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AUTHOR Winsor, Pamela J. T.
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ABSTRACT

A study investigated: (1) whether children at risk for failure to learn to read and write increase their phonemic awareness while engaged in holistic language arts instruction; (2) if so, which language experiences and instructional practices are associated with the gains; and (3) the nature of the interaction between phonemic awareness development and reading and writing achievement among those children while in grade one. Four classroom instructional programs were selected on the basis of recommendations of supervisory personnel, teacher-given descriptions, and preliminary observations. Five children from each classroom were selected as focal children. Each classroom was observed for 10 full days and each focal child was assessed in October and April on 10 measures. Teachers and children were interviewed and parents completed questionnaires indicating their child's participation in a list of preschool language learning activities and experiences with print outside of school. Results indicated that children involved in holistic language arts programs improve their performance on tasks of phonemic awareness. The instructional practices that appear to contribute to this change are writing using invented spelling and reading connected text both chorally and independently. Results also indicated that phonemic awareness is necessary for reading and writing, but is not a sufficient condition for reading and writing success. Although holistic language arts instruction contributes to phonemic awareness, it is not sufficient training for all children. The contribution of home literacy to the development of phonemic awareness is apparent. (Seven tables of data are included and 21 references are attached.) (MG)

Pamela J. T. Winsor

University of Lethbridge

4401 University Drive

Lethbridge, Alberta,

Canada T1K 3M4

(403) 329-5624

Developing Phonemic Awareness: Knowledge and Practice in Holistic Instruction

Running head: PHONEMIC AWARENESS

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Developing Phonemic Awareness: Knowledge and Practice in Holistic Instruction

From among many, phonemic awareness emerges as one reason many children experience difficulty or failure learning to read. In her comprehensive review of the literature pertaining to beginning reading, Adams (1990), considers phonemic awareness one of the most critical factors in reading success. She states: "Faced with an alphabetic script, the child's level of phonemic awareness on entering school may indeed be the single most powerful determinant of the success she or he will experience in learning to read" (p. 54).

There is clear evidence that some awareness of the phonological structure of the language is necessary for reading success, and that this awareness is not, by itself, sufficient for reading skill acquisition (Tunmer & Nesdale, 1985). In addition, there is reason to believe that having some phonological knowledge facilitates the growth of more proficient decoding (Treiman & Baron, 1983). It has also been demonstrated that phonemic awareness is a consequence of reading (Morais, Cary, Alegria, & Bertelson 1979; Read, Zhang, Nie, & Ding, 1986). That is, successful decoding results in explicit awareness of the structure of the language at the phonemic level. Finally, it is possible that phonemic awareness and reading are related in all three suggested ways.

The relationship of method of instruction to development of phonemic awareness has been addressed (Morais, 1987; Perfetti, Beck, Bell, & Hughes, 1987; Tunmer & Nesdale, 1985) with indefinite conclusions, largely because there is great variability among the assessment tasks. It can be correctly concluded that instruction influences phonemic awareness development, but there is no convincing evidence that phonics-based, whole word, and basal methodologies can be definitively ranked in respect to their contribution. The influence of holistic (meaning-based) instruction remains relatively unexplained.

Previous research is promising in terms of remediation (Ball & Blachman, 1988; Cunningham, 1989; Wallach & Wallach, 1976: Williams, 1979), but many avenues remain

unexplored. My exploration of the development of phonemic awareness among struggling readers in contemporary classrooms was designed to provide insights into phonemic awareness acquisition, including the influence of holistic instruction and home literacy experiences, and to suggest possible further directions for remediation.

I sought answers to three questions: (a) Do children at risk for failure to learn to read and write increase their phonemic awareness while engaged in holistic language arts instruction? (b) If so, what language experiences and instructional practices are associated with the gains? and (c) What is the nature of the interaction between phonemic awareness development and reading and writing achievement among those children while in grade one?

METHOD

Setting

Four classroom instructional programs were selected on the basis of recommendations of supervisory prrsonnel, teacher-given descriptions, and my preliminary observations. The most important criterion was a holistic approach as evidenced by inclusion of tradebooks in the reading instructional material; discriminate use of basal reading materials; extensive opportunity for student writing; and little, if any, explicit phonics instruction.

Two classrooms, Mrs. Alward's and Mrs. Frazee's were located in a midwestern suburban school with a population of 546, approximately 5% of which is considered low-income enrollment by the State Board of Education. The other two classrooms, Miss Miller's and Miss Scott's, were located in a small midwestern city school with a total population of 287, approximately 58% of whom come from low-income families.

