Beginning to Read and the Spin Doctors of Science: An Excerpt

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Theorizing and research are informed by assumptions about what knowledge is and who gets to say what counts as knowledge. In this excerpt, Taylor critically unpacks the recent debates over phonemic awareness and reading. Her analysis is a reminder of the positionalities that undergird all writing in the field of literacy education. She asks us all to consider how we think about the ways in which knowledge about reading and reading instruction is constituted.

While there are many researchers who have contributed to the research base on the importance of phonemic awareness in learning to read, there are only a small number of researchers whose studies are central to the idea that we should *specifically* teach phonemic awareness skills to young children.

One of these researchers is Barbara Foorman, who consistently references Marilyn Jager Adams and Keith Stanovich, both of whom also agree that phonemic awareness should be specifically taught. In *Beginning to Read*, Adams relies heavily on the research studies conducted by Stanovich. She discusses no fewer than eight of his articles in her report, and in her bibliography she makes twenty-six references to his work, including "Matthew Effects in Reading: Some Consequences of Individual Differences in the Acquisition of Literacy," which received the Albert J. Harris Award from the International Reading Association, is also referred to by Foorman, and is one of the most -cited research articles in support of the proposition that variation in phonological awareness is causally related to the early development of reading.

"The remedy for the problem must be more of a 'surgical strike,' to use a military analogy," Stanovich writes in "Matthew Effects in Reading," adding, a few sentences later, "identify early, remedy early, and focus on phonological awareness" (pp. 393, 394).

The research of Foorman and Stanovich is also discussed in Grossen's report on the research of NICHD—which is hardly surprising, since both receive research funding from that institute. Adams' government report is also mentioned. Because the research of Foorman and Stanovich and the report written by Adams are also frequently referred to and relied upon by governmental agencies at the national, state, and local levels, I have begun my evaluation of the research on phonemic awareness with an analysis of some of their work. The Foorman studies that are a part of my analysis are those referred to by Honig and Winick[2], which are also relied upon by the states of California, Texas, and North Carolina.[3] They are also the studies referred to by Grossen[4] in the NICHD research circulated by John Silber to every superintendent in the state of Massachusetts.

In my analysis of Stanovich's research, I have begun with "Matthew Effects in Reading," and I have also read the reports of a number of the studies to which he refers in that article.[5] "Even more popular has been my work on Matthew Effects in the reading development," Stanovich (1993/1994) writes in his "Distinguished Educator" article in *Reading Teacher*. "The term Matthew Effects derives from the Gospel according to Matthew: 'For unto everyone that hath shall be given, and he shall have abundance; but from him that hath not shall be taken away even that which he hath' (XXV: 29). It is used to describe rich-get-richer and poor-get-poorer effects that are embedded in the educational process" (p. 281).

In addition, I have also read many of the studies which now refer to "Matthew Effects" as if Stanovich's arguments and conclusions are indisputable. Thus the corpus of data for this analysis goes well beyond what I consider to be just the primary studies in phonemic awareness.

Since I am trained in both anthropology and psychology, I will present a synthesis of my analysis from two very different perspectives. I begin with an exploration of empirical research in which reading is regarded as a psychological process and the emphasis is on reading words.[6] This is an "in-the-head" viewpoint on young children learning to read, which, as Adams states, "depends as much on [children] detecting invariants as on attending to distinctive or differentiating features" (p. 203). Learning to read is "the creation or strengthening of associations"—visual, auditory, motor, or conceptual—"to interlink the printed appearance of words with ones knowledge of their sounds, contexts, functions, and meanings" (p.206).

I found out as I was writing *Beginning to Read and the Spin Doctors of Science,* politics doesn't stop at the schoolhouse door.

Then I will explore the research on phonemic awareness from the sociocultural perspectives of practical intelligence and everyday cognition. Such a viewpoint takes the research out of the child's head, considers learning to read (and write) from the perspective of literacy as social and cultural practice, and draws upon research in literacy but also on the work of many other scholars whose work is relevant to our understandings of the reading process and how young children learn to read.

"Speech," Oliver Sacks explains in an essay, "natural speech, does *not* consist of words alone, nor of 'propositions' alone. It consists of *utterance*—an uttering-forth of one's whole meaning with one's whole being—the understanding of which involves infinitely more than mere word-recognition" ("The President's Speech," p.81). Similarly, reading is more than decoding the sounds that letters and groups of letters represent, or even of reading words. I can decode and "read" entire paragraphs in Spanish—but that doesn't mean that I understand what the text *means.*

"Reading, then," Alberto Manguel writes, "is not an automatic process of capturing text in the way photosensitive paper captures light, but a bewildering, labyrinthine,[7] common and yet personal process of reconstruction. Whether reading is independent from, for instance, listening," Manguel continues, "whether it is a single distinctive set of psychological processes or consists of a great variety of such processes, researchers don't yet know, but many believe that its complexity may be as great as that of thinking itself" (p. 39).

You might think that much of this sounds like a dry intellectual treatise, a silly argument between academics and nothing more, but as I found out as I was writing *Beginning to Read and the Spin Doctors of Science*, politics doesn't stop at the schoolhouse door.

PHONEMIC AWARENESS RESEARCH … ANALYZED FROM AN EXPERIMENTAL PSYCHOLOGICAL PERSPECTIVE

My analysis of the documentation begins with an examination of the research on phonemic awareness from an experimental psychological perspective.[8] I focus primarily on the

foundational work of Keith Stanovich and his co-researchers Anne Cunningham, Barbara Cramer, and Dorothy Feeman, who participated with him in different phonemic awareness studies. What I have found, you will see, is that in these phonemic awareness research reports and articles, other studies are selectively and misleadingly cited out of context to support the argument that explicit training in phonemic awareness is the key to reading success.

I have also reviewed the published accounts of many of the experimental studies that Stanovich and Foorman reference to support their proposition that explicit phonemic awareness training is the key to reading success.[9] To some degree, all of these experimental studies: (1) were based on the assumption of cultural uniformity; (2) focused on aggregates of children; (3) separated children's everyday lives from their performance on isolated cognitive tasks; (4) artificially disconnected the forms of written language from the functional meanings of print; (5) assumed that children's early cognitive functions work from abstract exercises to reading as meaningful activity; (6) depended on cognitive tests that have no value outside the testing situation; (7) assumed the transfer of learning; and (8) totally disregarded the critical relationships that exist between teachers and children, Further. a critical review of a number of key studies that are frequently cited reveals that some of the research used to support the direct training argument does not support this proposition, Some studies actually provide contradictory evidence.

To support the statement that studies are selectively and misleadingly cited out of context, I will focus on one of the landmark articles in phonemic awareness research—"Matthew Effects in Reading" by Keith Stanovich. In this paper Stanovich discusses the literature on individual differences in the cognitive skills related to reading, and he uses his critique of the literature to support the hypothesis that slow development in phonemic awareness "delays early code-breaking progress and initiates the cascade of interacting achievement failures and motivational problems" (p. 393).

