## Why Not Sound It Out?

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Camden, a beginning first grader, is rereading a book that his teacher introduced the previous day. He knows the pattern of this easy reader, *I Can Draw*. He accurately reads the sentence on each of the first two pages before facing a challenge.

**Child:** I can draw a bird.
I can draw the body.
I can draw the [pause before the word *beak*] – What is that again?

**Teacher:** You try it.

Camden takes another look at the picture, then throws his head back and lets out a long “Awhhhh,” prompting the teacher to tell him the word.

This is a familiar interaction for any teacher who works with beginning readers. As children build a sight vocabulary and develop word recognition strategies, they often encounter words that are unfamiliar to them in print. Some of these words may also be unfamiliar or only partially familiar in the child’s oral language. Camden understands that *beak* is the word he was searching for, but he was unable to generate this word from the clues provided by the picture or the print.

When Patricia Gallant and I (Gallant & Schwartz, 2010) showed this video interaction to teachers in our undergraduate and masters level reading methods classes, their responses differed based on their experiences and perspectives on teaching beginning readers. The undergraduate students were, however, almost unanimous in their analysis and interpretation of Camden’s needs. “He needs to learn how to sound it out, and the sooner the better!”

Future teachers are skeptical when I suggest this is not what Camden—or any other beginning reader—needs to learn and that a prompt to “sound it out” is both inappropriate and potentially detrimental to his learning. Even novice teachers are aware of the “reading wars” between advocates of phonics and whole language, and they assume I’ve just made my bias clear (Pearson, 2004). Why should they believe me, when they frequently encounter experienced and effective mentor teachers who consistently urge their students to sound it out?

My goal in this article is to describe a perspective that combines current understandings of word recognition based on experimental research with theory from close observation of children’s early learning.

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### A Different View

Rather than start with the voluminous research on word recognition that has contributed to our current understandings (Adams, 1990; Cunningham, Nathan, & Raher, 2011; Foorman & Connor, 2011; Roberts, Christo, & Shefelbine, 2011; Tunmer & Nicholson, 2011), it might be more productive to begin with a relatively independent view on thinking and learning. My summer reading last year included Daniel Kahneman’s (2011) book, *Thinking, Fast and Slow*. Kahneman is a cognitive psychologist who won a Nobel Prize in economics. His book covers the wide range of topics he has researched across his career, focusing on what he has learned about how our mind makes decisions.

Here is an example Kahneman uses early on to demonstrate his perspective on cognitive processes. As you read this problem, don’t try to solve it mathematically, but rather listen to your intuitions (Kahneman, p. 44):

A bat and ball cost $1.10. The bat costs one dollar more than the ball. How much does the ball cost?

When presented this problem to many thousands of university students, he finds the intuitive but incorrect answer is generated by 50–80% of
the students. Across his book he contrasts the fast, intuitive type of thinking that suggests 10 cents as the puzzle answer—called System 1 thinking—with the more-deliberate and effortful System 2 processing that could monitor and control thoughts suggested by System 1.

These systems are usually highly efficient in working together to minimize mental effort and optimize performance in most situations. System 1 thinking is quick and accurate in perceiving familiar situations, making short-term predictions, and reacting swiftly, and generally appropriately, to challenging situations. System 1 thinking, however, is prone to making systematic errors, sometimes substituting a simplified question for a more-complex one.

In the bat and ball problem, many respondents used System 1 thinking to simplify the question to what amount added to a dollar makes $1.10. They failed to invest the small amount of additional attention needed to check their answer in the original problem. By using System 2 thinking to monitor their initial response, respondents might notice that if the ball cost 10 cents and the bat a dollar more ($1.10), then together they can’t cost $1.10. The more-sequential and effortful System 2 might then consider what if the ball cost 5 cents. Give it some thought!

Kahneman paints a picture of thought processes that have evolved to meet the survival needs of our species. We monitor our environment for signs of danger and can react quickly to a perceived threat, but often fail to recognize logical contradictions in our thoughts and decisions. Although he acknowledges that human beings are capable of extraordinary acts of cognition, he views everyday thought as governed by the law of least effort.

