I error inflation. Here, the only statistically significant between-group difference was between Condition 1 ( $M_{\text{adj}} = 85.1, p < .01$ ) and Condition 5 ( $M_{\text{adj}} = 56.2$ ), although in the expected direction, Conditions 2 ( $M_{\text{adj}} = 66.6, p = .29$ ), 3 ( $M_{\text{adj}} = 72.4, p = .10$ ), and 4 ( $M_{\text{adj}} = 76.5, p = .03$ ) failed to demonstrate statistically significant ( $ps < .01$ ) differences when contrasted with Condition 5.

The third dependent variable to be evaluated in follow-up to the significant multivariate test for equality of adjusted mean vectors was decoding. Although results failed to demonstrate statistically significant between-group differences on the adjusted post-test decoding means following conventional alpha levels (i.e., .05),  $F(4,94) = 2.30, p = .06$ ,  $\eta^2_{\text{Adjusted}} = .095$ , it is useful to consider the between-group contrasts were obtained. Readers are cautioned to not over-interpret these contrasts given the results of the omnibus test. Results here were similar to those obtained for sight words. The only statistically significant between-group difference was between Condition 1 ( $M_{\text{adj}} = 12.9, p = .01$ ) and Condition 5 ( $M_{\text{adj}} = 8.8$ ), although in the expected direction, Conditions 2 ( $M_{\text{adj}} = 10.8, p = .24$ ), 3 ( $M_{\text{adj}} = 12.3, p = .04$ ), and 4 ( $M_{\text{adj}} = 12.6, p = .02$ ) failed to demonstrate statistically significant ( $ps < .01$ ) contrasts in comparison to Condition 5.

**Table 5**  
Means and standard deviations by condition and overall

Groups	Pre-test measures			Post-test measures			
	Phonological awareness	Sight words	Decoding	Phonological awareness	Sight words	Decoding	Word attack
Condition 1							
<i>M</i>	44.71	21.94	8.88	53.41	83.53	13.06	7.47
<i>SD</i>	7.06	15.04	5.64	3.69	38.46	4.82	3.06
Condition 2							
<i>M</i>	42.44	21.39	9.11	50.83	64.33	10.94	5.78
<i>SD</i>	6.48	19.69	7.08	4.44	44.37	6.42	2.82
Condition 3							
<i>M</i>	42.68	27.90	7.79	50.42	78.42	11.90	6.79
<i>SD</i>	7.30	20.78	5.17	5.58	40.93	4.84	3.68
Condition 4							
<i>M</i>	41.09	21.5	9.09	51.05	74.41	12.73	7.46
<i>SD</i>	6.59	16.89	6.82	5.49	34.93	5.27	4.00
Condition 5							
<i>M</i>	37.25	23.08	8.71	43.08	56.13	8.83	3.67
<i>SD</i>	10.60	23.95	7.01	9.43	41.06	7.08	2.87
Overall							
<i>M</i>	41.33	23.15	8.72	49.38	70.52	11.37	6.12
<i>SD</i>	8.17	19.53	6.33	7.20	40.2	5.93	3.59

*Note.* Condition 1: entire UFLI model, Conditions 2: UFLI minus manipulative letters, Condition 3: UFLI minus the sentence-writing component, Condition 4: UFLI minus the extending literacy component, Condition 5: no treatment control.

The final dependent variable to be evaluated was the standardized Word Attack measure from the WDRB. Pretest phonological awareness scores served as a covariate in this design in order to control for possible preexisting differences between the groups, to which participants were randomly assigned. Phonological awareness was chosen as a covariate in this design due to its importance to decoding skill. Results indicated statistically significant differences between groups,  $F(4,94) = 3.63, p = .009$ . In addition, an appreciable amount of variance in Word Attack was accounted for by the groups,  $\eta^2_{\text{Adjusted}} = .134$ . Follow-up contrasts between each of the four treatment conditions with the no-treatment control were evaluated with a per comparison alpha of .01 in order to control for Type I error inflation. Both Condition 1 ( $M_{\text{adj}} = 7.08, p = .007$ ) and Condition 4 ( $M_{\text{adj}} = 7.48, p = .001$ ) were found to be statistically greater than Condition 5 ( $M_{\text{adj}} = 4.14, p = .29$ ), although in the expected direction, Conditions 2 ( $M_{\text{adj}} = 5.65, p = .15$ ), and 3 ( $M_{\text{adj}} = 6.63, p = .02$ ) failed to demonstrate statistically significant ( $ps < .01$ ) differences when contrasted with Condition 5.

