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Reading Interventions for Students With Learning Disabilities in the Upper Elementary Grades

Jeanne Wanzek
Shawn C. Kent
Florida State University

For students with learning disabilities, the upper elementary grades may represent a unique opportunity to provide successful remediation for lessening a reading difficulty and preventing students with learning disabilities from falling behind in other content areas. This article discusses effective reading interventions for students with learning disabilities in fourth and fifth grades. First, we review the research base on reading interventions at these grade levels in terms of content and context. Next, practical recommendations for practitioners emanating from the research are discussed. The article concludes with a brief discussion on limitations of the extant literature and suggestions for future research.

Keywords: reading instruction, learning disabilities, upper elementary

In general education classrooms, the upper elementary grades often represent a key transition period in reading instruction with the "learning to read" stage fading and "reading to learn" coming into focus. For students with learning disabilities (LD) in reading who are often still learning to read, this transition away from beginning reading instruction places increased emphasis on the importance of their special education services for providing effective interventions to assist them in acquiring necessary reading skills. Nationally, the number of students identified with LD increases by approximately 37% in the upper elementary grades, and students with reading disabilities make up the largest percentage of students in the LD category (Fletcher, Lyon, Fuchs, & Barnes, 2007; U.S. Department of Education, 2010). Thus, implementation of effective reading interventions in the upper elementary grades is of high priority to educators in special education.

Although many students with LD in the upper elementary grades can demonstrate continued difficulties in beginning reading skills such as decoding, word recognition, or fluency, simply applying beginning reading interventions designed for students in K-3 may be inappropriate. Students in the upper elementary grades have most often received this beginning reading instruction in K-3 and still continue to struggle, suggesting different types of intervention may be necessary to increase learning. In addition, many students who continue to struggle in the upper elementary grades are much further behind in their reading skills in relation to grade level expectations than students in the earliest grades, and thus different interventions may be needed to allow for more accelerated learning. With this in mind, the research on upper elementary reading interventions has been reviewed along with research at the middle and high school grade levels more frequently than it has been included in reviews of the early elementary grades (e.g., Kamil et al., 2008; Scammacca et al., 2007; Torgesen et al., 2007). However, these research reviews have included only some

studies of reading interventions for struggling students, specifically for students in the upper elementary grades. The upper elementary grades are distinctive in that student instructional needs related to literacy may have more in common with secondary students, but the interventions are implemented in an elementary setting and context. Thus, an examination of the research on reading interventions for students with LD in the upper elementary grades is germane. Although fourth or fifth grade may be too late to prevent a reading difficulty, these grades could represent a unique opportunity to provide successful remediation for lessening a reading difficulty and preventing students with LD from falling behind in other content areas and experiencing academic difficulties throughout school and into adolescence (Francis, Shaywitz, Stuebing, Shaywitz, & Fletcher, 1996).

We recently conducted a synthesis to disaggegrate the findings of research on reading interventions at the upper elementary level for students with reading difficulties. The synthesis included several studies that were not included in the previous reviews of adolescent literacy (Wanzek, Wexler, Vaughn, & Ciullo, 2010). The synthesis suggested positive growth occurred for students with reading difficulties in the upper elementary grades who participated in supplemental reading interventions (Wanzek et al., 2010). High effects have been noted for interventions focusing on comprehension strategies, while small to moderate effects were found for interventions focusing on word recognition and decoding instruction. However, the effects of reading interventions for students with LD have not been disaggregated.

In this paper, we take a closer look at the literature examining reading interventions, specifically for students with LD in 4th and 5th grade. We investigate the content of these interventions, the contextual factors related to the interventions, and the practical considerations regarding content and context that emerge from our current knowledge. We also discuss current needs in the area of upper elementary interventions that could further assist educators in implementing effective reading interventions for students with LD.

What Does the Research Say About Components of Effective Interventions in the Upper Elementary Grades for Students with LD?

We recently conducted a synthesis of the research on reading interventions for students with reading difficulties in 4th-5th grade, locating 24 studies published since 1988 (Wanzek et al., 2010). Sixteen of the studies (presented in 14 published articles) in the original synthesis examined interventions for students identified with LD. In an updated search, we found no additional studies of school-based reading interventions for students with LD in the upper elementary grades since the original search. Thus far, all but one of the published studies have examined interventions with instruction in a single reading component (e.g., fluency). We review the content of these interventions and their findings below.