If there are several ways of achieving the same goal, people will eventually gravitate to the least demanding course of action. In the economy of action, effort is a cost, and the acquisition of skill is driven by the balance of benefits and costs. Laziness is built deep into our nature. (2011, p. 35)

This laziness applies to the thinking of stockbrokers, politicians, the voting public, as well as Nobel-winning psychologists, as Kahneman (2011) is fond of demonstrating, with personal examples. In a section on “The Planning Fallacy,” Kahneman describes how a team he led fell victim to ‘delusional optimism’ and his failure to consider available evidence. They had been asked to develop a high school curriculum on judgment and decision making. After 2 years of work on the project, Kahneman unearthed evidence that their insider estimates of 4 years to program completion were likely to be off by more than half.

Despite this evidence, the team continued on with the project, maintaining their delusional optimism for 10 years, only to find that enthusiasm in the ministry of education had waned and the program was never used!

In relating the curriculum-planning story over many years, Kahneman’s view of his role in this disaster shifted from “clever questioner and astute psychologist” to “chief dunce and inept leader.” He acknowledges that even when you’re writing the book on decision making, it is easier to ignore new data than make the effort to confront the complications this information creates.

Laziness and Learning to Read

So what role might laziness, or System 1 thinking, play in the acquisition of reading skills? My experience working with struggling beginning readers (Schwartz, 1997, 2005) suggests that sounding-it-out is seldom, if ever, a least-effort approach to word recognition. Children like Camden, who are just developing letter-sound sound knowledge and a high-frequency sight vocabulary, will often substitute woman for lady, bunny for rabbit, or water for river when reading simple books that support meaning. Their System 1 processing has simplified the word recognition question from “What is this word?” to “What word would make sense here?” This simplification allows a least-effort solution to an immediate problem within the more-complex task of reading a book for meaning.

To adults, sounding out may appear to be a logical and highly effective approach to breaking an alphabetic code (Moats, 2007), but I’d suggest this is another example, like those Kahneman (2011) describes, where the logical answer is not the correct answer. A more-complex view is supported by the work of Marie Clay and other literacy researchers who have used close observation of change over time in children’s beginning reading behavior to infer the strategic processing used for word recognition (Clay, 1982, 2001; Kaye, 2006; McGee, Kim, Nelson, & Fried, 2015; Schmitt, 2010).

As children like Camden learn to read and write, they are also learning how to look at print (Clay, 2001). This is a complex cognitive task. It involves coordinating what they know about the conventions of directional
By sounding it out I mean an approach where the child moves left to right across the word, assigning a sound to each letter or digraph and then blending those sounds to recognize a known word in their oral language, for example /b/ /ea/ /k/.

Within each of these approaches, however, 20–30% of students struggle with literacy learning. Often these students have entered school with less knowledge, experience, and/or interest related to literacy. They may attend to the components of literacy the particular approach emphasizes, but remain blind to other components that could make learning more efficient.

Blinded by Effort

Kahneman (2011) cites a variety of cognitive studies that demonstrate how focusing our attention on a demanding cognitive task can blind us to even highly surprising events in our environment. If you’re not familiar with this type of research, I suggest you pause now and watch a demonstration of this effect: http://www.youtube.com/watch?v=1GQmdoK_ZFY.

The Invisible Gorilla (Chabris & Simons, 2010) and similar research on attention and effort (Kahneman, 2011) have strong implications for beginning reading, learning, and instruction. Each of the various approaches to beginning reading instruction has recognized the need to reduce the number of unfamiliar elements that require novice reader’s attention. Directing attention and effort to one element of the reading task may actually blind a child to other aspects of the task. Asking a struggling reader to sound out a word with three or more letters may, temporarily, blind them to meaning of the text they’re reading.

Sounding it out is not what Kahneman would view as a least-effort approach. By sounding it out I mean an approach where the child moves left to right across the word, assigning a sound to each letter or digraph and then blending those sounds to recognize a known word in their oral language, for example /b/ /ea/ /k/.

If the child was reading words in isolation, or perhaps the first word in a sentence, and if larger clusters of letters within the word are unfamiliar, then sounding it out may be the only way to recognize the word. For a novice reader, this type of sequential processing requires considerable System 2 attention and effort. When, however, the word is encountered within a series of known words comprising a story, there are a number of additional sources of information and ways to use that information that require less effort and can generate a word recognition attempt (Schwartz, 1997, 2005; Stanovich, 1980).

