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# EARLY READING INTERVENTION: RESPONDING TO THE LEARNING NEEDS OF YOUNG AT-RISK ENGLISH LANGUAGE LEARNERS

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*Lisa Klett Gyovai, Gwendolyn Cartledge, Lefki Kourea, Amanda Yurick, and Lenwood Gibson*

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**Abstract.** This study examined the effects of a supplemental early reading intervention on the beginning literacy skills of 12 kindergarten/first-grade urban English language learners (ELLs). The Early Reading Intervention (ERI; Simmons & Kame'enui, 2003) was the instructional intervention used with all students. A multiple-baseline design across students was used to investigate the effects of the instruction on phoneme segmentation fluency (PSF) and nonsense word fluency (NWF), as measured by the Dynamic Indicators of Basic Early Literacy Skills (DIBELS; Good & Kaminski, 2002). Data analyses showed that all students increased in the number of phonemes segmented and the number of letter sounds produced correctly. Gains were commensurate with the amount of instruction received.

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For the past two decades, students in our schools who are English language learners (ELLs) have increased dramatically and their numbers continue to rise at an accelerated pace (Gunn, Smolkowski, Biglan, Black, & Blair, 2005; Klingner, Artiles, & Barletta, 2006; Snow, Burns, & Griffin, 1998). Thus, in 2002 as many as 45% of teachers reported having at least one ELL in their classroom (National Institute of Child Health and Human Development [NICHD], 2003). ELLs account for approximately 6% of the school-age population, with Spanish-speaking students comprising approximately 70% to 80% of that group (Fitzgerald, 1995; Gunn et al.; Haager & Windmueller, 2001; Klingner et al.).

This is not a homogeneous population, and, like native English speakers, they are affected by differences in socioeconomics, cultural background, and schooling conditions. Schools need to become more responsive to these changing demographics (Wilkinson, Ortiz, Robertson, & Kushner, 2006). Students who are learning English as a second language or report another language as the primary language in the home present special academic risks, including underachievement, grade retention, attrition from school (Abedi, 2002; August & Hakuta, 1997), and poor reading acquisition (Haager & Windmueller, 2001). A special report from Zehler, Fleischman, Hopstock, Pendzick, and Stephenson

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(2003) on the achievement status of limited-English proficient students suggests that nearly three quarters of ELLs read below grade level in English in the third grade, and more than half perform below grade level in math.

Typically, these students' underachievement or lack of response to classroom instruction results in a referral to special education. In fact, approximately 56% of ELLs being served in special education are referred for reading problems and 24% are served for a speech or language impairment (NICHD, 2003). Furthermore, the rate of placement in special education appears to be negatively correlated with the level of English proficiency. That is, as English proficiency increases, the rate of placement in special education decreases.

This is an important finding, as we know from research on non-ELL populations that not all children with reading difficulties have learning disabilities in reading or any other area (McCardle, Mele-McCarthy, Cutting, Leos, & D'Emilio, 2005). If a disability is determined, ELLs with disabilities, compared to their non-ELL peers, are likely to be instructed in more restrictive settings, receive fewer language supports, and have more long-term placements and less movement out of special education (Artiles, Rueda, Salazar, & Higareda, 2005; Klingner et al., 2006).

Given the growing number of ELLs, interventions that are effective in improving the reading abilities of these students are essential (Linan-Thompson & Hickman-Davis, 2002). However, recent research indicates that schools continue to have difficulty with assessment, professional development, and service delivery for ELLs (Haager, 2007; Rinaldi & Samson, 2008).

### ***Effective Early Intervention***

***What to teach.*** For nearly a decade there has been a growing consensus that beginning readers, especially those at risk for reading failure, need instruction in specific skills such as how to manipulate phonemes, which are the smallest unit of speech. Scientists have found that young readers need to develop the ability to hear and manipulate sounds (i.e., phonemes) prior to being able to make sense of printed symbols (i.e., letters and letter combinations) (Foorman, 2003, 2007; Lyon, 2001). Manipulation consists of segmenting phonemes into smaller units of speech and/or blending them into words. This auditory skill is called phonological awareness. Along with developing phonological awareness, beginning readers need to learn to connect those manipulable sounds with their respective printed forms (i.e., phonics). This skill is termed alphabetical principle.

Young learners need frequent opportunities to practice these skills and thus develop reading fluency (i.e.,

speed and accuracy) along with vocabulary knowledge and text comprehension strategies. All five components (phonological awareness, alphabetical principle, fluency, vocabulary knowledge, and text comprehension strategies) are necessary to be a good reader. By contrast, deficits in any of these areas hinder students' reading development.

These five areas of reading were validated by the National Reading Panel's (NRP; 2000) meta-analysis of the extant reading research. In their discussion of alphabets, the NRP observed that phonological awareness (PA) training significantly improves students' reading more than instruction that excludes any focus on PA. The NRP found that teaching children to manipulate phonemes with letters explicitly and systematically, focusing the instruction on one or two types of phoneme manipulations rather than multiple types, and teaching children in small groups were key components in developing successful readers. Phonics instruction focuses on teaching students how to link phonemes with letters in order to form letter-sound relationships. NRP members found that studies that provided PA training to students as early as in preschool resulted in the greatest statistically significant effect sizes ( $d = 2.37$ ).

Most of the early literacy studies have been conducted with native English speakers. In these studies explicit instruction on phonemic/phonological awareness produced the strongest growth in reading skills for preschool and primary-level children, providing sound evidence of a means for reducing the likelihood of having a child fail to acquire early literacy skills (Foorman, Breier, & Fletcher, 2003; Hatcher, Hulme, & Snowling, 2004; Torgesen et al., 1999). Similarly, there is preliminary, but sound, evidence that ELLs are likely to benefit greatly from explicit instruction in phonological awareness (Ehri, Dreyer, Flugman, & Gross, 2007; Haager, 2007), and that this instruction can be delivered effectively in English (Gunn et al., 2005; Lesaux & Siegel, 2003).

For example, Leafstedt, Richards, and Gerber (2004) found that 300 minutes of explicit phonemic awareness resulted in significantly more growth in word reading for kindergarten ELLs than for their peers who only received the general kindergarten curriculum. Explicit phonological awareness and phonics instruction helped ELLs to outperform their ELL peers who did not receive this instruction as well as to exceed the reading performance of non-ELLs. Altogether, the ELL literature base appears convergent regarding the value of phonological awareness and phonics in the development of early reading skills (Jitendra, 2004; Vaughn, Mathes, Linan-Thompson, & Francis, 2005).

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**How to intervene.** Waiting for students to fail academically and then send them to special education is problematic in that (a) valuable time is lost in learning to read, (b) students may lose their motivation to learn, and (c) the quality of instruction may be unsystematic and inadequate (Lyon & Fletcher, 2001; Torgesen, 2002). Effective reading instruction begins early and includes explicit instruction in the development of specific reading skills (NRP, 2000).

An alternative solution that has received rigorous empirical support is the response to intervention (RTI) model, a multi-grouped service delivery system that encompasses layered levels of evidence-based instruction (National Research Center on Learning Disabilities [NRCLD], 2005). This model provides for early intervention, focuses on prevention, and links assessment directly to student outcomes and educational programming (Fuchs & Fuchs, 2007). Students who fail to make progress with high-quality classroom instruction (tier one) are given more intensive small-group (tier 2) instruction (Brown & Doolittle, 2008). Tier 3 instruction is further intensified, delivered either through small groups or individually.

Given the special challenges of ELLs, this approach may be especially appropriate for helping to circumvent problems of inadequate assessment, cultural bias, and overly delayed identifications (Brown & Doolittle, 2008; McMaster, Kung, Han, & Cao, 2008). If employed effectively, RTI could potentially reduce the overrepresentation of ELLs in special education.

This position is supported by other researchers who point out that early interventions need to be more intensive than classroom instruction and that this intensity can be increased through supplemental instruction, either in small groups or individually (Foorman & Moats, 2004; Foorman & Torgesen, 2001; Torgesen, 2002).

Explicit and systematic instruction is defined by the following components: (a) skills are introduced sequentially, in isolation, and students are then provided opportunities to practice these skills; (b) redundancy is embedded in the intervention, providing for guided and independent practice; and (c) students are actively engaged in student-directed activities (Linan-Thompson & Hickman-Davis, 2002). Although systematic instruction has relevance for ELLs (Gersten, Baker, Haager, & Graves, 2005; Kamps et al., 2007), other considerations also apply.

