Performance and Reflection: Young Children's Concept of Word

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ABSTRACT **Four tasks that measure performance- and reflective-based knowledge of the structural and significative features of words were administered to subjects at two different levels of cognitive functioning as determined by Piagetian assessment tasks. A priori tests of hypothesized relations within and between cognitive levels revealed no significant differences. Post hoc analyses revealed a significantly greater ability to identify whether or not aurally-presented phrases and words (nouns, verbs, functors) were in fact words than to discuss words metalinguistically. Results question a strict Piagetian cognitive-stage position which maintains that language performance must precede metalinguistic knowledge and support instead an interactionist position which holds that the two work in concert toward developing children's concepts of "wordness."**

For well over a decade the area of metalinguistic awareness—the ability to think about language as an object of study in itself—has provided fertile terrain for investigation by psychologists, linguists, and educators (Gleitman & Rozin, 1973; Mattingly, 1972; Sinclair, Jarvella, & Levelt, 1978). Of specific interest is the emergence of children's concepts of what words are. This question is not only of theoretical interest but of significant practical interest as well; unrealistic assumptions on the part of primary grade teachers regarding students' knowledge of words as units in speech and print, and of the nature of the constituent elements in these units, often lead to difficulties and frustration in formal reading instruction (Downing, 1976; Templeton, 1980). Work in phonics, for example, is frequently undertaken before children understand some basic concepts about words—that they are groups of letters bounded on both sides by spaces, have a beginning, middle, and end, and so forth (Henderson, 1981; Morris & Henderson, 1981). Our understanding of the development of young children's concepts of "wordness" should better inform us in the matter of facilitating the development of that concept as well as the development of reading ability in general.

Templeton and Spivey (1980) noted that research in the area of concept of word usually falls into one of two areas. *Performance*-based knowledge entails children's indicating in some fashion awareness of word conventions. For example, boundaries of written words (Meltzer & Herse, 1969) or spoken words (Allan, 1982) may be identified, or numbers of phonemes noted (Liberman, Shankweiler, Fischer, & Carter, 1974). A powerful though rarely recognized source of children's performance-based knowledge lies in children's written efforts (Henderson, 1981; Morris, 1980; Read, 1975). The second area of research in the development of word concept involves *reflective* knowledge, in which children talk about their notions of what words are (Papandropoulou & Sinclair, 1974; Templeton & Spivey, 1980). To date, however, little work has been done in which both performance- and reflective-based knowledge of words have been investigated within the same sample. Furthermore, there has been little effort to determine the cognitive prerequisites for, or underpinnings of, these competencies. The purpose of the present study, therefore, was to address these two issues by investigating primary-age children's performance- and reflective-based knowledge of words as a function of level of cognitive development. Performance-based knowledge was assessed by a spelling task and a phoneme segmentation task; reflective knowledge was assessed by an oral interview.

Many investigators hold that the cognitive operations necessary for deliberate reflection on words appear to incorporate elements characteristic of Piaget's level of concrete operations (Hakes, 1980; Piaget & Inhelder, 1969). Lundberg (1978) noted that, according to this position, "changes in *thinking* around six or seven lead to new forms of verbal behavior. A general capacity for detachment paves the way for metalinguistic reflection" (p. 87). Concrete operational thought reflects conceptual awareness of several attributes; preoperational

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thought, however, is characterized by attention at any one time to only a single attribute. Preoperational children are "stimulus bound," unable to "decenter." From this perspective, conscious reflection on words is a fairly abstract undertaking. Children must decenter from the meaning of a word to consider its form. Consideration of form or structure, furthermore, involves the understanding that words are separable units in speech and print which in turn comprise smaller elements (letters or sounds). Lundberg commented that "Unfortunately, hard data are missing which support this view" (p. 87). Since Lundberg's observations, few studies have empirically addressed this notion (Smith & Tager-Flusberg, 1982).

