



Published in final edited form as:

Learn Disabil Res Pract. 2014 May 1; 29(2): 46–53. doi:10.1111/ldrp.12031.

Intensive Interventions in Reading for Students with Reading Disabilities: Meaningful Impacts

Sharon Vaughn, Ph.D. and
The University of Texas at Austin

Jeanne Wanzek, Ph.D.
Florida State University

Abstract

We use three data sources to build a rationale for why intensive interventions are necessary for students with pervasive reading disabilities: current data on the performance of students with disabilities on reading achievement measures over time, observation studies on students with reading disabilities in general and special education classrooms, and findings from intensive intervention studies for students with reading disabilities. Results of these data sources indicate that students with disabilities are not making progress in reading at the same rate as students without disabilities, reading instruction for students with reading disabilities is comprised of excessive amounts of low level tasks, and findings from intensive intervention studies suggest positive impacts for students with reading disabilities. We argue that students with reading disabilities require ongoing intensive interventions that are likely to require schools to change the contexts and practices for these students.

More than two decades ago, Zigmond and colleagues asked two significant questions that remain of high importance:

- Are regular education classes equipped to accommodate students with learning disabilities? (Baker & Zigmond, 1990)
- Is the mainstream a more appropriate educational setting? (Zigmond & Baker, 1994)

We think these two questions are relevant particularly when considering whether students with reading disabilities are provided intensive reading interventions within this context. As Zigmond and colleagues noted, even when a good general education was afforded students with learning disabilities, these students were unlikely to be provided an appropriate special education or what we might call ‘intensive intervention’. Other researchers, who were documenting the extent to which instructional practices met the educational needs of students with learning disabilities, have raised similar concerns (e.g., Fuchs & Fuchs, 1994; Fuchs, Fuchs, & Stecker, 2010; Jenkins, Pious, & Jewell, 1990; McIntosh, Vaughn, Schumm, Haager, & Lee, 1993).

The purpose of this paper is to revisit, more than 20 years later, the questions about appropriate instructional practices for individuals with reading disabilities. We review findings from three sources to examine whether reading instruction is fulfilling the

instructional needs of many students with learning disabilities: (a) data demonstrating reading achievement trends for students with disabilities, (b) findings from observational studies of reading instruction for students in general and special education settings, and (c) findings from two syntheses on the impact of intensive interventions for students with reading disabilities. Based on these findings, we provide guidance for the types of services and instructional practices that are needed to adequately support the instructional needs of students with reading disabilities.

Reading Achievement Data for Students with Disabilities

We provide findings from the National Assessment of Educational Progress (NAEP) and findings from other large-scale studies as a data source for documenting a national trend in early reading for students with disabilities that is concerning. The NAEP provides a database from a representative sample of students with and without disabilities in the United States and their performance on a reading and math assessment. The NAEP scores reflect how well students can form a general understanding of the text, interpret it, make reader/text connections, and critically evaluate the text. Findings from this assessment allow us to track progress in reading over time and determine whether policies and practices are positively influencing reading achievement. The NAEP reading scores in fourth grade are of particular interest because they provide insight into how effectively early reading instruction is improving students' understanding of text.

Between 2002–2011, the mean NAEP fourth grade reading score for students without disabilities *increased* from approximately 220 to 225, whereas students with disabilities *declined* from 188 to approximately 186 (National Center on Education Statistics, 2011). Both the increases for students without disabilities and the decreases for students with disabilities were statistically significant. Thus, while students without disabilities are improving their reading performance, the performance of students with disabilities is declining. How do we explain the lack of progress of students with disabilities in reading? One possible explanation is that students with disabilities were not effectively accessing the enriching classroom instruction that was provided for students without disabilities to make significant increases during this same time period. Although the quality of reading instruction provided to the students with disabilities is difficult to determine, data do suggest students with disabilities are increasingly accessing instruction in the general education classroom.

The U.S. Department of Education, Office of Special Education Programs (U.S. Department of Education, Office of Special Education Programs, September, 2011), reports that in 2002, 50% of students with disabilities spent 80% or more of the school day in general education classrooms whereas by 2011 there was an increase to 60% of students with disabilities spending 80% or more of the school day in general education classrooms. Interpreting the NAEP data in light of the statistics on the increasing number of students with disabilities spending more than 80% of their time in general education settings is compelling. During the same time period when scores in reading for students with disabilities declined and reading scores for those without disabilities increased, students with disabilities were spending more, not less, time in general education classrooms.