"The cycle of escalating achievement deficits must be broken," Stanovich asserts, "in a more specific way to short-circuit the cascade of negative spinoffs" (p. 393).

To bolster his argument for phonemic awareness training, Stanovich writes, "a growing body of data does exist indicating that variation in phonological awareness is causally related to

the early development of reading skill." In this context he states, "most convincing, are the results of several studies where phonological awareness skills were manipulated via training, and the manipulation resulted in significant experimental group advantages in reading, word recognition, and spelling" (p. 363).

One of the studies that Stanovich cites in support of this statement is by Swedish researchers Åke Olofsson and Ingvar Lundberg, a study in which the "long-term effects" of phonemic awareness training in kindergarten are evaluated. "Great variances, ceiling effects, and group heterogeneity created many difficulties in evaluating the training effects," Olofsson and Lundberg write in the abstract of their paper. They state in their discussion of methodological problems that "the increase in precision gained from an elaborated statistical analysis may be rather small compared to the uncertainty introduced by the post-test treatment delay and the lack of randomization often occurring in practical settings. However, this is no excuse for not trying to make the best of the situation."

In discussing their testing protocols, these researchers caution that "[I]n addition, we must consider the effects of violating the assumptions about normally distributed scores and homogenous error variances. Distributional violations have generally small effects but unequal variances in combination with unequal group sizes may seriously affect the statistical significance tests."

In an examination of their "preschool test protocols," Olofsson and Lundberg observe, "the children with negative development almost without exception passed the tests very fast rendering test -administers remarks like 'fast' and 'very fast.'" They go on to state, "On some test protocols the assistant had made notes like 'ants in the pants.' "The researchers then talk about letter-name bias and comment that "some children completely refused to utter phonemes or certain phonemes but could silently make the correct synthesis."

Olofsson and Lundberg observe that a great number of children had already reached a high level of phonemic awareness before starting school and before participating in their phonemic awareness training program. Interestingly, they also found some nonreaders who had "complete ability" with their phonemic awareness test. How could this be explained? Olofsson and Lundberg do not answer this question.

Olofsson and Lundberg conclude, “The ability to predict the effect of, for example, a four-month or a two-semester training program is limited. However, the results found here suggest that a longer training program in combination with an examination of the children’s total alphabetical environment could yield important information about the parameters in the development of phonemic awareness.”

By juxtaposing statements made by Stanovich with those of Olofsson and Lundberg, it IS possible to gain some appreciation of the ways in which studies are selectively and misleadingly cited out of context. Clearly, there is much to be learned from the research of Olofsson and Lundberg, but 'III their research does not provide strong support for Stanovich’s argument Contrary to the claim by Stanovich that this study provides “most convincing” evidence that training in phonemic awareness is “causally related to the early development of reading skill,” the most that Olofsson and Lundberg say is that “the children who participated in the phonemic training program seemed to have benefited from it to some extent. At least they improved their scores on phonemic synthesis tests m school.”

The misleading use of citations might seem like a small problem—but consider the larger context. “Matthew Effects in Reading” is relied upon by both Adams and Foorman, and it is also relied upon by the state of California to justify the “ABC Bills” and to mandate that children receive phonemic awareness training. NICHD has used “Matthew Effects in Reading” in the report that Silber sent to every school superintendent in the state of Massachusetts. But when the references are checked, they are often problematic. Much of what is stated by Stanovich is little more than “spin doctoring”' to support an argument with which many researchers and teachers who have spent their lives observing children's early literacy development would strongly disagree.

The articles that are cited do not establish conditions of reciprocal causality; in fact they do not even establish causality.

Let me provide another example. Once again I will stick closely to the text to avoid over-interpretation. In “Matthew Effects in Reading,” having “established” causation between phonemic awareness and early reading development-at least to his own satisfaction—Stanovich

goes on to discuss the concept of "reciprocal causation." He cites the work of Linea Ehri, which suggests that reading acquisition itself facilitates phonological awareness. He adds references to Charles Perfetti, and to Richard Wagner and Joseph Torgesen, and then states that "the situation appears to be one of reciprocal causation." But none of the references Stanovich provides supports this proposition.

"Such situations of reciprocal causation can have important 'bootstrapping effects' " Stanovich states, without any evidence to back him up. Then comes the spin. "However, the question ... is not which direction of causality is dominant. The essential properties of the model being outlined here are dependent only on the fact that a causal link running from phonological awareness to reading acquisition has been established, independent of the status of the opposite causal link" (p. 363).

Unfortunately for this argument, the articles that are cited do not establish conditions of reciprocal causality; in fact they do not even establish causality. At best, and even then subject to the many limitations and problems inherent in the various studies, all that they establish is a possible correlation, and correlation is *not* causation—in either direction. But let's suspend judgement for a moment and say, "Okay, we accept that there is an apparent correlation between phonemic awareness and reading acquisition, and that this may imply a causal link one way or the other." By what leap of faith can we then discard one of these two possibilities and accept only the other, as Stanovich does when he states that "the causal link running from phonological awareness to reading acquisition has been established independent of the status of the opposite causal link?"

More importantly, how do we end up with the definitive conclusion that the direction of this phenomenon of reciprocal causation is unimportant? Clearly it is of national importance. School districts across the country are being told by state governments to shift direction in reading instruction, so how can it not be important? Where are the data to support Stanovich's "one way" causal link conclusion that explicit teaching of phonemic awareness will lead to reading acquisition? Certainly not in "Matthew Effects in Reading," nor in any of the other papers that I have read on phonemic awareness.

However, if we continue to suspend judgement and put aside the severe limitations of experimental research studies, we could still find empirical evidence that contradicts the position

that Stanovich has taken. In a paper published one year after "Matthew Effects in Reading," Perfetti, Beck, Bell, and Hughes write, "What is clear is that learning to read can begin in a variety of ways, most of which may require only minimal explicit knowledge of speech segments. Thus, the rudimentary ability to manipulate isolated segments may be necessary for significant progress in reading. However, it is *reading* it*self,* we suggest, that enables the child to be able to analyze· words and to manipulate their speech segments. It is not that the reader performs such manipulations on the orthography. Rather, learning some orthographic principles *through reading* enables the discovery of parallel phonemic principles" (p. 317, emphasis added).

A final example of selective and misleading referencing that will provide a context for a critical analysis of the Barbara Foorman studies that have received national attention is Stanovich's contention that "Although general indicators of cognitive functioning such as nonverbal intelligence, vocabulary, and listening comprehension make significant independent contributions to predicting the ease of initial reading acquisition, phonological awareness stands out as the most potent predictor" (p. 363). To support this statement Stanovich quotes a research study that he conducted with Anne Cunningham and Dorothy Feeman.[10]

In this study these researchers administered a series of tests to first-, third-, and fifth-grade children who attended a "predominantly middle-class" elementary school. The children were given tests of general intelligence—the Picture Peabody Vocabulary Test (all groups); the Raven's Colored Progressive Matrices (1st and 3rd grades); and the Raven's Standard Progressive Matrices (5th grade). Then there were timed decoding tests with words and pseudowords—lat, wuck, mip, mish—and vocal reaction times were assessed.

