

rect responses from the beginning rather than the kind of behavior you see when teachers are using sloppy phonics programs. This data, correlated with data about specific changes in reading behavior, would yield good information about exactly what misconceptions about reading the kids had and how the changes in the MRI pattern were correlated with specific details in their word-reading behavior.

In summary, the MRI scientists' interpretation of brain-function data is what is logically referred to as a false dilemma or an argument from igno-

rance. The scientists observe a correlation between brain patterns and not learning to read.

The possibilities are:

1. The brain pattern caused the non-learning.
2. The nonlearning caused the brain pattern.
3. The interaction of a third variable caused both the nonreading and the brain pattern.

These scientists apparently don't consider possibilities 2 or 3, but proclaim

that the brain pattern causes the non-learning. There is no question that there are individual differences in reading performance; however, if the kid can find his way into the right classroom and follow simple directions, he can be taught to read in a timely manner.

An interesting footnote about the MRI data is that it is related to sounds and manipulation of sounds. Phonemic awareness is now a big deal—even for these scientists—but DI had it in 1968. That's one, but only one, of the reasons it worked in 1968. *ADP*

BOB DIXON



Emos Thuogths on Dyslexai

The medical community has recently brought its high-tech gadgets into the field of reading, with a special emphasis on poor reading. A hot topic of late is "Dyslexia and MRIs." *Time* had a feature on dyslexia (July 28, 2003). Zig Engelmann wrote a pithy response that is printed in this issue.

A friend of mine is an emergency room physician. I was telling him a little about this MRI stuff related to reading. He couldn't picture the value of an MRI for studying reading behavior. I can't either. On the one hand, I don't know squat about what you can and can't do with an MRI. I thought that MRIs revealed physiological anomalies—tumors and the like. What I do know is that relating behavior to neurological behavior is a very tricky business. Finger and Stein, in their book *Brain Damage and Recovery*, forcefully conclude that the *minority* of data support any sort of brain theory revolving around localization of function. Put

another way, the data point toward the notion that many—very, VERY many—parts and different regions of the brain interact in unknown ways, in association with any given behavior. Research on sea slug neurology strongly supports something like a "holographic" model of even the most simple and observable neurological systems.

I'm way out of my league here with MRIs and CAT scans and electroencephalographs and the like. Staying closer to home, I'd like to focus on dyslexia from a purely analytical point of view. As Engelmann and Carnine point out in *Theory of Instruction*, Direct Instruction is a rationalist-empiricist approach to instruction. This is pretty much the same as plain old science. Empiricism alone, although it sounds scientific, is like throwing mud against the wall to see what sticks. First, *things have to make sense*. It's possible (and common, I'd argue) to invest a great deal of time and effort in an interven-

tion study that makes no sense whatsoever to begin with. We often see studies that "show" something can't be true, logically. When we dig a little, we find all sorts of errors and weaknesses in research design.

That's a rather long way of saying that I don't take much research on dyslexia very seriously because it doesn't make any sense.

Dyslexia is defined like this:

Dyslexia is a neurologically based, often familial disorder that interferes with the acquisition of language. Varying in the degrees of severity, it is manifested by difficulties in receptive and expressive language, including phonological processing, in reading, writing, spelling, handwriting, and sometimes arithmetic. Dyslexia is not the result of lack of motivation, sensory impairment, inadequate instructional or environmental opportunities, but may occur together with these conditions. (Orton Dyslexia Society, 1994, now called the International Dyslexia Association.)

One obvious problem with this definition is the notion of “inadequate instructional or environmental opportunities.” Poor instruction can’t cause dyslexia, according to this definition. Therefore, poor instruction causes tons of reading problems that can’t be categorized as dyslexia (because dyslexia is a neurological impairment). Poverty can’t cause dyslexia. As it happens, poverty is about the only thing that really correlates well with reading failure, but all that failure can’t cause dyslexia. The definition above suggests that a poor child could *also* have dyslexia: apparently, a severe double whammy.

The International Dyslexia Association claims that about 4% of kids have dyslexia. If that were true, then there would be massive numbers of poor readers without dyslexia. Although still shying away from medicine, I’d be curious to see the differences—MRI, CAT, etc.—between the majority of poor readers and those neurologically impaired dyslexic kids. Mostly what I’ve seen is discussions of how MRIs change as a child changes from being a very poor reader to a good reader. Maybe I’m naive, but wouldn’t we pretty much expect the electrochemical behavior of the brain to change in some way as a person goes from struggling hopelessly with a highly complex cognitive activity to mastering it?

If dyslexia is a neurological impairment that causes reading difficulties that differ from those caused by poor instruction or exacerbated by poverty, then what are those differences in difficulties. The Dyslexia folks don’t tell us what the differences are, but they at least list the difficulties that dyslexic kids have:

1. early difficulties in acquiring phonic skills
2. a high proportion of errors in oral reading

3. difficulty in extracting the sense from written material without substantial rereading
4. slow reading speed
5. inaccurate reading, omission of words
6. frequent loss of place when reading
7. an inability to skim through or scan over reading matter
8. a high degree of distractibility when reading

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9. perceived distortion of text (words may seem to float off the page or run together)
10. a visually irritating glare from white paper or whiteboards.