Schwartz (2005) describes how a child like Camden might respond to a pattern change in a simple pattern book. In the book, various animals suggest something a boy might like on his sandwich.

A cat asks, Would you like a mouse? No I wouldn’t.
A lizard suggests, Would you like a grasshopper? No I wouldn’t.
A chicken inquires, Would you like a fat worm? No I wouldn’t.
The worm page is particularly interesting because of the addition of an adjective to the language pattern used on the previous pages.

A few weeks after the opening scenario, Camden reads, “Would you like a worm?” This response uses the familiar language structure and picture clue on the page to generate the word recognition attempts. Camden could continue with the boy’s “No I wouldn’t” response, but he notices that the first sentence contains an additional word. So he stops and rereads the sentence and searches for an additional clue. As he rereads, he again looks at the picture for a clue and notices the worm is bright purple, leading to this attempt: “Would you like a purple worm?”

Having satisfied the constraint of matching one word in oral language to one word in print, Camden may finish the page and attempt to go on. From recent observations, however, his teacher knows that if Camden attempted to write the word purple he would include at least one p. So before he turns the page she says, “That makes sense, but check to see if it looks right.” This request for additional System 2 processing leads him to notice that purple doesn’t look right and he rereads the page as, “Would you like a funny worm? No I wouldn’t.”

Now he can turn the page, because the goal of the interaction was not to produce accurate reading but to initiate a new way of checking on the least-effort attempts generated by Camden’s current word recognition strategies. These temporary but efficient strategies change over time as Camden increases his knowledge of letters, sounds, and words while he also develops new ways of searching information sources to generate least-effort attempts, and uses System 2 thinking to monitor and refine these attempts (Clay, 2001).

**Building on Strengths to Reduce Effort**

Beginning readers who adopt a meaning only, or print only, approach to word recognition are drifting off course for further literacy learning. Helping these struggling beginning readers to integrate what they know about print and meaning will keep them on track toward fast and efficient word recognition strategies. This recovery of the normal developmental trajectory is the goal and meaning of the Reading Recovery early intervention.

Reading Recovery-trained teachers help struggling readers refine a series of least-effort approaches to word recognition that build on their increasing language strengths and print knowledge (Clay, 1998; Schwartz & Gallant, 2011). A large body of scientific research has established that the end goal of this learning is a highly efficient, context-free word recognition process that requires little directed attention (Adams, 1990; Roberts, Christo, & Shefelbine, 2011; Stanovich, 1980; Tunmer & Nicholson, 2011).

Kahneman (2011) cites this proficient word recognition skill as a prime example of System 1, least-effort thinking. He describes several examples, including the Stroop Effect, to demonstrate how this System 1 processing can cause conflict with a System 2 task. In the Stroop task, subjects are asked to name the color each word is printed in. This becomes difficult when a word like green is printed in red ink (see http://www.apa.org/science/resources/stroop.aspx). This proficient processing is the result of considerable learning and experience with print.

Siegler (2006) has studied change over time in a variety of cognitive tasks. He describes the pattern of change he’s observed as series of overlapping waves like those shown in Figure 1.

Clay (2001) describes a similar type of change over time in the searching and monitoring processes involved in word recognition.

- Early processing approaches are reflected in meaning based errors with no visual similarity to the target word.

- Changes in these processes will be reflected in attempts that incorporate the meaning and the initial letter, but for a time both approaches will coexist.

- Eventually, the final wave will represent proficient processing, with rapid visual processing of orthographic units in the target word and monitoring to evaluate the fit to meaning.

Reading Recovery teachers have the opportunity to observe and foster these changes over time in the one-to-one intervention setting. Both this context and professional expertise of these teachers are necessary components of this highly effective early intervention (Schwartz, Schmitt, & Lose, 2012; IRA, 2010).

Primary classroom teachers have fewer opportunities to provide prompting support during guided reading groups (Schwartz, 2005).
Cunningham and Allington (2011) describe an effective instructional routine that supports this type of learning in whole-class or small-group settings. The routine illustrates the goal of word recognition processing for novice readers and helps them construct and refine an implicit theory to guide their strategic activity. For a reader like Camden, the word recognition task is to determine which of the 6,000 or so words from his oral language he is looking at in print. This is a daunting task, so he needs a clue. Since Camden has considerable oral language skill, the first clues are the syntax and meaning of a sentence in which the word occurs. Presenting a sentence in written form with the target word covered invites the group to use their language skill to narrow the possible options.