Word Recognition Interventions

There have been 8 studies examining interventions with a focus on improving word recognition abilities of students with LD in the upper elementary grades (Butler, 1999; Das, Mishra, & Pool, 1995 (Study 1 and 2); Das-Smaal, Klapwijk, & Leij, 1996; Ferkis, Belfiore, & Skinner, 1997 (Study 1 and 2); Gillon & Dodd, 1997

(Exp. 2); Torgesen et al., 2001). In each of the studies, interventions—emphasizing phonics and decoding skills, including multiletter units, sight word instruction, and ample practice opportunities for reading words with the learned skills—yielded positive outcomes for students with LD who participated in the intervention. Students increased their decoding and/or ability to read words in all studies. In 3 studies, the group of students who participated in the intervention (treatment) were compared with a group of students with LD who did not participate in the intervention (comparison), and the treatment groups outperformed the comparison groups at posttest on measures of decoding, word reading, and speed of word reading.

One study (Torgesen et al., 2001) compared two types of explicit instruction in word-level skills. One of the interventions emphasized phoneme awareness: spelling and reading of individual words with self-monitoring and self-correcting techniques incorporated with a small amount of time (5%) spent on applying word reading skills to reading decodable text. The other intervention emphasized sight word acquisition through reading and writing activities. About half of the instructional time was spent on application of these word-level skills to reading text from trade books or basals as well as writing activities that included connected text. Phonemic decoding and spelling knowledge were included in the second intervention with less emphasis than the first intervention (about 20% of intervention time on phonics minilessons). Students with LD participating in either of these interventions made substantial gains in word decoding, reading, and comprehension skills. There were few differences between the 2 interventions in student outcomes, but students participating in the intervention focused on phoneme awareness and individual word reading did perform better at posttest on decoding, accuracy of oral reading, and fluency. Overall, each of the studies examining word recognition interventions for students with LD in the upper elementary grades indicate these students can benefit from continued instruction in word decoding and sight word instruction. The findings from the Torgesen study also indicated many students were able to reach standard scores above 90 on measures of decoding and comprehension, suggesting students were closing the gap to reach grade level expectations (Torgesen et al.).

Fluency Interventions

Three studies have examined fluency-oriented interventions for students with LD with mixed results in comparison to students who did not receive the intervention (Daly & Martens, 1994; Mathes & Fuchs, 1993; O'Connor, White, & Swanson, 2007). In two of the studies (Mathes & Fuchs, 1993; O'Connor et al., 2007), an intervention focusing on repeated reading to improve fluency was compared with an intervention of continuous/sustained reading provided for the same amount of instructional time. Both interventions were also compared to a group of students who did not receive a fluency intervention. Mathes and Fuchs implemented the fluency intervention in peer-mediated groups while O'Connor and colleagues provided the intervention to students 1:1 with an adult. In the peer-mediated version, the sustained reading group outperformed the students who did not participate in intervention on fluency outcomes, but not on comprehension outcomes. No differences in outcomes were found between the repeated reading and continuous/sustained reading groups on any measure. In contrast, O'Connor and colleagues reported moderate to large

effects on posttest measures of decoding, word reading, fluency, and comprehension for students with LD who participated in either of the fluency interventions when compared to students with LD who did not participate in a fluency intervention. The LD sample was too small for statistical significance tests, but the students who participated in the repeated reading condition appeared to have higher posttest outcomes on measures of decoding, word reading, and fluency. However, when general education students with reading difficulties were included in the sample, no statistical differences were noted between the repeated reading and continuous reading conditions.

In all 3 fluency intervention studies, increasing the time students were reading text appeared to improve word reading and fluency for students with LD. Only one study (O'Connor et al., 2007) found students also improved comprehension outcomes following fluency interventions. The mean comprehension levels were more than 1 standard deviation below the norm at pretest (standard score of approximately 83) and within grade level expectations at posttest with mean standard scores above 90, suggesting substantial comprehension improvements following intervention.

Vocabulary Interventions

One study has examined vocabulary instruction in an intervention for students with LD in the upper elementary grades (Xin & Reith, 2001). In this study, 30 new vocabulary words related to a unit about earthquakes were taught in a video condition or a nonvideo condition. Students under either of these conditions learned the same words and received instruction in definitions, questioning about word meaning, and writing sentences with the words. However, in the video condition, students watched video clips about the content while in the nonvideo condition, text was used instead of the video to facilitate vocabulary knowledge. Students in the video instruction group learned more target word meanings than students in the nonvideo condition. There were no differences between the groups in the comprehension of the material learned.

Despite the fact that students in the video condition outperformed students in non-video condition, the mean score on the 2 posttests of vocabulary word learning demonstrated students with LD in the video group learned less than 50% of the words. Thus, there appears to be continued room for improvement in techniques for teaching students with LD new vocabulary.