Six years after the NRP, another federal report by the National Literacy Panel (NLP) was published, examining the development of literacy among ELLs (August & Shanahan, 2006). The panel formulated five major topics for research investigation: (a) development of literacy, (b) cross-linguistic relationships, (c) sociocultural

contexts and literacy development, (d) instruction and professional development, and (e) student assessment. Based on its major findings, the panel endorsed the importance of phonological awareness, phonics, fluency, vocabulary, and text comprehension for ELLs, but recommended providing accommodations so that ELLs could benefit maximally from the English literacy instruction. Additionally, the panel noted that ELLs benefit from instruction that emphasizes oral English proficiency, which would enhance comprehension and writing skills. A third recommendation is the need to take advantage of ELLs' oral proficiency and literacy in their native language to facilitate development of English literacy. (Under some conditions it is believed that learners can transfer literacy skills from their first language to their second language.) A fourth recommendation is to take into consideration for instruction many individual factors such as age, general language proficiency, English language proficiency, cognitive skills, and similarities between the first and second language, which can influence second-language acquisition. Fifth, the panel recommended that ELLs be assessed in both their native and their second language to reach more valid conclusions about their performance. A final suggestion is that home language experiences can have a positive impact on literacy achievement. Therefore, in addition to PA and phonics, it is apparent that beginning readers, especially ELLs, would benefit from the full array of written and oral language development skills. Furthermore, along with being explicit and systematic, the instruction must be adjusted to foster comprehension and multi-language proficiency/reciprocity to the extent possible.

The principles of explicit systematic instruction have also been studied in cases where multiple languages were represented (Gersten et al., 2005; Kamps et al., 2007). For example, Lesaux and Siegel (2003) conducted a longitudinal study that followed 296 at-risk ELLs and non-ELLs from kindergarten through second grade. The linguistic backgrounds of the ELLs included Persian, Mandarin, Korean, Polish, Cantonese, and Farsi. Students received small-group secondary instruction in phonological awareness.

At the end of the second grade, the authors drew several conclusions that included (a) limited English proficiency does not impede reading development, (b) the development of early reading skills in ELLs is very similar to the development of those skills in non-ELLs, and (c) phonological awareness instruction can be provided to ELLs in English rather than relying on building skills in the primary language before transferring to English.

These positions are supported by other studies showing that interventions can successfully be provided in English (e.g., Leafstedt et al., 2004; Gunn et al., 2005;



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Jitendra, 2004). Vaughn et al. (2005) determined that the elements of early interventions associated with literacy gains in native English students also yielded positive effects for ELLs. A particularly interesting finding from the Lesaux and Siegel study (2003) was that, for the most part, ELLs with risk status in kindergarten caught up to or surpassed their non-ELL counterparts on reading measures by the end of second grade.

Given the relatively high profile that early literacy instruction has attained in recent years, there is a genuine need for empirical demonstrations of effective interventions for ELLs who struggle with reading (Gersten et al., 2005; Klingner et al., 2006). The existing research highlights some salient findings to guide our interventions. Although educators must be aware of the empirical evidence of the possible beneficial effects of native language proficiency on the acquisition of reading (Slavin & Cheung, 2005) and the promise it holds for academic achievement (Escamilla, 2006), there is an emerging consensus that ELLs acquire reading skills in the same fashion as non-ELLs. Thus, many of the same principles of effective instruction apply. Specifically, Gersten et al. pointed out that the amount and quality of explicit instruction in phonics, phonemic awareness, and vocabulary were related to the level of reading proficiency demonstrated by ELLs and that students who received this type of instruction reached performance levels similar to non-ELLs.

The purpose of the present study was to extend the existing research on effective early literacy interventions for young urban ELLs at risk for reading failure. With few exceptions (e.g., Kamps et al., 2007; Lesaux, 2006; Lesaux & Siegel, 2003), most of the early literacy research for ELLs has been reported on Spanish-speaking children. There is a need to expand this work with learners from diverse cultural backgrounds.

We investigated the effects of a supplemental PA and phonics instructional program delivered in English to a diverse group of kindergarten/first-grade ELLs. A single-subject, multiple-baseline design enabled us to determine the effects of the intervention and to analyze each subject's responsiveness to this instruction.

## METHODS

### *Setting and Participants*

The study was conducted in a public urban elementary school located in a large midwestern metropolitan area. The student enrollment was 336, of which 60% were African-American, 33% were Caucasian, and the remaining 5% consisted of Hispanic, Native American, Asian, and/or multiracial students. No data were provided by the school district on the number of students for whom English was their second language, but were listed among the ethnic categories presented above. For

instance, students from Somalia were recorded as African-Americans despite the considerable cultural and linguistic differences between the two groups. All students were enrolled in the free and reduced-price lunch program, and 15% of them received special education services.

The intervention took place in a small storage room, containing a hexagon-shaped table with six chairs. Intervention sessions were conducted 2 to 4 times per week for 20 minutes each.

**Target students.** Eleven ELL students from three kindergarten classrooms and one ELL student from a first-grade classroom were selected for inclusion in the study based on three criteria: (a) having English as their second language (ESL), as indicated by their ESL assignment; (b) being at risk or some risk, as evident by low performance on the fall benchmark standardized subtests of the Dynamic Indicators of Basic Early Literacy Skills (DIBELS; Good & Kaminski, 2002); and (c) below average grade-level performance on the Woodcock-Johnson Tests of Achievement – Third Revision (WJ-III; Woodcock, McGrew, & Mather, 2001b).

The state department of education defined ELLs as students whose primary or home language is other than English who need special language assistance to participate effectively in school instructional programs. In the school district of this study, students who met these criteria received an initial assessment of their abilities in the domains of listening, speaking, reading, writing, and comprehension of the English language at a grade-appropriate level. Students were rated on a continuum spanning beginner, intermediate, advanced, advanced +, and proficient. Students proficient in all five domains did not receive ESL services. Using this classification, 6 of the study participants were designated as beginners, 2 as intermediates, and 4 as advanced.

All of the students were from a low socioeconomic background and received services from the ESL program three times a week for 30 minutes. Except for Jack, who was 6 and in the first grade, all of the other children were 5-year-old kindergarteners. Table 1 gives information on gender, language proficiency, ethnicity, and risk status of each student.

In the fall, the students were assessed on the Initial Sound Fluency and Letter Naming Fluency subtests of the DIBELS and the Letter-Word Identification (LWID) and Word Attack (WA) subtests of the WJ-III. These scores are given on Tables 2 and 3. Parent consent, written in the student's native language, was obtained for all students who participated in the study.

### *Measures*

The study incorporated three primary dependent measures: phoneme segmentation fluency, nonsense

**Table 1**  
*Student Demographic and Academic Characteristics*

Student	LP <sup>a</sup>	Race <sup>b</sup>	Gender	DIBELS Risk Status
Andy	Beginning	S	M	Some risk
Rachel	Beginning	S	F	At risk
Faith	Beginning	S	F	At risk
Allen	Beginning	S	M	At risk
Aaron	Beginning	S	M	At risk
Jacob	Intermediate	H	M	Some risk
Adam	Beginning	S	M	At risk
Abby	Intermediate	S	F	Some risk
Jen	Advanced	V	F	Some risk
Sam	Advanced	S	M	Low risk
Zoe	Advanced	S	F	Low risk
Jack	Advanced	S	M	Some risk

<sup>a</sup>LP = language proficiency of students at beginning of the study.

<sup>b</sup>S = Somali, H = Hispanic, and V = Vietnamese.

word fluency, and curriculum-based pre/postassessments. The assessment instruments included the DIBELS, Woodcock Johnson-III, curriculum-based assessments, and the ERI Placement Test. The DIBELS assessments were selected because they provide measures of critical early reading skills and corresponding intervention recommendations such as a need for supplementary or intensive instruction. The recommendations supplied by DIBELS are based on the combined test scores obtained at each assessment period.