Is this reading? Lat. Wuck. Mip. Mish.

I would think not.

Then the children were tested for reading comprehension with the "stimuli" for each group consisting of three paragraphs taken from the 1972 Revised Edition of the Diagnostic Reading Scale. Then there were two phonological awareness tasks for the first graders—"the strip initial consonant task" and the "phonological oddity task." In addition, the authors state that

"All of the children had completed other cognitive tasks that were part of another investigation." Notably, there is no discussion of the effects of all this testing on the children.

In analyzing the tasks that were given to the children in this testing situation, we might begin by asking a critical question raised by Sylvia Scribner.[11] "To what extent does the (experimental) task selected for study share at least some characteristics with other tasks?," Scribner asks, with regard to the phenomena being studied. In other words, are these laboratory tasks representative of the ways in which young children encounter print in their everyday lives? *Is this reading? Lat. Wuck. Mip. Mish.* I would think not If the pseudo-words were timed, would that reflect everyday uses of print? Definitely not. Knowing how contrived the paragraphs are on the Diagnostic Reading Scale, is this task representative of authentic reading tasks? Almost certainly not. Given these difficulties, can we generalize from the completion of these tasks? I suggest not. The researchers do not establish cross-task commonality on these arbitrarily selected laboratory tasks. Given that the tasks have no generalizability, Scribner encourages us to focus on the children and ask ourselves whether the researchers can make generalized statements based on the performance of such a small number of individual children. Intuitively, we might answer, we don't think so.

The Importance of Statistics Should Not Be Overestimated

But we don't have to answer intuitively; we can answer analytically. If we examine the statistical procedures we can question whether the research supports the proposition that phonological awareness stands out as the most potent predictor of the ease of initial reading acquisition. Before we examine the statistics, however, let me say that I am convinced that one of the reasons the phonemic awareness research has gone unchallenged is that most of us are not comfortable in critiquing statistical studies. For my own part, I am fascinated by mathematical representations and by the problem solving involved in statistical analysis, and fortunately, over the years I've had considerable support in my analysis of reading studies which rely heavily on the use of parametric statistics. I've consulted with a statistician who has a Ph.D. in statistics, is a fellow of the American Statistical Association, was awarded a senior research fellowship in statistics at the National Institute of Standards and Technology, and has received many awards for his work in statistics. I've also worked closely with a scientist with considerable expertise in engineering statistics who has spent the last fifteen years critically analyzing the uses and

misuses of statistical procedures in commercial settings. Experimental psychologists use the same basic parametric statistical procedures to study the cognitive functioning of children as engineers use to assess the failure rates of mechanical components in nuclear power plants and commercial aircraft.

One of the reasons the phonemic awareness research has gone unchallenged is that most of us are not comfortable in critiquing statistical studies.

The study Stanovich cites to support the proposition that "phonological awareness stands out as the most potent predictor" of "ease of initial reading acquisition" violates three fundamental properties of parametric statistics. The first property is that the sample on which measurements are being made is a random sample from both the specific population being studied and the population to which the results are being generalized. The "sample" in Stanovich, Cunningham, and Feeman's study is in fact highly subjective and selective with 56 first-grade children, l8 third-grade children, and 20 fifth-grade children drawn from a middle-class elementary school.

In the published article, Stanovich, Cunningham, and Feeman recognize that this situation is problematic: "The sizes of the third- and fifth-grade samples were small, rendering tentative any conclusions from the results of these groups" (p. 298). Unfortunately, this caveat does not appear when the study is cited in "Matthew Effects in Reading," nor in Adams' *Beginning* to *Read.*

The second fundamental property of parametric statistics on which the experimenters based their analysis is that both the population and the sample are normally distributed with respect to the attribute being studied. The experimenters do not present their raw data nor do they show how the various test results are distributed. But with such small numbers of children, it is highly unlikely that the scores were normally distributed. The lack of a normal distribution is problematic.

"Low power and non-normal distributions of test scores lie behind the limited application of statistical tests," Olofsson and Lundberg write in the article cited earlier. Then they add that

"the importance of statistics should not be overestimated." Non-normal distributions raise all kinds of questions about the data, but even if the sample distributions were normal, the experimenters' statistical inferences and conclusions would still only apply to their limited and subjective sample and not to any broader population—which is the answer to Scribner's question.

The third fundamental property of parametric statistical analysis involves the use of an interval scale. Using a strategy that is typical of most of the experimental research on phonemic awareness, Stanovich, Cunningham, and Feeman use variables and test measurements which are both qualitative and subjective, that are at best ordinal, and convert them into number-assigned, interval scales in order to use parametric statistical procedures.

In further support of these arguments, I refer you to Sidney Siegel's *Nonparametric Statistics for the Behavioral Sciences.* The third chapter focuses on parametric statistics-the kind of statistics used in phonemic awareness studies. Siegel presents a clear discussion of the assumptions, problems, and dangers inherent in the use of parametric statistical tests in the behavioral sciences. Siegel's discussion supports the criticisms stated above that, in general, the manner in which the sample is drawn, the nature of the population from which the sample is drawn, and the kind of measurement or scaling which is employed to define the variables involved, *all preclude the use of parametric statistical methods.*

Siegel also lists the conditions which must be satisfied before *any* confidence can be placed in *any* probability statement obtained by the use of parametric tests (p. 19) and notes that "these conditions are ordinarily not tested in the course of the performance of a statistical analysis. Rather, they are presumptions which are accepted, and their truth or falsity determines the meaningfulness of the probability statement arrived at by the parametric test." He further notes that, the "scales used by behavioral scientists typically are at best no stronger than ordinal" Cp. 26), and that the inappropriate use of "interval" scales results from the "untested assumptions" made by investigators, including the assumption that the underlying distribution is "normal" (p. 27).[12]

Siegel concludes his discussion by noting that "the assumptions which must be made to justify the use of parametric tests usually rest on conjecture and hope, for knowledge about the

population parameters is almost invariably lacking" (p. 32). This certainly applies to the study of Stanovich, Cunningham, and Feeman.

The research studies on phonemic awareness that I have reviewed are too physicalistic, too reductionist, and too impoverished.

But other assumptions are also made that are particularly problematic. In this study the researchers quite literally discarded data. For example, in their test of "decoding speed" the naming of 20 real words and 15 pseudowords—they simply discarded all incorrect responses and all responses where the "subjects" took longer than 3 seconds to name a word. How many of the 35 individual words did each "subject" get right in less than 3 seconds, and how many responses from the "subjects" were discarded? Did they discard just a few answers from a few children, many answers from a few children, or many answers from many children? We don't know, because the experimenters don't say, but in another of their speed tests, they admit to discarding 20 percent of the children's answers as "inappropriate" before analyzing the remaining data.