Only a few studies have questioned children directly about their notions of wordness (Papandropoulou & Sinclair, 1974; Templeton & Spivey, 1980; Sulzby & Templeton, Note 1). Templeton and Spivey, following an interview protocol used first by Papandropoulou and Sinclair with non-English speaking children, questioned four- to eight-year-old children about what they think words are. In addition, the interview asked subjects to: 1) identify words from a list of aurally-presented single words and phrases; and 2) define what a word is and give examples of long words, short words, easy words, and hard words. As with Papandropoulou and Sinclair's findings, Templeton and Spivey found children's development of a reflective concept of word to follow a "long and slow elaboration," from an equivalence between word and referent (" 'Patty' is a short word because my best friend's name is Patty and she's short"; " 'wood' is a hard word because wood is hard") to a gradual differentiation between words with concrete referents and those without ("table" is a word because tables exist; "the" is not a word because it does not have an objective referent in the real world) to an abstract conceptualization that reflects both structural and significative aspects of words.

Performance-related factors that still entail a higher degree of metalinguistic awareness include phoneme segmentation, which is also one of those skills addressed first in formal programs of reading instruction. Several researchers have suggested that inability to segment words phonemically is a significant cause of reading difficulty in the primary grades. Liberman et al. (1974) found that young children were able to segment words at the level of the syllable, but that phonemic segmentation followed considerably later. Part of the reason for difficulty is the abstract nature of the phoneme (Liberman, Cooper, Shankweiler, & Studdert-Kennedy, 1967); unlike the syllable, which comprises a definable acoustic span, the phoneme has no separate acoustic reality. Syllables are the smallest units into which the stream of sound can be segmented; because of this, phonemes are psychological rather than physical entities.

As a measure of performance-based word knowledge, spelling—or more specifically, invented spelling—is particularly appropriate. As Read (1971, 1975) and other investigators in invented spellings have noted (Beers & Henderson, 1977; Henderson & Beers, 1980), while young children are unable to explain the rationale behind their attempts to represent speech with letters, their spellings nevertheless reveal the sophistication of their analysis on a tacit level. Although the genesis of children's writing may be placed quite early in their development (Ferreiro & Teberosky, 1982; Harste, Burke, & Woodward, 1981), when the children begin to match letters with segments of sound, their tacit concept of wordness begins to emerge. Henderson (1981) and several of his colleagues (Beers, 1980; Gentry, 1978; Schlagal, 1982; Templeton, 1979; Zutell, 1979) have investigated the progression in spelling development of this type of word knowledge. Table 1 presents examples characteristic of each stage.

Table 1.—Levels of Spelling Strategy

Deviant[a]	Prephonetic	Phonetic	Transitional	Correct
- - -	YDN	WADN	WADDING	WADING
- - -	KM	KRIM	CRIEM	CRIME
- - -	PT	PEKT	PEEKT	PEEKED
- - -	JR	JRAGN	DRAGIN	DRAGON
- - -	PK	PEKN	PIKING	PICKING

[a]This stage is characterized by random letters, numerals, and scribbling.

Bear (1982) and Zutell (1979) have found evidence to suggest that, with the onset of transitional spelling, children are decentering from a linear, left-to-right conceptualization of English spelling to a relational understanding—noting the effects that certain letters have on preceding letters (such as the long vowel marker "silent" *e*). In the case of Zutell's study, this evidence came from the children's performance on a battery of Piagetian assessment tasks which indicated transitional-level spellers had attained the cognitive level of concrete operations.

Templeton and Spivey (1980) found that the degree of sophistication evidenced in children's reflection on structural and significatory features of words was dependent upon cognitive level, with the greatest differences occurring between children of the preoperational and those at the transitional and concrete levels. Whether this disparity holds for perhaps less impressive but nevertheless important knowledge that depends on some degree of metalinguistic competence remains to be tested. Based on the research in invented spellings and phonemic segmentation, and the findings in Papandropoulou and Sinclair and Templeton and Spivey with

respect to reflective knowledge of word, the present study investigated specific relationships among performance- and reflective-based knowledge within and between subjects at different cognitive levels.