**DIBELS (6th edition) benchmark and progress monitoring probes.** DIBELS is a standardized instrument designed to assess three major areas of early literacy: (a) phonological awareness (initial sound fluency [ISF] and phonemic segmentation fluency [PSF]); (b) alphabetic principle (nonsense word fluency [NWF]); and (c) fluency with connected text (oral reading fluency [ORF]). At the kindergarten level, the autumn assessment covered letter naming fluency (LNF) and ISF. On

the LNF text, students are asked to name both lower- and uppercase letters. On the ISF test, students are asked to point to pictures that represent the initial sounds in some words or to produce the initial sound in isolation themselves.

PSF and NWF were the dependent measures used in this study. PSF was defined as the number of correct segment sounds produced in a one-minute timing. Consistent with the DIBELS administration procedure, students were required to produce orally the individual phonemes of each word as presented by the examiner. For example, if the experimenter said "mop," the student would have to segment all three sounds by saying "/m/ /o/ /p/." Twenty alternate forms of the PSF subtest were administered over the course of the study.

NWF was defined as the number of correct letter sounds produced upon reading two- and three-sound words in a one-minute timing. This assessment required students to produce orally the individual letter sounds

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in a nonsense word or read the whole word. Students were presented with 50 randomly ordered vowel-consonant (VC) and consonant-vowel-consonant (CVC) words. For example, in the presence of the nonsense word "tef," the student could either say "/t/ /e/ /f/" or "/tef/" in order to receive three points. Twenty alternate forms of this subtest were administered over the course of the study. Alternate-form reliabilities range from .72 to .88, but when repeated four or more times, the resulting mean is .90 (Good & Kaminski, 2002).

The DIBELS benchmark assessments were administered three times (fall, winter, spring) during the school year for screening youngsters at risk for potential reading failure. The progress monitoring probes were administered on a weekly basis to assess student skill growth prior to and during the early reading intervention.

**Curriculum-based pre-/postassessments.** One assessment problem was that the letters and sounds learned by the low-performing students may appear on the DIBELS assessment very few times, thereby limiting the number of opportunities the student had to demonstrate that skill. The purpose of this curriculum-based assessment (CBA) was to assess participants' acquisition of specific phonological/phonics skills as directly related to instruction. The skills were assessed immediately prior to the introduction of the target letter and following the final lesson.

Each CBA included three different letters: the current lesson's letter and the two previous lessons' letters. For example, if the lesson introduced the letter "m," a sheet with several "m's" and two previously taught letters was presented to a student. The experimenter would say, "Here are some letters: (point). Tell me the names of as many letters as you can. When I say 'begin,' start here (point to first letter in upper left hand corner) and go across the page (point). Point to each letter and tell me the name of that letter. Try to name each letter. If you come to a letter you don't know, I'll tell it to you. Put your finger on the first letter. Ready? Say 'Begin.'" The students' responses were recorded as a percentage of the number of opportunities the students had to name and sound the target letter.

**Woodcock-Johnson III Tests of Achievement (WJ-III).** The WJ-III is a set of standardized assessments intended to measure intellectual abilities and academic achievement (Woodcock, McGrew, & Mather, 2001a). Designed to be used with individuals from 2 years of age through adulthood, it includes eight assessment scales. Two standardized reading subtests of the WJ-III were administered at the beginning and end of this study: LWID and WA.

The Letter-Word Identification (LWID) subtest requires the student to identify or read a list of increasingly difficult letters or words. It contains 79 items and

measures letter and word recognition. The student is shown a page of letters or words and asked to point to or say certain letters or words. For ages 5 to 19, this subtest has a median reliability of .91. On the Word Attack (WA) subtest, the student must similarly read a list of increasingly difficult nonsense words. The WA contains 30 items and measures skill in applying letter sound knowledge to nonsense words. The first three items require the student to identify singular letter sounds. The remainder of the items are nonsense words such as /tiff/ and /zoop/. For ages 5 to 19, this subtest has a median reliability of .87.

**ERI placement test.** The test was developed in accordance to the early reading intervention curriculum (ERI; Simmons & Kame'enui, 2003) and consists of six parts. Part A assesses the student's knowledge of letter names and sounds, whereas parts B through F assess the student's skill level in phonological awareness and alphabetic principle skills.

**Interobserver agreement for dependent variables.** Interobserver agreement (IOA) for the two DIBELS dependent variables (i.e., PSF and NWF) was measured on at least 30% of the assessment sessions per participant. The percentage of IOA was calculated by dividing the number of agreements between the two observers (i.e., the experimenter and a second observer) with the total number of agreements and disagreements multiplied by 100. The grand mean percentage of IOA per dependent variable was calculated by summing up all the mean percentages of IOA across participants and then dividing the sum by the number of participants. A mean agreement of 95.6% (range 88%-100%) was obtained for the PSF and 95.9% (range 66%-100%) for the NWF measure. The low score for the NWF was due to an outlier and resulted in retraining of the second observer.

**Observer training.** The experimenter trained a primary observer on accurate scoring of the PSF and NWF measures in order to avoid any observer drift. The training consisted of an overview of the correct sounds for each letter of the alphabet, practice of phoneme segmentation tasks, and mock trials for scoring segmentation and letter sound tasks on a copy of the data collection booklet. Training continued until the observer met a minimum agreement criterion of 85% on PSF and 95% on NWF and ORF. During the study, if interobserver agreement dropped below the above criterion, a booster training session would be given.

**Treatment integrity.** An independent observer measured both quantitatively and qualitatively the degree to which the experimenter adhered to the treatment protocol. The quantitative dimension was defined as the percentage of steps completed out of a predetermined number (i.e., seven). However, since there were multiple



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opportunities for some integrity components to occur, or they could occur to varying degrees of quality (e.g., maintains brisk pace), a qualitative dimension was added to the quantitative procedures. The qualitative dimension was defined as the sum of points earned across the seven intervention steps. The quality of the intervention steps was measured on a 3-point Likert scale (0 = never, 1 = rarely, 2 = sometimes, 3 = always; it ranged from 0 to 21 possible points. The experimenter obtained a mean of 100% on the quantitative scale and a mean of 88% (range 85%-100%) on the qualitative measure over a total of 21.6% (21 out of 97 sessions) of instructional sessions across groups.

### **Early Reading Intervention Curriculum**

The Early Reading Intervention curriculum (ERI; Simmons & Kame'enui, 2003) was selected because it (a) is designed to teach early literacy skills, (b) is aligned with the DIBELS, (c) addresses the skill deficits of students at the bottom quartile of class, and (d) teaches phonological and phonics skills in an explicit, direct, and systematic manner. A typical lesson consisted of approximately six activities, which were scripted and based on the model-lead-test approach.

The teacher modeled each activity before asking the students to practice and then respond independently. Activity one was alphabetically based and introduced the target letter and sound. The suggested time for this activity was 2 to 3 minutes. Activity two was phonologically based and taught students how to isolate initial sounds. This activity was scheduled for 6 to 7 minutes. The third activity, which would take 2 to 3 minutes, was a review of the first activity and reintroduced the target letter and sound. Activity four, titled "Writer's Warm-Up," required students to first trace the letter and then independently write the letter while saying the letter sound. Two to 3 minutes was suggested for completing this activity. The fifth activity, which integrated phonological and alphabetical skills, reintroduced the target letter and required students to match it with the first sound in a picture. Again, 2 to 3 minutes was the suggested length of time for this activity. The final activity, suggested to last 6 to 8 minutes, targeted students' phonological and spelling skills. In this activity children were to show a connection between the sound for the letter and the written letter.

### **Experimental Design and Conditions**

A multiple-baseline-across-participants design was used to measure the effects of the early reading intervention on the phonological and reading skills of target ELL students (Baer, Wolf, & Risley, 1968). This experimental design was chosen based on the principle that it does not require withdrawal of treatment and can be

used for more than one student requiring the same intervention (Cooper, Heron, & Heward, 2007).

**Pretest.** At the beginning of the study, two subtests of the WJ-III (i.e., Letter-Word Identification, Word Attack) and the DIBELS fall benchmark assessments (i.e., Initial Sound Fluency, Letter Naming Fluency) were administered to identify at-risk kindergarten students for intensive early reading intervention (ERI).