In the "decoding speed" test, Stanovich, Cunningham, and Feeman also proceed to analyze the remaining data, with the result that the "subjects" response times on this decoding test were highly correlated with their reading comprehension as measured by the Metropolitan Achievement Test. The magnitude of the effect that inclusion of the discarded data would have had on this correlation is unknown, but the correlation would obviously be reduced, perhaps even to insignificance. The researchers further claim that this "decoding speed" test had a high "split-half reliability" (Spearman Brown Corrected), when in fact George Ferguson, in *Statistical Analysis* in *Psychology and Education*, states categorically that this reliability measure should not be used with speed tests (p. 367).

Given the statistically inappropriate procedures which Stanovich, Cunningham, and Feeman use throughout this study, and their "selective" use of some of the data, the reliance on this study in "Matthew Effects" to support the proposition that phonological awareness stands out as the most potent predictor of the ease of initial reading acquisition seems highly questionable.[13] But the problems with this research go even deeper.

Mechanical Models Break Down Hopelessly Before the Sheer Creativity of the Brain

"One of the reasons I'm against mechanical models," Oliver Sacks tells interviewer Wim Kayzer, "is that they are too physicalistic and too reductive and too impoverished and too boring. and I think they break down hopelessly finally before the sheer creativity of the brain."

Kayzer asks several questions, and Sacks continues talking about the brain. "It's not a library. It's not a granary. It's not a computer." Then, speaking of memory, Sacks asserts, "memories are constructions and not xeroxes, not facsimiles, not reproductions." A few minutes later he says, "There is no snapshot of how things are. Whatever comes into the mind always comes in a new context and in some sense is colored by the present. This doesn't mean that it is distorted, but it is against any mechanical reproduction."

The research studies on phonemic awareness that I have reviewed are too physicalistic, too reductionist, and too impoverished. The theories on which these studies are founded do break down whenever I have observed or worked with a young child who is learning to read. The brain is not a library; it's not a granary; it's not a computer. And children do not produce mechanical reproductions when they are learning to read.

PHONEMIC AWARENESS RESEARCH... ANALYZED FROM A SOCIOCULTURAL PERSPECTIVE

I am now going to shift my focus to explore the central characteristics of phonemic awareness research from the perspective of research on practical intelligence and everyday cognition. This analysis builds on the work of Michael Cole, Anne Haas Dyson, Emilia Ferreiro and Ana Teberosky, Jean Law, Barbara Rogoff, Sylvia Scribner, Lev Vygotsky, and James Wertsch. all well-known scholars who are highly regarded for their scientific research.

From the perspective of research on practical intelligence and everyday cognition, the major criticisms of phonemic awareness research are as follows:

1. Experimentation rests on the assumption of cultural and social uniformity.

Jean Lave argues that the concept of cultural uniformity "has served as a mandate to treat culture in cognitive studies as if it were a constant, as if nothing essential about thinking would

be disturbed if its effects were controlled experimentally”[14] The assumption of cultural uniformity is a fundamental theoretical weakness in phonemic awareness research Ignoring the social, cultural, and intellectual lives of children invalidates the measures.

Inspired by the ideas of Vygotsky, Luis Moll explores the concept of the cultural mediation of thinking in his research which focuses on Spanish-speaking children in school and at home with their families.[15] “This social thing called literacy has come to possess you,” Moll says, "you find it unthinkable to live without it, and for most of you, reading has become a substitute for life.” To explain the concept of cultural mediation, Moll quotes Scribner, who was his colleague and friend, as if in conversation with her.

“Vygotsky's special genius,” Scribner writes, “was in grasping the significance of the social in things as well as people. The world in which we live is humanized, full of material and symbolic objects.” She gives as examples signs and knowledge systems, for example, “that are culturally constructed, historical in origin and social in content.”

In positivistic research there is a total lack of recognition that literacy ... is embedded in everyday activities, or that the use of complex symbolic systems is an everyday phenomenon constitutive of and grounded in the everyday lives of young children and their families.

She continues, “Since all human actions, including acts of thought, involve the mediation of such objects,” which she describes as tools and signs, "they are, on this score alone, social in essence. This is the case, whether acts are initiated by single agents or a collective and whether they are performed individually or with others.”[16]

“To put it succinctly” Moll writes in his to-and-fro with Scribner, “people interact with their worlds, which are 'humanized, full of material and symbolic objects,' through these mediational means, and their mediation of actions through cultural artifacts, *especially language in both its oral and written forms* plays a crucial role in the formation and development of human intellectual capacities. Notice that the central point is not simply about the importance of tool and symbol use by human beings, it is a stronger claim than that, it refers to the essential role of cultural mediation in the constitution of human psychology”[17]

In phonemic awareness studies, children do not interact with their world. Their lives are dehumanized, and researchers ignore or remain unaware of the role of cultural mediation in the early reading development of young children. In positivistic research there is a total lack of recognition that literacy—I prefer to talk about both reading and writing—is embedded in everyday activities, or that the use of complex symbolic systems is an everyday phenomenon constitutive of and grounded in the everyday lives of young children and their families.[18]

2. There are no children in the phonemic awareness studies, only labels, aggregates, and measures.

In these studies children are referred to as "normals," "good readers," "poor readers," "disabled readers," "passive organisms," and "subjects," subscript i in a mathematical formula, and "cohorts." Nameless, faceless, they are phenotypes, data points on a scatter plot, "phonologically disabled," "phonologically deficient," and "limited English proficient." In one study children are identified as 70 percent African American, 16 percent Hispanic, 5 percent Asian, 9 percent White, and 15 percent ESL, but that is all. They are anonymous, their lives unknown. They are identified only by their participation in federal lunch programs, segregated by their socioeconomic status, ethnicity, and race or by their scores on some artificial test. Irrespective of what is happening to them, they all receive the same "treatment," and there is a total disregard of the social, political, and economic circumstances in which young children live their everyday lives.

To meet Erik and Alejandra and Marisela in studies of early literacy development, we must tum to the research of Emilia Ferreiro and Ana Teberosky. To learn more about the literacy development of Jameel and Ayesha and William, we must read Anne Haas Dyson. In fact, there are numerous longitudinal studies of children's early literacy development that are disciplined and systematic in their data collection procedures and rigorous in their scientific analysis, and these provide counterevidence to the reductionist empirical studies of phonemic awareness and early reading development.[19]

3. In phonemic awareness research, there is a complete separation of children's everyday worlds from their performance on certain isolated cognitive tasks.

Such an approach to the study of language and literacy is problematic, and the difficulties are underscored by James Wertsch, who writes, "Like Vygotsky and Bakhtin, I believe that it is

often difficult if not meaningless to isolate various aspects of mental processes for separate analysis" (p 14). The phonemic awareness research ignores the social and cultural embeddedness of human learning.[20] The research disregards the considerable body of work which explores the social and cultural literacy practices of very young children. For example, in her discussion of the social consequences of written formulas, Anne Dyson provides a powerful example of the ways young children search for meaning in isolated cognitive tasks.[21]

This is a story about AbcdefGhiJklMnoPQRstuvwXYz," a first grader writes, "One day there was a A. And One DaY There was a B. And One Day there was a c. I like aBcdefGhiJ KlmnoPQrstuvwxY and Z. The End."

