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ABSTRACT

A preliminary study sought to determine whether preschool, kindergarten, and first-grade children's analyses of English words were governed by perception of onsets and rimes or by perception of phonemes within onsets and rimes. Data were from several previous studies that used a 10-word invented spelling task. High percentages of the 135 preschool, kindergarten, and first grade inventive spellers with all lengths of words produced spellings that were considered unlikely if governed by attention to onsets and rimes rather than by attention to individual phonemes. The percentage of first graders who spelled consonant blends (78%) matches findings of an earlier study. Findings support a child-centered approach to early reading instruction. If children do not treat phonemes as more difficult than onsets and rimes and are willing to work at the task of analyzing complex onsets and rimes, then it makes sense to use teaching strategies that encourage children's discovery of their own tasks. (Four tables and one figure of data are included.) (Contains 22 references.) (Author/RS)

Northern Illinois University

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Abstract

Phoneme awareness has received considerable attention in recent years as a precursor and predictor of reading ability (Adams, 1990). The purpose of this study was to determine whether preschool, kindergarten, and first grade children's analyses of English words were governed by perception of onsets and rimes or by perception of phonemes within onsets and rimes. Data were from several previous studies that used a ten-word invented spelling task. High percentages of preschool, kindergarten, and first grade inventive spellers with all lengths of words produced spellings that we considered unlikely if governed by attention to onsets and rimes rather than by attention to individual phonemes. The percentage of first graders who spelled consonant blends (78%) matches Treiman's (1985b) finding in a study of first graders' writing. This preliminary study supports a child-centered approach to early reading instruction. If children do not treat phonemes as more difficult than onsets and rimes and are willing to work at the task of analyzing complex onsets and rimes, then it makes sense to use teaching strategies that encourage children's discovery of their own tasks.

In the past two years reading educators have devoted considerable attention to phonemic awareness as a precursor of and predictor of reading ability and to phonemic awareness training as a component of beginning reading instruction (e.g., Griffith & Olson, 1992; Lie, 1991; Tangel & Blachman, 1992; Yopp, 1992). This follows Adams' (1990) review of research related to beginning reading. She emphasized the importance of functional understanding of the alphabetic principle and, by extension, the importance of phonological awareness.

Phonological awareness is conscious attention and response to units of sound in language; such units can be as big as phrases and as small as features of phonemes. The unit that is crucial for

reading alphabetic writing, however, is the phoneme. "Faced with an alphabetic script, the child's level of phonemic awareness on entering school may be the single most powerful determinant of the success she or he will experience in learning to read and of the likelihood that she or he will fail" (Adams, 1990, p. 304).

Adams points out that phonemic awareness does not develop automatically. Any speaker of a language must use phonemic information, but does so unconsciously; a beginning reader/writer needs conscious awareness of phonemes, and that requires either explicit instruction or "finding oneself in a situation in which phonemic awareness is inescapably required" (p. 305). Using phonemic information unconsciously is a kind of knowing; it is phonemic knowledge; it is necessary for spoken language competence. Using phonemic information consciously is a different kind of knowing; it is phonemic awareness; it is necessary for written language competence. Thus, studying phonological knowledge often becomes a study of phonological *awareness*.

Because phonemic knowledge is initially (for spoken language competence) unconscious, the first steps in studying it have involved devising ways to make it visible to the researcher. For a long time researchers used a variety of tasks to make visible one's usually unconscious use of the sound rules of one's language. These tasks range from various tapping or object manipulation tasks in which the subject matches an action (tapping the table top or moving a poker chip) to each act of sound perception (e.g., Liberman, Shankweiler, Fischer, & Carter, 1974) to various word altering tasks in which the subject adds, deletes, or substitutes sounds in words (e.g., Alegria, Pignot, & Morais, 1982; Bruce, 1964; Lindamood & Lindamood, 1971). Of course, all of these tasks (because they require the subject to make a conscious decision about when to move a poker chip or what part of a word to change) work only if the subject is able to raise his or her sound knowledge to a conscious level, a level--we can not stress too strongly--that is *not* necessary for spoken language competence.