I’m hazarding a guess that numbers 1–8 are common among many poor readers who don’t have a neurological impairment. There is no way I can think of to differentiate dyslexic kids from other poor readers based on these behaviors. (Numbers 2 and 5 seem a bit redundant to me.) Number 10 is probably not unique to poor readers at all: Under certain circumstances, I suppose anyone could find white paper or whiteboards a bit irritating, visually speaking. I suppose. It sounds fishy.

Number 9 seems to me to be the one potentially differentiating behavior and probably the one that inspired the notion of a neurological impairment to begin with. My earliest recollections of examples of dyslexic behavior didn’t

have much to do with “floating words,” but a lot to do with what I guess we could generally call “reversal.” The examples involved “seeing” letters (or numbers) backward, seeing letters transposed, and seeing words reversed. While normal children look at a capital letter **R** and see **R**, dyslexic kids are purported to see **Я**. Normal children see receive; dyslexic children see recieve. Very little of this screwed up perception would actually manifest itself very directly in reading. If a reader actually sees **Яed**, for instance, that child is most likely to say /rɛd/. If the child “sees” **Я** and thinks it’s **R** that’s not going to cause a decoding problem. If a child sees **Яeb**, that could cause a decoding problem, but most letters, written backward, are just backward letters.

Similarly, if the only problem is that a reader looks at **receive** and “sees” **recieve** that alone isn’t going to cause any reading difficulty. Look at all the people who *write* **recieve** but who think they’ve spelled the word right, and can certainly read what they wrote.

I suspect strongly that the only time a reversal of letters results in a reading error is when both versions are themselves words, such as **angle** and **angel**. If that is due to a neurological impairment, then we’re *all* neurologically impaired, one time or another. (Do neurological impairments come and go sporadically? Not likely.)

That leaves us with reversing words as one potential discriminator of the neurologically impaired dyslexics and just plain, ordinary poor readers. If a child comes across **was**, and truly sees it in reverse, then, granted, the child will say **saw**. Same thing with **no** and **on**, **not** and **ton**, and even **desserts** for **stressed**. It seems, though, too much of a coincidence that the examples given of “seeing words backward” are words that actually spell *something*, backward or forward: **saw** and **was**, and so on.

If a reader literally sees words backward (and I'd call that a neurological problem any day), then wouldn't we see kids trying to decode lots of other words—words that don't spell anything backward—very frequently? I think we would.

Here is a kid who is a very poor reader. Let's say that means, minimally, that for starters, the kid is struggling mightily with just decoding. Under those circumstances, I think we'd all agree that comprehension is likely to be extremely low. If such a child literally sees words backward, then why, during oral reading, doesn't she look at **the** and decode it as /ěth/? She would *have* to do that if she has a neurological perception problem that causes her to see words backwards. Has she just memorized an association: When you see "e-t-h," say **the**? I suppose that's theoretically possible. And she memorized, when you see "e-m-o-s," say **some**. But that would mean that she has done so for nearly every word she encounters. She has an incredible memory, not only because the vast number of words she has memorized, but because there are no alpha-phonemic clues whatsoever to help master the associations. Someone has probably told her time and time again that when she sees—whatever, **Я** or **R**—she should say /rr/. But somehow, when she sees "d-e-r," she says **red**. I'll bet she doesn't ever say **der** when she sees **red**. Not only are these incredible associations without phonemic prompts, they're actually completely loaded with false prompts.

And before she made these fantastic associations, would there not have been a period where she did say **eth** for **the**, **emos** for **some**, and **der** for **red**? In short, if a child sees letters in reverse, that usually doesn't cause reading problems, and if a child sees letters transposed, that doesn't cause any reading problems except in the sense that it causes all of us problems from time to time (e.g., angel and

angle). If a child sees *words* in reverse and reads practically anything at all correctly, that's a notable miracle. In terms of reading, dyslexic kids can't possibly be "seeing" what they are (or have often been) purported to see.

Kids make other reading errors that are difficult to attribute to a neurological impairment. Kids confuse **were** and **where**. All poor readers, predictably, do the same, and so do I, from time to time. It's nonsense to postulate on a neurological impairment that accounts for both "not seeing" something that is there (when a reader says **were** but

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the word is **where**), and moreover, for "seeing" something that isn't there (when a reader says **where** but the word is **were**). The latter would be a cousin of hallucination. (Maybe this is what the dyslexia people mean by "floating words." Random words float onto and off of the page.)

Words that are very similar to one another are easy for anyone to confuse, just as any two things in the universe that are very similar to one another are also easy to confuse: certain dogs and wolves, for instance. If the word is **elephant** and the oral reader says **ship**, then I'm betting on pretty severe but idiosyncratic brain dysfunction. Or a middle-school kid jerking my chain.

