Part IV.
So, Where's the Failure?

What's the beef? The discovery that increased knowledge and skills with phonemic awareness (PA) helps young learners learn to read has become well established. It has played an important contribution in making it possible for more children to learn to read. It was the researches' contribution to reducing the cognitive load of beginning reading so that more are successful. The problem has been in bringing this discovery to completion, that is, making sure that no one has been left out in fully benefiting from this discovery. The failure has been in identifying the best way to implement the principle at the very beginning, in kindergarten, at the very threshold of learning to read words. The prevailing way of meeting the challenging barrier, identified by Adams, has resulted in the delay of teaching children to read words until late kindergarten or first grade. (see Adams' program) This has denied kindergarten children the opportunity of beginning to reap the advantages of learning to read in kindergarten. There is ample evidence that this is unnecessary.

The view taken was that this challenge can only be met successfully by devoting the kindergarten year to readiness activities that focused on a wide range of phonemic awareness activities. This was all done as readiness for learning decoding and reading words **later in 1st grade**. Any search for way for kindergarten children to make an earlier start was omitted. This omission has had serious consequences, especially for those children who lag behind their peers in language skills and need more than readiness. They need a better head-start. This was not considered possible.

Adams documented, in detail, the dynamics and value of phonemic awareness in her 1990 book, twenty years after the initial Haskins Laboratories studies had begun.   Ten years later, she published a program for teaching PA to kindergarten children. ([1998a&b scroll to page 16](#)) It represents this omission. It was designed to be used in kindergarten as a preparation in meeting the first-grade challenge of learning to read in earnest. This was where the built-in challenge existed that Adams had earlier identified as an impasse, a source of cognitive overload.

The program called for lengthy kindergarten PA instruction of a wide range of activities, later identified in a 2000 national report. The results of the program did prove beneficial in preparing for **first grade**. **However, it was an unfortunate development for kindergarteners because the search for PA research did not go far enough in considering a shorter way of getting reading started sooner. Even though a shorter way had been in practice for decades. An earlier start would involve identifying a way of training phonemic awareness so that decoding and word reading could substantially be started in kindergarten, as described in the Part I of this paper. Adams' program failed to do this.**

Also found in the National Reading Panel report of 2000

The failure to find such a practice for kindergarten is also evident in the largest nationally commissioned report ever conducted on all research published on teaching phonemic awareness and phonics, entitled the [National Reading Panel](#) (NRP). On the whole, it solidified the strong support for increased phonemic awareness training as an essential feature for learning to read. (see below) It identified Six oral tasks, from 52

studies, that, in some combination, had proved helpful in attaining phonemic awareness and in learning to read. The studies were mostly conducted in kindergarten in preparation for first grade. Although this is not always clear. They were designed to enable first graders to learn to read without the cognitive overload that was experienced in typical phonics programs. Because of the difficulty and number of the Six tasks, they were not used in the studies to prepare children to read words in kindergarten, as a head-start for first grade – a critical distinction. This report played a critical role in determining how phonemic awareness is being incorporated into beginning reading.

The Six Tasks

The purpose of the Six PA tasks was to strengthen a child's sensitivity and skills in hearing, identifying and manipulating specified phonemes deep within spoken words in order to enhance learning to read. The oral tasks included: recognizing individual phonemes in beginning, middle and end of spoken words, identifying like phonemes in beginning, middle and end of words within a group, recognizing words with phonemes that don't belong to a group, vocally combining, or blending dictated phonemic segments into words, counting or pronouncing phonemic segments broken down from spoken words, and finally, the most difficult task, deleting or substituting phonemes in spoken words. The common objective of all six was, in some degree, to orally recognize and use phonemes as broken abstract segments that go beyond what is heard in speech.

Six Oral Phonemic Awareness Tasks Identified in the NRP Report

1. Phoneme isolation, which requires recognizing individual sounds in words, for example, "Tell me the first sound in paste" (/p/); (also in the end and middle.)
2. Phoneme identity, which requires recognizing the common sound in different words, for example, "Tell me the sound that is the same in bike, boy, and bell" (/b/); (also in the end and middle)
3. Phoneme categorization, which requires recognizing the word with the odd sound in a sequence of three or four words, for example, "Which word does not belong? bus, bun, rug" (rug); (also in the end and middle)
4. Phoneme blending, which requires listening to a sequence of **separately** spoken sounds and combining them to form a recognizable word, for example, "What word is /s/ /k/ /u/ /l/?" (school); (listening to parts, in sequence with pauses, and blending them into a whole word, - from parts to whole.)
5. Phoneme segmentation, which requires breaking a word into its sounds by tapping out or counting the sounds, or by pronouncing and positioning a marker for each sound, for example, "How many phonemes in ship?" (3: /š/ /i/ / p/); (whole to separated parts, that correspond to letters in words, in one form or another)
6. Phoneme deletion, which requires recognizing what word remains when a specified phoneme is removed, for example, "What is smile without the /s/?" (mile). (manipulating the parts by omitting, adding or substituting)

How was the search for these tasks conducted?

To prepare for the phonemic awareness part of the report, the **Reading Panel** conducted a survey of 1,962 published sources **to find all the teaching activities** that had been used for classroom instruction and for assessments in testing for PA skills. They categorized all the exercises found into these Six oral tasks. **No other kind of PA task was found or identified in this survey- a big omission**.

How were they evaluated?