In order to demonstrate to oneself that phonological knowledge is usually unconscious, one needs only to try writing out the rules that require pronouncing some English plural noun endings like an S (e.g., bricks), some like a Z (e.g., bugs), and some like UZ (e.g., birches). All speakers of English do that effortlessly, but only a very few (usually only trained linguists) can write out the rules for how to do it. On the other hand, spelling requires conscious knowledge of rules such as that the letter S sometimes sounds like S and other times like Z, and that the UZ-sounding syllable at the end of some plurals is always spelled "es" even though that "es" is not pronounced at all like the "es" at the beginning of *estimate*. This does not happen effortlessly--in fact, most of us expend considerable effort applying spelling rules correctly in our everyday writing. (One might argue that most spelling is automatic and so involves unconscious knowledge, not conscious awareness. Even if that is so, most of us can recall expending considerable conscious effort *learning* spelling rules, whereas no child *consciously* learns rules like those for how to pronounce English plural noun endings.)

Once subjects know the names of the letters of the alphabet, the situation changes in a dramatic way. Subjects can be asked to spell, and spelling is a particularly revealing measure of phonemic awareness. It becomes revealing not only to the researcher who has chosen it for his or her own purposes, but also to the speller who uses it for his or her own purposes (because spelling--unlike poker chip moving which must seem a peculiar thing to be asked to do--is a language act, one that can come from the speller's own desire to communicate). Spelling is revealing not only to the researcher who has the written product as a record of the subject's sound-letter matchings, but also to the spellers who have had to make sound-letter choices in the process of communicating. In other words, spelling can be a particularly effective means of *assisting* the transition between unconscious use of phonological knowledge for spoken language and necessarily conscious phonological awareness for written language. Adams (1990) recognized this when she stated,

> [T]he process of inventing spelling is essentially a process of phonics. Not surprisingly, then, the phonetic appropriateness of prereaders' invented spellings is found to be predicted by their level of phonemic awareness and to predict their later success in learning to read words. . . . The evidence that invented spelling activity simultaneously develops phonemic awareness and promotes understanding of the alphabetic principle is extremely promising, especially in view of the difficulty with which children are found to acquire these insights through other methods of teaching. (p. 387)

Read (1971) demonstrated this when he used a spelling task--for which he is justifiably credited with the discovery of invented spelling--to study not early writing *per se* but "Preschool Children's Knowledge of English Phonology" (the title of his landmark work). For this study, we, too, used a spelling task as the indicator of the nature of children's phonological analyses of English words.

Given the importance of phonemic awareness to beginning reading achievement (Adams, 1990), at least two questions demand attention: What kind of situations can we provide to children that will require their developing phonemic awareness? How can we make it easier for children to develop conscious awareness of phonemes? It is these questions that the recent spate of phonemic awareness articles in reading journals attempt to answer.

One answer to these questions is to break the process of acquiring phonemic awareness down to small steps and control children's experiences with those steps. This reductionist approach is similar to time-honored "reading readiness" programs which deliver instruction in supposed prerequisite skills (such as auditory and visual discrimination) to children whose performance on reading readiness tests has identified them as not yet ready for reading instruction. Although the reading readiness approach has been challenged in the past two decades by those who emphasize that children from infancy to school age demonstrate a broad continuum of written language competencies (see Teale, 1987, for a

review of research supporting such an "emergent literacy" perspective), reductionist programs persist. The small steps to which children's access is controlled in a recently proposed program of phonemic awareness instruction involve a unit of sound smaller than the fairly accessible syllable but larger than the less accessible phoneme.