Participants

Five children from each classroom were selected as focal children: eight girls and twelve boys whose mean age was 6 years 7 months (80.1 months SD 4.68) in October. Teachers considered the children to be of average intelligence, but at risk for failure to learn to read and write on the basis of poor performance on classroom language tasks, seeming inexperience with printed language, and need for repetition and extensive practice to grasp new language skills.

Data Sources and Analyses

Observations. Each classroom was observed for ten full days between October and April. Instruction outside of the classroom was observed when two or more focal children were involved. The observer's role was that of a participant-as-observer (Gold, 1958 cited in Denzin, 1989). Observations, focused on the instruction and materials presented to the focal children, were recorded in fieldnotes and checklists. These were later reviewed, expanded upon, and transcribed to form the "cooked" (Spradley, 1980) notes that were the basis of further analysis.

Analysis of fieldnotes was ongoing through a process of continuous comparison (Glaser & Strauss, 1967) to identify recurring themes and programmatic events relevant to the development of phonemic awareness and reading ability. To establish the trustworthiness (Lincoln & Guba, 1985) of the recorded observations, teachers read and confirmed the accuracy of the written accounts.

Individual Assessments. Each focal child was assessed in October and April on ten measures: blending, segmentation, and deletion of phonemes; segmentation of sentences into words; invented spelling; sentence dictation; vocabulary writing; alphabet recognition; word recognition; and reading connected text. Tests included investigator-designed measures, items from Clay's (1985) Diagnostic Survey, and Sawyer's (1987) Test of Awareness of Language Segments (TALS).

Theoretical Orientation To Reading (TORP). Teachers responded to Deford's (1985) Theoretical Orientation to Reading (28-item instrument that employs a Likert scale to determine teachers' beliefs about reading instruction) to which had been added 16 items, two that concerned whole language instruction and 14 that pertained directly to phonemic awareness. The original scoring scheme was employed to classify teachers as "skills", "phonics," or "whole language".

Teacher Interviews. Initial interviews focused on the teacher's overall program organization, and more specifically, the instructional approach taken to the language arts. Final interviews probed, in depth, the teachers' theoretical orientation to language arts instruction, specifically the place of phonemic awareness. Interviews were transcribed and statements composed to delineate each teacher's beliefs. Teachers endorsed these written statements.

Children's Interviews. Children were interviewed prior to final individual assessments with respect to their perceptions of the reading and writing processes and themselves as readers and writers. Responses were tallied and organized into naturally emerging categories to reveal their perceptions both individually and as four groups. For validation, transcriptions of the children's comments were shared with their teachers who concurred that responses were in accordance with their understanding of the children.

Parent Questionnaires. Parents (or guardians) indicated their child's participation in a list of preschool language learning activities and on-going experiences with print outside of school. Response rate was 90%. The number of activities indicated for each child was tallied and summed to obtain a class frequency. Each class frequency was converted to a proportion of the total possible so that cross-class comparisons could be made.

RESULTS

Observations. The four classroom programs varied in terms of time children spent reading tradebooks; approach to, and time spent in writing; teacher's theoretical orientation; and instruction provided regarding sound-symbol associations.

The Alward and Frazee programs however, are indistinguishable. In these, language arts instruction is both inter-correlated and correlated with all other areas; meaning construction is the ultimate goal; specific literacy skills, although sometimes addressed explicitly, are viewed as means of supporting meaning-making; and extensive experience is offered with children's literature, up-to-date basal reading materials, and writers workshop.

The Miller program attempts to balance traditional instruction with extended periods of reading and writing connected text. Much time is spent in shared (oral and choral) reading; opportunity, but little coaching, is provided for writing; and there is little explicit instruction.

The Scott program is based on a traditional basal program, supplemented with choral reading of Big Books and some opportunities for writing. Limited time is provided for reading tradebooks.

Individual Assessments. T-tests for dependent means indicated that significant gains were made on all tests. To look at the relations between measures of phonemic awareness and academic achievement Pearson Product Moment Correlations were calculated. Of primary interest are the correlations of each October measure of phonemic awareness (including invented spelling) with the ultimate goal of reading connected text in April. October and April correlations are shown in Table 1

Insert Table 1 about here.

As in previous research (Mann, Tobin, Wilson, 1987; Zifcak, 1981), invented spelling served as the best predictor of both word recognition (r=.75) and text reading (r=.71). Further, October invented spelling is significantly correlated with the number of words children write correctly (r=.45) and sentence dictation (r=.55) in April. In other words, children's ability to segment a dictated word and to match letters to those segments as invented spelling requires, is a moderate predictor of both reading and writing upon completion of one school year in a holistic language arts program.