**Student grouping.** Based on the selection criteria, 12 ELL youngsters were targeted for intervention. Participants received the ERI placement test to determine group level and intervention order. The first group (i.e., Andy, Rachel, Faith, and Allen) had the lowest scores, the second group (i.e., Aaron, Jacob, Adam, and Abby) had higher scores, and the third group (i.e., Jen, Sam, Zoe, and Jack) had the highest scores. Sam and Zoe, who were added later, were included in the study because (a) the school personnel requested that we take more students due to the tremendous academic need in the school, (b) they were ELLs receiving ESL services, and (c) the researchers wanted to compare Sam and Zoe's performance to that of their lower performing peers.

After all participants entered intervention, regrouping of students took place midway through the study (beginning of March) to address students' instructional needs. Specifically, Aaron and Adam were moved to group 1 for more intensive instruction, and Andy was moved to group 2 for more advanced instruction (see notations on Figure 1). This movement is consistent with the expectations of progress monitoring, but due to the advanced stage of the study, student positions were retained on the multiple baselines to preserve the integrity of the experimental design.

**Baseline.** Prior to and throughout the early reading intervention, participants received daily reading instruction from their classroom teacher. The school used the Trophies reading program (Beck, Farr, & Strickland, 2003). *Trophies* is a comprehensive program that includes activities related to direct and guided reading instruction, phonics, phonemic awareness, writing, vocabulary, fluency, and comprehension. It also includes a supplemental intervention program, an ELL resources kit, and a parallel Spanish language version of the program, *Troteos*.

The experimenter tested the reading and phonological awareness skills of the target students at the end of every day by administering the DIBELS PSF and NWF progress monitoring probes. After two weeks of baseline, the early reading intervention was introduced to group 1 with the lowest placement and progress monitoring scores, while baseline probes continued to be administered for the other target students. Groups 2 and 3 entered intervention after five and eight weeks of baseline, respectively.

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**Intervention.** The ERI was used as the intervention. The ERI employs a model-lead-test approach based on the principles of effective instruction (i.e., active student responding, brisk pace, immediate and direct error-correction, continuous and intermediate schedule of reinforcement). The first author modeled the skill, provided students with opportunities for guided practice, and then assessed students by giving them individual turns for responding. One concern was the limited English proficiency of most of the students, especially the lower performing ones. Therefore, the experimenter made instructional accommodations such as reducing extraneous language, increasing student responses, and reinforcing correct responses so that students better understood the desired behaviors.

Students with the lowest ERI placement scores entered intervention first and received instruction four days a week for approximately 20 minutes each session. Probe data were collected once a week during intervention as well as for participants in groups 2 and 3, who were still in baseline. Once improvement was evident for the first group, the intervention was applied with the same conditions to the second group. When a functional relationship – determined through visual analysis when at least three data points were above baseline levels – was determined in group 2, group 3 entered intervention, but only twice per week, with probe data being collected once a week. Groups 1, 2, and 3 received intervention for 15, 11, and 7 weeks, respectively.

**Posttest.** Following intervention, an alternative form of the two subtests of the WJ-III and the DIBELS spring benchmark probes were administered.

## RESULTS

### DIBELS

**Phoneme segmentation fluency.** Table 2 presents the fall and spring DIBELS benchmark data and the mean performance of students according to the DIBELS progress monitoring. It also gives the effect sizes for the DIBELS scores. As illustrated, all of the students made progress. Five of the 12 elevated their instructional recommendation status to benchmark, two remained at benchmark, and one student's status regressed from strategic to intensive. Four of the students (i.e., Aaron, Rachel, Adam, and Allen) remained at intensive status despite considerable progress during intervention. On the PSF subtest, the ELL students produced a baseline mean of 14.2 correct segment sounds per minute (range 0 - 52.8) and a mean of 28.8 correct sounds (range 2-58.6) during intervention. Of note, students in groups 1 and 2 presented the greatest improvement, with a group mean increase of 16.2 and 13.6 segment sounds, respectively. Improvement across the three groups is also evident in Figure 1.

During baseline, students in groups 1 and 2 showed nearly zero responses in phoneme segmentation. Group 3, which received intervention last, presented higher baseline responding than the other two groups. Once ERI intervention was implemented in group 1, the ELL students increased substantially the number of correct segment sounds produced per minute.

Noteworthy is the immediate upward trend in Andy's responding with a mean of 22.5 segment sounds per minute compared to zero responding in baseline. The improvement in student responding was replicated across groups 2 and 3, although the change was less dramatic. Zoe, Jack, and Jen, who were third-group students, appeared to demonstrate some knowledge of and improvement in PSF in baseline. Although less pronounced, their continued improvement throughout the intervention suggests the instruction was comparably beneficial for them. More notably, a clear and strong functional relationship was found for Andy, Rachel, Adam, and Abby, who were low or no-rate responders in groups 1 and 2. Additional evidence of the beneficial effects of the intervention on PSF for all students can be seen in the effect sizes, which range from 0.4 to 1.9, indicating modest to very strong effects. Nine of the 12 students obtained effect sizes above 1.0, suggesting an effective intervention.

**Nonsense word fluency.** Similar gains were evident for the NWF across all ELL groups (see Table 2 and Figure 1). During baseline, groups 1 and 2 showed nearly zero responding in the letter sound correspondence subtest, which contrasts with the considerably higher baseline responding of group 3. Overall, the group baseline means of groups 1, 2, and 3 was zero, 3.0, and 26.9 correct letter sounds per minute, respectively. Once intervention was implemented in group 1, the students increased substantially the number of correct letter sounds per minute. Replications of student gains were evident across groups 2 and 3 with a group mean increase of 5.8 and 0.6 letter sounds, respectively. Even though group 3 presented the lowest group mean increase, all the ELL students in this group increased their individual performance by at least 11 correct letter sounds per minute. Similar individual improvement was evident in two students in group 1 (i.e., Andy and Faith) and two students in group 2 (i.e., Jacob and Abby).

Again, for some students in group 1 and group 2, the functional relationship was less distinct, although it is evident that these students continued to improve their NWF throughout intervention (e.g., Jen, Jacob, Jack). An obvious functional relationship can be drawn from the graphs for others (Adam, Andy, Faith), who demonstrated little to no knowledge of NWF in baseline, but clearly gained the skill during intervention. The effect

**Table 2**  
**Student DIBELS Data on Fall/Spring Benchmarks and Mean Assessments on Dependent Variables**

Student	DIBELS Fall and Spring Benchmarks				DIBELS Mean Baseline and Intervention Scores								
	DIBELS Fall K-Benchmarks		DIBELS Spring K-Benchmarks		DIBELS PSF		DIBELS NWF						
	ISF <sup>1</sup> G:8	LSF <sup>2</sup> G:8	IR <sup>3</sup>	LSF G:40	PSF <sup>4</sup> G:35	NWF <sup>5</sup> G:25	B <sup>6</sup> M	I <sup>7</sup> M	ES <sup>8</sup> (SD) <sup>9</sup>	B M	I M	ES (SD)	
Andy	9	4	S	51	53	47	0	22.5 (15.3)	1.5	0	24.1 (15.9)	1.5	
Rachel	0	0	I	3	48	3	0.3	22.8 (18.9)	1.1	0	7 (4.2)	1.6	
Faith	6	0	I	34	58	26	0	17.2 (18.5)	0.9	0	11 (9.5)	1.2	
Allen	0	7	I	8	8	8	0	2.8 (3.9)	0.7	0	8.1 (5.4)	1.5	
Aaron	3	0	I	4	3	6	0	2 (3.5)	1.4	0.1	4.8 (2.3)	0.9	
Jacob	6	23	S	61	22	45	3.8	14.2 (5.8)	1.8	8.9	29.6 (12.4)	1.7	
Adam	0	0	I	8	20	8	0	11.5 (7.9)	1.5	0	7 (4.8)	1.4	
Abby	6	6	S	43	55	30	0	30.5 (18.4)	1.7	2.2	24.3 (12.5)	1.8	
Jen	4	28	S	66	40	60	29.2	49.9 (16.2)	1.2	27.4	50 (14.7)	1.6	
Sam	11	50	B	75	67	79	52.8	56.3 (8.1)	0.4	21.6	37.4 (12)	1.3	
Zoe	18	16	B	59	58	56	42.4	57.8 (9.4)	1.6	29.6	45.8 (11.7)	1.4	
Jack	27	29	14	S	51	43	12	41.3	58.6 (8.2)	1.9	28	40.7 (8.4)	1.4

<sup>1</sup>ISF = Initial Sound Fluency; <sup>2</sup>LSF = Letter Sound Fluency; <sup>3</sup>IR = Instructional Recommendation (I = Intensive, S = Strategic, B = Benchmark); <sup>4</sup>PSF = Phoneme Segmentation Fluency; <sup>5</sup>NWF = Nonsense Word Fluency; <sup>6</sup>B = Baseline; <sup>7</sup>I = Intervention; <sup>8</sup>ES = Effect Size (Cohen's d); <sup>9</sup>SD = Standard Deviation; <sup>10</sup>LNF = Letter Naming Fluency; <sup>11</sup>ORF = Oral Ready Fluency.