Several examinations of large, longitudinal databases of reading achievement have also noted a lack of substantial growth over time for students with disabilities, despite their qualification for a special education. Hanushek, Kain, and Rivkin (1998) reported reading comprehension standard scores in fourth and fifth grade rose on average by a mere .02–.04 standard deviations in a school year for students with learning disabilities in special education. In addition, reading gains for students with learning disabilities have been consistently lower than gains seen over time for students without disabilities across grades on multiple measures, with an overall decelerating quadratic trend in achievement (Judge & Bell, 2011; Wei, Blackorby, & Schiller, 2011). Even when gains in reading achievement have been noted for students with disabilities, there has been little evidence these students are accelerating learning to meet grade level expectations even with years of special education services (Morgan, Farkas, & Wu, 2001; Wanzek, Al Otaiba, & Petscher, in press). In fact, Eckes and Swando (2009) noted the disability subgroup is the most common reason schools fail to make adequate yearly progress.

In summary, data from national studies provide a consistent message about the poor performance of individuals with disabilities in reading. Particularly concerning is the low growth rate in reading for students with disabilities. As a means of better understanding this low growth in reading, we use the following segments of this article to summarize research in two areas. First, we examine research from observation studies in reading related to individuals with disabilities in order to investigate the overall quality of instruction for these students. Second, we examine the effects of intensive intervention studies with these students to determine whether the provision of more intensive interventions might be associated with improved outcomes.

Observations of Reading Instruction in General and Special Education Settings

Since Delores Durkin's (1978–1979) classic article about what reading comprehension instruction looked like in classrooms, we have relied on classroom observations as a mechanism for influencing our understanding of how students are taught to read. As a testament to the influence of Durkin's article, Google Scholar documents that the article has been cited more than 1300 times. Findings revealed that teachers spent less than 1% time on reading comprehension (.63%), and 17.65% of the reading comprehension time (the largest amount) on asking assessment questions about what students read. Findings from this observation study had a large and lasting impact on reading instruction with an increased emphasis on reading comprehension research as well as reminders that asking students questions about what they read is different from providing instruction to improve students' understanding of what they read.

Relatedly, there have been several studies of reading instruction with students with disabilities in both general and special education settings that provide a context for the extent to which research-based practices are occurring in reading instruction. We summarize this research as a means of providing a better understanding of the quality of reading instruction for individuals with disabilities. We first examine a synthesis of observation studies of reading instruction with students with learning disabilities and emotional/

behavioral disorders (Vaughn et al., 2002). They reported findings from 16 published studies with 11 independent samples. We then supplement these findings with studies from the last decade that were not part of the 2002 review. The findings from these observation studies conducted over the past several decades might provide guidance about future practice and policy for reading instruction for students with disabilities. We organize the findings from these studies into several key themes: time for reading instruction, individual and group instruction, and quality of reading instruction.

Time engaged in reading

Observations across various settings (general education, special education, and/or remedial reading) revealed few differences in the amount of time spent on reading instruction (Vaughn et al., 2002). Of concern, was the amount of time students with disabilities were not participating in reading instruction because they were off task, out of the room, or waiting. “We observed students engaging in many nonreading activities throughout the day, even during times that were set aside for reading” (Leninhardt, Zimond, & Cooley, 1981, p. 357). Recent observation work conducted in kindergarten classrooms (Kent, Wanzek, & Al Otaiba, 2012) has documented continued concern in this area reporting, on average, 50% of the scheduled reading instructional block for general education reading instruction dedicated to non-literacy activities (e.g., transitioning, discipline, calendar, games or drawing/coloring without a specific literacy focus). Because time on task and academic engagement are two of the most reliable predictors of academic learning (Greenwood, Horton, & Utley, 2002; Stallings, 1980; Stallings, Johnson, & Goodman, 1986), it is of considerable concern that students in both special and general education settings are spending large amounts of time during reading instruction on non-literacy activities.