The **Panel** recognized 52 of the best conducted experimental studies, completed within the previous 30 years, that examined the effect of PA training on learning to read. Each study compared a group of children's performances in an early reading task with PA training to a control group with no PA training. The Panel also identified which of the Six PA activities had demonstrated the most effective results in learning the PA skills and in learning beginning reading. In most of the 52 PA studies, the results were measured by short tests in word or pseudo-word decoding and simple comprehension that would indicate a causal relationship. These tests were given immediately after PA training, before any instruction on any other aspect of reading could influence, and then several months later, after some instruction.

During the same time, when these studies were being conducted and reported, there was considerable discussion in research literature about the relative difficulty, effectiveness and efficiency of some combination of these activities. This discussion had been documented well before the NRP report. For example: the accuracy rates for blending dictated phonemes, #4, in grades 1, 2/3 and 4 were 8%, 25% and 42% respectively. Notably, blending accuracy from dictated segments, as defined in the report, was increased as reading levels increased in grades, as a possible consequence, not a cause, of increased reading levels. (I. Liberman, 1974)

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Concerns for task difficulty:

It is clear that the last three tasks are the most difficult and time consuming to learn by the pre-reader. They required vocally manipulating, in some way, phonemes from their natural continuous state to separated, abstract units. This difficulty was acknowledged in the Panel report. It cites Stephan Stahl's study that describe factors that make PA tasks easy or difficult. These factors included "the **type of manipulation** applied to phonemes, the number and phonological properties of phonemes in the words manipulated, whether the words are real or non-words, and whether letters are included."   From these factors, the following tasks were ordered, from easy to difficult, based on findings by, Schatschneider, (1999),

1. First-sound grouping—identifying the names of pictures beginning with the same sound;
2. Blending onset-rime units into real words; (a step in between PA and decoding, not in the list of six,)
3. Blending abstracted or dictated phonemes into real words; (ranked high in relevance to reading by NRP report.)
4. Deleting a phoneme and saying the word that remains;
5. Segmenting or breaking words into separated phonemes. (a lead-up to spelling)
6. Blending abstracted or dictated phonemes into non-words. (not included in the Panel's six).

The Six PA tasks listed in the NRP report closely followed this ranking. Acknowledged in the report, blending words from dictated, segmented phonemes has unique difficulties in teaching. (also see M. Adams, 1990, p. 80 on the difficulties with this task.) Segmenting, or counting words into separated phonemes (task #5), is ranked higher. The report does acknowledge the difficulty with the practice of breaking words into phonemic segments (as separated units) beyond just counting, called segmentation. Although it has value in over-all PA in reading, it was a part of spelling, with less relevance for reading, at least at the start. Adams' program seems to acknowledge the difficulty with these advanced tasks by teaching all Six of the tasks, with the first three as lead-ups, over a long period of time, as a preparation for the harder tasks and for first grade.

It is not clear in the report just how, or what technique, was best for teaching segmenting. In her 2004 summary of the NRP report, Ehri used the example, "Say the separate sounds in *jump*." This is more difficult than just tapping or counting the phonemes. Perffetti commented on this task as early as 1985.

> "Phoneme segmentation (oral) may be even a more cognitively demanding process than reading. In fact, it is likely that, when engaging in phoneme segmentation activities, children are doing something that is harder for them than decoding simple CVC words." (quoted in Isabelle Becks' book, **Making Sense of Phonics,** 2013)

Ehri also wrote that this task could include the more difficult task of writing letters, as well as saying the sounds. "Say and write the separate sounds in *jump*." (p. 157) This is a spelling task, which typically is introduced later in a teaching progression. This implies that blending, as defined in the Six tasks, is the more important PA task in preparing for beginning reading. Applying letters to the blending task is the beginning of learning the alphabetic principle and decoding words. This was classified in the NRP report as Phonics.

Stahl (1994) (scroll to page 11) emphasized some added dimensions to these levels of difficulty. He demonstrated how the spelling complexity of words adds more variation to the levels of difficulty within each task and should be considered in the understanding of phonemic awareness and its relevance to reading.

> "It appears that linguistic complexity across tasks is a better way of defining phonological awareness. Our further analysis suggests that this may be a fruitful way of looking at the relations between phonological awareness and reading." (1994)

Clearly these PA tasks are a new source of potential cognitive overload. They would require careful and lengthy training before children are ready to apply to beginning reading challenges.

Phonemic Awareness and Letters

The panel did report evidence that phonemic awareness can be accomplished with and without letters. **It concluded: "....the most effective circumstances may be in teaching one or two PA skills <u>with letters,</u> especially blending and segmenting, to small groups."** The problem with this statement is that, as described, all of the Six PA tasks were oral, without letters. It is not clear how adding letters should be done. Was it to be done after learning the oral only tasks, or at the same time? Furthermore, using letters in these tasks adds to their difficulty and implies some prior learning of letters and letter/sound correspondences. It also denies the value of first learning the PA tasks orally.   Applying letters may then be considered phonics not PA , in that phonics is the act of combining letters and phonemes. This does illustrate the full challenge.

In any case, the NRP report made it clear that PA is enhanced when letters are added, at some point.

> "Teaching PA effectively includes teaching the applications (to decoding) as well as teaching the skill (itself)." "...it is important for teachers to help children apply the PA skills taught in reading."