Comprehension Interventions

Three studies have examined reading interventions at the upper elementary level for students with LD that focused on comprehension skills or strategies (Lederer, 2000; Miranda, Villaescusa, & Vidal-Abarca, 1997; Taylor, Alber, & Walker, 2002). Lederer examined the reciprocal teaching intervention providing instruction in comprehension strategies and self-monitoring with students reading text with strategies for questioning, summarizing, predicting, and clarifying. Students with LD who participated in the intervention outperformed students with LD who did not participate in the intervention on a measure of summary composition. Students who participated in the intervention performed similarly to students who did not participate in the intervention on measures of question answering and question generation. Miranda and colleagues also found positive effects for including self-regulation strategies in the intervention. High effects were noted in this intervention that included

self-instruction techniques for understanding text including teaching students to activate knowledge, preview, question, clarify, and map while reading. Students who participated in the intervention and also received positive attribution training also performed better than students who did not receive the intervention. Both of these interventions—self-instruction and self-instruction plus attribution training—yielded very large effects for students' ability to recall information, identify main idea, and complete cloze sentences on researcher-developed posttest measures.

A third study examined 2 students with LD whose scores were compared prior to intervention, during a story structure and story mapping intervention, and during a self-questioning intervention (Taylor et al. 2002). The students performed better when answering questions related to the text after instruction in either the story structure or self-questioning techniques.

It should be noted that for all of the studies, the effects of comprehension interventions are based on student outcomes on assessments developed by researchers and designed to measure the specific content learned in the intervention. Thus, the reliability and validity of the data in regards to students' general comprehension outcomes is unknown. There is also no indication of whether these student gains were meaningful in relation to grade-level expectations for reading achievement.

Multi-Component Interventions

Surprisingly, only one study has considered the effects of a multi-component intervention specifically for students with LD in the upper elementary grades (O'Connor et al., 2002). Although information on individual strategies that hold promise in a particular component of reading is important for informing practice, educators are often faced with students who have multiple needs in reading, particularly as they enter the upper grades. Thus, information on effective and efficient interventions that address multiple areas of reading is paramount. It is unfortunate that there is limited research in this area to inform practice; however, the study by O'Connor and colleagues demonstrates the promise and potential for implementing multi-component reading interventions for students with LD in the upper elementary grades. In this study, large effects were found for students with LD who participated in an intervention incorporating explicit instruction in phonemic awareness (blending and segmenting), phonics, and word analysis including syllable patterns, text reading, fluency-building activities, spelling, and comprehension strategies when compared with students with LD who did not participate in the intervention. In addition, some students participated in the intervention with text that was matched to their reading level while other students participated in the intervention with text from the general class materials for their grade level. For students with LD who began the intervention with poor fluency (all but 2 students), outcomes were significantly higher on word reading, decoding, and fluency in the intervention that used text matched to their reading level. This finding seems to be specific to students with particularly poor fluency, as the larger sample including students in general education who had reading difficulties (but were higher on fluency at pretest) demonstrated no differences in outcomes whether reading level matched text or grade-level text was utilized. Following intervention, students with LD in both treatments obtained mean standard scores of 88-89 on a passage comprehension measure. However, mean flu-

ency rates for students in these treatment groups ranged from 34-44 words correct per minute, significantly below grade level expectations.

What Does the Research Say About the Context of Effective Interventions in the Upper Elementary Grades for Students With LD?

In addition to the content of instruction, school personnel are often charged with determining the most effective and efficient context of the intervention implementation. Decisions—such as amount of intervention (dosage), instructional group size, and intervention implementer—provide context for the intervention and the resulting outcomes. Thus, we further examined the research on upper elementary interventions for students with LD to summarize the findings in relation to these contextual factors.

Dosage

Of the 13 studies providing enough information to determine dosage, four of the upper elementary reading interventions were implemented for 10 hours or less (Butler, 1999; Das-Smaal et al., 1996; Taylor et al., 2002; Xin & Reith, 2001). Students in seven of the studies received 10-20 hrs. of intervention (Das et al., 1995 (Study 1 and 2); Gillon & Dodd, 1997; Lederer, 2000; Mathes & Fuchs, 1993; Miranda et al., 1997; O'Connor et al., 2007), and two studies implemented interventions for more than 20 hours (Torgesen et al., 2001; O'Connor et al, 2002). Overall, the effects of intervention increased as the amount of intervention increased. However, only 2 studies examined intervention above 20 hours so there is limited evidence for these higher dosage interventions.