One-way analysis of variance (ANOVA) indicated differences among classes on October performances on alphabet $F(3, 16) = 7.57$, $p=.002$, invented spelling $F(3,16) = 5.34$, $p=.009$, and word recognition $F(3,16) = 4.82$, $p=.01$. Tukey's (HSD) post hoc comparisons ($p=.05$) indicated the Alward class differed significantly from the other three, none of which differed from each other: Alward children named fewer letters, spelled less accurately, and read fewer words.

Analysis of covariance (ANCOVA) in which October alphabet, invented spelling, and word recognition scores were entered all at one time as covariates revealed that significant differences continued among measures of invented spelling and appeared on the TALS and sentence dictation. Tukey's (HSD) post hoc comparisons ($p=.05$) determined Frazee children significantly superior to Scott children, but the Frazee, Alward and Miller children did not differ significantly from each other on measures of invented spelling and sentence dictation. Post hoc comparisons of the TALS indicate Frazee children were superior to Miller and Scott children, but that Frazee and Alward children did not differ from each other on the TALS. It is speculated that the extensive writing opportunities and experience with reading connected text of the Alward, Frazee, and Miller children account, in part, for the differences in performance.

To examine the emerging relationship between phonemic awareness and reading achievement, the children were categorized on the basis of their degree of phonemic

awareness and their level of reading achievement. For the purposes of this categorization, "adequate" phonemic awareness was defined as achieving a score of 5 or more (possible 10) on measures of blending, segmenting, and deletion; a score of 18 or more (possible 36) on the TALS; and 50 or more (possible 100) on invented spelling. Children who did not meet these criteria were considered to have "poor" phonemic awareness. Grade level reading was defined as Level 11, the conventional third pre-primer level. Tables 2 and 3 summarize the relationships between phonemic awareness and reading achievement.

Insert Table 2 about here

Insert Table 3 about here

Within the groups of grade level and below grade level readers there are divergent patterns of individual performance. To bring these patterns and their associations with instruction and home literacy into closer focus, I will now present profiles of four children. The profiles are presented in pairs to highlight the contrasts and similarities.

Profiles of Individual Children

Lynn and Charlotte. Lynn and Charlotte began grade one with the expectation that they would learn to read, Lynn with Mrs. Alward and Charlotte with Miss Scott. Both completed their year with feelings of accomplishment and were promoted to grade two.

Home literacy. Their literacy experiences at home as preschoolers, kindergartners, and during grade one differed in several ways, but both girls had preschool experience with books, Lynn much more than Charlotte. Currently, outside of school, Lynn sometimes plays with language by making up nonsense and rhyming words and she reads and writes daily either independently or with adult assistance. Charlotte's present experience with

print outside the classroom is, in contrast, focused on daily reading in which she takes turns with an adult or sometimes, is read to by an adult. In further contrast to Lynn, Charlotte has opportunity to see an adult reading less than once per week. The proportion of literacy activities in which they engaged and the mean proportion of their classes is shown in Table 4.

Insert Table 4 about here

On individual assessments of phonemic awareness, reading, and writing in October, the girls appeared to have similar language facility to bring to bear upon the task of learning to read. Their performance on all tests is summarized in Table 5.

Insert Table 5 about here

Given their parallel performances in October, particularly on the invented spelling tasks, similar outcomes in April might be expected. The girls experienced different instructional programs and contrasting home literacy. In brief, Lynn was in Mrs. Alward's program; she worked consistently from day to day; read frequently by herself, with partners, and in choral groups; she wrote extensively; and she received contextualized letter-sound instruction. In addition, her small group assistance was closely linked to the classroom program.

Charlotte's program, with Miss Scott, also provided the repeated choral readings of whole texts, mostly big books and poetry, but otherwise provided little time for reading connected text. Writing was attempted less frequently and when it was attempted, the lessons were based on skill mastery rather than a process approach. Letter-sound

associations were introduced and reinforced both in the context of the repeated readings and in a skill and drill approach. Finally, the instruction Charlotte received outside the classroom in the Chapter I, speech, and learning disabilities programs was not planfully linked to her classroom instruction.

To what, can the differences in performance be attributed? Three possibilities seem plausible. First, it is possible that differences in instructional programs directly affected achievement. Second, the contrasts in home literacy may have made the difference. Third, it is possible that Lynn and Charlotte have different learning capabilities. The most likely explanation, however, is that all three factors contributed to the reading and writing gains made by both girls. And of course, it is always possible that some other unexamined factor (or factors), accounts for the differences.