Even so, as Dyson states, "A quick story about ABC would not be likely to engender an intense response from one's peers." The social fabric of learning breaks down. Mapping the smallest units of sound onto the smallest units of print is an irrelevant activity It's hard to read a story about a digraph or a schwa.

4. In phonemic awareness research, the form of written language is separated from the meaningful interpretation of the text.

There is no text. The practice of investigating the mapping of isolated sounds onto decontextualized units of prim has no purpose for the reader. It is a meaningless exercise. You cannot have an opinion about a digraph, you cannot express how you feel about a diphthong, and you cannot deepen your knowledge of your everyday world with an "øū" or an *"ēγ*. Children cannot discuss the phonemic awareness exercises that are prescribed to them within the sociocultural contexts of their everyday lives. Vowel digraphs have no meaning in time and space. No transactions can take place.

"Recall," Louise Rosenblatt tells us, "that the text is more than mere paper and ink" Then, referring to the reader, she states, "The physical signs of the text enable him to reach through himself and the verbal symbols to something sensed as outside and beyond his own personal world."[22]

In *Family Literacy,* the first of *my* own longitudinal studies of young children learning to read and write, I stated, "The children's increasing fascination with both writing and reading was well evidenced in the present research, and their fascination with print seems to occur when they

become highly sophisticated in their functional utility of print." And then, as if I was preparing to write *Spin Doctors* almost twenty years later, I wrote, "Developing metalinguistic awareness of written language forms was added to the literacy agenda of the children. But still, the activities were meaningful in their everyday lives." (p.77).

5. Phonemic awareness research is based on the false assumption that children's early cognitive functions work from abstract exercises to meaningful activity.

To the contrary, as Vygotsky states, "We have found that sign operations appear as a result of a complex and prolonged process subject to all the basic laws of psychological evolution. *This means that sign-using activity in children is neither simply invented nor passed down by adults:* rather it arises from something that is originally not a sign operation and becomes one only after a series of qualitative transformations" (emphasis in the original) [23]

An example of these Vygotskian evolutionary processes and qualitative transformations in a child's early reading and writing is provided by the story of Nicola, whose teacher participated in the Biographic Literacy Profiles Project (BLiPP), a longitudinal study of early literacy development which lasted from 1986 to 1994 (Taylor, 1993). Nicola was sexually and physically abused by her father for the first three years of her life. In kindergarten Nicola was supported both socially and academically by Sharron, her teacher, who did not force her to practice phonemic awareness drills, or make her participate in other rehearsal-for-reading exercises. There were no "surgical strikes," to quote Stanovich, and there was no "quick remedy."

Nicola used writing as one of the ways in which she coped with the difficult circumstances of her everyday life. She wrote letters to her teacher and took telephone messages even though she did not know the letters of the alphabet and was unable to transform the sounds of language into their written form. But then, over the period of a year her scribble-like writing began to include letter-like forms. She began to connect letters with sounds. She used a pointer to point to the words in the big book stories that she "read" to the other children in the class and eventually she began reading some of the words in her own interpretation of the story

But Nicola's ability to communicate through print had far deeper Significance in her everyday life than just learning to read. When she was angry or afraid she expressed how she felt

m print. On one occasion when her teacher was away and she was taught by a man, she wrote all over her face, her arms, and her legs. Through print, she expressed her anger and her grief, and eventually the ways in which she had learned to use print helped her to improve her sense of well-being.

I think of Nicola when I read the phonemic awareness research. If this approach to reading is going to be successful, it has to work for even the most fragile of our children.

6. **In phonemic awareness research, the tests given to children provide measures which are of no value outside of the testing situation**.

In their discussion of social constraints in laboratory and classroom tasks, Denis Newman, Peg Griffin, and Michael Cole (1984) state, "The key to making claims in the laboratory is the psychologists control over the task and the conditions under which the subjects undertake the task" These researchers go on to state, "Whether laboratory settings are used for testing cognitive theories or for administering psychological tests, the cognitive processes modeled in them and the cognitive accomplishments tested are thought of as representing more than esoteric games…. But the constraints on activity used to create model systems render them systematically dissimilar to the systems of activity created in the society for other purposes"[24] (pp. 172-173).

"On tests like the Woodcock-Johnson, kids scored really low, but, for example in their everyday reading and writing, they did have the ability to encode and decode."

Wertsch expands upon this argument. Citing studies by Donaldson, Rogoff, Cole and Scribner, Lave, and Rogoff and Lave, he states, "In general, these studies have shown that children and adults who were not thought to have a particular ability on the basis of an assessment in one context did in fact demonstrate that ability in other contexts" (p. 94). This has consistently been my experience as an ethnographer working with children and their families or with children and their teachers in school. In the Biographic Literacy Profiles Project, which lasted for more than eight years, I was continually working with teachers whose observations of

children reading and writing in classroom settings did not support the findings of the tests that were administered to them.

Ironically, the test with which we had the most difficulty was the Woodcock-Johnson Revised—the same test that is used in many of the phonemic awareness studies I have included in *my* analysis, and the same test that was used by Foorman and her colleagues in the NICHD reading studies which are being used across the country to rationalize the new emphasis on teaching decontextual skills. During the course of the eight-year project, we were continually responding to children's deficits and "deficiencies" that were identified by the Woodcock-Johnson, but which were not evident in the disciplined and systematic documentation of children's reading and writing in classroom settings.

"That was the problem," one of the teachers with whom I worked for many years commented in a recent conversation. "We were always trying to counter the ways in which children's reading abilities were being tested in isolated situations. On tests like the Woodcock-Johnson, kids scored really low, but, for example in their everyday reading and writing, they did have the ability to encode and decode."

7. In phonemic awareness research, there is an underlying assumption that there will be a transfer of learning from isolated phonemic awareness exercises to reading texts.

This assumption is reminiscent of the late sixties and the alphabetic paradox which Phil Gough referred to as an "infamous fact." In "The Cooperative Research Program in First Grade Reading Instruction," Guy Bond and Robert Dykstra reported that knowledge of the alphabet is the single best predictor of reading achievement. But as Jay Samuels pointed out, there were no studies, and no evidence to support the proposition that specifically teaching the alphabet facilitated learning to read. The question that was raised was whether the children who knew the alphabet were ever specifically taught the alphabet, and if they weren't, then why should we presume that other children will profit from such instruction? [25]

At about the same time in the sixties, there ,vas a "phoneme-grapheme- correspondences-as-cue-to-spelling-improvement" movement; and a major study was undertaken at Stanford University which produced over 10,000 pages of lists, analyses, and statistics regarding the

subtle grapheme-phoneme correspondences in the American-English language. The purpose of this study was to reform language arts programs in schools across America—sound familiar? — and to help improve school spelling programs. Paul Hanna and his many colleagues who participated in the study produced a tome of 1,716 pages. Figure 1 has been adapted from their 22-vowel classification of graphemic options representing phonemes. Figure 2 is from the 30-consonant classification.