Grouping

Of the thirteen studies reporting instructional group size, seven of the studies used 1:1 instruction. Overall, high effects were found for intervention implementation in 1:1 instruction. Only one article (reporting on 2 studies) discussed intervention implementation with a small group (Das et al., 1995), so it is not possible to examine small group as a possible moderator of intervention or whether effects are similar to studies that implemented 1:1 instruction. Three studies (Butler, 1999; Lederer, 2000; Mathes & Fuchs, 1993) examined interventions using peer-tutoring or collaborative student groups with positive outcomes that were on average lower than the effects of the interventions implemented with 1:1 instruction. One study also examined an instructional group of 10 students (Miranda et al., 1997) and found high effects for students receiving the intervention in comparison to students who did not receive the intervention. Again, because of a lack of comparative studies it is not possible to accurately discuss the potential of this larger group size.

Implementer

The studies examining upper elementary reading interventions for students with LD used researchers (10 studies) or teachers (6 studies) for implementation. Implementation of interventions by other school personnel has not been examined in this research. Overall, effects of interventions were higher when researchers implemented the intervention. It may be that researchers are more able than teachers to

have (1) additional training in relation to the intervention, (2) fewer time constraints in addition to implementing the intervention, (3) a lower student caseload overall, or (4) other factors that may affect intervention implementation or student outcomes. Nevertheless, intervention implementation by teachers in the research resulted in positive effects for students across the word recognition, fluency, vocabulary, and comprehension interventions.

Bridging Research and Practice

There are some practical recommendations regarding the content and context of interventions we can establish from the research reviewed. In Table 1 we have summarized several recommendations related to the content of upper elementary reading interventions for students with LD that are based on the research reviewed. In addition, in Table 2 we provide recommendations for the context of these interventions based on the current research.

Table 1. ***Practical Recommendations From the Research Base for the Content of Upper Elementary Interventions for Students With LD***

1. Interventions targeting word recognition are necessary for some students with LD. Explicit instruction in phoneme awareness, decoding, and sight word practice has been associated with positive increases in student reading ability at this level.
2. Providing time for students with LD to practice oral reading of text is associated with positive word reading and fluency outcomes. Both repeated reading and continuous reading have yielded positive outcomes.
3. There is limited knowledge at the upper elementary level for vocabulary instruction. However, students with LD who receive instruction in new word meanings do learn additional words, and this aspect of intervention should not be ignored.
4. Teaching students strategies for self-regulation while reading text such as setting a purpose for reading ("What/why do I want to know about text?"), connecting current reading with background knowledge and prior experiences, questioning ("What is the author trying to convey?), and summarizing/paraphrasing a passage as they are reading ("What was the main idea?) helps students comprehend the instructional text.
5. Multi-component interventions allow instructors to address several areas in combination with one another, including word recognition, fluency, comprehension, and even spelling/writing. The current research is limited, but suggests large effects may be found when multiple areas of reading are included in instruction.

Table 2. ***Practical Recommendations from the Research Base for the Context of Upper Elementary Interventions for Students with LD***

1. Increasing the dosage (number of hours) of intervention may provide increased opportunities for student learning.
2. Instruction in many group sizes have yielded positive outcomes including 1:1, groups of 2, collaborative pairs/groups, and groups of 10. Most of the research has utilized 1:1 interventions and noted large effects for student reading ability.
3. Only teacher implementation of interventions has been examined. Thus far, there is no research on upper elementary interventions for students with LD with other school personnel (e.g., paraprofessionals).

In thinking about the content of reading intervention for upper elementary students with LD, there is research to suggest that positive outcomes occur for students when instruction is provided for the components of word recognition, fluency, vocabulary, or comprehension, including integration of self-regulation strategies (e.g., self-monitoring of the steps completed during reading). In fact, positive student outcomes have been noted when students with LD participate in reading interventions, even if only one skill or strategy is emphasized. However, educators are particularly interested in student response to intervention that suggests the gap between current levels and expected grade-level outcomes is closing with the ultimate goal that students will not require additional intervention. The research findings suggest that combining several components of instruction in one intervention may produce the highest outcomes for students towards this goal of obtaining expected grade-level outcomes. It is possible that focusing on more than one element of the reading process in intervention better addresses the needs of the students and allows integration of reading components in instruction and student application. Given the promising but, thus far, limited findings related to multi-component reading interventions in the upper elementary grades, we recommend assessing student needs in reading and considering interventions that integrate instruction across the reading areas warranted by the assessments.