Adams (1990) devotes considerable space (pp. 306-328) to reviewing studies that have examined both adults' and children's abilities to attend to two sub-units of syllables: the *rime*, that is, the vowel and any consonants that come after it in a syllable; and the *onset*, that is, any consonants that may precede the vowel. Most of these studies are from an extensive line of research by Rebecca Treiman in which she first establishes the psychological reality of onset and rime for both adults and children, usually using word altering tasks, and then explores the role of onset and rime perception in children's literacy development. For example, Treiman (1985a) found that five year olds could easily recognize a target sound in a spoken syllable when the sound was a single letter onset (e.g., the s sound in /sap/). Their performance suffered, however, when the target sound was part of a two-letter onset (e.g., the s sound in /ski/). Further, first and second graders made more reading errors with nonsense syllables in which the second consonant was part of the onset (e.g., the m in smoo) than with nonsense syllables in which the second consonant was part of the rime (e.g., the m in soom).

Treiman (1983; 1985b; 1991a) has argued that young writers have difficulty deconstructing consonant clusters, that is, perceiving that they are composed of more than one phoneme. She identifies the second consonant of initial consonant clusters as a source of the difficulty. Treiman (1985b) analyzed the spelling errors of a classroom of first graders over the period of two school years. Children were much more likely to omit the second phoneme of an initial consonant cluster than the first phoneme. We view the percentages of times Treiman's subjects represented those phonemes to be high. They were 98% for first phonemes and 76.7% for second phonemes. These percentages are much higher than chance. That means that with 76.7% of complex onsets, first

graders were able to spell the second phoneme; they attended to an individual phoneme within the onset, that is, beyond the first, more obvious phoneme. Nonetheless, Treiman concluded that children have an easier time distinguishing onsets and rimes than distinguishing individual phonemes, and that complex onsets are more difficult than simple ones.

Based on these findings, Treiman (1991b) has proposed an "onset/rime approach to reading instruction" (p. 157) that would

> begin by teaching children to analyze spoken words into syllables. Next, pupils learn to analyze syllables into onsets and rimes. At this point, correspondences between print and speech at the level of onsets and rimes are introduced. . . . Once children have achieved a certain degree of success at the onset/rime level, correspondences between print and speech at the level of phonemes are introduced. Children first receive training in segmenting onsets and rimes of spoken syllables into phonemes. Then, children begin to learn correspondences between phonemes and letters. (p. 157)

We suggest two possible problems with such an approach. First, we question whether failure to represent all the sounds in an onset or a rime is evidence that the onset or rime has been perceived as an indivisible unit, that is, that its component phonemes have not been perceived. What children perceive may differ from what they consider needs to be represented, and/or what they perceive may differ from what they are able to record given their difficulties as beginners with the physical process of composing. Further, omitting sounds is not in and of itself problematic; all spelling systems--whether a novice writer's invented spelling or a master's conventional spelling--are necessarily abstract, that is, they cannot represent every nuance of sounds in the spoken language. One of the most intriguing findings from Read's (1971) invented spelling study was that children abstracted from (omitted) sounds in the TR and DR consonant clusters. Read's subjects omitted the T sound and the D sound in their spelling of those consonant clusters but recorded the affricative (a CH sound in TR

and a J sound in DR), whereas conventional spellers do just the reverse. Many observers of children's invented spellings--including Treiman (1985c)--have replicated Read's (1971) finding concerning affricatives.

We believe that more important than whether or not children omit sounds in their spellings is which sounds they omit and which sounds they represent. If they usually omit the less salient phonemes in their spellings of rimes and complex onsets, then it is more easily argued that they see the rime or the onset as a unit. On the other hand, if they frequently represent a non-initial sound in a complex onset (even if they omit the initial sound), then it is more difficult to argue that they have failed to deconstruct the onset or that they have found the complex cluster especially difficult. Similarly, if they frequently represent non-final letters in rimes (even if they omit the final sound), then it is difficult to argue that they have failed to deconstruct the rime. We counted spelling a non-initial phoneme in an initial consonant cluster or a non-final phoneme in a final consonant clusters as spelling the cluster.