Method

Twenty-seven kindergarten, first, and second grade children were selected from an elementary school in a predominantly middle class suburban and rural community. All children were administered two Piagetian assessment tasks to determine level of cognitive functioning. Very few children were found to be on a preoperational level; 13 tested out on a transitional level and 11 on a concrete operational level. Because of absenteeism and scheduling conflicts, it was not possible to administer all subsequent tasks to all the subjects. Seven transitional and nine concrete operational subjects were administered all the tasks; seven subjects were randomly selected from the concrete operational group, and subsequent analyses were based on the transitional and the concrete operational groups. Each subject in each group was then individually administered a word awareness interview and a phoneme segmentation task. In addition, a 10 word spelling test was administered to all subjects.

Level of cognitive functioning. The independent variable, level of cognitive functioning, was determined by administering the Different Criteria Sorting Task and the Seriation Task as developed by Inhelder, Sinclair, and Bovet (1974). These tasks were determined to be most likely to tap the operations characteristic of multidimensional or relational thought, which according to the Piagetian perspective is necessary for reflective thinking about words. In the Different Criteria Sorting Task subjects were asked to sort large and small differently-colored circles and squares according to various criteria determined by the subject and to explain the reasons for each sorting. In the seriation task, subjects arranged sticks of different sizes so that they resembled a staircase.

Word awareness interview. Following a procedure employed first by Papandropoulou and Sinclair (1974), Templeton and Spivey (1980) developed an interview protocol which was used in the present study. There were two parts to the interview. First, subjects identified what they believed to be words, and their reasons for belief, from an aurally-presented series of randomly arranged phrases (e.g., from the house, up and down, hide and seek), nouns (e.g., table, night, children), verbs (e.g., give, put, took), and functors (e.g., the, and, with). Second, subjects offered examples of, and rationales for, long and short words as well as easy and hard words. The rating scale used by Templeton and Spivey to determine level of word awareness was used in evaluating responses, and is shown below.

0) No response, "Don't know," Unscorable.
   Examples:
   What is a word? "A word."
   "If it doesn't have any vowels."
1A) Word equivalent to object and/or action.
   Examples:
   for a long word: "Like dancing."
   for a short word: "A short book."
1B) Word equivalent to object and/or action and adequate explanation of response.
2A) Word equivalent to a spoken phrase.
   Examples:
   What is a word? "It's like when you say something."
   "Just saying something to people, like I just said."
2B) Word equivalent to a spoken phrase and adequate explanation of response.
2C) One word repeated several times.
   Examples:
   for a long word: "books and books and books and books"
   "television" (repeated eight times)
2D) Word equivalent to a spoken word.
2E) Word equivalent to a spoken word and adequate explanation.
3A) Word equivalent to print.
   Example:
   What is a word? "Something that you spell."
3B) Word equivalent to print, and it says something.
   Example: "Something that you read, and it says something."
3C) Word discussed in terms of conventions of print (description of what it looks like on the page—letters, spaces, capitals, etc.)
   Examples: "Letters form words." (Papandropoulou & Sinclair, 1974, p. 247)
3D) Simultaneous consideration of attributes rather than simple listing.
   Example:
   Why is 'sleep' a word? "Because it's one of the things you write in books, and you read it, and it says something."
4A) Symbolic representation of objects, actions, and events.
4B) Same as 4A as well as discussion of structure.

For purposes of scoring and analysis, the interview was considered in terms of these two parts. The first part, Word Identification, was scored simply by tallying the correct responses given by each child. In the second part, Word Features, each response was rated one through five and a total score for each child was determined.

Phoneme segmentation task. The procedure developed by Liberman et al. (1974) was used in this study. Each child was asked to repeat a verbalized sound or word and tap out, with a pencil, the number of phoneme segments (one, two, or three) that he or she heard. Correct responses were positively reinforced with a nod or praise; incorrect responses were corrected by the experimenter before immediately proceeding to the next item. All 42 items were administered to each subject, and the number of correct responses then tallied.

Spelling ability. A 10 word spelling inventory based on studies by Gentry (1978) and Morris (1980) was administered to each child. The words were of second grade or greater level of difficulty, assumed to be in the child's listening/speaking vocabulary, and represented potential spelling miscues identified by Read (1971) and supported by subsequent research (Henderson & Beers, 1980). The children were instructed to spell the words to the best of their abilities. Errors were scored based on the levels identified by Gentry (1978), and Beers and Henderson (1977); a rank of one through five corresponding to the developmental level evidenced by the spelling was given for each word (1 = deviant, 2 = prephonetic, 3 = phonetic, 4 = transitional, 5 = correct) and a total score computed.