Notably, there is evidence in the research that students with LD in 4th and 5th grade still benefit from word recognition instruction (including phoneme awareness, orthographic patterns, and syllable instruction) and oral reading of text to build fluency. In a recent study, we noted that more than 25% of the sample of students with reading difficulties entering fourth grade continued to demonstrate significant difficulties in word recognition in addition to comprehension difficulties (Wanzek & Roberts, in press), and the percentage of students with LD who struggle in this area may be even higher. Continued instruction in the area of phonics and word reading can be beneficial for these students, and the research suggests robust outcomes for students including accelerating learning enough to obtain expected grade-level outcomes and to demonstrate improvements in other reading areas of reading as well.

A variety of instructional contexts were noted in the current research on upper elementary reading interventions for students with LD. The majority of the research has been conducted with relatively small dosages (less than 20 hours of intervention). There is evidence in some studies that these small dosages were enough to bring some students up to expected grade-level outcomes, but there were also

many students who continued to demonstrate significant reading difficulties at the end of the intervention despite their making greater progress in relation to students who were not receiving the specified interventions. The two studies implementing more substantial doses of intervention ([32 hours], O'Connor et al., 2002; [66 hours], Torgesen et al., 2001) reported means on several outcome measures demonstrating that students achieved reading scores in the expected ranges for their age or grade level. These findings hold promise for the effectiveness of interventions provided for substantial periods of time. For students with significant needs, consideration should be given to providing these more intensive interventions.

The current research does not provide much variation in instructional group size to guide decision making. However, many studies examined 1:1 instruction and found positive outcomes. In terms of cost-benefit analysis, educators could benefit from more information in the research regarding small group instruction with this population of students.

Similarly, teacher implementation of interventions has been studied with positive effects, but there is no information on student outcomes when interventions are provided by other school personnel. Researcher implementation demonstrated the highest effects for implementation. Although it is not feasible for most schools to have researchers implement these interventions, an examination of factors that may be related to the higher researcher-implemented outcomes could assist schools in providing the context necessary for teachers to implement and achieve similar student outcomes.

Where Do We Go From Here?

As a field, we have scratched the surface on effective interventions for the upper elementary grades. There are several promising outcomes to guide current instruction, but more information is needed. Despite the wealth of accumulated knowledge in the area of prevention and early intervention for reading difficulties, there remains much to learn about helping students with LD whose significant reading difficulties persist in the upper elementary grades. As we have highlighted, the current research provides many promising avenues for intervention and offers preliminary evidence of effective practices. However, there is still much to consider to ensure the most effective remediation services can be provided.

In reviewing the literature on upper elementary interventions for students with LD we noted 5 areas of insufficient research:

- There have been a total of 10 experimental or quasi-experimental studies and 6 single- subject or single-group studies conducted for students with LD at the upper elementary level in the past 30 years. Future research at these grade levels is needed to better guide interventions for students with LD as they transition into the upper elementary grades.
- There is a lack of information regarding vocabulary intervention at the upper elementary level. Only one study implementing a vocabulary intervention was reported in the research.
- Effects of interventions examining higher level skills of vocabulary and comprehension have been investigated only by researcher-developed measures which may inflate the effects. In addition, these measures

prevent examination of student outcomes in relation to grade-level expectations.

- The highest effects were noted for a study implementing a multi-component intervention. This is a similar finding to a synthesis of reading interventions for students with reading difficulties (Wanzek et al., 2010). The potential value of multi-component interventions for upper elementary students can be confirmed only with additional research, but this appears to be a promising intervention course for students with reading difficulties that persist beyond third grade. The potential of these interventions suggests the need for additional research in the area of multi-component interventions at these grade levels.
- The majority of the interventions in the research provided low doses of intervention. Students with LD entering the upper elementary grades with significant reading difficulties may need more intensive interventions to reach meaningful and successful outcomes. Certainly, evidence from the secondary grades suggests that the amount of intervention needed to assist students with significant reading difficulties is much greater than 20 hours of instruction (e.g., Vaughn et al., in press). The two studies reviewed in this paper providing greater than 20 hours of intervention demonstrated strong potential for these interventions to assist students with LD in closing the gap to successful reading. Employing more intensive interventions prior to the secondary grades may be more efficient than waiting until middle or high school, but more research is needed on intensive interventions at this level to guide decision making.

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Author Note

Jeanne Wanzek, Florida Center for Reading Research and School of Teacher Education, Florida State University; Shawn C. Kent, Florida Center for Reading Research and School of Teacher Education, Florida State University.

Correspondence concerning this article should be addressed to Jeanne Wanzek, FCRR, Florida State University, 1107 W. Call St., P. O. Box 306-4304, Tallahassee, FL 32306. Email: jwanzek@fcrr.org.