This surely is understood, but how and when are print and sounds combined in early reading? (See Part III, pg 9) However, it further stated that *"In most of the (52) studies we reviewed, application was not taught."* (P. 278)

There didn't seem to be any information on the best way to transition PA tasks, or apply them to beginning decoding in the 52 PA studies. This was outside of their scope. But again, studies that did teach the application of PA skills were disqualified from the PA analysis and were referred to Phonics, Part 2 of the report. This may explain how other possible PA tasks were missed. (see below)

In the phonics programs reviewed in [Part II of the NRP](#) report, the method or amount of teaching PA was not described. In these programs, the length of time for PA preparation may have been short and quickly integrated or transferred to letters into the application to decoding. Thus, the value of such a short PA preparation, embedded in subsequent instruction, would not be separately evaluated. The Panel acknowledged that the lack "of application to decoding contributed to a lower effect-size of the PA studies on reading than what should be expected." (p. 279) This emphasized the value of applying PA to decoding. How this should be done is still not clear. Given the value that the Panel gave to PA, they seemed to expect the effects of the training on learning to read to be higher. They attributed the lack of application as the cause of not meeting this expectation – a conundrum for sure.

While the value of eventually linking the PA training to letters is clear, (see below) the benefit of giving this prior training orally only is even more clear. Training without letters means teaching children to become sensitive and attentive to what is heard, not seen, which is a new experience. Children are not accustomed to paying much attention to the sound structures of words, necessary for reading. It's, therefore, a major objective of PA. Teaching the Six tasks with letters, before they are learned orally, may distract and call more attention to the eye, rather than the ear. Teaching oral only also has a practical advantage. It means being able to introduce these oral tasks early in instruction, before and along-side of the teaching of some letter/sounds and being combined to the sounds in isolation. This is an added value in first training PA without letters. (There is a common mistake of teaching all letters before beginning to teach their application to PA in decoding. Some words can be taught is only a few letters.)

Therefore, adding letters to the PA tasks is important in the transition and application to decoding and learning to read words. The report did confirm the value of linking PA with letters at some point and in some way…. "…letters bring children closer to the transfer tasks of applying PA in reading and spelling".

When letters were somehow integrated into the process of learning to read, in studies, results were more effective. Exactly how this is done, or how it coincides with learning to decode, was not clear in the report, however. As noted in Part III of this paper, based on other sources, a reciprocal interaction between word spellings and phonemic awareness is a major way in which more advanced, segmented PA skills are developed. It helps in further clarifying, remembering and vocally manipulating phonemes with letters. (see comments from Rayner, et al. 2001 for additional clarification of this.)

Ironically, when PA tasks are taught with letters, especially blending and segmenting, the studies were classified as phonics,. Using letters with their sounds for blending, in place of an oral only dictation, results in a decoding practice. The same is true regarding the relationship of segmenting for spelling. It's important to recognize that this use of letters does reinforce PA and does help reveal how they interact with each other inside words (see Parts III, V and VII, below). However, any studies that did include letters, according to the report, were re-assigned to the **Phonics** ,Part II. This made it impossible to identify and evaluate the kind, amount and contribution of PA teaching used in those programs. (p. 253-4,6) Evaluating oral only PA tasks in the 52 studies, apart from phonics instruction, tells only part of the story.

How effective?

The effectiveness of the selected PA tasks from the six identified in the NRP report was measured by the "effect-size" between results with PA instruction and results without PA. The higher the effect-size indicates a stronger **effect of PA instruction on learning to read**. The over-all average of effect-size for all studies **was considered moderate** *(d=0.53). (but significant and important)* This average score can be deceiving because the scores for various subgroups and activities varied greatly. For example, the effect-size for the combined results with blending and segmenting activities, for an undetermined length of time, were higher than all other activities *(Blending and segmenting= 0.67).* The group in the Adams PA program using all six tasks for the entire year was almost identical, 0.65. Strangely enough, just using one or two kinds of tasks (blending and segment) resulted in higher results compared to just using three or more.

In another ironic statement, the panel reported that the most effective studies only used one to three of the tasks, not all Six. It speculated that teaching more skills may have diluted teaching the two most effective tasks of blending and segmenting. Adams' well researched program with Six tasks may have avoided this possibility.

Because of the positive effects of these kinds of trainings on beginning reading in 1st grade, the practice of devoting a full year in Kindergarten for PA for their learning has become prominent. **However, this has**

resulted in ignoring the possibilities of also teaching reading in kindergarten. It denies opportunities and benefits of learning earlier. Can both be accomplished? These programs, plus the newly formulated Common Core guidelines, based on this research, greatly influenced the wide practice of teaching beginning reading. They contributed to holding off teaching decoding words until first grade. The emphasis of the publication by Jeanne Chall (1996) that framed reading into stages, stage 0 was for pre-reading (birth through age 6) and stage 1 for initial reading, or decoding, (grades 1-2, Ages 6-7) may have contributed to this practice as well.

Some examples of program applications.

> Marilyn Adams' team of experienced prestigious researchers, in 1998, published their program, **Phonemic Awareness in Young Children**, for kindergarten children. This study was followed up by a publication by Benita Blachman in 2000, **Road to the Code**: A Phonological Awareness Program for Young Children. Blachman's book has 44 lessons with picture and letter card materials. Both programs were designed to completely teach all six kinds of tasks before teaching decoding words in 1st grade.
>
> A recent description of two of Blachman's studies, published in the spring, 2019, issue of Perspectives on Language and Literacy, illustrates this approach. This two-year program started with a 11-week kindergarten program of PA training and letter/sound correspondence that ended with a small pool of CVC real words. This led to a 1st grade program with various levels of review and transition to a five-step reading program that "continued to reinforce PA skills and emphasize the alphabetic code". It was found "that children who participated…… demonstrated a significant advantage in reading at the end of grade 1 and 2."