The second problem we find with Treiman's (1991b) approach to reading instruction is her leap from verifying the psychological reality of onset and rime to requiring onset-rime segmentation training. We find it especially troublesome when such training is required prior to authentic writing tasks in an instructional sequence. Children frequently impress us with the complexity and flexibility of their strategies. It is possible that they know syllables, know onsets and rimes, and know phonemes, and that they use these different knowledges in different situations, with different tasks, especially when they set the tasks themselves. It is also possible that they acquire and refine these knowledges in the contexts of such tasks, not always in a regular sequence (first mastering syllable segmentation, then mastering onset-rime segmentation, then mastering phoneme segmentation), and certainly not for segmentation's sake but for the sake of more effectively communicating what they want to write.

The purpose of this study was to determine whether preschool, kindergarten, and first grade children's analyses of English words were governed by perception of onsets and rimes or by perception of phonemes within onsets and rimes. Specifically, we were interested in whether children's spelling of consonant clusters in onsets would show the same high percentages of representations of non-initial phonemes as Treiman (1985b) found, and whether other aspects of their spellings of rimes would show evidence of attending to phonemes. We used their spellings of ten words comprising an invented spelling task to determine the nature of their phonemic analyses.

Based on the arguments given above, we made the following assumptions:

1. **One-letter spellings**. If invented spellings are governed by attention to the syllabic subunits of onset and rime, then one-letter spellings of a word are **likely**

(a) to represent a simple onset or the first sound of a complex onset [examples: N for *nose* and B for *bridge*] OR (b) to represent the final sound of a rime (including complex rimes) [examples: S for *nose* and T for *nest*]

AND are **unlikely**

(c) to include representation of a sound that makes an onset or rime complex (i.e., a non-initial sound in an initial consonant cluster or a non-final sound of a final consonant cluster) [examples: J for *drum* and S for *nest*].

2. **Two-letter spellings**. If invented spellings are governed by attention to the syllabic subunits of onset and rime, then two-letter spellings of a word are **likely**

(a) to represent one sound from the onset and one sound from the rime of a one-syllable word (most likely an initial consonant and a final sound) [examples: FT for *feet* and NZ for *nose*]

OR (b) to represent one sound from the first onset and one sound from the second

onset of a two-syllable word (most likely the initial consonants of each syllable) [example: TB for *table*]

AND are **unlikely**

(c) to include a representation of a sound that makes an onset or rime complex (i.e., a non-initial sound in an initial consonant cluster or a non-final sound of a final consonant cluster) [examples: GM for *drum* and NS for *nest*].

3. **Spellings with three or more letters.** If invented spellings are governed by attention to the syllabic subunits of onset and rime, then spellings with more than two letters are **likely**

(a) to represent simple onsets, first sounds from complex onsets, final sounds from rimes, and to be random other letters (such as random strings of letters after spellings of initial consonants and random "filler" letters between spellings of initial consonants and final sounds of syllables) [examples: BSKZ for *bird* and HWXYZST for *hat*]

AND are **unlikely**

(b) to include a representation of a sound that makes an onset or rime complex (i.e., a non-initial sound in an initial consonant cluster or a non-final sound of a final consonant cluster) [examples: NAIST for *nest* and BRDE for *bridge*]

OR (c) in other ways to represent more than one sound per rime [examples NES for *nest* and GUM for *drum*].

Method

Subjects

Data for this study were collected as part of several studies of children's invented spellings over the past seven years. Subjects were 135 preschool children (ages 3-5), 78 kindergartners, and 26 first graders. They represented a variety of ethnic backgrounds and were from two geographic

regions of the United States (a southern and a midwestern state).