Just as specifically teaching the alphabet did not work, neither did the attempts that were made to improve spelling through specifically teaching the phoneme-grapheme relationships identified by the Stanford researchers. It didn't work for the reasons discussed earlier. There was a complete separation of children's everyday worlds from their performance on these isolated cognitive tasks. The form of written language was separated from the meaningful interpretation of the text. And the approach was based on the false assumption that the child's early cognitive functions progressed from abstract exercises to meaningful activity. …

Frequency and Percentage Tabulations of Phoneme-Grapheme Correspondence in American English: 22-Vowel Classification

Phoneme	*Grapheme*	*Frequency*	*Percent*
/E/		2,538	
	E	1,765	69.54
	EE	249	9.81
	EA	245	9.65
	E-E	62	2.44
	I-E	44	1.73
	I	38	1.49
	IE	33	1.30
	EA-E	30	1.18
	IE-E	23	0.90
	EI	16	0.63
	EE-E	9	0.35
	EI-E	6	0.23
	EY	6	0.23
	AE	5	0.19
	OE	5	0.19
	EO	2	0.07
/E2/		198	
	E	64	32.32

Phoneme	*Grapheme*	*Frequency*	*Percent*
	EA	49	24.74
	EE	36	18.18
	E-E	27	13.63
	IE	14	7.07
	I	3	1.51
	IE-E	3	1.15
	EI	2	1.01
/E3/		3,646	
	E	3,316	90.94
	EA	139	3.81
	A	94	2.57
	E-E	79	2.16
	AI	4	0.10
	IE	4	0.10
	EO	3	0.08
	U	2	0.05
	A-E	1	0.02
	A-E	1	0.02
	AY	1	0.02
	EA-E	1	0.02
	EI	1	0.02
/E5/		2,170	
	E	1,666	76.77
	O	268	12.35
	A	168	7.74
	U	31	1.42
	U-E	23	1.05
	I	8	0.36
	Y	4	0.18
	E-E	1	0.04
	OU	1	0.04

Figure 1. Adaptation of Hanna et al.'s (1996) 22-vowel classification of graphemic options representing phonemes.

Frequency and Percentage Tabulations of Phoneme-Grapheme Correspondence in American English: 30-Consonant Classification

Phoneme	*Grapheme*	*Frequency*	*Percent*
/CH/		564	
	CH	313	55.49
	T	175	31.03
	TCH	61	10.81
	TI	13	2.33
	CH	2	0.35
/F/		2,019	
	F	1,580	78.25
	PH	242	12.02
	FF	177	8.76
	LF	9	0.44
	GH	8	0.39
	FT	3	0.14
/G/		1,338	
	G	1,178	88.04
	GG	67	5.00
	X	42	3.17
	GUE	21	1.56
	GU	19	1.42
	GH	10	0.74
	TG	1	0.07
/J/		982	
	G	647	65.88
	J	218	22.24
	DG	51	5.19
	D	32	3.25
	DJ	16	1.62
	GI	14	1.42
	GG	2	0.20
	DI	2	0.20
/K/		4,712	
	C	3,452	73.25
	K	601	12.75
	CK	290	6.15

Phoneme	*Grapheme*	*Frequency*	*Percent*
	CH	142	3.01
	X	80	1.75
	CC	76	1.61
	QU	27	0.57
	Q	20	0.42
	LK	14	0.29
	CQ	3	0.06
	KH	3	0.06
	SC	3	0.06
	CCH	1	0.02
/SH/		1,537	
	TI	820	53.50
	SH	398	25.89
	CI	81	5.27
	SSI	51	3.31
	SI	38	2.47
	C	38	2.47
	CH	34	2.21
	T	30	1.95
	S	20	1.30
	SS	9	0.58
	SC	6	0.39
	SCI	5	0.32
	X	3	0.23
	CE	2	0.13
	SCH	2	0.13

Figure 2. Adaptation of Hanna et al.'s (1996) 30-consonant classification of graphemic options representing phonemes

8. The direct application of experimental research on phonemic awareness to classroom situations changes the relationships that exist between teachers and children.

Developing phonemic awareness in reading and writing classrooms in which teachers and children form literate communities has different social, cultural, and intellectual significance than developing phonemic awareness in classrooms in which instruction takes the form of predetermined lesson plans that are given to children and used to control their learning The

difference is easily made apparent by contrasting the work of children in these two types of classrooms. The following examples of children's work from reading and writing classrooms are taken from data I collected in the 1980s when I was participating in the Biographic Literacy Profiles Project. The children whose work is represented here live in low-income neighborhoods and attend two different "financially challenged"' schools.[26] …

The … example which follows is taken from the quick notes that Martha, a kindergarten teacher … wrote as she observed Michael on October 11. Michael, who had been in kindergarten for approximately six weeks, was talking about what he wanted to be for Halloween.

"I want to be Superman,"' Michael says, "but I don't know how to write it down."

"Well, what do you hear when you say Superman?" Martha asks him.

"S!" Michael says, and writes it in his journal.

"What else?"

"E." Michael writes E and then he writes a P.

"What else?"

"P and I already wrote that."

What else?"

"M." Writes M. "I'm all done!" Michael pauses, then adds, "I think."

Every so often, Martha gathers up her notes and synthesizes the literacy development of the children in her classroom. In March she documented the transformations that had taken place in Melanie's reading and writing.

"Melanie is starting to make sense of the sounds of letters and connect them to her writing," Martha notes. "She is changing from random strings of letters to strings of letters with more and more accurate sounds represented. On February 2, she wrote I S P C R S Y Q Y—'I was playing on the swing set with Jakey' On February 15, she wrote, I (write backward Z) S K E—'I was skating.' Suddenly she got it!" Martha writes, her excitement clearly visible in her

notes. “Since then beginning, middle and ending sounds are all represented, as well as vowels. They seem to be coming all at once. On March 14, she wrote I W S T K A W—‘I was taking a walk.’ On March 17:

I W S G
W E N
M A G P H—‘I was going to my club house.’”

Martha ends by stating that Melanie's pictures “continue to be colorful and closely illustrate the sentences that she writes.”

Now contrast the Vygotskian evolutionary processes and qualitative transformations in the reading and writing histories of these kindergarten children with the intellectually poverty-stricken activities that were given to Patrick when he was in first grade. …

“Cc” is printed at the top of … [a] workbook page—now sometimes called “activity sheets.” On this torn-out page, Patrick has written a “c” beside a picture of a camel, a cowboy, and a candle. Underneath there are more pictures, and he has written a “c” to go with “age” to make “cage,” and a “c” with “up” to make “cup.” But then beneath these pictures there are other pictures. One is of a mask, and Patrick has written an “m” to go with “ask,” and another is a picture of some jacks and he has written a “j” to go with “acks” I still don't know why these pictures of a mask and some jacks are on the page which is supposed to be about the initial consonant “Cc.” But it must have been okay because on the “Nn” page there is another mask, and after Patrick has written “n” to go with “ail” and “n” to go with “et,” he has written “m” to go with “ask.” He must have been correct because when his “m” didn't sit on the line, his teacher wrote over it with a bright red marker I guess that makes what he wrote correct and incorrect at the same time, and once again I have no idea what he made of that.