Results

For all the subjects the scores of each of the four dependent variables were expressed as proportions. To ensure that homogeneity of variance was not violated, an arc sine transformation (ϕ = 2 arc sine $\sqrt{p}$) was calculated for each of these proportions. Because subsequent results are reported in terms of these transformed proportions, the reader may wish to refer occasionally to Table 2 which reports the mean performance scores for each task based on subjects' raw scores. A priori tests using Dunn's procedure were applied to test specific hypotheses. A Lindquist Type I a posteriori analysis of variance was also carried out to determine significant main effects and a post hoc simple effects analysis was used to determine significant differences.

Although overall scores were expected to be higher for concrete operational subjects than for transitional subjects, two general trends of interest were expected to be revealed in the data. First, differences between transitional and concrete operational cognitive levels would be greater for elements of conscious reflection on words than for the performance-based spelling ability. Second, differences between cognitive levels would be greater for phonemic segmentation than for more general word knowledge. To test for the first trend, two interactions were investigated. Table 3 presents the results of the comparisons among means for word identification and spelling; Table 4 presents the results of the comparisons for phonemic segmentation and spelling. As is apparent, however, no comparisons reached significance. To test for the second trend, another two interactions were investigated. Tables 5 and 6 present the results of the comparisons as a function of cognitive level among phonemic segmentation and word identification, and phonemic segmentation and word features, respectively. Again, none of the comparisons reached significance.

The Lindquist Type I analysis of variance indicated that there was a significant main effect for word awareness. A post hoc simple effects analysis indicated that there was a significant difference between word identification and word features, $p < .05$ (see Table 7).

Discussion

These results provide support for Smith and Tager-Flusberg's (1982) interactionist theory regarding the relationship between metalinguistic and normal language processing. Smith and Tager-Flusberg note that Piagetian theory would predict that a certain sophistication is necessary before metalinguistic thought is possible. More appropriately, however, one should probably speak in terms of degree of metalinguistic awareness. With regard to words, the present study suggests that it is not necessary to be firmly entrenched within a concrete operational level of cognitive functioning in order to reflect on the structural and significative aspects of words. One would expect significant differences in responses between preoperational and concrete operational children—the cognitive differences between these levels suggest this (Templeton & Spivey, 1980)—but this hypothesis remains to be tested statistically.

In this study, the difference between word identification and spelling within both transitional and concrete operational subjects approached significance; furthermore, the difference within transitional subjects for spoken word identification and phoneme segmentation

Table 2.—Mean Performance Scores on Word Concept Tasks by Cognitive Level

Cognitive Level	Phoneme Segmentation (42)	Spelling (40)	Word Identification (12)	Word Features (20)
Transitional (N = 7)				
$\bar{X}$	22 71	19.86	8.57	8.86
SD	11.94	12.94	1 27	5 24
Concrete operational (N = 7)				
$\bar{X}$	29.47	23.29	8.86	12.86
SD	7.66	11.42	2 41	5 08

Note: The total score for each task is in parentheses.

Table 3.—Pairwise Comparison of Means for Cognitive Level and Word Concept Type: Word Identification and Spelling

$d^1_B 4/12 = 1.3906$ Absolute Mean Differences
$d^1_W 2/36 = .5342$

Means	Cognitive Levels/ Word Concept[a]	CWI	TWI	CSP	TSP
2 1970	CWI		1745	4305	5868
2 0225	TWI			.2560	.4123
1 7665	CSP				1563
1 6102	TSP				

[a]C = Concrete Operational, T = Transitional, WI = Word Identification, SP = Spelling.

Table 4.—Pairwise Comparison of Means for Cognitive Level and Word Concept Type: Phoneme Segmentation and Spelling

$d^1_B 4/12 = 1.3906$ Absolute Mean Differences
$d^1_W 2/36 = .5342$

Means	Cognitive Level/ Word Concept[a]	CPS	CSP	TPS	TSP
2.0707	CPS		.3042	.4503	.4605
1.7665	CPS			1488	.1563
1.6177	TPS				.0075

[a]C = Concrete Operational, T = Transitional, PS = Phoneme Segmentation, SP = Spelling.