Individual and group instruction

Observational research findings were examined related to students’ participation in whole-class, small group, or individual reading instruction. Observations conducted prior to 1990 were associated with more small-group and individual instruction than those conducted after 1990 in both general and special education settings (Vaughn et al., 2002). Students with disabilities, when compared with students without disabilities, were receiving more individual instruction (Haynes & Jenkins, 1986; Olinger, 1987; Ysseldyke et al., 1984) – again with these findings occurring before 1990. Several of the synthesized studies reported special education classrooms where teachers were providing services to large groups of students with disabilities (5–19) in which whole class instruction prevailed and little individualized or differentiated instruction was observed (Vaughn et al., 2002). Whole class instruction also prevailed in a recent observation study of special education resource rooms, though class sizes were smaller (1–7 students) and individualized instruction was noted 23.7% of the time (Swanson & Vaughn, 2010). In recent years, the use of small groups for differentiating instruction in general education classrooms and interventions has again begun to increase (Chorzempa & Graham, 2006; Ford & Opitz, 2008; Swanson, Solis, Ciullo, & McKenna, 2012).

Prevailing practice through the years in grouping students with reading difficulties does not align well with research on effective instruction. Across subject areas in general education,

small groups of 3–4 students are associated with significantly higher effects than groups of 8–10 students, with the lowest achieving students benefitting the most (Lou et al., 1996). Similarly, the use of differentiated, small group instruction in general education is significantly related to higher student reading outcomes (Hong & Hong, 2009; Taylor, Pearson, Clark, & Walpole, 1999). Students with reading disabilities who are provided one-on-one intervention or intervention in very small groups (5 or fewer students per group) make greater gains than students provided reading instruction in large groups (Elbaum, Vaughn, Hughes, & Moody, 1999; Wanzek & Vaughn, 2007).

Quality of reading instruction

The quality of reading instruction in both general and special settings appears to be inadequate to meet the intensive instructional needs of students with reading disabilities. In the research synthesized by Vaughn et al. (2002) students with disabilities across educational settings spent very little time reading silently (6–10 minutes) and similarly low amounts of time reading aloud (3–13 minutes). Even in the most recent research, limited time with print continues to be an issue in general education classrooms for students with reading difficulties (Chard & Kammenui, 2000). Kent et al. (2012) reported students with reading difficulties were provided an average of 1 min of time for reading print (sounds, words, or text) during the 90 min general education reading instructional block. Examination of the experiences of students with reading difficulties in general education also revealed low levels of opportunity for active responding with and without print during the reading instructional block (4–5% of the instructional time) suggesting students with reading difficulties spent the large majority of time in general education instruction passively learning (Wanzek, Roberts, & Al Otaiba, 2013). In addition, there was no evidence of differentiation in engaging students in active responding based on student need (Wanzek, Roberts, et al., 2013).

Overall, the research suggests students also received little comprehension instruction and spent large amounts of time in both special and general education setting doing worksheets and independent seatwork. To illustrate, Haynes and Jenkins (1986) indicated that students spent about 52% of their time completing individual seatwork while they were in special education classes. Generally speaking, these studies revealed that both the quality and quantity of reading instruction was low. Recently, Swanson and Vaughn (2010) reported on a series of observations conducted in special education resource rooms for students with learning disabilities during reading. Teachers spent about the same amount of time on phonics and phonological awareness as they did on vocabulary and comprehension instruction. This seems reasonable since students with learning disabilities typically require both code (phonics) and meaning (comprehension) focused instruction. However, the most common comprehension instruction activities were asking students questions about what they read and independent work, suggesting little time on assisting students with improving student strategies for understanding what they read. The most consistent finding across observational studies of reading instruction is the range of quality regardless of whether the instruction occurs in special or general education settings.

Why are these observational studies relevant as we consider intensive interventions for students with reading disabilities? From our perspective, these observation studies establish a baseline for understanding the reading instruction provided to students with disabilities in special and general education settings. Findings from these observation studies lead us to conclude that many of the previous approaches for providing reading instruction for students with disabilities were inadequately intensive, lacking the specialized instruction that is associated with improved reading outcomes and aligned with students' academic needs. Students with reading disabilities were frequently taught in large groups, instruction was infrequently differentiated, opportunities for engagement in explicit reading instruction were low, and generally, students spent too much time in passive learning and/or doing worksheets and independent work that did not adequately provide the feedback needed. These findings were relatively consistent across special education and general education settings. Thus, neither large group resource room settings nor general education classroom settings consistently provided the intensive intervention required for students with reading disabilities.