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sizes further support the positive effect of the intervention on NWF for all students. These effects ranged from .9 to 1.9 with only one of the 12 students falling below 1.0.

### ***Curriculum-Based Pre-/Postassessments***

The experimenter-constructed pre-/postassessments provided a more direct measure of students' learning of letter sound correspondence. All students made gains from pre- to posttest with mean percentage gains of 1.9, 2.2, and 0.5 correct responses for groups 1, 2, and 3, respectively. Group 3 students had a stronger initial command of letter sounds and were assessed on only three or four letters. Conversely, group 1 and 2 students knew fewer letter sounds and had lower preassessment percentages. Four students from groups 1 and 2 (i.e., Rachel, Aaron, Allen, and Adam) made at least a 74% mean gain by the end of the instructional sessions. The students' responses, pre- and post-, for each letter taught are shown in Figure 2.

### ***Pretest/Posttest Scores on Woodcock Johnson***

Table 3 provides the pre- and posttest results of students' performance on the standardized subtests of the WJ-III. Students in group 1 evidenced the greatest raw score group mean gain on the Letter-Word Identification and the Word Attack subtests. That is, ELLs in group 1 obtained a group mean raw score gain of 4 on LWID compared to a mean gain of 0.7 and 0.3 raw score points by groups 2 and 3, respectively. Likewise, greater gains were noted for group 1 on the WA subtest, with a mean gain of 12.3 raw score points, compared to a mean raw score gain of 2.2 and 0.2 for groups 2 and 3. This was expected since the lowest performing students were specifically selected to enter intervention first and therefore received more instruction. The standard scores and classifications also support reading gains on LWID. Eight students advanced their classifications from pre- to posttest (e.g., moving from average to high-average), three students maintained their initial classification (Jacob, Abby, and Zoe), and one student (Sam) dropped from superior to high average.

The WJ-III does not provide standard scores for the WA subtest for kindergarten students, so these scores are reported as grade equivalents. All but two students surpassed their grade level on the WA subtest by receiving at least a grade-equivalent score of 1.0 (range of GE 1.0-2.4); however, these results must be viewed cautiously since grade-equivalent scores are unreliable at the kindergarten level.

## **DISCUSSION**

This study examined the effectiveness of the ERI curriculum on the phonological awareness and phonics skills of 11 kindergarten and one first-grade ELLs at risk

of reading failure. The intervention was restricted to these skills due to (a) empirical evidence indicating these skills as critical for early literacy development, (b) limited time allocations for providing secondary interventions, and (c) the availability of language interventions in other settings such as classroom language arts and ESL classes. The students received supplementary instruction for approximately 20-minute sessions 2 to 4 times weekly over a period ranging from 7 to 15 weeks. Student progress was determined through the DIBELS, CBAs, and Woodcock subtests.

### ***DIBELS***

All of the students showed progress on the DIBELS measures. Of particular interest is the growth pattern of individual children relative to their group assignments. As depicted in Figure 1, some group 1 students (i.e., Andy and Faith) began to outperform some group 2 students (i.e., Aaron and Adam), making it necessary to regroup the students so that they could be taught at a pace commensurate with their rate of learning. Andy was taught with the second group to accommodate his faster progress, whereas Aaron and Adam were programmed into a lower group so that they could receive more intensive instruction.

A functional relationship between ERI instruction and student growth is indicated from the data for phonemic segmentation fluency. For some students, the improvements were immediate and dramatic (e.g., Andy, Abby, and Zoe), while for other students, the progress was more gradual but eventually resulted in sizeable gains (i.e., Rachel and Faith). Students like Rachel and Faith may have needed more time to fully grasp the expectations of this skill, but once understood, they made steady progress.

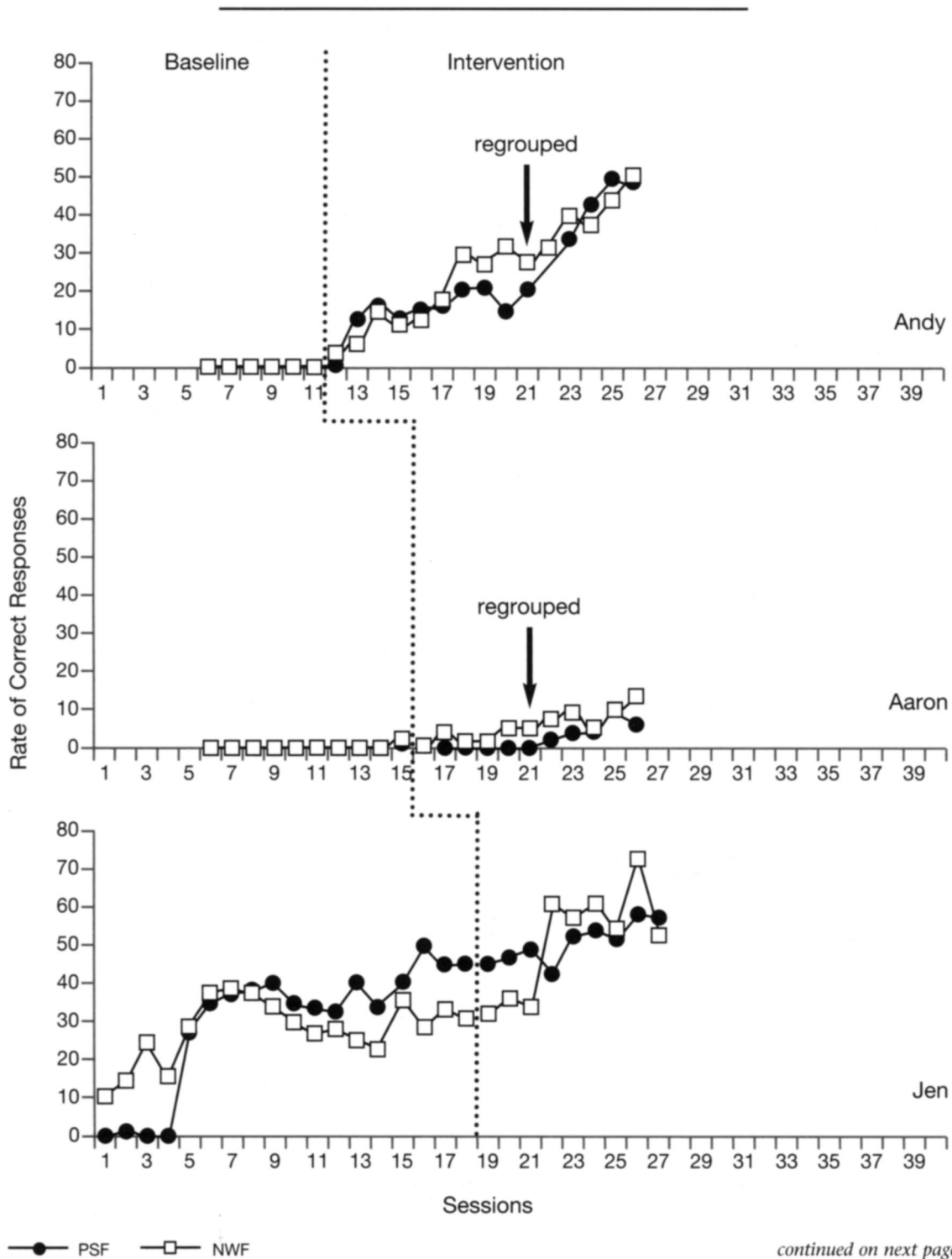
Still other youngsters showed obvious growth upon intervention, but their performance remained at rather low levels of responding (e.g., Aaron, Jacob, Allen, and Adam). This persistent low-level responding signals some resistance to secondary intervention and the need for more intensive instruction at the tertiary level, particularly for Aaron, Allen, and Adam. Group 3 students (i.e., Jack, Jen, Sam, and Zoe) made solid but less dramatic progress on PSF following intervention, due to their higher initial skill levels compared to their peers, who began the study at mostly zero level responding.