Materials

Richgels (1986) designed and Burns and Richgels (1989) revised an invented spelling task consisting of ten words chosen for their varying demands on a novice speller's ability to separate and represent speech sounds. The ten from the original list are *jar, pie, dirt, nose, feet, cry, east, table, hat,* and *kitten*; those from the revised list are *nose, feet, table, pie, bird, nest, bridge, sock, drum,* and *wagon*. These words include one- and two-syllable words; long, short, and "other" vowels; and single-consonant and consonant-cluster beginnings and endings (or, using Treiman's terminology, simple and complex onsets and rimes). This invented spelling task has been used in a variety of investigations of early literacy--for example, to compare children's invented spellings in a formal task with their spellings in free compositions (Richgels, 1986, and Richgels and Barnhart, 1990) and to determine the role of peer interaction in kindergartners' decisions about how to spell (Cannella, 1988). The studies from which the data for this study were drawn used either the original (Richgels, 1986) or the revised (Burns & Richgels, 1989) invented spelling task.

Scores are the number of phonemes that subjects are credited with representing. Scoring procedures give subjects credit if a phoneme is represented in a manner consistent with the invented spelling strategies described by Read (1971), even when their spelling is not conventional (see Richgels, 1986, and Burns & Richgels, 1989, for details). For this study, we were interested in where credited phonemes were located within the onsets and rimes of list words (see Table 1). We compared subjects' spellings with the predictions listed in assumptions 1-3 above (see Figure 1 for examples of scoring).

Table 1. Spelling lists: Onsets and rimes.

First version of spelling list (used with subjects 1-56) Onset - Rime	Second version of spelling test (used with subjects 57-239) Onset - Rime
J - AR	N - OSE
P - IE	F - EET
D - IRT	T - A
	B - LE
N - OSE	
	P - IE
F - EET	
	B - IRD
CR - Y	
	N - EST
- EAST	
	BR - IDGE
T - A	
B - LE	S - OCK
H - AT	DR - UM
K - ITT	W - AG
- EN	- ON

Subject #100

nose	N	(1-a)
feet	F	(1-a)
table	T	(1-a)
pie	P	(1-a)
bird	B	(1-a)
nest	N	(1-a)
bridge	G	(1-b)
sock	S	(1-a)
drum	G	(1-c)
wagon	W	(1-a)

Subject #146

nose	NS	(2-a)
feet	FD	
table	TB	(2-b)
pie	PN	
bird	BD	(2-a)
nest	NS	(2-c)
bridge	BS	
sock	SK	(2-a)
drum	GM	(2-c)
wagon	WG	

Subject #55

jar	JSER	(3-a)
pie	PIRY	(3-a)
dirt	DOVT	(3-a)
nose	NABC	(3-a)
feet	FROT	(3-a)
cry	KARVIY	(3-b)
east	EFGT	(3-a)
table	TSLHO	(3-a)
hat	HWXYZST	(3-a)
kitten	CAN	

Subject #113

nose	NOZ	(3-c)
feet	FET	(3-c)
table	TABL	(3-c)
pie	PI	
bird	BRD	(3-c)
nest	NEST	(3-b)
bridge	BEG	(3-c)
sock	SOOK	(3-c)
drum	DRM	(3-b)
wagon	WGN	

Figure 1. Examples of spellings and scorings from four subjects. Underlined letters were credited as representing a phoneme in the word. Numbers and letters in parentheses refer to assumptions listed on pp. 8-9.

Procedures

Each subject was given the invented spelling task individually. Subjects were asked to use the plastic magnetic letters from a Fisher Price alphabet set to spell the words they had pronounced from meaning clues (in the original version) or from identifying pictures (in the revised version).

Results

One hundred and thirty-seven protocols were classified as invented spelling, 100 were random non-spelling, and two were conventional spelling (see Table 2). Tables 3 and 4 show the number of letters subjects used in their spellings and the number of subjects who spelled consonant blends. We counted spelling a non-initial phoneme in an initial consonant cluster or a non-final phoneme in a final consonant cluster as spelling the cluster. Of the preschool inventive spellers, the majority of spellings of 11 were one letter per word, the spellings of two were two letters per word, and the spellings of 36 were more than two letters per word. Of these, 45%, 50%, and 86% respectively spelled at least one consonant cluster (of the two consonant clusters in the words of the original list or the three consonant clusters in the words of the revised list). For the kindergarten inventive spellers, 11 used one letter per word, eight used two letters, and 42 used more than two. Of these 73%, 75%, and 90% respectively spelled at least one consonant cluster. All 23 first grade inventive spellers used more than two letters per word; 78% of them spelled at least one consonant cluster.