The dyslexia people say that dyslexic kids demonstrate "inaccurate reading,

including omission of words." I agree that omitting words is a subcategory of inaccurate reading. "Inaccurate reading" seems like a pretty broad category that could even include *adding words that aren't there*. More hallucination. Literally "not seeing" a word that is actually there is a lot like "not seeing" a letter that is actually there.

Maybe someone is using spelling examples to support the "reversal" hypothesis and then generalizing them to reading. For instance, one might postulate that a kid who writes "receive" as "recieve" sees letters reversed. Sometimes the simplest explanation is the best: The kid can't spell the word, period. Generalizing from spelling to reading is highly questionable in general, as well. Lots of people, including many adults, can read "receive" without any difficulty but struggle with spelling it. I'd say the same is true, only more so, for "mnemonics."

A kid who writes letters backward just hasn't learned to write them forward. Doing so usually isn't a reading problem and it isn't a spelling problem: It's a problem with learning that directionality is a critical discriminating feature for precious few concepts in the universe, including letters and numbers. Well, at least it's a problem of learning the conventional way to write letters and numbers. Reversing letters like i-e and e-i is a challenge for nearly everyone because both are legitimate and common spellings for /ē/. If there is a lot of evidence that dyslexic kids spell **receive** as **erceive** or **recevie**, then I have to give a little thought to the possibility that someone is seeing letters transposed and then transferring that to spelling. I wouldn't give it much thought, though.

In short, if dyslexic kids routinely see letters backward, letters reversed, or words backward, or if words routinely float on and off the page, then it would, in fact, occur *routinely* (and ran-

domly), not predictably, as it does. Why would kids always make errors that can very easily be explained in terms of normal concept learning and almost *never* make errors that can't be?

There is no analytical basis for postulating a neurological impairment for differentiating some poor readers from others, except when a kid verifiably has a brain dysfunction. That being the case, there is no firm theoretical basis upon which one might base empirical studies. I think it is fair to characterize this opinion as one well founded in Direct Instruction theory. I can imagine a lot of well designed experiments that would contradict the notion that a neurological impairment differentiates some poor readers from

all the rest, but why bother? I, personally, like the idea of saving the incredible resources associated with scientific experimentation for helping us answer questions for which we don't know the answers.

Right here, at the very end of this article, I have to confess that not only the *Time* article and all other current interest in dyslexia are much ado about nothing, but that this article is as well! It's not like the question of how to teach nonreaders and poor readers how to read well is a big mystery. Far from it. As a practical matter, the causes themselves of poor reading—real things like poverty or fanciful things like dyslexia—don't matter. Although, personally, I'd like to see poverty elim-

inated, it isn't going to be in my lifetime, and poverty isn't a *direct* cause of poor reading, anyway. While people are sitting around talking about causes—me included, by virtue of this article—some kids are out there this moment benefiting from the *solutions* to reading problems and underlying language deficiencies, and millions more ought to be. **ADI**

References

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The Failures of a Teacher Education Program: A Need for Change

As a recent graduate of Great Midwest University's* (GMU) teacher education program, I am compelled to express my concerns regarding the education preservice teachers receive at GMU and how (I feel) the program neglects training preservice teachers to be both effective and efficient teachers.

My story starts like that of most preservice teachers. I knew I wanted to be a teacher and chose GMU because of its reputation of having a strong education program. The College of Education at GMU is typically characterized as one of the best in the country and one from which school districts from all over seek graduates. As a 1st-year student, I had confidence in and entrusted my college education to this program. I had the simple and reasonable expectation that if I invested my

time, hard work, and money in this establishment, I would graduate knowing **what** to teach and **how** to teach it. Now that I have completed the course work, finished two very different student teaching experiences (one of which I had to "discover" on my own), and acquired a teaching job, I realize that GMU's teacher education program failed to meet my expectations.

As a recent student and now an educator, I am aware of many of the factors involved in educating a group of learners, and I have heard the many excuses as to why a child may or may not be able to learn (home life, socioeconomic class, a learning disability, etc.). I have come to believe, however, that regardless of the excuse, the bottom line is this: If a child fails to learn, a teacher has failed to teach. It is the teacher's

job to teach the students. Thus, it is the teacher education program's job to teach the preservice teachers how to teach in order to maximize student learning. Just as teachers must be held accountable for students' learning in the classroom, so must the teacher education program be held accountable for preservice teachers' learning in the teacher education program. Until such responsibilities are recognized and teacher trainers are held accountable, excuses for teacher's shortcomings will continue.

I do not regret receiving my education at GMU. I learned a lot both in and outside of the classroom that has made me the person I am today. But I believe that GMU's teacher education program failed to teach me the things I needed to know to teach effectively and efficiently. I cannot help thinking about how much more confident and capable I could have been when going into my first classroom had my course-

*fictitious name