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Part V.
Some Faulty Assumptions

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The Heart of the Matter

The underlying assumption, made early in research development, up to and including the NRP report, was that learning to read well, at 1st grade and higher, requires acquiring skills with advanced phonemic segments, modeled after print. Because printed words had spaces for letters, it was assumed that the phonemes should be thought of and used as segments with spaces to match what is seen in print in order to be most helpful in learning to read as words gradually become a little more complicated. Ultimately this has turned out to be a correct assumption in principle, at some point in learning to read. The question is, at what point?

> A "full phonological representation" in learning to read, "suggests that segmental representations are closely tied to knowledge of orthography rather than speech." (Rayner, et al., 2001 see below)

When the term segmenting is used, it means broken spaced units. I. Liberman states:

> "We have noted elsewhere that the need to do explicit segmentation may be one of the important differences between speaking and listening, on the one hand, and reading and writing, on the other." (1974)

As a general principle, it is true. Where it went wrong was in assuming it equally applied to how reading gets started with pre-readers. It should be remembered that, just because the advanced PA skills are important for eventually becoming good readers, does not mean they are necessary or even mosts effective for getting reading started. Making this requirement results in delaying the start until first grade, until after the advanced skills are taught, with segments. This is unnecessary and a waste of time and opportunity. As well principled as this assumption ultimately is for good reading, its necessity for getting reading started is false.

The key phrase in the above quote is "full phonological representation". In practical terms, this means that more advanced word reading requires more advanced phonemic awareness, similar to print, beyond speech. It does not mean that this level of "full phonological representation" is necessary or even cognitively appropriate for introducing reading to a child in kindergarten. Nor, does it mean that a lower level of PA, modeled from speech, without spaces, can't be more appropriate in assisting and facilitating an early start. It can include progressively working towards the more complete or "full phonological representation", with segmented phonemes modeled after print. This possibility has not been examined by the researchers, even though it has been in use for decades.

T**he representation of phonemes as broken "segments" is hard to grasp by the new learner at first.** Without extensive training, many phonemes are hard to distinguish and separate in the mix with other sounds, in many English words. (see Part II) Integrating this training into early instruction in decoding is an added burden, which can also result in increased, not reduce, cognitive overload, if it is not planned and done carefully. To make things even more difficult, even whole words are often spoken in continuous streams of

sound within a sentence and are hard to distinguish as units by a young child. Steven Pinker, bestselling author, Harvard Psychologist, has been quoted in a Haskins Laboratory pamphlet,

> "In the speech sound wave, one word runs into the next seamlessly, there are no little silences between spoken words the way there are white spaces between written words."

The question is: at what point in the phonemic awareness training, can learning to decode words begin?

As described earlier in Part II, the nature of phonemes in speech can be problematic for the new learner. For one thing, they don't exist in speech as broken segments. Segmented phonemes are an abstraction in thinking about and verbally pronouncing the phonemes. In speech, phonemes are naturally connected streams of vocal sounds that are orally attached to and overlapped into each other, within syllables. They only exist as segments in abstract thinking or by artificially breaking them into verbal units for the purpose of assisting in making their match with spaced letters in print. To borrow a term from Sally Shaywitz, phonemes are more like granular particles, in that they keep their identity when being hidden within a spoken word. Unlike blended colors, they can be blended in a spoken word, and lost from hearing, without losing their individual identity. They don't change in the mix.

Blending phonemes from dictation or from separated letter sounds, as well as breaking spoken words into separated phonemic segments, all are difficult and time-consuming skills to teach. Given that learning the broken segments has value, as a more difficult abstract task, the question is: how and when should they be integrated into beginning reading? Do they necessarily need to be learned before the beginning? Why not introduce them a little later in the sequence of lessons, after a simpler form of PA and decoding, more similar to speech, is taught? This should reduce potential cognitive overload and still provide for the more difficult forms learned later in the sequence. **It can also make meeting both objectives in kindergarten possible.** Recall, as noted above, skills with PA are both a cause and an effect in learning to read. Some PA skills (described below) are acquired as a result of learning to read some words.

The faulty aspect of this underlying assumption created a conflict in terms of when and how to begin teaching reading. Should beginning teaching wait until the segmented form of phonemes, similar to print, are learned, or is there a way to get it started earlier with a simpler speech form of the phonemes that gradually develops the segmented forms? If phonemes are not naturally segmented with spaces in speech, why start teaching them with spaces? Is there a speech form of PA that would more easily ease the non-reader into getting started, that was not identified in the NRP report? What are the possible advantages in starting earlier? How would this lead to satisfying the clear causal relationship of the full spectrum of PA tasks that contribute to become a better read? See Part VII for answers.

The Failure, in summary:

In the search for suitable PA training exercises to facilitate learning to read, the model used for a guide was based on print, not speech. This meant that the exercises attempting to identify phonemes, as broken units of sounds, like seen in print, are not like what is heard in speech. This made teaching of phonemic awareness more difficult and time consuming than necessary. It meant delaying beginning reading until first grade. No value was found in using speech as a model, at least, at the start, to shorten the time between PA training and its application to decoding. The delayed approach meant that the full impasse, and potential cognitive overload in decoding, would not be overcome until 1st grade, possibly not even then for many children.