Table 5.—Pairwise Comparison of Means for Cognitive Level and Word Concept Type: Phoneme Segmentation and Word Identification

$d^1_B 4/12 = 1\ 3906$ Absolute Mean Differences
$d^2_W 2/36 = .5342$

Means	Cognitive Level/ Word Concept[a]	CWI	CPS	TWI	TPS
2.1970	CWI		1263	.1745	5793
2.0707	CPS			.0482	.4530
2.0225	TWI				.4043
1.6177	TPS				

[a]C = Concrete Operational, T = Transitional, WI = Word Identification, PS = Phoneme Segmentation.

Table 6.—Pairwise Comparison of Means for Cognitive Level and Word Concept Type: Phoneme Segmentation and Word Features

$d^1_B 4/12 = 1\ 3906$ Absolute Mean Differences
$d^1_W 2/36 = .5342$

Means	Cognitive Level/ Word Concept[a]	CPS	CWF	TPS	TWF
2.0707	CPS		.3929	.4530	6467
1.6778	CWF			.0601	.2538
1.6177	TPS				.1937
1.4240	TWF				

[a]C = Concrete Operational, T = Transitional, PS = Phoneme Segmentation, WF = Word Features.

also approached significance. It is believed that this difference would reach significance had preoperational subjects been included in the study. This finding is interesting in light of Morris's (1980) study in which strong evidence is offered to support the necessity of the attainment of a minimal concept of a printed word before phoneme segmentation is possible. With respect to phoneme segmentation, Morris's evidence for the prerequisite of printed word concept and this study's evidence for spoken word concept support the position that children need to learn what words are in a basic sense—at least to identify the unit of word—before they can profitably attend to the segmented analysis of that unit in speech. A cause-effect relationship is suggested, although the research evidence is not unequivocal on this issue (Bradley & Bryant, 1983). Because children are observed to write—to use letters in an apparently systematic attempt to represent speech—before they have been introduced to formal reading instruction, a possibility exists that partitioning of speech for purposes of writing is more advanced than the identification of phonemes in speech; this reflects the distinction between tacit or performance-based word knowledge and explicit or reflective word knowledge. Because no preoperational subjects were included in this study, at present this hypothesis can be neither confirmed nor rejected. The case between transitional and concrete, however, is more clear cut. The similar means for transitional subjects for phoneme segmentation and spelling suggest that the systematic matching of letters to sounds in synthesizing printed word structure is clearly related to identification of number of phonemic segments in spoken words. Examination of the spelling data supports this suggestion and contributes to Henderson's (1981) argument that phonetic or "letter name" spelling accompanies the ability to begin to segment words phonemically in the manner usually required in beginning phonics instruction. Phoneme segmentation continues to improve, more than does spelling, suggesting that phoneme segmentation is relatively easy once students have the hang of it, but spelling—because its mastery extends beyond left-to-right linear analysis to include relational features—may lag behind. A similar explanation may account for the lack of significant differences between word features and phoneme segmentation; the sophistication with which subjects can consciously reflect on the nature of structural and significative aspects of words may continue to develop. In this study, cognitive level alone is obviously not sufficient to discriminate between degree of metalinguistic reflection vis-a-vis words.

The post hoc analysis which revealed the significant difference between word identification and word features supports the argument that words ought to be conceptualized as spoken units before a more qualitative analysis of their structural and significative features can occur. Interestingly, reflection on the structural features by subjects in this study, based on an examination of the responses to the second part of the word awareness interview, are very similar to those in Papandropoulou and Sinclair (1974) and Templeton and Spivey (1980). Responses to this part, particularly

Table 7.—Summary of Lindquist Type I Analyses of Variance of Word Concept by Cognitive Level and Word Concept Type, Including Comparison of Means for Word Concept Type