Of the 41% who did not spell consonant clusters in their single-letter spellings (the reciprocal of the last cell in row one of Table 4), none consistently spelled according to assumptions 1-a and 1-b. The fact that they did not spell consonant clusters should not be interpreted as meaning that they always spelled as if they were paying attention to onsets and rimes. For example, single letter spellings sometimes were a spelling of a vowel sound (e.g., O for *nose*) or a letter that couldn't be credited for any phoneme in the word (e.g., D for *nose*), and they never were the spelling of the onset of the second syllable of a two-syllable word.

Table 2. Number of subjects (and % of subjects of same grade): Spelling groups and grades.

Spelling Group	Grade			
	Pre-School	Kindergarten	First	Total
Non Spellers (Random)	84 (62%)	14 (18%)	2 (8%)	100 (42%)
Conventional Spellers	0 (0%)	1 (1%)	1 (4%)	2 (1%)
Inventive Spellers	51 (38%)	63 (81%)	23 (88%)	137 (57%)
Total	135 (100%)	78 (100%)	26 (100%)	239 (100%)

Table 3. Number of subjects (and % of inventive spellers of same grade): Lengths of invented spellings and grades.

Length of Spellings	Grade			
	Pre-School	Kindergarten	First	Total
One Letter per Word	11 (22%)	11 (17%)	0 (0%)	22 (16%)
Two Letters per Word	2 (4%)	8 (13%)	0 (0%)	10 (7%)
More Than Two Letters per Word	36 (71%)	42 (67%)	23 (100%)	101 (74%)
Mixed	2 (4%)	2 (3%)	0 (0%)	4 (3%)
Total	51 (101%)	63 (100%)	23 (100%)	137 (100%)

Table 4. Number of subjects (and % of number in same cell of Table 3) who spelled beginning or ending consonant clusters.

Length of Spellings	Grade			
	Pre-School	Kindergarten	First	Total
One Letter per Word	5 (45%)	8 (73%)	-	13 (59%)
Two Letters per Word	1 (50%)	6 (75%)	-	7 (70%)
More Than Two Letters per Word	31 (86%)	38 (90%)	18 (78%)	87 (86%)

Two words in the original version of the spelling list contain consonant clusters (*cry* and *east*); three words in the revised version contain consonant clusters (*bridge*, *drum*, and *nest*). Of the 87 subjects whose longer-than-two-letter spellings included spellings of consonant clusters (see the last cell in Table 4), 66 spelled two or three consonant clusters.

Of the 101 subjects whose spellings were usually longer than two letters (see the last cell in row three of Table 3), 57 represented more than one sound per rime (i.e., spelled as described in 3.c) in a majority of the multi-sound rimes in their spelling list.

Discussion

High percentages of inventive spellers at all ages and with all lengths of spellings produced spellings that we considered unlikely if governed by attention to onsets and rimes rather than by

attention to individual phonemes. We consider the percentages in Table 4 to be high; they are consistent with Treiman's (1985b) percentages from a first grade study, which, we argued in our introduction, are much higher than chance. We would score 76.7% percent of her subjects' initial consonant clusters as having been spelled (because the second phoneme was represented). This compares to the figure of 78% of our first graders who spelled initial consonant clusters in our spelling list. Thus, we have replicated Treiman's first-grade findings. In addition we have extended those findings to kindergartners and preschool children; we found percentages of kindergartners who spelled consonant clusters at all word lengths and percentages of pre-schoolers who spelled consonant clusters at the more-than-two-letters word length to be similar to percentages of first graders who spelled consonant clusters (see the first three columns of Table 4).