The reasoning behind using the print model is understandable for learning to read typical words in English, especially those words with unique challenges. However, this reasoning neglected to consider how to start reading and progressively working towards meeting the larger goals from an easier beginning. The path that has been chosen has left out kindergarteners as a place to begin.

Recognizing the importance of the print model for mature reading does not mean that it is the best guide for getting learning started. The advanced PA skills do take time, and much of their development is gained in the process of learning to decode words. They are then used in a reciprocal interaction between the words and the progress of learning more advance phonemic awareness skills. This earlier time can be taken up in learning basic principles of the alphabetic print in simple decodable words in preparation for the more advanced learning in kindergarten and in following grades.

> A simpler, speech oriented, PA task is needed to "kick-start" beginning reading for younger children that would avoid the cognitive overload. No consideration has been made for finding such a PA exercise that taught PA in a closer form to speech, without segments.

Conflicts between meeting the two essential challenges of beginning reading: 1. how best to

make the critical start and 2. how then to begin the progression of teaching essential advanced PA components in kindergarten , needs to be resolved.

The Role of Reciprocal Interaction

Understanding the role that reciprocal interaction between PA and decoding plays in early learning helps resolve this conflict. The 2001 monograph by highly prominent researchers (Rayner et. al.) has made an important contribution towards this concern. It made a distinction between advanced abstract PA skills, "full phonological representations" involving segments, and the "relatively coarse knowledge of phonemic structure" that pre-readers bring in their speech at the start. They found that the more advanced phonemic skills, involving segments, are gained, not as much by direct training, but from the other direction, from "reading experiences" gained from earlier instruction. In addition to oral only exercises, the more advanced skills are further learned from the earlier learned collection of decodable words. The principle is: Phonemic awareness assists in learning to read words and, from the other direction, it is also enhanced in clarity and skill, changed towards the print model, by learning to read words.

A reciprocal interaction between learned phonemic skills and reading words has been generally acknowledged. Each assists the other in the act of learning to read. Researchers have found that this interaction assists in the critical development of the PA segmenting skills, more similar to print than speech. This learning in turn, is critical for the continuous progress of becoming mature readers

"Pre-readers' knowledge of phonemic structure, is causally related to success in learning to read; **at the same time**, learning to read changes the nature of phonological representations, [from what pre-readers bring] making them more segmental." Connectionists models show how the "mechanism of the underlying interactions between phonological knowledge and reading" make this change in phonemic awareness. [It becomes more segmented, like print.] "What was crucial in the model was not having full phonemic representation **prior to reading** but rather **having the capacity to develop such representations with reading experience.**"….

The question then becomes: what aspect of "reading experience" contributes to "the capacity to develop such [advanced] representations" from the reciprocal interactions in words? The reasoning above implies that some prior learned "entry" words that introduce the alphabetic principle, are necessary. They would be learned with the assistance of simpler phonemic skills, "the kind of phonological knowledge children had acquired from speech." Pre-readers can start to learn to read entry words with a "relatively coarse knowledge of phonemic structure… …on the basis of non-segmental PA information" [mostly resembling speech.] These entry words are needed ".. in order to supply a reading vocabulary for the reciprocal interaction with the advanced forms of PA". This kind of early learning promises to be more effective and efficient (less time) in avoiding the feared cognitive overload.

The more advanced, "Phonological representations, [resembling print] are shaped by children's participation in reading" these entry words. The "non-segmental" phonemic skills for learning these words would need to be made up of skills from the speech, that pre-readers bring to learning. The early learning of words would provide for the reciprocal interaction between PA and decoding, which is needed for learning more advanced and essential PA skills, modeled after print.

This raises the question about how these entry words can be learned: what particular easier way of teaching PA, based on "relatively coarse knowledge of phonemic structure" would be most effective for getting decoding and reading started, at the entry level? The Connectionist researchers found that teaching the alphabetic principle, i.e., the basic alphabetic bonded match of letters to phonemes in words aided in the development of the critical reciprocal interactions. If a reciprocal interaction in words is important in developing the necessary advanced forms of phonemic skills, with segments, what kind of simpler, "course" phonemic exercises, closer to the speech that pre-readers bring, could best be suitable? It needs to be suitable for starting the alphabetic learning through a similar form of decoding. The first words need to be decodable, phonetically spelled.

What the research has failed to show, with a few exceptions, is how a simple PA skill can be used at the point of entry in reading that can produce this early acquisition of phonetically spelled words. This small body of words, as many as a few hundred, serves as a foundational reading vocabulary to assist in learning the essential advance segmenting PA skills, called for in research. It provides the young learner an earlier entry to gain early experiences in reading.

The faulty aspect of the underlying assumption has been that, because of this strong relationship of the advance PA skills to mature reading, these skills were deemed a pre-requisite for the point of entry. This is not true. They are not an essential prerequisite to beginning learning. A valuable supply of reading vocabulary can

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be acquired earlier, from an easier form of PA. They then facilitate in learning the more advanced PA skills through the reciprocal interaction, and in the process, give the child a head-start. The mistake was in deciding that the same means or tasks used for testing phonemic awareness for research purposes, with segments, would also be the best way to introduce reading. (see Part VII). How was this error made in the history of this major question?

<p style="text-align:center;color:red;">Two misdirections at the very beginning.</p>

The faulty part of this assumption began with the pioneering efforts of the Haskins Laboratory researchers. It grew out of their initial analysis of the problem of the difficulties between the match of letters and phonemes. From this analysis, (described in Part II) **two misdirections were made**.   (Also, Jeanne Chall's 1963 publication on diagnosing reading readiness through the ability to blend dictated segmented phonemes may have contributed to this error as well.)