Source	*SS*	*df*	*MS*	*F*	*p*
Between subjects	10.338	13			
Cognitive level	.9422	1	.9422	1.2034	NS
Error	9.3957	12	7830		
Within subjects	9.0634	42			
Word concept	2 4148	3	.8049	4 4891	< .05
Cognitive level × Word concept	.1939	3	0646	< 1.00	NS
Error	6.4547	36	1793		
Total	19.4014	55			

Pairwise Mean Comparisons

d^{1}_{W} = .5342 Absolute Mean Differences

Means	Word Concept Type[a]	WI	PS	SP	WF
2.1098	WI		.2656	4215	5590*
1.8442	PS			1559	2934
1.6883	SP				1375
1.5508	WF				

[a]WI = Word Identification, PS = Phoneme Segmentation, SP = Spelling, WF = Word Features
*$p < .05$

to the query as to what a word is, revealed that subjects' first mention of the intraword structure of words was in terms of letters rather than sounds.

In terms of implications of the present study for developmental theory, further support is offered for the argument that Piagetian stages do not powerfully predict or explain certain aspects of metalinguistic behavior. Although they are useful means for characterizing cognitive and linguistic development at greater levels of generality, as one focuses on quite specific aspects of metalinguistic functioning such as those involved in word analysis, their explanatory power is significantly reduced. With respect to words, linear and relational thinking interact at least during the period we have termed transitional. The issue, then, is not whether young children are capable of metalinguistic reflection—indeed they are (Clark, 1978; Smith & Tager-Flusberg, 1982)—nor whether certain levels of cognitive sophistication are necessary for one to do so, but rather the degree of explicitness we may expect of the children in the classroom, and the degree to which this level of explicitness is based on an interaction with print. And with this focus the concern becomes more practical than theoretical.

From the beginning in school, children should experience print in a variety of contexts and in a variety of forms in order for concepts about written words to emerge. Opportunities to write—to invent spellings—can exercise this developing concept of wordness. Phoneme segmentation may then follow more properly in an instructional sequence of word analysis within a formal reading program. Importantly, teachers should not assume that primary pupils have clearly sorted out all structural and significatory aspects of words; as the interaction trends and post hoc analyses suggest, pupils need opportunities to acquire and to exercise knowledge about the visual and aural features of words, thereby establishing a more elaborate conceptual ground for more sophisticated types of metalinguistic reflection.

Two important limitations of the present study must be mentioned. As has been noted, although it was the intention to include preoperational subjects, there were not enough children who tested at preoperational levels to be included in the analysis. Future research should definitely include this population, as both theoretical and developmental issues, including order of acquisition of beginning concepts regarding visual and spoken word identities and their subsequent analyses, may be more satisfactorily addressed. Second, it is certainly possible that the measures selected to assess word knowledge are insufficiently discriminating in some aspects. This may be particularly true in the case of metalingistic awareness. Further research, including a broader conceptual range of children and measures assessing visual word awareness in addition to those included in this study, is necessary.

REFERENCE NOTE

1. Sulzby, E., & Templeton, S. *The development and validation of metalinguistic tasks assessing children's concept of "word-ness."* Paper presented at the meeting of the National Reading Conference, San Diego, California, December 1980.

REFERENCES

Allan, K. The development of children's metalinguistic understanding of words. *Journal of Educational Research*, 1982, *76*, 89-93.

Bear, D. *Patterns of oral reading across stages of word knowledge.* Unpublished doctoral dissertation, University of Virginia, 1982.

Beers, J. Developmental strategies of spelling competence in primary school children. In E. H. Henderson & J. W. Beers (Eds.), *Developmental and cognitive aspects of learning to spell: A reflection of word knowledge.* Newark, DE: International Reading Association, 1980.

Beers, J., & Henderson, E. H. First grade children's developing orthographic concepts. *Research in the Teaching of English, Fall*, 1977.

Bradley, L., & Bryant, P. E. Categorizing sounds and learning to read—a causal connection. *Nature*, 1983, *301*, 419-421.

Clark, E. Awareness of language: Some evidence from what children say and do. In W J. M. Levelt, A. Sinclair, & P. J. Jarvella (Eds.), *The child's conception of language.* Berlin: Springer-Verlag, 1978.

