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How Reading Volume Affects both Reading Fluency and Reading Achievement

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Abstract

Long overlooked, reading volume is actually central to the development of reading proficiencies, especially in the development of fluent reading proficiency. Generally no one in schools monitors the actual volume of reading that children engage in. We know that the commonly used commercial core reading programs provide only material that requires about 15 minutes of reading activity daily. The remaining 75 minute of reading lessons is filled with many other activities such as completing workbook pages or responding to low-level literal questions about what has been read. Studies designed to enhance the volume of reading that children do during their reading lessons demonstrate one way to enhance reading development. Repeated readings have been widely used in fostering reading fluency but wide reading options seem to work faster and more broadly in developing reading proficiencies, including oral reading fluency.

Keywords: Volume, Fluency, Voluntary reading, Comprehension, Accuracy.

Introduction

Fourth-grader Abdul is a good reader. Few teachers would then be surprised to learn that Abdul also reads voluntarily, hooked currently on the Diary of a Wimpy Kid books. In many respects, Abdul is a good reader because he reads extensively voluntarily (Cipielewski & Stanovich, 1992). Few teachers would be surprised to learn that Abdul is also a fluent oral reader, reading with both accuracy and expression. At the same time, too few teachers realize that it is at least as much the case that his extensive voluntary reading produced his high levels of reading accuracy as well as his ability to read aloud accurately and with expression. Abdul, like many effective young readers has never participated in a single lesson designed to foster his fluent reading. He has never engaged in any repeated readings activities. Abdul just reads. A lot. And voluntarily.

Abdul's development as a reader represents the path followed by many proficient readers, especially students who completed first-grade prior to 2001. That is, before reading fluency was named one of the five scientifically-based pillars of reading development by the National Reading Panel (2001).

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In this article I hope to provide a brief history of reading fluency in American education and then share what we know about the relationship between fluency and reading proficiency broadly considered and reading volume. In truth, this chapter is more about the potentially powerful, but typically overlooked, role of reading volume. The evidence we have is consistent and clear: Children who elect to read voluntarily develop all sorts of reading proficiencies, not just the ability to read fluently (Mol & Bus, 2011). In this chapter, however, I will largely ignore the other proficiencies fostered through extensive voluntary engagement in reading activity and focus on volume of reading and its role in the development of fluent readers. I conclude with strategies for enhancing voluntary reading among elementary school students.

The research on the relationship between reading volume and reading fluency.

While classroom teachers have paid attention to reading fluency for a long time, researchers largely ignored the development of reading fluency until about 40 years ago when Dahl and Samuels (1977) published a paper contrasting drill on word recognition in isolation with repeated reading of passages to attain a standard reading rate (100 words per minute). They reported that the repeated reading intervention developed struggling readers' reading fluency, accuracy, and comprehension far better than the training to rapidly and accurately read words in isolation.

Shortly thereafter, Samuels (1979) published a paper in Reading Teacher on the repeated reading method. Samuels seemed prompted to explore reading fluency primarily as a result of his earlier co-authored paper (Laberge & Samuels, 1974) that set forth automaticity theory as an explanation of early reading development. Basically, this theory argued that automaticity involved developing lower level processes (as in word recognition) to free up attentional space for higher-level processes (comprehension). As sometimes happen in experiments, the Dahl and Samuels (1977) experiment surprisingly demonstrated that repeated reading worked better than isolated training of word recognition in isolation. Their findings have been replicated by other researchers over the years (Homan, Klesius & Hite, 1993; Morgan, Siderisis & Hua, 2012; Vadasy, Sanders & Peyton, 2005). In other words, what has now been repeatedly demonstrated is that working to foster automatic word identification through lessons that feature primarily word level work is simply less effective at developing reading fluency than lessons that engage readers in repeated reading activities.

Kuhn and Stahl (2003) reviewed over 100 research studies on repeated readings but noted that the studies were a mixture of models including many studies with no true control group and most did not compare repeated readings with an alternative intervention. However, in the two studies where a repeated readings model was compared to a control group where students read independently for comparable amounts of time they found no difference in fluency outcomes. Overall, they concluded that the repeated reading model improves both fluency and reading achievement. Based on the two studies noted above, they also suggested that it may be the increase in the volume of reading that students do when engaged in repeated reading activities that underlies the success observed with the use of repeated readings in developing fluent reading performances.