Findings from Intensive Interventions for Students with Reading Disabilities

We interpret current reading achievement data as suggesting a high need for students with disabilities to receive intensive and ongoing interventions in reading to assure that they make adequate progress. Additionally, observational studies suggest that students with reading disabilities are often receiving inadequate instruction in reading in both general and special education settings. If students with disabilities are making inadequate progress in reading and observation studies indicate relatively weak reading instruction, it seems reasonable to ask whether there are studies of more intensive interventions with these students that suggest better outcomes are possible. With this in mind, we summarize the findings from intensive interventions for students with reading disabilities to determine the potential benefits of these types of interventions.

Wanzek and colleagues synthesized the effects of intensive interventions for students with reading disabilities for (Wanzek & Vaughn, 2007) and grades 4–12 (Wanzek, Vaughn, et al. 2013). Based on the information for intensive interventions that is most consistently reported, intensive intervention was defined by a criterion of 100 sessions (approximately 20 weeks of daily treatment) or more for students in grades K-3 (Wanzek & Vaughn, 2007), and a criterion of 75 sessions (approximately one semester of daily treatment) or more for students in grades 4–12 (Wanzek, Vaughn, et al., 2013). These syntheses provide findings for studies meeting criteria for all grades except grades 10–12 where there were no studies that met criteria. We examine the findings from these syntheses, by the features of interventions associated with positive effect sizes, including grade level of intervention, instructional group size, level of standardization, and intervention duration.

Grade level of intervention

A summary of the effect sizes by grade grouping for each of the critical outcome measures (i.e., comprehension, fluency, word reading and spelling) is provided in Table 1. As you can

see in Table 1, mean effect sizes for all outcomes were larger for studies conducted with students in the early elementary grades than for students in the upper grades. The largest mean effect size in grades 4–9 was for word reading (MES = 0.20), less than half the size of the word reading effects for the younger students (MES = 0.56). Reading comprehension, arguably the most important outcome for reading intervention, was more than five times larger for early elementary students (MES = 0.46) than for students in grades 4–9 (MES = 0.09). How do we interpret these sizeable differences in favor of intensive interventions with early elementary readers? One possible explanation is that younger students are more readily remediated and thus are more responsive to treatments. In fact, even within the early elementary grades higher effects were noted for students receiving intervention in grades K-1 than in grades 2–3. Relatedly, older students (grade 4 and above) may have more intractable reading disabilities and are thus less responsive to treatments. It could also be that reading and understanding text becomes considerably more complex in the upper grades, requiring students to increasingly rely on background and vocabulary knowledge for success, both of which are not easily remediated.

Instructional group size

To better understand these effects, we further examined the interventions for differences in instructional group size. At the elementary level, very few intensive intervention studies implemented interventions in small groups (2–4 students). Thus, within these intensive interventions, we were unable to examine the effects of interventions provided in large groups in relation to effects for interventions implemented in small groups. However, the studies with the largest group sizes (6–8 students) also had the lowest effects. In addition, interventions with one-on-one instruction had higher effects than studies with group instruction. These two trends suggest that reducing group size in early elementary interventions may be one way to increase the intensity of the intervention. At the secondary level, group size was not a statistically significant moderator of student reading outcomes when comparing studies implementing interventions in groups of one to five students to those with intervention group sizes of six students or more. This may be because the overall impact from interventions at the secondary level was low. Thus, reducing group size without other changes in intervention may be insufficient to substantially improve student outcomes in the older grades.

Level of standardization

At both the early elementary and upper grade levels, we sought to contrast standardized interventions (use of research-based instructional programs delivered in a specified, sequenced manner) with individualized interventions (designing and adjusting interventions individually, based on identified student difficulties and identified goals to address the difficulties); however, we were unable to locate any intensive, individualized interventions at the early elementary level, and only two studies examined these types of interventions at the secondary level. Thus, there is very little research related to individualized approaches to intervention. One study (Vaughn, Wexler, Roberts, et al., 2011) did directly compare standardized and individualized interventions and found no differences in student outcomes between the two interventions in the full sample of students with persistent reading

difficulties. Students identified with learning disabilities benefitted more from the standardized condition in relation to their word reading and reading comprehension.