The intrasyllabic units of onset and rime may be psychologically real even to very young children. Young spellers may not always represent the phonemes within those units; children are flexible in their application of linguistic knowledge and use of communication strategies in various situations (see Figure 1 for examples of different strategies within individual spellers' performances). However, it seems clear to us that even novice spellers (those who spell words with single letters) frequently attend to individual phonemes when making their spelling decisions. In other words, what inventive spellers are usually representing are phonemes, not onsets and rimes.

The consonant cluster is a unique entity for at least two reasons. First, it does not sound like a simple sequence of its component sounds; those sounds are altered or additional sounds are interposed by their being pronounced in such close proximity to one another--as the cases of affrication in TR and DR demonstrate. Second, the consonant cluster is the only way that an onset can contain more than one phoneme, and so it is the only way that an onset can contain the possibility of only partial representation in spelling.

We treated the interposed sounds in consonant clusters (such as the affrication in DR and TR) as non-initial sounds, and we treated partial representation of an initial consonant cluster as recognition of the complexity of the onset *so long as that partial representation was of a non-initial sound*. In other words, we contend that when children represent a non-initial sound, even if they do not represent the initial sound, they have gone beyond what one would do if one perceived a complex onset as a unit. They have not simply represented the most salient, most obvious (i.e., the first) phoneme of the cluster.

Treiman (1983; 1985b) uses any partial representation of a consonant cluster as evidence that the cluster is perceived as a unit--in the case of the initial consonant cluster, as an onset--rather than as a grouping of phonemes. The difference in emphasis in our interpretations of findings rests partly on this different treatment of partial spellings of consonant clusters. Still, our conclusions depend also on our subjects' numerous representations of two sounds in initial clusters and of multiple sounds in rimes.

Furthermore, we feel that our conclusion that invented spelling is governed by phoneme perception rather than by onset-rime perception is consistent with other knowledge about invented spelling gained in the more than twenty years since Read (1971) discovered it. Most observers of inventive spellers in action note their often conscientious sounding out of words. Most observers of invented spelling over time note the late appearance of one of the boundary sounds between onsets and rimes, that is a syllable's vowel.

A longstanding pedagogical debate concerns the efficacy of controlling children's experiences with written language so that they are exposed to simpler tasks before more difficult ones. We have seen this with many instructional methods, from use of basal reading materials in which children's reading vocabularies are carefully controlled to Treiman's (1991b) proposed program for teaching onsets and rimes before phonemes as the to-be-spelled units of written language. There are two

underlying assumptions to such methods: that simpler can be reliably distinguished from more difficult and, more importantly, that children prefer and profit from such control. We argue that our percentages, like Treiman's (1985b), of spelled consonant clusters refute those assumptions.

Read's (1971) groundbreaking study of preschool children's phonemic awareness--in which he "discovered" invented spelling--provided one piece of evidence on the child-centered side of this pedagogical debate. He studied the spontaneous writing of preschool children at a time when most experts contended that children could not write because they had not yet been taught to read.

Read discovered that children will work quite diligently and systematically at inventing their own spellings for words, making use of alphabet knowledge and developing and practicing phonemic awareness. He concluded that "[f]or at least some children, to learn standard spelling is to learn to broaden and deepen their pre-school phonological analysis . . . In the meantime, we must assume that learning to read and write are matters of knowledge rather than habit" (1971, p. 34). Read recommended that teachers "at least respect [children's pre-conventional spelling system] and attempt to work with it" (p. 33).

This study is preliminary, using data gathered for other purposes and other studies. Read's child-centered approach will gain further support if this study's findings can be replicated with new data from spelling lists with more multiple syllable words and more words that contain complex onsets and rimes. If children do not treat phonemes as more difficult than onsets and rimes and are willing to work at the task of analyzing complex onsets and rimes, then it makes sense to use teaching strategies that encourage children's discovery of their own tasks, that is, encourage their personal experimentation with written language.

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