The same year that Kuhn and Stahl published their review, Therrien (2003) provided a meta-analysis of repeated readings studies published since 1979 and found repeated readings to be an effective intervention for improving the reading fluency of both general and special education students. This meta-analysis also indicated that repeated reading with an adult present proved to be more effective than repeated reading interventions where students were engaged with a peer or an audio-tape recording. Additionally, Therrien

reports that using instructional level texts as opposed to the more difficult grade level texts also produced faster and larger student fluency gains.

However, while repeated reading activities are more powerful in fostering fluent reading than are word identification in isolation activities, it also seems that reducing time spent engaging in repeated readings and using that time to engage students in wide reading is an even more powerful option than offering repeated readings activities alone. This is the major finding from a recent series of studies of by Kuhn and her colleagues (Kuhn, 2005, Kuhn, et al, 2006; Schwanenflugel, et al, 2006; 2009). In this work they compared use of their wide reading fluency intervention with the traditional repeated reading intervention. Much like earlier studies (e.g., Homan, et al, 1993) they found that reducing the time spent on repeated readings while extending the time spent reading new texts developed fluency faster and developed both word recognition and comprehension better than a steady diet of repeated readings. Reviewing primarily their previous studies, Kuhn, Schwanenflugel and Meisinger (2010, p. 232) argue, "To move beyond this serial processing and toward the autonomous word recognition entailed by fluent reading, learners require the opportunity for extensive practice in the reading of connected text." In other words, while repeated readings activities typically expand the volume of reading that student do (as compared to the more traditional skills in isolation work provided by worksheets and skills drills), simply expanding not only the volume of reading but also expanding the numbers of texts students read fosters fluency development faster.

Improving reading fluency by expanding student reading volume is predicted by "instance theory" (Logan, 1988). Logan explained instance theory in this way:

"The theory makes three main assumptions: First, it assumes that encoding into memory is an obligatory, unavoidable consequence of attention. Attending to a stimulus is sufficient to commit it to memory. It may be remembered well or poorly, depending on the conditions of attention, but it will be encoded. Second, the theory assumes that retrieval from memory is an obligatory, unavoidable consequence of attention. Attending to a stimulus is sufficient to retrieve from memory whatever has been associated with it in the past. Retrieval may not always be successful, but it occurs nevertheless. Encoding and retrieval are linked through attention; the same act of attention that causes encoding also causes retrieval. Third, the theory assumes that each encounter with a stimulus is encoded, stored, and retrieved separately. This makes the theory an instance theory..." (p. 493)

As children read they encounter words, if these words are correctly pronounced then a useful "instance" has occurred. Thus, efforts to expand reading volume need to ensure that students are reading texts with a high level of accuracy. What we've learned in the past 25 years is that it takes very few "instances" of correctly pronouncing a word before it becomes readily recognized when next encountered.

Instance theory underlies the "self-teaching hypothesis" proposed by Share (1995; 2004) who has demonstrated that while reading children are actually also acquiring orthographic knowledge of both whole words and word segments. Readers use this orthographic knowledge to facilitate pronunciation when they next encounter the same word or an identical word segment occurring in a different word. That is, pronouncing the word segment "ism" in the word racism may assist the reader in pronouncing the word schism that contains the same segment. This sort of self-teaching, which is derived from instance theory, is one mechanism by which reading fluency is achieved. Self-teaching is also an important mechanism that supports developing other reading proficiencies, such as vocabulary knowledge (Swanborn & DeGlopper, 1999).

A different role for self-teaching is the development of a core set of words, in skilled readers a huge core of words, that can be pronounced instantly, words that we call “sight words”. The larger the number of words that can be instantly recognized is in large part what separates skilled readers from developing (or emergent) readers. The ability to recognize many words with little conscious effort also underlies the ability to read aloud with fluency.

Shany and Biemiller (1995) provide one example where self-teaching seems to have occurred. They studied the effects of teacher-assisted reading and tape-assisted reading on reading achievement. The study consisted of three groups: one control group and two experimental groups. One experimental group received 30 minutes of extra reading practice with adult assistance (pronouncing any mispronounced words) while the other experimental group received 30 minutes of extra reading practice with audio-taped recordings of the texts to assist the reading. Students in both experimental groups read more books in and out of the classroom than the control group. Most subjects "read" through 2.5 years worth of basal stories in 64 days (or 32 hours) of practice! Treatment students read 5 to 10 times as many words as the control group students during this 16 week study. (p. 390)