These findings indicate that the ERI treatment had a positive effect on the phoneme segmentation skills of all 12 target students and agree with other studies, which obtained similar results (Abbott, Walton, & Greenwood, 2002; Foorman et al., 2003; Fuchs et al., 2001; Torgesen et al., 1999).

Visual analysis of the students' data shows that all students made gains on NWF. As with PSF, the low-level

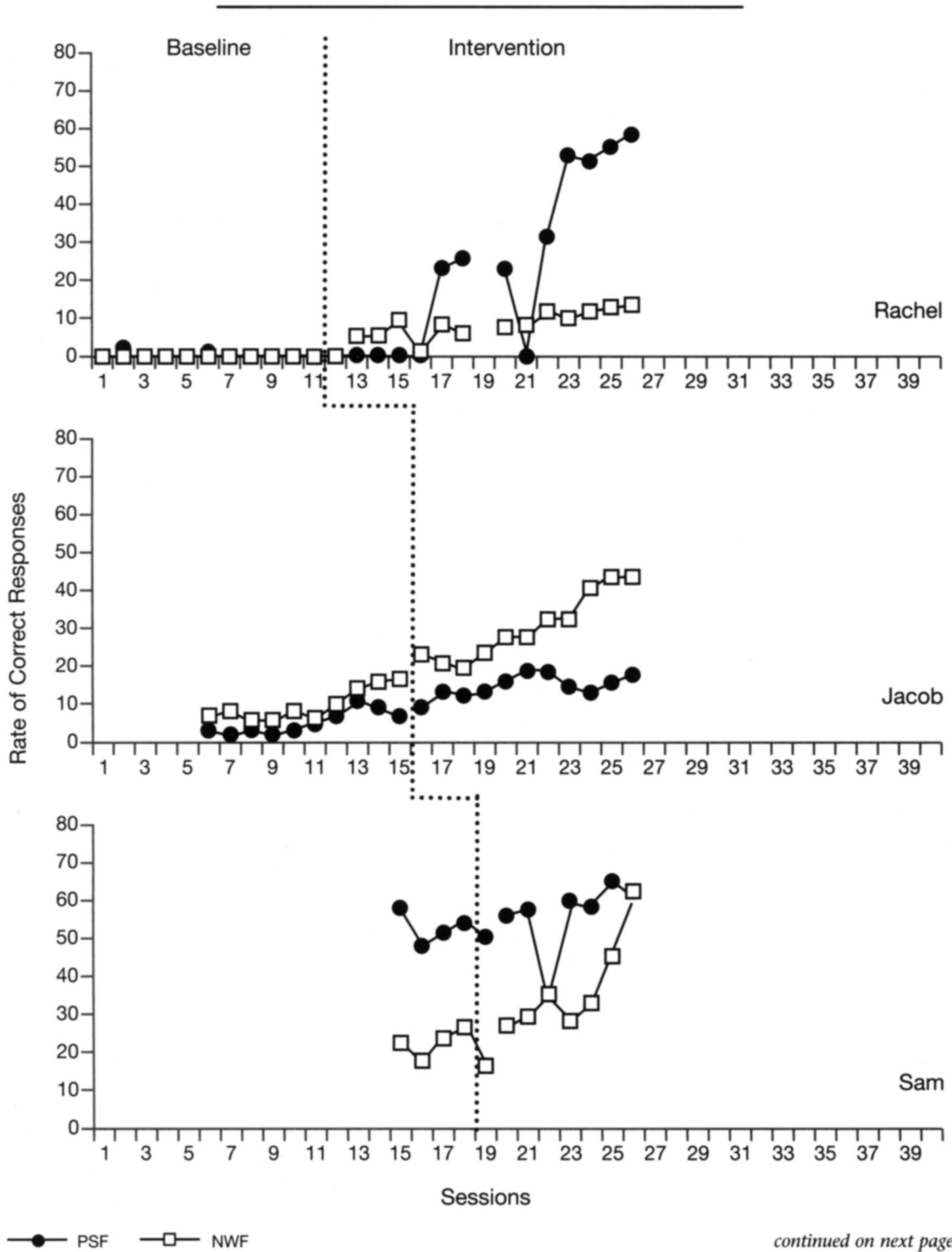


**Figure 1.** Visual representation of baseline and intervention data on dependent measure for target students.



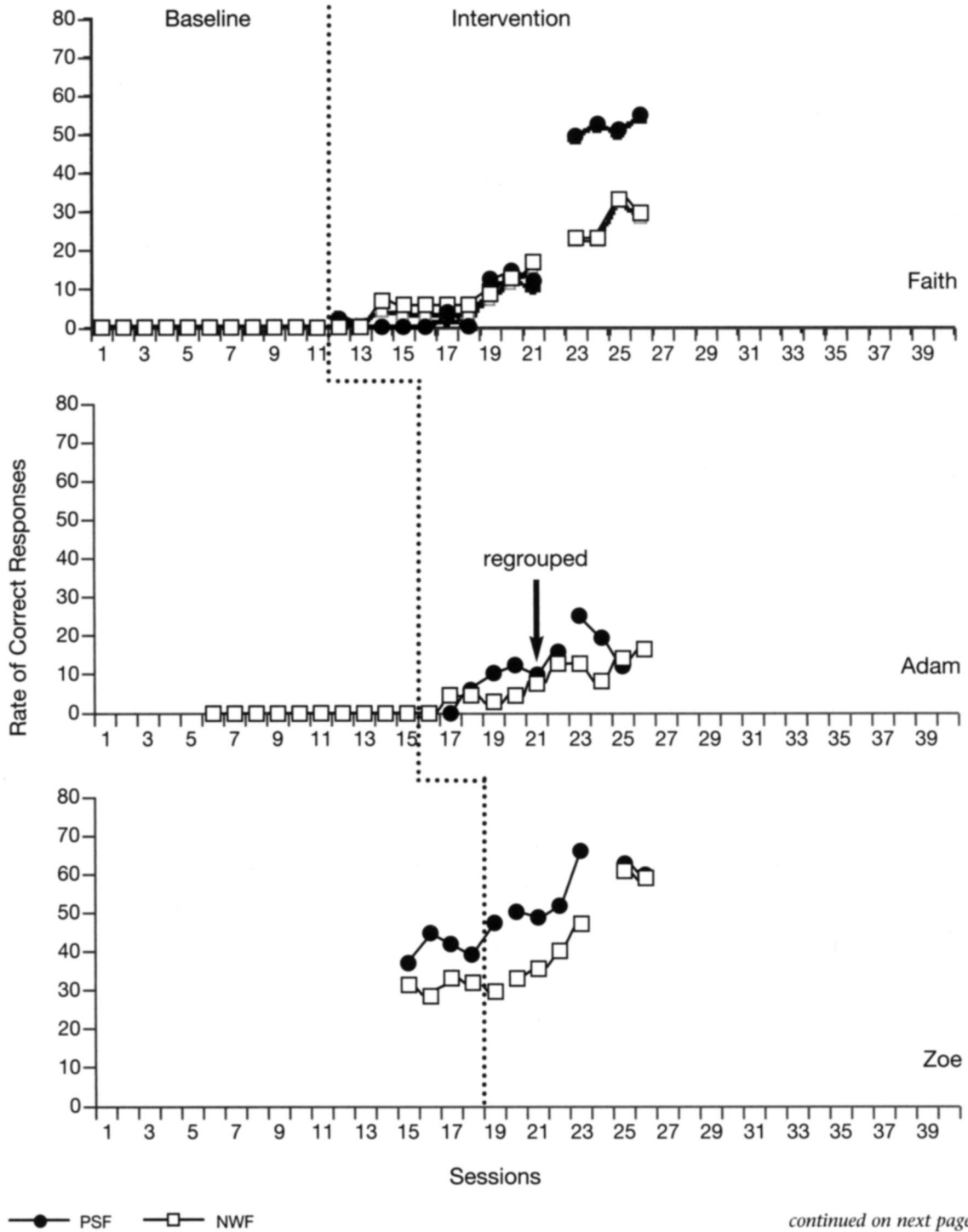
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**Figure 1 continued.** Visual representation of baseline and intervention data on dependent measure for target students.