Duration of intervention

For students with reading disabilities, sustained intervention and support may be paramount to their success. However, there are very few studies demonstrating the effects of reading interventions provided for more than one school year. We found two studies conducted with early elementary students that examined reading interventions provided for multiple years (Gunn, Biglan, Smolkowski, & Ary, 2000; Torgesen, Wagner, & Rashotte, 1997). Torgesen et al. began intervention in kindergarten, selecting 180 students at-risk for reading difficulties based on inadequate letter naming and phonemic awareness abilities. Students were randomly assigned to one of four study groups: phonological awareness training plus synthetic phonics, embedded/implicit phonological awareness and phonics, tutoring designed to align with and support the general education classroom instruction, or a no intervention control. The students in the three treatment groups received intervention 80 min per week for 2.5 years. Students in the phonological awareness training plus synthetic phonics group, the intervention with the most explicit instruction, had the highest reading outcomes at the end of first grade. In addition, the mean effect size of this intervention when compared to the no intervention control was .64 (range = .14–1.21) on measures of phonological awareness, decoding, word reading, spelling, and reading comprehension. Similarly, Gunn et al. reported a mean effect size of .39 (range = .27–.73) on measures of decoding, word reading, fluency, vocabulary, and comprehension for a 2-year explicit phonics intervention provided to 198 K-3 students identified as at-risk for reading difficulties.

Only one study conducted with older students examined reading intervention for more than one year (Vaughn, Wexler, Roberts, et al., 2011). In this study, seventh and eighth grade students who demonstrated insufficient response to a previous year of intervention were provided a second year of intervention and were compared to a group of students with reading difficulties receiving the reading interventions provided by the school for two years. In addition, as noted earlier, the students in the treatment group were randomly assigned during the second year of intervention to receive either a highly standardized intervention or a more individualized intervention. Both interventions were provided daily for 50 min in small groups of four to five students. Although no significant differences were noted in reading outcomes between standardized and individualized interventions, the students receiving these intensive treatments significantly outperformed the students in the comparison group in reading comprehension. The large effect sizes for comprehension (ES = .65–.70) were principally due to the comparison students falling further behind over time, demonstrating the need and importance of very intense and sustained interventions.

As a means of further assessing the cumulative effect of intervention over time, students with intractable reading disabilities were examined within the context of a three-year, response to intervention treatment for students who consistently displayed inadequate response to reading interventions. Findings revealed that on a standardized measure of reading comprehension, students with reading disabilities outperformed comparison students

with an effect size of 1.20 (Vaughn, Wexler, Leroux, et al., 2011). Interestingly, examining the standard scores of these students over time, individuals receiving the intervention had slopes that were greater than typical readers and students with reading disabilities not receiving the treatment (Roberts, Vaughn, Fletcher, Steubing, & Barth, 2013). Our conclusion, is that students with significant reading disabilities benefit from intensive interventions and that for many of these students, these interventions will be required for multiple years (Vaughn & Fletcher, 2012).

Overall, the research suggests positive outcomes for students with reading difficulties and disabilities participating in intensive interventions. Furthermore, the interventions demonstrated high feasibility due to school personnel implementing many of the treatments for all or part of the time the study was conducted. The interventions required specific training with feedback but appeared to be the types of interventions that schools could successfully implement. The mean effects from interventions for students with reading disabilities in older grades were significantly lower for all of the critical reading outcomes than were effects from interventions for younger students. It is conceivable that some might argue that these effects are small and perhaps even not meaningful. However, the few studies examining the cumulative effects of intensive interventions over multiple years provide evidence that sustained, intensive interventions may be a powerful tool for supporting students with reading disabilities. We interpret these data as suggesting that intensive interventions have meaningful and educationally practical impacts.

Dilemmas Demanding Consideration

These data tell a compelling story about the current direction of reading outcomes for students with disabilities, the promise of intensive treatments, and the need for consideration about how students with reading disabilities are currently provided reading instruction. We know that students with disabilities are not making the progress needed in reading. We also know from multiple observation studies that there are pervasive and consistent findings that inadequate instruction for students with reading disabilities prevails in both the general and special education settings across grades. This inadequate instruction is cumulative and by the time students are in secondary schools, effectively accessing curriculum demands is beyond the reach of many of these students. Furthermore, many of the current services provided for students with reading disabilities in special education settings are inadequate (Swanson & Vaughn, 2010).