Shany and Biemiller (1995) evaluated different aspects of reading achievement, comparing the two experimental groups to each other as well as to the control group. They found that students in both treatment groups scored significantly higher in reading comprehension, listening comprehension, and reading speed and accuracy, than the control group that completed less reading activity. Comparing the treatments, the tape-assisted group scored significantly better in listening comprehension. There were similar gains in reading comprehension, reading speed and accuracy between the two treatments and these gains were higher than those obtained by the control group students. Neither treatment improved word identification in isolation, nor decoding proficiency on the Woodcock Reading Mastery Test. The authors’, nonetheless, concluded that, "increased reading experience led to increased reading competence." (p. 392) In this study, then, simply expanding the volume of reading, with or without teacher feedback, resulted in improved fluency (as measured by reading rate and reading accuracy) and improved reading comprehension. In other words, the groups that completed the greater volume of reading activity demonstrated a larger gain in reading achievement than the control group students.

The potential role of reading volume in daily classroom reading lessons was demonstrated in a large-scale observational study conducted by Foorman, Schatschneider, Eakins , Fletcher, Moats and Francis (2006). They reported that the key factor of the reading instruction offered by over 100 observed 1st and 2nd grade teachers was the time that they allocated to text reading. Key because it was this measure of reading volume during reading instruction that explained any variance observed on any of the outcome measures including word recognition, decoding, and reading comprehension. None of other time factors, including time spent on phonemic awareness, word recognition or decoding were related to reading growth. These findings suggest that teachers should design their lessons such that student reading volume is expanded, perhaps by reducing the time planned for other, not very useful, activities that too often replace wider reading.

The outcomes from these studies noted above should not be unexpected. Torgeson and Hudson (2006) reviewed several studies, each which demonstrated that neither improving recognition of words of in isolation nor improving decoding proficiencies improved either reading fluency or comprehension. In other words, reading fluency and reading comprehension develop largely separate from word identification and decoding. In the case of struggling readers, too many have huge deficits in reading volume and therefore huge

deficits in the number of words they can recognize automatically, when compared to their achieving peers. As Torgeson and Hudson (2006) contend,

"The most important factor appears to involve difficulties in making up for the huge deficits in accurate reading practice the older struggling readers have accumulated by the time they reach later elementary school... One of the major results of this lack of reading practice is a severe limitation in the number of words the children with reading disabilities can recognize automatically, or at a single glance... Such 'catching up' would seem to require an extensive period of time in which the reading practice of the previously disabled children was actually greater than that of their peers." (p. 148)

If educators hope to improve either the oral reading fluency or the reading comprehension of struggling readers then expanding reading volume, it seems, must necessarily be considered. Considered as in evaluating the reading volume of every struggling reader as a first task to complete prior to attempting to design an intervention to address the student's reading difficulties.

An unfortunate characteristic of current models for diagnosing the difficulties some children exhibit with reading acquisition is almost total neglect of any consideration that reading volume deficits are likely a more critical factor than knowledge of the sounds linked to vowel digraphs. While diagnosticians and school psychologists routinely evaluate struggling readers proficiencies with decoding words in isolation and their proficiency with various decoding subcomponents, I have yet to find a single school psychologist who attempted to track and estimate the daily reading volume of students with reading difficulties that they are evaluating. Thus, reading volume deficits are largely overlooked when explanations of reading difficulties (or fluency problems) are offered and overlooked in designing intervention lessons to remediate the reading difficulty. Reading volume is typically not addressed in Individual Education Plans (IEP) developed for pupils with disabilities even though some 80 percent of these students exhibit reading difficulties. Thus, we have a series of research reports noting that pupils served by special education programs read less than do general education students (Allington & McGill-Franzen, 1989; Vaughn, Moody & Schumm, 1998; Ysseldyke, Algozzine, Shinn & McGue, 1982; Ysseldyke, O'Sullivan, Thurlow & Christenson, 1989) and that struggling readers of all stripes read less during general education classroom reading lessons than do achieving readers (Allington, 1983; 1984; Hiebert, 1983).

Outside of daily reading lessons students have other opportunities to expand their reading volume. Lewis and Samuels (2005) conducted a meta-analysis of 49 studies of providing students with independent reading time during the school day. They concluded that, "no study reported significant negative results; in no instance did allowing students time for independent reading result in a decrease in reading achievement." (p. 13) The overall effect size for the eight true experiments was d=0.42 indicating a moderate and statistically significant effect for volume of reading, They also conducted an analysis of 43 studies that were insufficient for including in the meta-analysis. There were 108 student samples in these 43 studies. Of these 108 samples, 85 of the samples were students who improved their reading achievement after participating in some form of an independent reading activity. In fourteen samples there were reported no positive effects on reading achievement, and nine reported negative effects on reading achievement. All of the studies reporting no effects or negative effects on reading achievement were done with older students enrolled in middle or secondary schools.