Sometimes Patrick didn't have to write. The instructions on one page state, “Say the short sound of e. Name the pictures. Color the ones with the ˇ sound of e.” I wonder what coloring has to do with reading and why, if Patrick was having so much difficulty, he was being taught phonetic notations that he would never need if he was given the opportunity to read. Even so, on this page Patrick had colored a bell, an elephant, and a pen, and other pictures of “short e sounds” as well.

I have several entire file drawers filled with similar workbook pages which Patrick dutifully completed. …

I am unable to take notes when I observe children in classrooms that rely on commercial skills programs, even if the materials are not as impoverished as those that were given to Patrick. In such classrooms children are not active learners. It's impossible to document the evolutionary processes and qualitative transformations that take place as children learn to read and write if all they have to do is follow directions. Their literacy histories are interrupted and written language is fractured when it is handed down to them piecemeal by adults.

In such situations children are, as Paulo Freire states, “anaesthetized” and left “a-critical and naive in the face of the world” (p. 152). In such situations teachers lose their status and become technical aids with predetermined lesson plans that they must use to “teach” children. This is what happened to the African American children who participated in the research project that was published in *Growing Up Literate.* What is so sad about this situation is that children who often had many important responsibilities in their families were forced to sit and copy from the board, fill in dittos, and practice for tests. In their classrooms they did not have the opportunity to create their own literate environments. They were denied ownership of their own literate lives, their personal and shared histones, and they did not have the opportunity to learn to use print in ways that would eventually give them access to the literacies of the world outside of their own community.

Notes

1. A manuscript originally begun as a submission for Language Arts rapidly grew into the book *Beginning to Read and the Spin Doctors of Science* (referred to as *Spin Doctors*) as Denny Taylor uncovered more and more information about the portrayal of reading and reading instruction in the United States. Given this ontogenesis, the editors of Language Arts felt it appropriate to excerpt a portion of the book subsequent to its publication. The portion excerpted is from chapters one to three. Other than omitting some text portions to bring the excerpt down to a manageable size for publication, no changes have been made, with the following exceptions: (a) rewording of the major headings to fit a manuscript context, (b) elimination of endnotes that duplicated reference material, and (c) minor rewording of some endnotes for style. Readers of Language Arts will notice that the references within the manuscript are not formatted according to house style. For ease of excerpting, the reference style is that which was used in *Spin Doctors*.

2. Garvin Winick's speech is taken from the court reporter's transcript of the Houston Reading Conference, May 16, 1997, pp. 141-142.

3. Documenting the research of Foorman and her colleagues creates an interesting dilemma. In critiquing experimental studies it is standard practice to cite the version of a particular study which has been through a rigorous peer review and is published in a refereed journal. However, Foorman's research has been widely disseminated by the media, presented to state legislatures, and discussed in documents provided to the United States House of Representatives before the academic community has had the opportunity to respond to the studies. Requests for information from Foorman and her colleagues have repeatedly been denied. Given this unusual circumstance, I have used the widely circulated unpublished papers and presentation handouts which have been made available to me as well as transcripts and videotapes that I have been able to obtain. None of the documents that I have used have any restrictions of use printed on them.

   Foorman, Barbara, Francis, David J., Fletcher, Jack, M., Schatscheider, Christopher, & Mehta, Paras. (No date). The role of instruction in learning to read: Preventing reading failure in at-risk children. Circulated draft of the paper to appear in the Journal of Educational Psychology.

   Foorman, Barbara, Francis, David, Fletcher, Jack, Beeler, Terri, Winikates, Debbie, & Hastings, P. (No date). Early interventions for children with reading disabilities and at risk for developing reading disabilities. To appear in Blachman, Benita. (Ed.). Cognitive & Linguistic Foundations of Reading Disabilities. Hillsdale, NJ: Erlbaum.

   Foorman, Barbara, Francis, David, Beeler, Terri, Winikates, Debbie, &: Fletcher, Jack. (No date). Early interventions for children with reading problems: Study designs and preliminary findings. Circulated draft later published in Learning Disabilities: A Multi-Disciplinary Journal.

Foorman, Barbara, Francis, David J., .Fletcher, Jack, Shaywitz, Bennett, Shaywitz, Sally, and Haskell, Dorothy: NICHD grant application in response to RFA HD-93-09 to examine the effectiveness of early interventions for children with reading difficulties, pp. 45-85.

Foorman, Barbara, Francis, David, Fletcher, Jack. (No date). Growth of phonological processing skill in beginning reading: The lag versus deficit model revisited. This document states that a revised version is to appear in Scientific Studies of Reading.

Francis, David. (No date). An introduction to the use of individual growth models in the analysis of change. No further information available.

The official video of the May 8, 1996, Reading Information Hearing of the Education Committee of the California Assembly at which Barbara Foorman presented the findings of the Houston research.

4. Bonnie Grossen is a research associate at the National Center for Improving the Tools of Educators (NCITE), which is located at the University of Oregon and co-directed by Douglas Carnine and Ed Kameenui. There are several versions with minor variations of Grossen's paper that have been widely distributed. In my analysis I have used the version of her paper that Silber sent to school superintendents throughout Massachusetts, and which has been widely distributed to teachers in that state.

5. For a powerful critique of Stanovich, see Steve Bialostock, (1997), "Offering the Olive Branch: The Rhetoric of Insincerity," *Language Arts* 74(8), 618-629.

6. In Beginning *to Read,* the first sentence Marilyn Jager Adams writes is "Before you pick this book up, you should understand fully that the topic at issue is that of reading words" (p. 3).

7. Hold on to the concept of reading as a labyrinthine process. You will come across other forms of the labyrinth as you read this book.

8. In this analysis, as I am trying to build an understanding of the research that forms the basis of the political arguments, I will focus on the phonemic awareness studies that have most often been cited in support of a reductionist view of learning to read. In his review of the manuscript for this book, Richard Allington states that it is important to make this clear to readers.

   "I think the point to make here," Allington writes, "is that a number of folks have studied PA [phonemic awareness] but only a very few of those folks are cited in the propaganda and mostly they cite a few older studies and selected new ones." Allington continues, 'The work of Don Richgels, Lea McGee, Penny Freppon, Margaret Moustafa and hosts of others are never mentioned."

   "Phoneme awareness, invented spelling, and word reading," Richgels writes in an article on spelling and word learning, "comprise only a single, albeit a very significant, piece of the larger picture of children's developing literacy knowledge and competence." In the last sentence of his article, Richgels writes that "inventive spellers are especially prepared for the

use of phonetic knowledge that beginning reading requires" ("Invented Spelling Ability," p. 108).

McGee, writing with Richgels on learning the alphabet, expresses a concern that "[t]eachers who begin alphabet instruction including phonics instruction without taking into account what children already know about letters and their role may disrupt alphabet letter knowledge that children have already acquired" *("K* is Kristen's," p. 224).

Clearly, the point that Allington makes is important, and I urge you to explore these studies in depth and add yet another layer to the argument that I present here.