The First **misdirection** was in deciding to use print, with its spaced letters, as the model for phonemic awareness. It was assumed that in order to match the phonemes to letters, it would help the new learner to hear them as separate segments, with pauses. As stated, there is important truth in this particular notion. However, it also became adopted practice for beginning reading. An easier model, based on the speech of pre-readers, for getting them started and that promised greater success, was not considered. There was no analysis of the possible usefulness of the two kinds of models, speech and print, as seen in later research. (Rayner et al, 2001) Therefore, this decision was monumental in that it neglected to provide kindergarten children the opportunity to learn to read.

The segmented form for PA involved the dictation of phonemes. The problem with this practice is that listening to and thinking about dictated phonemes, even with letters for decoding, have no meaning, are strange to the young non-reader and are difficult to learn. This difficulty with phonemes is well documented in the Liberman studies. For PA blending, it's hard to learn how to form words in this manner from dictated phonemic segments. It means holding each phoneme in memory while getting ready to blend them all into a word. Because the action lacks explicit demonstration, (it's hidden, internally) blending seems somewhat magical to the child.

Segmenting oral words into phonemic segments is even harder. It requires learning how to hear, identify and then pronounce all the phonemes imbedded in words, individually. Learning these skills takes considerable time in training. The research indicates that it takes most of kindergarten to acquire both of these skills. As helpful as they eventually are in the buildup of reading, their necessity and success in starting out learning to decode is questionable.

This difficulty for pre-reading children was first studied by Liberman and her team in 1974. As described above, they studied three groups: preschoolers, kindergarteners and first graders. They evaluated their ability to identify phoneme segments by tapping-out the number of phonemes in a one-to-three letter word, not by vocalizing each individually, which is more difficult. Tapping was the easiest way of identifying phonemic segments developed at the time. After some initial training and several test trials, it was found that none of the preschoolers could identify the correct number of phonemes, only 17% of kindergarteners could, and only 70% of first graders could at the end of the year. This attests to the difficulty of working with segmented phonemes.

A smoother, easier and more effective way of training the ear to hear and to guide the voice to articulate the phonemes in their natural connected form in speech would be preferred, especially as a starting point that can lead into a similar way of decoding. It would require less pre-teaching in preparation for decoding. It could be applied to decoding as an alternative to the traditional segmented version. It would make decoding easier to teach as well. (see argue in Part VII) It would contribute to reducing the "impasse" and overload at the start, described in Part II. It would not require waiting until late kindergarten or first grade to begin to teach decoding. It would mean starting to acquire a foundation of a decodable reading vocabulary and in learning the alphabetic principle early in kindergarten. It would reduce some of the rush for new reading vocabulary that begins in first grade. These are only a few of the advantages of starting early.

The **Second misdirection,** concerns decoding, itself. The segmented form for PA was then matched to a corresponding segmented component of decoding, modeled after print. It has been commonly assumed that decoding would be taught in the traditional segmented, sounding-out, with spaces, as seen in print. (see examples below.) In this model, PA and decoding would correspond. It is not clear which came first. It appears as though the PA practice of dictation was modeled on the traditional decoding practice. A child sees the letters and says the sound for each letter, pausing between each letter. In the experience of the researchers, "Sounding out" letters, from one to the next, would result with a schwa sound in between the letters. (buhatuh) They found that pronouncing letter sounds in broken segments and then blending them into a word in one action

would avoid the schwa sound. (S - a - m = sam) This requires the child to silently hold these sounds in memory, same as dictated phonemes, but with letters, to think about how to combine them into a word. The child then pronounces the word, a hard task.

The difficulty with this task, (described earlier as an impasse to decoding) explains why a group of prominent researchers decided that this method would require a lengthy and varied series of PA tasks as preparation training in kindergarten. This decision was made instead of finding a better way to decode that also avoided the schwa sound. Although the child is better prepared in 1st grade with this practice than without it, it still fails to fully remove the source of the impasse in decoding, even in 1st grade. **The concession appeared to be that decoding is difficult for the new learner and therefore required lengthy PA training in kindergarten**. No other method was compared to this practice.

It is understandable why young children have more difficulty learning to work with spaced phonemic segments. They don't exist in natural speech. Therefore, pronouncing separated phoneme segments in speech is one of the later skills to be developed in young children. Because of the revealed need for oral segmenting skills and the difficulty in learning them, the solution was to delay reading instruction until very late kindergarten, or 1st grade after direct training in the Six PA tasks. **Is this the best that can be done from the vast amount of work done on this subject?**

Isabelle Liberman did give some recognition, in her early reports, to the experimental work of Engelmann, (1969, p. 81- 121) that did offer an alternative to the traditional way of sounding out. She did not pick up on this much and did not take note of Engelmann's even more important idea for phonemic awareness, as a preparation for this practice, in the same source. Engelmann's ideas for initially teaching decoding were only taken up by a few studies, i.e., Blachman, but did not include the corresponding phonemic awareness part. In so doing, the segmented form of PA does not match the speech form taught for decoding. Therefore, decoding requires more preparation. To be useful in applying PA to decoding, both practices must correspond or match. Each can then strengthen the other. They go together. If one is changed, the other needs to be changed in the same way.