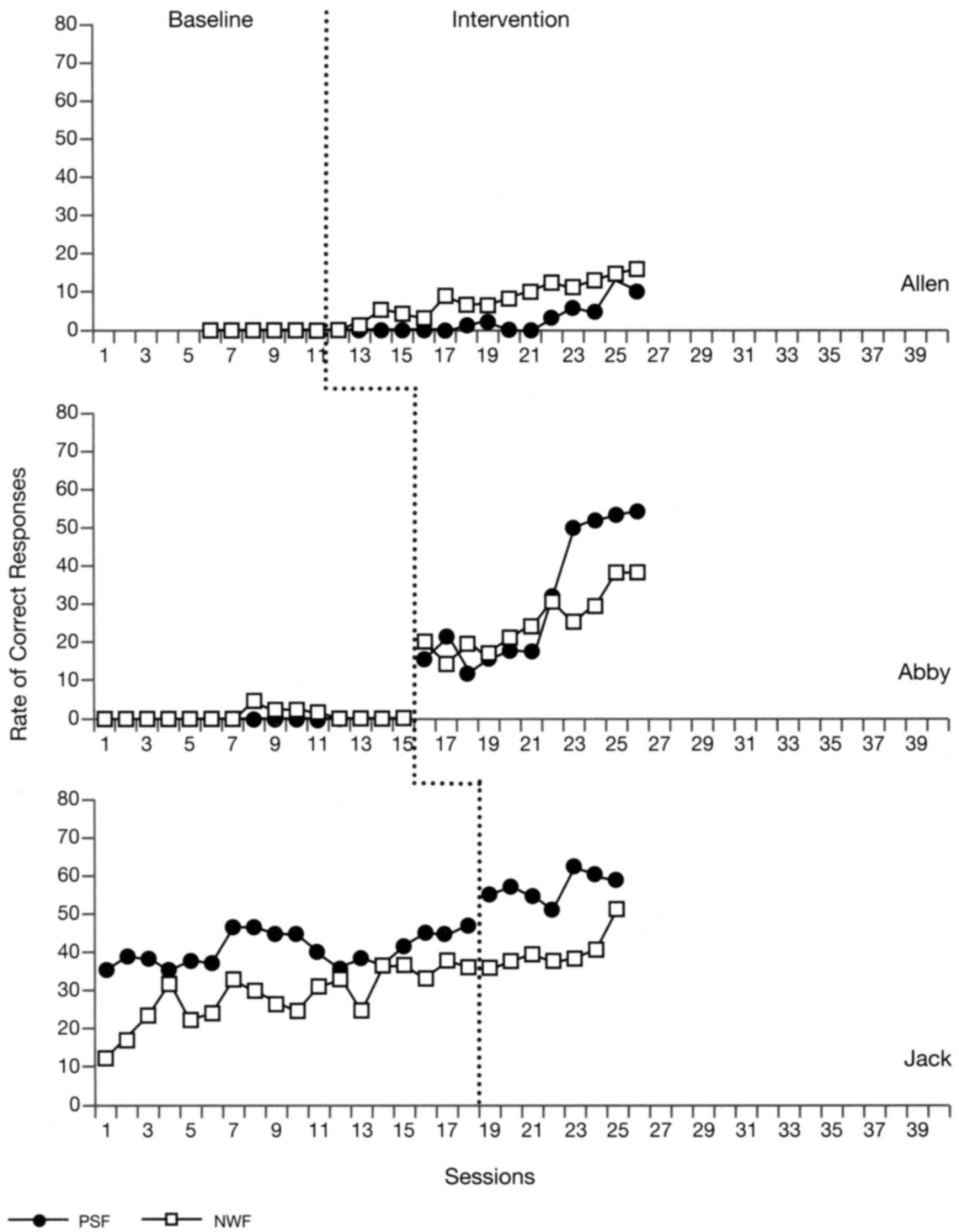


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**Figure 1 continued.** Visual representation of baseline and intervention data on dependent measure for target students.



**Figure 1 continued.** Visual representation of baseline and intervention data on dependent measure for target students.





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responding during baseline for groups 1 and 2 suggests that there was no learning of the target skills until intervention. Group 3 demonstrated more variability, but still the students did not evidence accelerated growth until intervention. The performance pattern on NWF paralleled that of PSF for most children with a few exceptions. Rachel, for example, showed improvement on NWF compared to baseline, but throughout the study, her NWF responses remained at low levels, substantially below her PSF performance. On the DIBELS assessment, Rachel achieved the status of “established” on the PSF measure but remained in the high-risk category for NWF.

The reason why Rachel showed a greater discrepancy between these two skills than any of her peers is not clear. One observation was that when requested to read the nonsense words in the NWF assessment, Rachel consistently attempted to read the words from right to left instead of from left to right, causing her to fail these items. Another possible interpretation is that the NWF task is more difficult than the PSF, because most of the children performed slightly better on PSF than NWF. However, several children (i.e., Jacob, Jen, and Sam) reversed this pattern and did better on NWF than PSF.

Comparisons between mean baseline and mean intervention scores indicate that all target students made gains in nonsense word fluency during intervention, supporting the position that the ERI intervention was effective in increasing students’ letter sound correspondence skills as measured by the DIBELS. Nevertheless, we cannot rule out the importance of language proficiency and the need to conduct more in-depth evaluations and language interventions to achieve desired gains with low-responding ELLs such as Rachel, Allen, Aaron, and Adam.

Because interventions for all of the students did not begin until either shortly before or shortly after the winter DIBELS benchmark assessments, decisions about moving the students to more intensive instructional groups were not made until March placement tests from the ERI had been readministered. It is important to note that student performance was constantly monitored, and it was this constant monitoring and subsequent instructional adjustments that enabled several of the children to achieve the desired status.

As part of a larger study, the researchers noted that although school personnel administered the DIBELS dutifully to all the students in kindergarten and first grade, steps were not taken to intensify instruction for students who fell behind. An example involved Jack, who was the only first-grade student in the study. Fall benchmarks placed Jack within the “strategic” category, indicating that he needed additional instruction. Although he made progress on the winter benchmarks

on both PSF and NWF, he was now being assessed on ORF. Here he failed to meet the midyear goal and regressed to the “intensive” category. Jack eventually received intervention from this study, but it was too little too late. He participated in only 11 out of 12 instructional sessions delivered twice a week over a six-week period. As a first grader, Jack did less well than some of his kindergarten peers on some of the DIBELS and WJ-III assessments. Although he definitely improved, he would likely have made considerably more progress if he had received secondary interventions beginning in the fall and continuing throughout the school year.

Kindergarten students who failed to elevate their instructional recommendation levels (i.e., Rachel, Allen, Aaron, and Adam) might be labeled treatment resisters, who will need continued intensive instruction at either secondary or tertiary levels. The benefits of this intervention are obvious in that these youngsters were responding at zero levels until instruction began. Rachel and Adam showed more promise with their modest to dramatic increases in PSF, suggesting that continued supplementary intensive instruction may enable these youngsters to remain in classrooms with their more skilled peers.