If we agree that the promise for many students with reading disabilities is in the provision of appropriate, intensive interventions, there are several significant questions that require consideration:

1. Considering the questions posed earlier in this paper, do we think that the necessary intensive interventions can be provided within the context of the general education setting, and if so across what grade levels?
2. Do we have an adequate research base to direct the development and implementation of intensive interventions for students with reading disabilities?

3. Can we design and implement effective interventions within the constraints of schooling as it is now provided to the vast majority of students with reading disabilities?

Considering these questions requires a response with caveats. The first question requires us to take stock of the extant research on intensive interventions and determine whether we truly have adequate knowledge about what to do with students with intractable reading disabilities. The extant literature provides several directions related to the content and features of effective interventions for these students. We know that students with reading disabilities require intensive treatments over time, provided in small groups or 1:1, and addressing the critical elements of reading through explicit, systematic instruction and abundant opportunities for practice and feedback. We know less about how these intensive interventions might be constructed to meet the individual needs of students. Continued research in this area is vital.

The need to enhance the knowledge base is recognized by the Institute for Education Sciences, National Center on Special Education Research issuing a call for proposals addressing the specific instructional needs in both reading and math of students with learning disabilities (ies.ed.gov). The call for proposals was entitled, “Accelerating the Academic Achievement of Students with Learning Disabilities Research Initiative (A3 Initiative)” and was described as supporting the development and evaluation of interventions to accelerate the academic achievement of students with or at risk for learning disabilities in grades 3 through 8 particularly for students with the most intractable learning problems. The call for proposals indicated that the goal was to “build a science of intensive instruction”. The expectation is that findings from these studies as well as other intensive intervention studies will enhance our knowledge about how to provide appropriate treatments. Additionally, the Office of Special Education Programs has invested in an intensive intervention center as a mechanism for providing additional resources (<http://www.intensiveintervention.org/>).

The need for further research in meeting the needs of students with reading disabilities should not halt improvements in current intervention services provided to students with reading disabilities. We argue that the best treatment methods we currently have need to be provided to these students in practice, even while additional intervention knowledge is accrued. Delaying intensive and ongoing treatments to students with reading disabilities is neither appropriate nor allowable by law - as we are not providing them with an appropriate, individualized education.

Assuming that we continue to advance our knowledge about the types of interventions necessary to further the academic success of students with reading disabilities, how do we adjust the context of schooling to assure that these interventions are implemented? How do we establish an educational climate that supports the implementation of these intensive interventions at the same time responding to the appropriate goal of including students with disabilities in general education classrooms? Including students with disabilities in general education classrooms and providing access to general education curricula does not mean students with disabilities simply receiving the general education curriculum. The Individuals

with Disabilities Education Act (2004) requires that we provide students with specially designed instruction. It is this specially designed instruction that offers the supports needed for students to access the general education curriculum. For students with reading disabilities, we need to design appropriate instructional settings to assure that intensive reading treatments can be provided so that students with reading disabilities can better access the general education curriculum. This includes providing highly trained personnel (e.g., special education teachers) with high knowledge and clinical skills to deliver appropriate intensive interventions. These interventions require small group instruction that occurs daily for 45 min or more. In order for students with reading disabilities to make progress towards grade level expectations, they must accelerate their learning, and, for some students, the evidence suggests that this will require ongoing, sustained, and intensive treatments for several years (e.g., Vaughn, Wexler, Leroux, et al., 2011).

In 1996, Kauffman argued that “Compared to the general practice of education, special education is instruction that is more urgent, more intensive, more relentless, more precisely delivered, more highly structured and direct, and more carefully monitored for procedural fidelity and effects” (p. 206). Fifteen years later we would argue that we are not adequately fulfilling the purpose of special education for the majority of students with reading disabilities, yet the evidence suggests we have the knowledge to make improvements in ways that are feasible in our schooling system. A focus on intensive interventions for students with reading disabilities can maximize student potential and prepare them for success.