Topping, Samuels and Paul (2007) provide other necessary aspects to consider when attempting to expand the reading volume of students. Their analysis of the records of some

45,600 students (primarily K-6 students) drew from the national database compiled by the Accelerated Reader firm. They report that until quite good reading comprehension (at least 80% comprehension) was achieved the added engagement in reading added little, if any, growth. As Topping, et al (2007) note:

"The current study suggested that simple information-processing models of reading practice were inadequate. Volume of practice is only one relevant variable, and not all practice is the same. Pure quality of independent reading practice and classroom placement were as important as quantity of reading practice. Theoretical models need to take account of three variables not one, and distinguish between affordances and the extent to which they are actively utilized." (p. 262)

Topping and colleagues (2007) may have provided us with a basis for explaining why the research on expanding reading activity may seem inconsistent. None of the experimental studies of extensive reading that are available attempted to control for 1) the level of accuracy that was achieved while reading, 2) the level of comprehension of the material read, 3) the variety of texts that are available to subjects, 4) the role of self-selection of texts to be read, or 5) the classroom context of students who participated in the studies. Each of these five factors, however, do seem related to the outcomes observed.

So we have a research basis for assuming that expanding reading activity will improve reading achievement and reading fluency as well. The repeated readings model is likely to expand students' opportunity to read and this may be the primary reason for its observed success in developing fluency. Simply expanding the opportunities to read seems to generally produce improved reading fluency and reading comprehension (Krashen, 2011). Thus, perhaps, repeated readings lessons are not actually necessary or can be useful when used for only a short period of time.

Why many children never acquire fluent reading proficiencies and what to do about it.

While the restricted reading volume of struggling readers, when compared to their higher achieving peers, has a strong research base as an important factor in the development, or the lack of development, of reading fluency, there is also evidence that differences in the reading instructional environment, beyond differences in reading volume, may also contribute to dysfluent reading behavior. For instance, many struggling readers read aloud word-by-word with little phrasing or intonation. This sort of dysfluent reading may be the result of being given a text that was simply too difficult given their level of reading development. Fluent reading only occurs when oral reading accuracy is high. On the other hand, many struggling readers still read word-by-word even when given a text that they can read quite accurately. These readers seem to have habituated reading as a word-by-word reading performance.

Thirty-five years ago I published a paper (Allington, 1980) documenting the differences observed during oral reading segments of reading lessons in the primary grades. Using audio-tapes of the oral reading segments of the reading lessons primary grade teachers provided, I noted that when working with the struggling readers in the classroom (as contrasted with working with the achieving readers), the teachers were more likely to:

1) interrupt the oral reading of struggling readers,

2) interrupt struggling readers more quickly, and

3) after interrupting offer different verbal responses to struggling readers and achieving readers.

These differences were actually quite striking with almost every miscue made by struggling readers resulting in an immediate teacher interruption while many miscues made by achieving readers produced no response from the teacher. When teachers responded to achieving reader miscues they typically targeted sense-making or simply rereading the sentence. Teacher responses to struggling readers typically targeted letters or sounds and rarely targeted sense-making. Perhaps, I argued, these differences in teacher responses to miscues occurred because the point at which the teacher interrupted the two groups readers (achieving and struggling) differed. For achieving readers the most common point of teacher interruption, when an interruption was observed, came at the end of the sentence that was being read when the miscue occurred. For struggling readers the most common point of interruption was the utterance of an incorrect word or letter sound. Hoffman, et al (1984) later reported that immediate interruptions had a detrimental impact on students' reading performances when compared to other, more delayed interruption options.

I have argued elsewhere (Allington, 2009) that the common pattern both Hoffman and his colleagues (1984) and I observed, interrupting struggling readers immediately when they miscue, creates both passive and non-reflective readers as well as word-by-word readers. I suggest that the continued use of such interruptive practice will stymie all attempts to produce reading fluency.

Creating a non-interruptive reading environment. What we are attempting to produce is active and reflective silent readers - that is, readers who are engaged with the story and who notice when they miscue and then attempt to self-correct their miscue. But an immediate teacher interruption after an oral reading miscue undermines both of these goals. Interruptions always interfere with reading engagement and prompts to "sound it out", to "look at the first letter", or asking "what is the sound of the vowel" take attention away from making sense of what was read. Perhaps a steady diet of immediate interruptions and letter and sound focused prompts actually foster the non-reflective and word-by-word reading so commonly observed with struggling readers.