Liberman tended to favor the clever oral language analysis and speech technique of the Soviet educator and psychologist Elkonin that used pictures above a row of boxes that depict the number of phonemes in the word for the picture. This technique has similar characteristics to a sustained PA task found in Engelmann's publication, but it is lengthy to train and weak in smoothly incorporating into a daily program, a time-saving issue.

(see the incorporation of learning details into a well-planned-out sequence of lessons, that is
"constructed in a logical sequence that proceeds in a hierarchy, from simple to complex objectives." K. Hempenstall (March, 2016, **Read About It**. Research Report #11, *The Center for Independent Studies*. Also see "Cautionary Note" on p. 33 below)

 This method has proved to be particularly useful in one-to-one tutoring. Neither of these methods were recognized by the NRP for PA purposes as a successful way to lead-up to decoding, especially in kindergarten.

Because an easier and quicker way of entering reading at the kindergarten level has not been recognized, researchers have been in a bind. They acknowledge that phonemic awareness training is essential in helping children learn to read, but that the training would require too much time to start kindergarteners reading. They didn't find a key that would enable an earlier start for kindergarten children. If a key for the earlier start was found or recognized, it would have opened the gates to more successful and humane teaching from the beginning. It would enable young children in kindergarten to gain more than readiness. They could have a head-start in establishing a firm foundation and meeting the demands of first grade. This is the question that seems to have been missed, rejected or in some way failed in finding a way by the main body of researchers on this subject.

Such a new practice has existed since before the first Haskins research on phonemic awareness was conducted. (Engelmann, 1969) It could have been found in a reading program that was in use and was given some notice in the NRP Phonics Part 2. This program had taken part in the largest beginning, k-3, reading, language and math research project ever conducted, decades earlier, from 1969 to 1976. It out-did all other programs that took part in the project. It is strange that, after this kind of performance, its promising form and combination of PA and decoding practices were not given much consideration. It provided an example of how to prepare and start teaching decoding with minimal phonemic awareness training that carried on along side of decoding, without denying the value of teaching the more advanced PA training as reading progressed. About half of the schools that took part in this project included kindergarten.

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Part VI
Outstanding questions remaining

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The major accomplishment of the NRP report on PA was to confirm the general value of teaching PA skills as an enhancement for learning to read. This was a major contribution and a break-through. However, whether any of the particulars can be used in early teaching beginning reading in kindergarten, for goals beyond readiness, is doubtful or at least left open to question.

Remaining questions Regarding Blending and Segmenting Phonemes.

The segmentation model for blending and segmenting, used in the reported studies, remain a question. The report gives these two tasks a prominent place in PA training. Of the Six tasks identified, they were considered most useful because of how closely they are to reading and spelling. Given what was written about their difficulties by the Panel and by Perfetti, it doesn't take much to see why this kind of PA training was mostly devoted to kindergarten, with decoding delayed to 1st grade. As noted, the Panel reported that the PA studies did not include how the PA training transitioned and applied to reading words.

Blending for Phonemic Awareness

For blending in phonemic awareness to be useful in preparing for decoding, it should correspond to the same way decoding is taught. In this match, PA blending then becomes a component part of the method used for teaching decoding. Therefore, the decoding method decided on for used will determine how PA is taught. Siegfried Engelmann described this rationale. (1999)

> "The basic argument that [is] used for the necessity of phonological manipulations was that they were components of the **corresponding** decoding manipulations." (pg. 43)

This kind of mutual correspondence does exist in the NRP report. The most prominent kind of decoding being used in the NRP report corresponds to the #4 PA blending task with dictated phonemes, only with letters. In decoding, letters pronounced separately are like the dictated phonemes for PA. The blending for PA task, without letters, is a component part of decoding with letters. It trains for "sounding out words" with spaces. It's the "traditional" form of a decoding procedure that starts with saying the sounds for letters, one at a time, with spaces, that is then blended, in a single action, into a word.

This traditional model for decoding can be seen in many sources.

◊   Sally Shaywitz gives an example in her book, **Over-Coming Dyslexia**.
> "Sounding out smaller words", for decoding the printed word "*mat*".
> "Once (the child) is able to articulate "*mmmm*", "*aaaa*", "*t*", ask him to blend the sounds together rapidly. (in order to say "*mat*"). P. 212

◊   Linnea Ehri also defined the act of decoding words this way.
> "Decoding involves identifying the sounds of individual letters, **holding them in mind**, and blending them (quickly) into pronunciations that are recognized as real words." p 137, (1998)
> It's a two step decoding procedure.
> > 1. Say the sounds for each letter separately.
> > 2. In one action, blend them together into a word.
> > > (possibly with some think time,)
> > See the FCRR link on how to decode short words.

◊   David Kilpatrick describes the same procedure:
> "A reader identifies the most common sounds that go with the letters and then blends those sounds together to pronounce the word." p. 86 (the blending is not described, but implied as rapid)
> Kilpatrick quotes a more technical statement from the NRP report:
> "The process of decoding words never read before involves transforming graphemes into phonemes and then blending the phonemes to form words with recognizable meanings. The PA skill centrally involved in decoding is blending." P. 2-11 (defined and described as one of the six tasks.)

With the segmentation model, the string of phonemes for PA are "artificially" presented as oral segments in dictation, with spaces. This is to match how letters are arranged with spaces. The idea is that spacing is to help children learn the match between letters and speech sounds. However, the consequence of this traditional decoding procedure has been problematic from the beginning. Due to its difficulty in learning, it has led to delayed instruction of decoding.