References

- Baker JM, Zigmond N. Are regular education classes equipped to accommodate students with learning disabilities. *Exceptional children*. 1990; 56:515–526. [PubMed: 2332023]
- Chard DJ, Kameenui EJ. Struggling first-grade readers: The frequency and progress of their reading. *The Journal of Special Education*. 2000; 34:28–38.10.1177/002246690003400103
- Chorzempa BF, Graham S. Primary grade teachers’ use of within-class ability grouping in reading. *Journal of Educational Psychology*. 2006; 98:529–541.
- Durkin D. What classroom observations reveal about reading comprehension instruction. *Reading Research Quarterly*. 1978–1979; 14:481–533.
- Eckes S, Swando J. Special education subgroups under NCLB: Issues to consider. *Teachers College Record*. 2009; 111:2479–2504.
- Elbaum B, Vaughn S, Hughes MT, Moody SW. How effective are one-to-one tutoring programs in reading for elementary students at-risk for reading failure? A meta-analysis of the intervention research. *Journal of Educational Psychology*. 2000; 92:605–619.
- Ford MP, Opitz MF. A national survey of guided reading practices: What we can learn from primary teachers. *Literacy Research and Instruction*. 2008; 47:309–331.
- Fuchs D, Fuchs LS, Stecker PM. The “blurring” of special education in a new continuum of general education placements and services. *Exceptional Children*. 2010; 76(3):301–323.
- Fuchs D, Fuchs L. Inclusive schools movement and the radicalization of special education reform. *Exceptional children*. 1994; 60:294–309.
- Greenwood CR, Horton BT, Utley CA. Academic engagement: Current perspectives on research and practice. *School Psychology Review*. 2002; 31:328–349.
- Gunn B, Biglan A, Smolkowski K, Ary D. The efficacy of supplemental instruction in decoding skills for Hispanic and Non-Hispanic students in early elementary school. *The Journal of Special Education*. 2000; 34:90–103.

- Hanushek EA, Kain JF, Rivkin SG. Does special education raise academic achievement for students with disabilities? National Bureau of Economic Research Working Paper No. 6690. 1998
- Haynes MC, Jenkins JR. Reading instruction in special education resource rooms. *American Educational Research Journal*. 1986; 23:161–190.10.3102/00028312023002161
- Hong G, Hong Y. Reading instruction time and homogenous grouping in kindergarten: An application of marginal mean weighting through stratification. *Educational Evaluation and Policy Analysis*. 2009; 31:54–81.
- Individuals with Disabilities Education Act, 20 U. S. C. 1400 et. seq. (2004).
- Jenkins JR, Pious CG, Jewell M. Special education and the regular education initiative: Basic assumptions. *Exceptional Children*. 1990; 56:479–491. [PubMed: 2185027]
- Judge S, Bell SM. Reading achievement trajectories for students with learning disabilities during the elementary years. *Reading and Writing Quarterly*. 2011; 27:153–178.10.1080/10573569.2011.532722
- Kauffman JM. The challenge of nihilism. *Teacher Education and Special Education*. 1996; 19:205–206.
- Kent SC, Wanzek J, Al Otaiba S. Print reading in general education kindergarten classrooms: What does it look like for students at-risk for reading difficulties? *Learning Disabilities Research & Practice*. 2012; 27:56–65. [PubMed: 23087545]
- Leinhardt G, Zigmond N, Cooley WW. Reading instruction and its effects. *American Educational Research Journal*. 1981; 18(3):343–361.
- Lou Y, Abrami PC, Spence JC, Poulsen C, Chambers B, d'Apollonia S. Within-class grouping: A meta-analysis. *Review of Educational Research*. 1996; 66:423–458.
- McIntosh R, Vaughn S, Schumm JS, Haager D, Lee O. Observations of students with learning disabilities in general education classrooms. *Exceptional Children*. 1993; 60:249–249.
- Morgan PL, Farkas G, Wu Q. Kindergarten children's growth trajectories in reading and mathematics: Who falls increasingly behind? *Journal of Learning Disabilities*. 2011; 44:472–488.10.1177/0022219411414010 [PubMed: 21856991]
- National Center for Education Statistics. National Assessment of Educational Progress (NAEP). 2011. Available at <http://nces.ed.gov/nationsreportcard/naepdata/dataset.aspx>
- Olinger, E. Unpublished doctoral dissertation. 1987. An observational study of reading instruction in self-contained classes for behaviorally disordered children. UMI Dissertation Services Order No. 8900556
- Roberts G, Vaughn S, Fletcher JM, Stuebing KK, Barth AE. Effects of a response-based, tiered framework for intervening with struggling readers in middle school. *Reading Research Quarterly*. 2013
- Schumm JS, Moody SW, Vaughn S. Grouping for Reading Instruction Does One Size Fit All? *Journal of Learning Disabilities*. 2000; 33(5):477–488. [PubMed: 15495549]
- Stallings J. Allocated academic learning time revisited, or beyond time on task. *Educational Researcher*. 1980; 9(11):11–16. Stable URL: <http://www.jstor.org/stable/1175185>.
- Stallings J, Johnson R, Goodman J. Engaged rates: Does grade level make a difference? *Journal of Research in Childhood Education*. 1986; 1:20–26.10.1080/02568548609594990
- Swanson E, Solis M, Ciullo S, McKenna JW. Special education teachers' perceptions and instructional practices in response to intervention implementation. *Learning Disability Quarterly*. 2012; 35(2): 115–126.
- Swanson EA, Vaughn S. An observation study of reading instruction provided to elementary students with learning disabilities in the resource room. *Psychology in the Schools*. 2010; 47:481–492.
- Taylor BM, Pearson PD, Clark KF, Walpole S. Effective schools/accomplished teachers. *The Reading Teacher*. 1999; 53:156–159.
- Torgesen JK, Wagner RK, Rashotte CA. Prevention and remediation of severe reading disabilities: Keeping the end in mind. *Scientific Studies of Reading*. 1997; 1:217–234.
- U.S. Department of Education, Office of Special Education Programs. Annual Report to Congress on the Implementation of the Individuals with Disabilities Education Act, selected years, 1990–2010;