It is with these struggling readers who read word-by-word even when they are reading accurately that repeated readings can be an effective solution. Perhaps this is because in most cases the repeated readings are done without a teacher interrupting to "correct" each miscue. Without teacher interruptions students read along with greater fluency. There is no need to read slowly and to look up at the teacher when you encounter a word that is unknown. Assuming the text is being read with a high level of accuracy, it also means that more instances of correct word identification are accumulating. Every instance of correct pronunciation leads to another trace on the reader's brain that will make the response to the next encounter of that word more likely a correct response.

The point is this, if we want to foster fluent reading then we need to create an instructional environment where fluent reading is fostered not suppressed. Shifting away from immediately interrupting students when they miscue on a word and moving towards a delayed response that focuses on making sense rather than on surface level characteristics of the misread word will both foster the development of fluent and reflective reading.

Adopting what I have dubbed the Pause-Prompt-Praise (P-P-P) interaction pattern while listening to students reading aloud is one strategy for becoming a more positive influence on students struggling with fluency. In the P-P-P pattern the teacher waits until the end of the sentence when a student is reading aloud and misreads a word. When the student has reached the end of the sentence, the teacher simply asks. "Does that sentence that you just read make sense to you?" Or, "Did that sentence sound right to you?" The goal is to stimulate self-regulation – the ability to monitor one's own reading. Self-monitoring is central to the

development of fluent reading and self-monitoring is central to self-correcting responses when oral reading miscues occur (Clay, 1969).

Breakout Box

Pause – Wait until the reader had finished reading the sentence before you interrupt and call attention to the miscue.

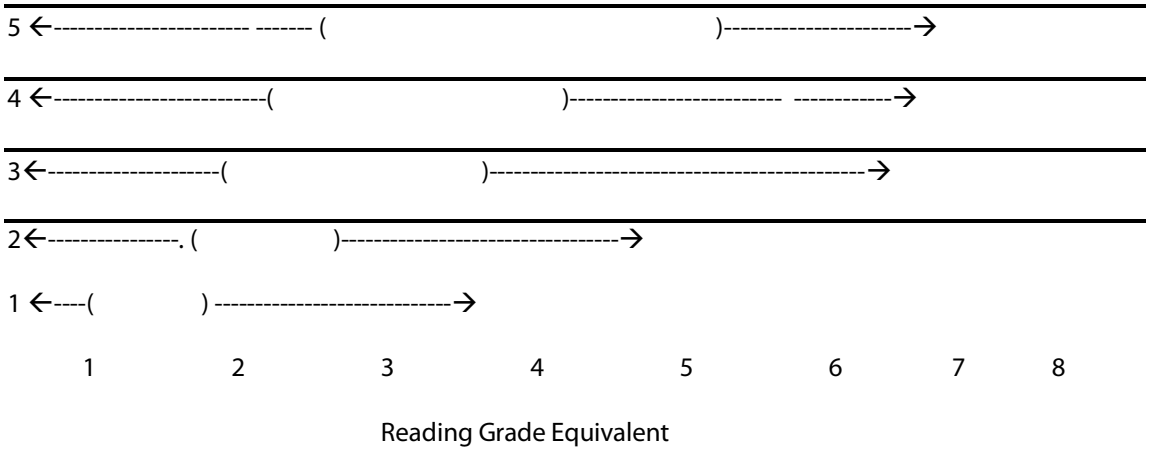
Prompt – The key prompt you want to make is to draw attention to making sense while reading.

Praise -- Two possibilities here—praise making sense or praise the effort to make sense.

If you want to foster better use of available decoding knowledge, fine, but not in the middle of an oral reading segment. Note the miscue and after the reading segment is completed you can discuss the appropriate decoding strategy the child might have used. Many struggling readers do better with decoding in isolation than decoding words while reading.

Enhancing reading volume by expanding access to texts. Once you have created a non-interruptive classroom reading environment you can focus on developing a classroom where all students can locate books they really want to read and can read with a high level of accuracy, say with 98% words correctly pronounced or higher (Allington, McCuiston & Billen, in press). This typically means you will need to develop a classroom library of books that provide texts across the range of reading levels and interests of students in your classroom.