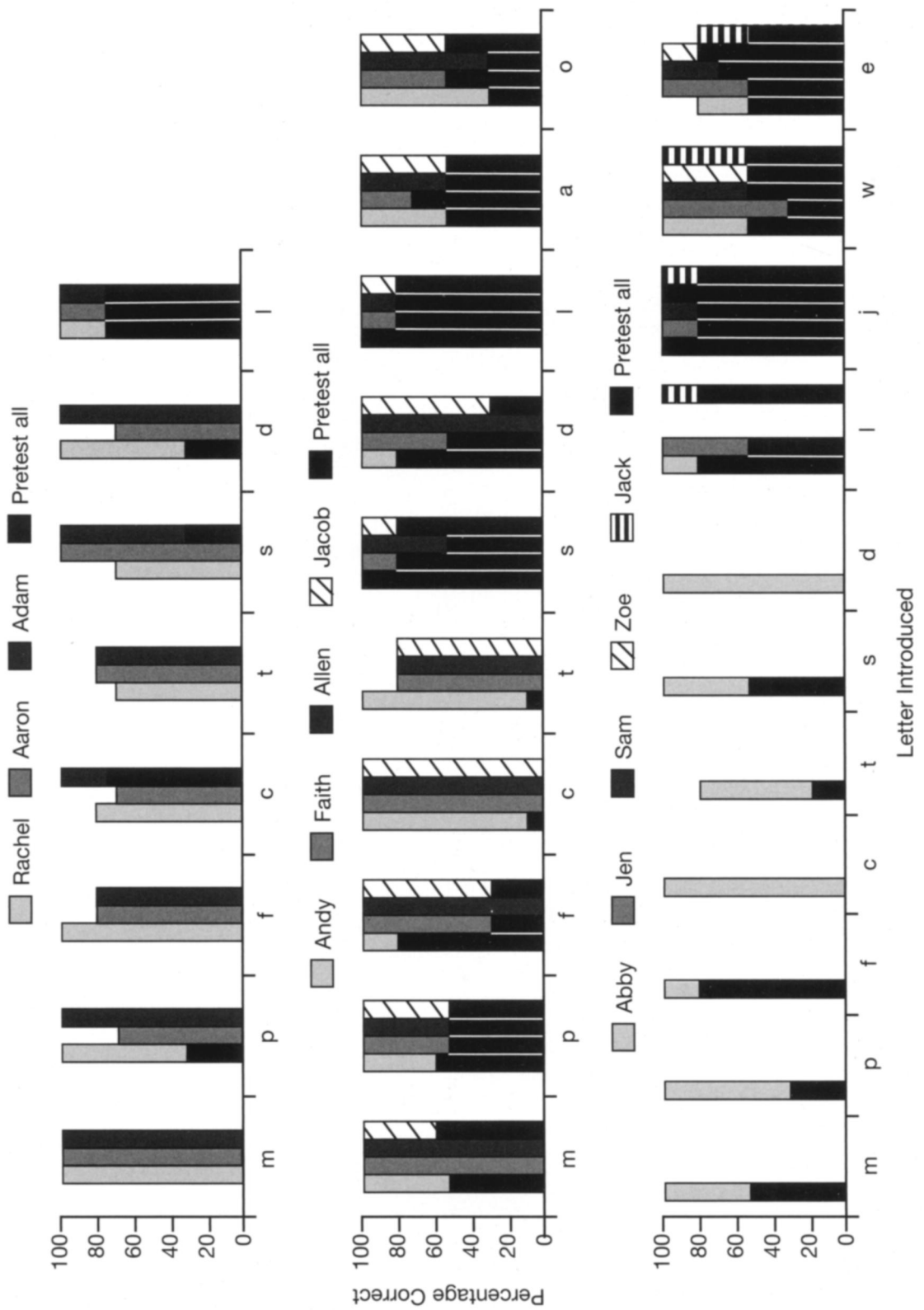
Consistent with an RTI approach to early intervention, the extremely low levels of responding by Allen and Aaron indicate the possibility of some type of disability and the eventual need for corresponding intervention. Because both boys were designated as beginners in the English language, the role of language is critical in learning these skills. Beyond the instructional accommodations made in this study, as suggested by the NLP (August & Shanahan, 2006), it may be necessary to pay more attention to their native language as well as English language development.

The brief time period of this intervention (12 to 50 instructional sessions) rules out conclusions about the prognosis of any of the students except to note the value of the intervention for all students. It is possible that student results would have been more robust if the study had started earlier in the school year, providing students with six to eight months of intervention instead of only three and a half months. Thus, studies by Vaughn et al. (2005) and Simmons, Kame’enui, Stoolmiller, Coyne, and Harn (2003) underscore the need for six to eight months of intervention.

#### **Standardized Instruments and CBAs**

The findings from the curriculum-based assessments and the WJ-III parallel and reinforce the DIBELS results. That is, the lower performing students made more gains on all measures than their higher performing peers. Whether this is because the lower performing students received more instruction or because of a ceiling effect

Figure 2. Pre- and postcurriculum-based assessments for letters introduced.



for the more skilled students is not easily discerned. We believe both factors were operating. For example, the CBAs on letter sounds was a finite measure, creating a ceiling effect for the more competent students in group 3 who already knew most of these sounds. In contrast, the relatively lower gains on the WJ-III might be attributed to the far fewer instructional sessions provided to students in group 3 compared to those in groups 1 and 2.

### Limitations

The intervention had positive effects on the prereading and reading skills of the 12 students in this study. Nevertheless, limitations pertaining to quantity of instruction and language need to be noted.

The ERI is designed to be a 30-minute supplemental instructional program administered daily. However, school requirements and scheduling conflicts restricted students in groups 1 and 2 to approximately 20 minutes

**Table 3**  
*Standardized Results of WJ-III*

Student	RS <sup>1</sup>	Letter-Word Identification					Word Attack			
		Pretest SS <sup>2</sup>	Class <sup>3</sup>	RS	Posttest SS	Class	Pretest RS	GE <sup>4</sup>	Posttest RS	GE
Andy	10	99-96	Average	27	113-117	High average	1	<K.0	7	1.9
Rachel	2	66-76	Very low	11	75-85	Low average	0	<K.0	2	K.2
Faith	2	66-76	Very low	13	81-91	Low average	0	<K.0	4	1.4
Allen	0	52-66	Very low	19	101-105	Average	0	<K.0	3	1.0
Aaron	2	66-76	Very low	9	70-79	Low	0	<K.0	1	<K.0
Jacob	18	108-112	High average	22	105-110	Average	3	1.0	8	2.0
Adam	3	73-81	Low	14	86-95	Low average	0	<K.0	3	1.0
Abby	13	88-102	Average	16	92-101	Average	3	1.0	7	1.9
Zoe	22	114-117	High average	29	115-120	High average	7	1.9	12	2.4
Jen	17	106-110	Average	25	110-114	High average	5	1.6	8	2.0
Sam	25	118-121	Superior	25	110-114	High average	9	2.1	9	2.1
Jack	12	66-75	Low	24	88-94	Average	6	1.8	8	2.0

<sup>1</sup>RS = Raw score; <sup>2</sup>SS = Standard scores (only available for LWID at kindergarten level); <sup>3</sup>Class = Classification that is correlated with standard scores; <sup>4</sup>GE = Grade-equivalent score.

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of instruction 4 days a week for 15 and 11 weeks, respectively, whereas students in group 3 received approximately 20 minutes of instruction twice a week for 7 weeks. The school held the researcher strictly to the time limit so that unfinished lessons had to be completed the following session, further reducing the number of skills that were taught. As a result, the students did not receive the requisite 30 minutes of daily instruction over a period of at least six to eight months.

Another obvious limitation was language. The children were taught and assessed in a language in which they were not yet proficient. Further, the researchers did not assess language proficiency in both English and the native language (e.g., assessment resources for Somalia language proficiency were not readily available). However, the students were assessed by the school district in English according to state and local guidelines, as noted earlier, and the researchers obtained informal assessments of the students' levels of proficiency as given in Table 1. Although the role of language under these conditions, including the validity of ELL language assessments (MacSwan & Rolstad, 2006), are a point of important consideration, overall, the findings of this study are consistent with other research showing that ELLs can be taught in English.

A final issue pertains to instructional delivery. A master's-level graduate student (experimenter) rather than personnel within the school provided the intervention. Although the experimenter was a licensed and highly skilled early childhood teacher with four years' experience, the credibility of the instructional interventions are enhanced if provided by school personnel. Nevertheless, this is a supplementary curriculum and clinical personnel are intended to deliver this instruction.

### **Implications for Practice**

Considering the pressure of the federal requirements outlined in the No Child Left Behind Act as well as the growing population of minorities in our schools, it is imperative that the needs of ELLs with academic risk be addressed. Losen and Orfield (2002) noted a tendency toward overrepresentation of ethnic minorities in some categories of disability and underrepresentation in others. A pressing concern is that ELLs are underidentified when schools incorrectly attribute early learning difficulties to second-language learning or economic status.

There is still much deliberation among researchers on how ELLs can be accurately identified for learning disabilities, and in particular reading disabilities (Gerber & Durgunoglu, 2004). Findings from this study support the value of secondary interventions of explicit, intensive, and systematic instruction for ELLs to prevent and address reading difficulties. Without such instruction,

the literacy deficits of students with such risk markers, especially ELLs, are likely to persist and become increasingly resistant to intervention.

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