This is a decoding model where the "impasse" is the greatest, and where Adams considers to be ***inherently intractable*** . It is a difficult, segmentation model, based on print for both PA and decoding. Yet, the purpose of PA, from its inception, was to make decoding easier. Instead, the PA methods were made harder in order to match the harder traditional decoding method. The "mission" was not accomplished. Finding an easier model for teaching the entry to learning to read, that makes both PA and decoding easier was not considered.

The decision was to make PA training harder and longer to be prepared for the traditional way of teaching decoding and reading words phonetically.

In the **Phonics**, Part 2, of the report, the question of the kind of PA used and how well its instruction prepared and led into an effective decoding strategy, as well as how long it took in kindergarten, remained unclear. This placed limits on evaluating just how effective a particular PA pre-training was in the phonics studies. Therefore, research on PA has managed to only make some improvements in learning to read. It has not served kindergarten children well. All the inherent decoding obstacles at the entry point have not been sufficiently reduced from these improvements. In fact, new obstructions have been put in the entry place in the form that is difficult and lengthy PA training. With the exception of the Blachman study for first graders, which did not include a corresponding matched PA task, the problematic traditional decoding procedure continued in use.

<center>This is where the "impasse" still lies, with a cognitive overload.</center>

> This traditional way of decoding words, from spaced letters, was one of the chief causes of what Adams understood as the "inherently intractable" teaching of phonics. It was too difficult for very young children. Adams' way of fixing this was to preserve the traditional way of decoding as a model, that was the chief cause of the problem, and used all six tasks for teaching a lengthy PA training in kindergarten. This was to serve as preparation for the hard way of teaching decoding, which also was not improved. The solution to the impasse was to devote a whole year in learning PA exercises before applying them to the difficult traditional form of decoding, either in late kindergarten or grade one.

This has become the prevailing way that research has solved the traditional dilemma with decoding.

In order to accomplish the purpose of PA's preparation for teaching decoding of words, in spite of the Panel's cautions, and the difficulty in teaching some of the Six tasks, the prevailing practice in nationally published programs has been to teach the full range of six tasks in kindergarten in preparation for teaching reading in first grade. This practice has been incorporated into the new Common Core State Standards for kindergarten and first grade.

The problem is: if PA and decoding are both modeled after the traditional two-step decoding practice, blending will be difficult to learn at the very beginning and will need lengthy lead-up for most of kindergarten children. Even with this model, and training, decoding is still difficult to learn for many children in first grade. With the Blachman and Liberman changes for decoding, decoding was still too difficult to teach in kindergarten because it didn't include a corresponding PA task to prepare for this change. The Six PA tasks, taught as segmented phonemes does not correspond to the decoding change in these programs that has the letter sounds connected. This leaves the impasse and potential cognitive overload in decoding unsuccessfully addressed. In these studies, it has only been partially addressed for children in first grade. The question becomes: In order to avoid any impasse, delay, or overload, what alternative PA method, if any, can improve both PA and decoding at the start of instruction? See Part VII.

How much time for PA and in what grades?

The total amount of time and kind of oral only PA readiness skills is one remaining question. The amount of time for oral only PA training in the NRP's report varied greatly, from a total of one hour to as much as 75 hours, of 15-20 minute sessions, over the period of a year. (either in k or 1st grade?) Ironically, the cases in which the time exceeded 20 hours (60 days, 3 months) resulted in smaller effects. The Blachman program, <u>Road to the Code</u>, calls for 15-20 minute sessions, four days a week, 11 weeks, almost 3 months. A relatively new program, <u>The Intensive Phonological Awareness</u> Program, by Melanie Schuele and Naomi Murphy has 3 days a week, 15-20 minutes a day, 110 lessons for 12 weeks or three months in kindergarten or pre-school. It is not aligned with any beginning reading program but could be used as such. The Adams program calls for 15-20 minutes teaching sessions over a period of 8 months or 140 days. The Blachman and Schuele programs, teaching segmented PA, are the closest to the studies in the NRP report in terms of time devoted to PA alone.

Whether or not any of the shorter NRP programs can be used at the start of kindergarten and be transitioned, from segmented PA tasks, to a beginning reading program within the year is undetermined. The Blachman study did not do this. (see up-dated report in *Perspectives on Language and Literacy*, in 2019) With the shorter PA programs for 2 to 3 months, it is not known what kind of instruction was conducted during the remaining year, or what part of the year they were taught, or how well they did on a program of reading instruction that taught traditional decoding . The published programs are mostly for kindergarten in preparation for 1st grade reading. Did they consider Kindergarten children not ready to start learning to read and need the extensive PA readiness?

The NRP report noted that none of the PA studies reported on taught children to apply the skills to beginning reading. Children were simply tested on some reading tasks to see any possible causal relationship to learning to read. How well they could lead into a substantial reading program in kindergarten is unknown. Perhaps the phonics studies, in the report, could have demonstrated a longer-term, transitional relationship with PA training. This is unknown.

The PA activity that the Panel missed and that had been in prominent use since the late 1960's was included in one program in the **Phonics** Chapter of the report but was not given notice.   Its use of time for PA was very similar to those in the NRP report.   A unique oral only phonemic awareness activity, at the start of this program, ran for a total of 13 hours, 10-15 minutes per lesson, 5 hours before applying to letters for decoding and 8 hours along-side its application in decoding, a total of 40 lessons.   This kind of PA activity was not included in the survey of PA tasks found in use. This raises questions about how thorough the survey went in investigating the subject of blending and segmentation.