Downing, J. The reading instruction register. *Language Arts*, 1976, *53*, 762-766.

Ferreiro, E., & Teberosky, A. *Literacy before schooling.* Exeter, NH: Heinemann Educational Books, 1982.

Gentry, J R. Early spelling strategies. *The Elementary School Journal*, 1978, *79*, 88-92.

Gleitman, L. R., & Rozin, P. Teaching reading by use of a syllabary. *Reading Research Quarterly*, 1973, *8*, 447-483

Hakes, D. T. *The development of metalinguistic abilities in children.* Berlin: Springer-Verlag, 1980

Harste, J., Burke, C., & Woodward, V. *Children, their language, and world: Initial encounters with print* (NIE final report #NIE-g-79-0132). Bloomington, IN: Indiana University, Language Education Department, 1981.

Henderson, E H *Learning to read and spell: The child's knowledge of words.* DeKalb, IL: Northern Illinois University Press, 1981.

Henderson, E. H., & Beers, J W. (Eds.) *Developmental and cognitive aspects of learning to spell. A reflection of word knowledge.* Newark, DE: International Reading Association, 1980.

Inhelder, B., Sinclair, H , & Bovet, M *Learning and the development of cognition.* Cambridge, MA: Harvard University Press, 1974.

Liberman, A M., Cooper, F. S., Shankweiler, D., & Studdert-Kennedy, M. Perception of the speech code *Psychological Review*, 1967, *74*, 431-461.

Liberman, I. Y., Shankweiler, D., Fischer, F. W., & Carter, B. Explicit syllable and phoneme segmentation in the young child. *Journal of Experimental Child Psychology*, 1974, *81*, 201-212.

Lundberg, I Aspects of linguistic awareness related to reading. In W. J. M. Levelt, A. Sinclair, & R. J Jarvella (Eds), *The child's conception of language.* Berlin: Springer-Verlag, 1978.

Mattingly, I G. Reading, the linguistic process and linguistic awareness In J F. Kavanagh & I G. Mattingly (Eds), *Language by ear and by eye: The relationship between speech and reading.* Cambridge, MA: MIT Press, 1972.

Meltzer, N S., & Herse, R The boundaries of written words as seen by first graders. *Journal of Reading Behavior*, 1969, *1*, 3-14

Morris, D. *Beginning readers' concept of word and its relationship to phoneme segmentation ability.* Unpublished doctoral dissertation, University of Virginia, 1980

Morris, D., & Henderson, E. H. Assessing the beginning reader's concept of word. *Reading World*, 1981, *20*, 279-285.

Papandropoulou, I., & Sinclair, H What is a word? Experimental study of children's ideas on grammar *Human Development*, 1974, *17*, 240-258.

Piaget, J., & Inhelder, B. *The psychology of the child.* New York: Basic Books, 1969

Read, C. *Children's categorization of speech sounds in English* Research Report #17. Champaign-Urbana, IL· National Council of Teachers of English, 1975.
Read, C. Preschool children's knowledge of English phonology. *Harvard Educational Review*, 1971, *41*, 1-34.
Schlagal, R. C. *A qualitative analysis of word knowledge: A developmental study of spelling, grades one through six* Unpublished doctoral dissertation, University of Virginia, 1982.
Sinclair, A., Jarvella, W J., & Levelt, W. J M. (Eds.). *The child's conception of language* Berlin: Springer-Verlag, 1978.
Smith, C. L , & Tager-Flusberg, H. Metalinguistic awareness and language development. *Journal of Experimental Psychology*, 1982, *34*, 449-468.
Templeton, S. Spelling first, sound later: The relationship between orthography and higher order phonological knowledge in older students. *Research in the Teaching of English*, 1979, *13*, 255-264.
Templeton, S. Young children invent words: Developing concepts of "word-ness." *Reading Teacher*, 1980, *33*, 454-459
Templeton, S., & Spivey, E The concept of word in young children as a function of level of cognitive development. *Research in the Teaching of English*, 1980, *14*, 265-278.
Zutell, J. Spelling strategies of primary school children and their relationship to Piaget's concept of decentration. *Research in the Teaching of English*, 1979, *13*, 69-80

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