- and Individuals with Disabilities Education Act (IDEA) database. retrieved September 14, 2011, from <http://www.ideadata.org/PartBdata.asp>
- Vaughn S, Fletcher JM. Response to intervention with secondary students with reading difficulties. *Journal of Learning Disabilities*. 2012; 45:241–253.10.1177/0022219412442157
- Vaughn S, Levy S, Coleman M, Bos CS. Reading instruction for students with LD and EBD: A synthesis of observation studies. *Journal of Special Education*. 2002; 36(1):2–13.10.1177/00224669020360010101
- Vaughn S, Wexler J, Leroux AJ, Roberts G, Denton CA, Barth AE, et al. Effects of intensive reading intervention for eighth grade students with persistently inadequate response to intervention. *Journal of Learning Disabilities*. 2011; 45(6):515–525.10.1177/0022219411402692 [PubMed: 21512102]
- Vaughn S, Wexler J, Roberts G, Barth AA, Cirino PT, Romain MA, Denton CA. Effects of individualized and standardized interventions on middle school students with reading disabilities. *Exceptional Children*. 2011; 77:391–407. [PubMed: 23125463]
- Wanzek J, Al Otaiba S, Petscher Y. Oral reading fluency development for children with emotional disturbance or learning disabilities. *Exceptional Children*. in press.
- Wanzek J, Roberts G, Al Otaiba S. Academic engagement with teachers and text and its relationship to literacy outcomes for kindergarten students at-risk for reading difficulties. *Reading and Writing: An Interdisciplinary Journal*. 2013 Advance Online Publication.
- Wanzek J, Vaughn S. Research-based implications from extensive early reading interventions. *School Psychology Review*. 2007; 36:541–561.
- Wanzek J, Vaughn S, Scammacca N, Metz K, Murray C, Roberts G, Danielson L. Extensive reading interventions for older struggling readers: Implications from research. *Review of Educational Research*. 2013; 83:163–195.
- Wei X, Blackorby J, Schiller E. Growth in reading achievement of students with disabilities, ages 7 to 17. *Exceptional Children*. 2011; 78:89–106.
- Zigmond N, Baker JM. Is the mainstream a more appropriate educational setting for Randy? A case study of one student with learning disabilities. *Learning Disabilities Research & Practice*. 1994

Table 1

Mean Effect Sizes for Early Elementary and Upper Elementary/Secondary Students with Reading Difficulties Provided Intensive Interventions

Student Outcome	Early Elementary K-3		Upper grades 4-9	
	Mean ES	# of Effects	Mean ES	# of Effects
Comprehension	.46	25	.09	37
Reading Fluency	.34	11	.12	8
Word Reading	.56	53	.20	22
Spelling	.40	24	.20	5

Note. ES = effect size.