When considering the range of difficulty of the texts you will need in your classroom library remember that, as Hargis (2006) demonstrated so powerfully, that in second-grade you can expect to have some children still reading at the very beginning reading levels (e.g., primer, first reader) and some children who can read fourth- and fifth-grade texts. By fourth-grade this gap between your best and worst readers widens even further with some children reading at the first-grade level and others at the ninth-grade level!



On the left side of the graph is the student current grade placement level. Across the bottom are the grade level equivalencies. The arrowhead on the left indicates the lowest scoring children and the range of scores for the lowest 25% of students. The arrowhead on the right indicates the reading level of the top scoring students and the length of the arrow indicates the range of reading proficiency of the top 25% of students. The area between the brackets is the performance of the middle 50% of students.

Figure 1. *Range of reading levels found typically in American elementary classrooms* (Developed from the data in Hargis, 2006)

As illustrated in Figure 1 the range of reading proficiency widens as children go through the elementary school year. The data in the Figure showing the range of reading proficiency at each grade level is a good guide as you develop your classroom library. The breadth of proficiency levels at each grade is why you should plan on acquiring 1,000 individual titles for your classroom library.

Classroom libraries provide children with easy access to a range of books that have been selected at appropriate levels of difficulty. Classroom access to books is especially important in schools where many children live in poverty. Classroom access is important because so many poor children own not a single book, much less have a home library such as the ones you can find in many middle class homes.

The number of books in the home is a powerful and significant predictor of children's reading achievement (Schubert & Becker, 2010), even when family income, parental education, language used in the home and other factors are controlled. In a 27 nation international study with over 70, 000 cases Evans, Kelly, Sikora and Treiman (2010) report that the number of books in the home, after controlling for SES, father's occupation, and parental education they reported that the effect of home access to books was about the same as parental education, twice as large as father's occupation, and stronger than family SES.

It is children from low-income families that routinely lack access to books. They rarely have home libraries of books. They live in neighborhoods where few books are available, either to purchase or to check out of a community library. Worse still, in the schools they attend both the school library and the classroom libraries have far fewer books than are found in middle class schools and libraries (Neuman & Celano, 2012; Pribesh, Gavigan & Dickinson, 2011)).

The differences in the availability of children's books are striking. Neuman and Celano (2012) report that there were 358 books for sale at the four stores that carried children's books in the high-poverty neighborhood they studied. At the same time, in a nearby middle-class community there were 16,453 children's books available for purchase. Of course, these communities differed not just on average family income but also in the numbers of books available for purchase from merchants who sold children's books. School libraries in these two communities – one poor and the other not poor – followed the same pattern. There were 26 books per child available in middle-class school libraries but half that number available per child (13) in the school libraries located in high-poverty communities. Pribesh and colleagues (2011) extend this finding and note that schools attended by children from higher-income families purchase more than twice as many books for the school libraries as do schools enrolling mostly children from low-income families.

Access to books is, of course, linked to voluntary reading activity (McQuillan & Au, 2001). And, no matter how you look at the issue, poor children have substantially more limited access to books than do middle-class children.. But when you live in a "book desert," as do too many children from low-income families, one should not expect that these children will engage in much voluntary reading.

Increasing children's access to books has been shown to have dramatically positive effects on reading growth and achievement (Lindsay, 2013). Yet, even with this body of research establishing that the children from low-income families have restricted access to books and that altering the situation so that ease of access to books is improved for low-income children improves their reading achievement we largely ignore the data and attribute the limited proficiencies in reading among poor children to other factors and then focus on those other factors when designing our interventions!

Conclusion

Given the research evidence linking volume of reading to reading achievement and oral reading fluency it seems surprising that American commercial core reading programs only provide roughly 15 minutes of daily reading activity (Brenner & Hiebert, 2010). That means that in too many classroom children have 75 minutes daily to listen to the teacher or to complete low-level worksheets instead of actually reading. Given the findings of Foorman, and her colleagues (2006) that the sole aspect of reading lesson design that was related to reading achievement was the volume of reading done during the lessons, it is undoubtedly time to reconsider the use of such programs as a central characteristic of American reading lessons.

Finally, given that the latest survey of adult reading habits (National Endowment for the Arts, 2007) reports that young American adults (ages 18-24) read less than any other age group and read less today than ever before, it seems that a substantive effort to promote greater voluntary reading, both in and out of school, is needed. We know much about reading instruction that fosters fluency and comprehension. The design of our reading programs and reading lessons must begin to reflect what we know.

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