To introduce the routine you might use a sentence like, Rasheed likes to play soccer, with the word soccer covered (Cunningham & Allington, 2011, p. 68).

1. After you read the other word within the sentence, students offer a number of intuitive guesses, or predictions, for the covered word, based on the sentence and what they know about their classmate Rasheed.

2. The next step is to uncover the initial letters up to, but not including, the first vowel. This will further narrow the set of options, perhaps to soccer and softball.

3. I suggest adding one more step to the routine described by Cunningham and Allington. Before you uncover the rest of the word, ask students to predict an easy-to-hear letter or a known pattern they expect to see if their guess is correct. This additional step will gradually extend the visual information used for self-monitoring and build orthographic knowledge.

**Figure 1. Overlapping Waves Showing Change Over Time in Strategic Processing. (Based on Siegler, 2006.)**

**Word Recognition Instruction as a Thinking Routine**

In his discussion of intellectual character, Ritchhart (2002) explains how “thinking routines generally adhere to the same criteria as other routines. They consist of a few steps, are easy to teach and learn, are easily supported, and get used repeatedly” (p. 90). The above procedure is a thinking routine that can be used with the morning message, a big book as part of a shared reading, or in small groups with guided reading. Cunningham and Allington (2011) suggest that the difficulty can be adjusted for different students. For example, you can vary the position in the sentence, or part of speech of the target word, or you can select target words with initial consonant blends or digraphs, or cover several words in a passage from an informational text. Since each step in this routine requires students to draw on various information sources, I’ll refer to the modified procedure including the final monitoring check as “Thinking Through a Word” (TTW).

A kindergarten teacher tried the TTW activity using a big book in a whole-class setting. The first sentence said, “Six flowers sit in the box.” She covered flowers initially. Based on her reading of the rest of the sentence and the picture clue, the group guessed flowers, plants, and roses. When she uncovered the fl, they settled on flowers. This exemplifies the early cross-checking of a prediction based on meaning against the initial visual clues that Cunningham and Allington’s (2011) routine promotes.

A bit later in the same book, the sentence was “A dog steps in the box.” The teacher covered steps. Her class
predicted stands, waits, and looks. These are all good predictions that fit the meaning and syntax. She uncovered the st blend. The group settled on stands as their choice. The teacher said, “All our guesses ended with a /z/ sound. If the word is stand, what letter do you expect to see near the end?” A few students predicted it would end with a d. When she uncovered the word, the class decided it wasn’t stands.

This final monitoring check before the word is uncovered can also vary in difficulty from checking for an easy-to-hear final consonant, to other easy-to-hear sounds, to familiar word patterns, to using more-complex orthographic knowledge. Consider the text, “Fred wasn’t happy. He had few toys.” Some students might guess few after the f is uncovered. The teacher could then wonder aloud with the group about what letters she might expect to see when the rest of the word is uncovered. “It sounds like the end of some words I know. I wonder if it ends like zoo or boo? It could end like to, but I know three ways to spell the sounds in to. Maybe it ends like blue. Let’s see! Were we right? Do you know any other words that end like that and sound like few?” As children are given an opportunity to think through unfamiliar printed words, and build the disposition to monitor correct and incorrect attempts, they learn more about complex orthographic patterns.

Change Over Time

Recognizing that an attempt didn’t work is an excellent step toward promoting self-correction and learning to look at more of the visual information (Clay 2001; Schwartz, 1997, 2005). Clay (1991) observed that children were using ‘predict and check’ in many cases as a substitute for letter-sound decoding, in situations where their print knowledge was inadequate. These intermediate skills enable a reader to use prediction to narrow the field of possibilities and to reduce the decoding load. (p. 254)

Checking both correct and incorrect attempts against sound-to-letter expectations helps build automatic access to sight words and phonics knowledge, including consonant sounds and vowel patterns.