9. I have included in my analysis articles by the following researchers: Eileen Ball and Benita Blanchman*; Lynette Bradley*† and Peter Bryant*†; Linda Clark*†; Ingvar Lundberg *†; Jírgen Frost*† and Ole-Peter Peterson*†; Barbara Fox*† and Donald Routh*†; Bonnie Grossen; Morag Maclean, Peter Bryant, and Lynette Bradley; William Nagy*, Patricia Herman* and Richard Anderson*; Ake Olofsson* and Ingvar Lundberg*; Charles Perfetti*†, Isabel Beck*†, Laura Bell*† and Carol Hughes*†; Rebecca Treiman*† and Jonathan Baron*†; and Richard Wagner*† and Joseph Torgesen*†(among others). Most of these researchers (noted * above) are relied upon by Marilyn Jager Adams and are referenced many times in her government report. Others (indicated by † above) are also cited by Barbara Foorman and her colleagues.

   I want to emphasize that my analysis focuses primarily on Stanovich, Foorman, and Adams, and that while some of the researchers mentioned above might agree with the ways in which their work has been referenced others must be concerned that both the purposes and the findings of their research have been distorted.

10. Note that in the package of materials that have been sent to school districts in California there is a paper in which Adams, writing with Maggie Bruck, uses the Stanovich, Cunningham, and Feeman study to support the contention that "children's knowledge of the correspondences between spelling and sounds is found to predict the speed and accuracy with which they can read single words, while the speed and accuracy with which they can read single words is found to predict their ability to comprehend written text" (p. 15). If A cites B. …

11. In an essay on studying working intelligence, Scribner states, "Laboratory studies have no intrinsic methodological advantage. The advantage of relevance, however, remains on the side of field-based studies" ("Studying Working Intelligence," p. 37).

12. In an article by John Broder, on "the false God of numbers" in *The New York Times*, Broder quotes Bruce Levin, a statistician at Columbia University's School of Public Health, who criticizes the use of statistics to describe hundred dimensional problems and reduce them to single numbers.

    "Professor Levin said." Broder writes, "that politicians labor in vain to apply the discipline of the hard sciences to matters of conjecture and opinion. The physical sciences

like chemistry and physics proceed by controlled experimentation, biology and medicine by longitudinal studies and clinical trials."

In such scientific inquiry. Broder reports, according to Levin, "a statistician can locate sources of bias and error and try to correct for them." But how does one measure statistically the success of pre-kindergarten programs? Levin asks, and we might ask, how does one measure statistically how young children learn to read? It would seem that Levin does not believe these questions can be answered statistically.

13. Unfortunately, It would seem that even the biblical reference is taken out of context and is misappropriated by Stanovich when he uses "Matthew effects" to describe the "rich-get-richer and poor-get-poorer effects embedded m the educational process."

    I learned from my discussions w1th the Reverend Paul Bretscher, a Doctor of Divinity, that the verse "For unto everyone that hath shall be given, and he shall have abundance; but from him that hath not shall be taken away even that which he hath" (25: 29) from the Gospel according to St. Matthew is the most sacred covenant language.

    “We are always first receivers," the Reverend Bretscher says to me. Then he asks, "What is it that we have that is so precious?"

    He talks of God's love and of his gifts of hope, honor, and dignity and he explains that if we are willing to receive these gifts then we will have gifts m abundance, not in the materialistic sense of the rich get richer and the poor get poorer, but in the religious sense of loving and being loved.

14. Lave states, "The concept of cultural uniformity reflects functionalist assumptions about society as a consensual order, and cultural transmission as a process of homogeneous cultural reproduction across generations." She goes on to state that "such a strategy legislates away major questions about social diversity, inequality, conflict, complementarity, cooperation, and differences of power and knowledge, and the means by which they are socially produced, reproduced and transformed m laboratory, school and other settings" (*Cognition in Practice*, p 10).

15. Moll spoke of the cultural mediation of thinking in his keynote address at the 1997 National Reading Conference in Scottsdale, Arizona.

16. See Scribner (1990).

17. Moll references David Bakhurst's 1995 article "On the Social Constitution of Mind: Bruner, Ilyenkov, and the Defense of Cultural Psychology," in *Mind, Culture, and Activity*, 2(3), 158-171.

18. In my research I focus on the plurality of literacies that are constitutive of the everyday lives of both young children and adults. However, as soon as you shift your view of literacy to include the many complex ways in which a multiplicity of literacies are a part of everyday

life, it becomes increasingly difficult ignore that literacy is embedded in different Ideologies, in different political perspectives, and in different political agendas. If we push the envelope a little further it becomes clear that literacy practices-such as teaching young children to read-are specific to the political and ideological contexts in which they occur. Teaching explicit, systematic phonics is grounded in a particular Ideological context, and research which ignores culture is itself a political act.

19. See Ferreiro ,and Teberosky (1982), Dyson (1989,1993), Yetta Goodman (1971. 1984). Clay (1979), Harste, Woodward, and Burke (l984), Taylor (1983, 1991, 1993), and Taylor and Dorsey-Gaines (1988).

20. Critical to the theoretical argument presented in *Spin Doctors* is neo-Vygotskian activ1ty theory. See Vygotsky (1978) and Wertsch (1991).

    "When action is given analytic priority," Wertsch writes, "human beings are viewed as coming into contact with, and creating, their surroundings as well as themselves through the actions in which they engage. Thus action provides the entry point into the analysis."

    "This contrasts on the one hand with approaches that treat the individual primarily as a passive recipient of information from the environment," Wertsch states, "and on the other with approaches that focus on the individual and treat the environment as secondary, serving merely as a device to trigger certain developmental processes" (p. 8).

    Clearly there are important distinctions between "activity" and "task." For Wertsch "activity" is culturally embedded and for Moll culturally mediated. However, in the research of experimentalists such as Stanovich, the concept of "activity" becl1mes synonymous with the assignment of "task" which 1S given to the child, who is regarded as the recipient of the information which, of course, is "culture-free."

    "It becomes a problem," Moll says in a telephone conversation, "when activity is treated as a normative concept." He talks of his own work and of the importance he attaches to treating particularly both "funds of knowledge" and "activity" and not treating them as abstract normative concepts. Another important resource is the paper by Moll which will appear in the fourth edition of the *Handbook of Research on Teaching.*

21. Dyson (1989) presents what she calls "the social consequences of written formulas" (p. 221).

22. Rosenblatt (1978, P 21).

23. See Vygotsky (1978, pp. 45-46).

24. These authors support this statement with references to Bartlett (1058); Cole, Hood. and McDermott (1978); and Lave (1980).

25. Many years ago, in my first book, *Family Literacy*, I wrote. “The children participating in the present research resisted any such instruction, and yet they all learned the alphabet as they came to use print in the mediation of their experiences of one another" (p. 90).

26. I find myself in a name dilemma. The convention I have established in writing *Spin Doctors* is to use first and last names the first time a name appears, and then use last names only thereafter. However, some of the teachers I have quoted appear by their first names In other books and articles that I have written to ensure the anonymity of some of the children that they teach. While I find it unsatisfactory, it is for this reason that I have continued to use the first names of the teachers with whom I have worked.

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