## Discussion

The results of this study confirmed that this intervention, UFLI, is effective in increasing the skills of struggling beginning readers. Students who received the entire tutoring model (*Condition 1*) performed significantly better than the control group on measures of phonological awareness, sight words, and decoding. Likewise, the group that received all of the components except the generalization step, Extending Literacy (*Condition 4*), performed significantly better than the control group on phonological awareness and the standardized measure of decoding, the Word Attack subtest of the WDRB.

Although students who received the entire model performed better than the control group on measures of phonological awareness, decoding, and word recognition, we were interested in determining whether all of the components are necessary to help struggling readers acquire beginning reading skills. Post hoc analyses revealed that when the word work with manipulative letters or the written word work were removed from the model, the group failed to perform statistically better than the control group on measures of decoding (non-standard and standard measures) or word recognition skills. The lack of significant differences between the reduced conditions and the control group demonstrates that the written word work and word work with manipulative letters are necessary components to maximize the effectiveness of the intervention. Removing these components reduced the overall effectiveness of the model, particularly for improving decoding and word recognition skills. This finding is consistent with our other studies of manipulative letter work (Pullen, Lane, Lloyd, Nowak, & Ryals, 2005; Pullen & Lane, 2007).

For struggling students, the acquisition of literacy skills requires extensive and thorough understanding of the alphabetic principle. In the UFLI tutoring model, this understanding is developed through word work with manipulative letters and written word work during sentence writing. These instructional elements provide students with the practice they need to learn to decode words and to recognize high frequency words. That this can be accomplished within the context of meaningful text is of particular importance. Students developed these understandings with extended practice, but that practice was always linked to the books they were reading.

The generalizability of the results of this study is limited for several reasons. First, because of the relatively small number of participants, the results of the study should be viewed cautiously. A study with a larger sample may allow more robust conclusions about the components necessary to support struggling readers. In addition, the intervention was



conducted in a one-on-one arrangement with first-grade students. Additional research is needed to determine if these methods would be effective with groups of children or with older struggling readers. Also, the difference in time spent in tutoring (from an average of 38 minutes per session for the *Condition 1* to an average of 32 minutes for *Condition 3*) may have influenced the outcomes of the analyses. Given, however, that the students in *Condition 2* (35 minutes of tutoring) and *Condition 3* (32 minutes of tutoring) failed to outperform students in the control group (0 minutes of tutoring) on several measures, and students in *Condition 4* (34 minutes of tutoring) did outperform other groups, it is unlikely that the time difference alone (3–6 minutes) had much of an effect.

The mobility rates in the participating schools and high number of student absences from school contributed to a high attrition rate for participants and a lower *n* for the analyses. These conditions, however, are common in high-poverty schools with large numbers of children who are at risk for reading failure and in need of early reading intervention. Although we were unable to include in the analyses data from participants with an insufficient number of tutoring sessions and without post-test data, review of their session notes and running records reveals that many of these students also had made substantial gains in their instructional reading levels.

The knowledge and experience of the tutors should be taken into consideration. The intervention in this study was conducted by university students who were preservice teachers. Given what is known about the role of teacher knowledge and expertise in student reading achievement (e.g., McCutchen et al., 2002; Pressley et al., 1998), experienced teachers with a better understanding of the reading process may be able to effect even greater reading gains using the same methods. On the other hand, the fact that instructors with limited background knowledge and training could effect significant growth in reading skills in a relatively short period of time is encouraging. By using carefully designed procedures and providing strong supervision, schools may be able to provide effective literacy tutoring at a cost substantially below other programs (Shanahan & Barr, 1995).

The UFLI tutoring model was developed initially as a teacher education tool. We hoped that, through application of these instructional strategies, preservice and practicing teachers would acquire essential understanding of the reading process and how to help struggling readers, and our assessments of growth in tutor knowledge have confirmed that this is the case (Lane, Al Otaiba, League, Torgesen, & Pullen, 2003; Grek, Al Otaiba, & Lane, 2004). Examination of the model as an intervention has demonstrated that this tutoring model also holds promise for helping struggling beginning readers. This examination has also demonstrated that targeted assistance in the development of word-solving strategies is crucial to the acquisition of skill in word reading for these students. Additional research is needed to determine the extent of the implications of these findings. For example, is the effectiveness of the word work dependent on its explicit application in connected text? Will these tutoring methods be effective for older children struggling to learn to read? Is one-on-one tutoring necessary, or can similar results be achieved using the same methods with small groups of children? Although much has been learned in recent years about the prevention of and early intervention for reading difficulties, much remains to be discovered.

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