Many novice readers make predictions based on meaning and do not use their developing phonics knowledge to cross-check information sources (Clay, 2001, Schwartz, 1997). For a child at this level, checking requires additional effort, System 2 thinking. If 50% of the Harvard students didn’t check their answer to the bat and ball problem described at the beginning of this article (Kahne- man, 2011), why would we expect novice readers to check their word recognition attempt? They have already used a strategy to generate an initial attempt within the difficult task of reading a book for meaning. Even fourth-grade, struggling readers are much less likely than their grade-level peers to notice visual discrepancies once they have generated a meaning-based attempt (Schwartz & Stanovich, 1982). We need to help these students build a disposition to engage with and check the visual information.

In terms of cognitive cost, it is much easier for a novice reader to check the visual clues against the sounds in a predicted word than to sound out a word. Phonological awareness enables a child to hear the individual sounds in a word. Checking those sounds against the visual information develops phonics knowledge by matching sounds to orthographic patterns in printed words. Self-monitoring, not letter-by-letter sounding out, provides the mechanism for novice readers to refine their word recognition strategies and move toward the fast perceptual processing that characterizes skilled readers’ word recognition (Clay, 2001; Kaye, 2006; McGee et al., 2015; Schwartz & Gallant, 2011; Share, 2004).

Learning to Read

As Camden read the I Can Draw book, he successfully used a least-effort strategy to read many of the words in this text. He would not be able to recognize draw or body in a word list or set of flash cards. Within the context of this book he reads draw as part of the language structure he expects on each page. He reads body and the other nouns that complete the sentence on each page by searching the picture for the new part added to the drawing. He attempted this least-effort strategy for beak, but was not able to quickly access a word for this part of the bird.

Over the next few years, Camden will learn how to look at print and integrate his growing knowledge about letters, sounds, words, syntax, and meaning into efficient, least-effort processes for word recognition (Clay, 2001; Schwartz & Gallant, 2011). Phonemic awareness, phonics, and orthographic patterns are important knowledge sets that will support him.
as he gradually develops word recognition strategies similar to those by proficient readers. These skilled readers do not depend on letter-by-letter sounding out, but rather on a large set of sight words and words patterns used to decode unfamiliar words in larger chunks.

Notice that phonics is knowledge the reader brings to print and can access as part of various word recognition strategies. Letter-by-letter sounding out is a particular approach for using phonics knowledge that is not a least-effort strategy for either novice or expert readers. There is no conflict in a position that maintains that phonics is an important knowledge set, but that sounding it out letter-by-letter is not an efficient way to use that knowledge. Building on students’ strengths to support change over time in their word recognition strategies will help more students learn to read.

By the middle of first grade, Camden has progressed to reading a much more-complex story about a giant, a ghost, and a witch’s new house. After a brief book introduction he reads the first sentence, “A ghost and a giant came to see her new house.” He substitutes giant for ghost and ghost for giant and doesn’t seem to notice. Deciding that this substitution didn’t change the meaning of the story, his teacher doesn’t interrupt Camden’s reading. He reads the next 61 words accurately, including the word ghost, with one self-correction (no initially for knob). The next sentence was, “The ghost hid behind the giant.” After looking at the picture he tried, “The giant had bended” and stops to work on his last attempt. He tries “be/hid” as two parts and then reread from the beginning of the line reading hid and behind correctly, but leaving giant for ghost. Having already said giant once in this sentence he tried gains and gint for the final word before the teacher told him giant. He finished the story with four more self-corrections and one additional error of giant for ghost again.

It is clear that Camden still has more to learn about looking at print. He likely already knows how to read and write most, but he is not yet using that knowledge to support his initial attempt to recognize ghost or to monitor an attempt that fits the sentence meaning, and begins and ends with letters expected from his sound-to-letter analysis. Camden’s word recognition strategies have changed over the past few months. Although letter-by-letter sounding out was never one of Camden’s searching strategies, if you ask him how he figured out behind, he’s likely to say, “I sounded it out!” (Clay, 2001).

Camden doesn’t need to be aware of how he integrated various types of information to generate his initial attempts, monitored those attempts, and then recombined this information to solve the unknown word. What is important is that those of us who teach beginning readers aren’t blind to the complexity of word recognition learning, and know how to support change over time toward fast and efficient processing!

References
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