Linda and Danny. In comparing Lynn and Charlotte, we were able to examine the possibility that differences in instruction might influence literacy development. By comparing Linda and Danny, we can examine the variability in reading achievement within a single program. Like Lynn and Charlotte, Linda and Danny held the expectation in October that they would now learn to read: Linda with Mrs. Frazee and Danny with Mrs. Alward. In April, both felt that they were good readers.

As preschoolers, both had opportunities to engage in early literacy activities in families where books and writing materials were available. While in grade one, Linda spent time at home playing school, writing notes, and reading both independently and with an adult. Danny's parents read to him, but he did not choose to read at home. The proportion of their home literacy tasks is shown in comparison to that of their classes in Table 6.

Insert Table 6 about here

Although in many ways similar, Linda and Danny are clearly distinguished from each other on their initial measures of invented spelling and writing vocabulary and their April measures of text reading. Their complete assessment performance is shown in Table 7. Linda's invented spelling in October (57%) resembled that of other children who became successful readers, and she too, read comprehensively at the grade one level in April. Danny, in sharp contrast, scored poorly (25%) on invented spelling in October and succeeded in reading only at the first preprimer level in April.

Insert Table 7 about here

To what can the differences in Linda and Danny's reading achievement be attributed? First, the October difference in invented spelling, given its relationship to reading success, is one explanatory candidate. Second, although the instruction provided for Linda and Danny was similar, the two children were observed to respond differently to the school learning opportunities just as they had to their preschool opportunities. While Linda usually appeared attentive and engaged with tasks, particularly writing, Danny was easily distracted and frequently had difficulty getting assignments started, often turning to his peers or Mrs. Alward for assistance to complete tasks. Finally, Linda, but not Danny, complements her classroom experience with reading and writing at home, both by herself and with an adult.

Are there some commonalities in the profiles of Lynn and Linda that account for success? First, both girls began with facility in invented spelling and both were able (in October) to segment sentences into words and to make at least onset-rime divisions when they attempted phonemic segmentation. Second, both were read to and attempted some writing as preschoolers. Third, both read and write with adults at home while in grade one. Finally, both were engaged in holistic programs of language arts instruction where they

spent extended periods of time writing, participating in choral repeated readings of texts, reading independently and with partners on a daily basis, and where their teachers focused their attention on letter-sound associations both in context and more explicitly in short periods of spelling instruction. These four factors, invented spelling, segmentation, home literacy, and holistic language arts instruction are linked to reading success.

TORP and Teacher Interviews. Comparison of sample responses on original items with Deford's standard indicated that Alward, Frazee, and Miller scored most like the whole language criterion group, whereas Scott responded in the same way as the criterion phonics group.

Responses to the auxiliary phonemic awareness items indicated lack of differentiation by all teachers between phonemic awareness and phonics. This was confirmed during interviews, but when the difference was explained, Mrs. Alward and Mrs. Frazee quickly suggested that they believed the extensive writing component of their programs to directly influence phonemic awareness.

Final interviews also confirmed that instruction varied directly with theoretical orientation. In the case of Miss Scott, the initial interview had been misleading. When I was later able to probe her theoretical orientation using examples of observed instruction it became clear that verbalization, belief, and practice were sometimes at odds.

Children's Interviews. Enquiry revealed that children attend to two levels: phoneme-grapheme associations and words. For example, Jeremy observed in relation to need for letter-sound associations, "not like x, y, or z, unless, of course, you got extra, or Ramirez, or yikes."

Linda told me, "sometimes you need to know letter sounds and sometimes you don't. If you know the word you don't, and if you don't, you do, so you can do this [sound it out]."

Their key to reading success is knowing even the "hard" words. Presumably by working through the process, at least some have gained surprising insight and metacognitive awareness of reading and writing.

Parent Questionnaires. Responses indicate that children in all four classrooms experienced a variety of preschool language activities including being read to and attempting to write. The frequency of being read to however, was notably greater for children in Mrs. Alward's and Mrs. Frazee's classrooms. Literacy experiences outside of school while attending grade one followed the preschool pattern, that of differentiation by frequency rather than type of activity.

CONCLUSIONS AND IMPLICATIONS

What can we learn from these observations and performance records? I believe four conclusions can be drawn. First, children who are at risk for failure to read and write and who are engaged in holistic language arts programs improve their performance on tasks of phonemic awareness. The instructional practices that appear to contribute to this change in phonemic awareness are writing using invented spelling and reading connected text both chorally and independently.

The importance of having facility and opportunity to write invented spellings cannot be over estimated: Facility to encode the phonological properties of words is the strongest predictor of word recognition and text reading upon completion of one year of holistic language arts instruction. This is consistent with previous research (Liberman, Rubin, Duques, & Carlisle, 1985; Zifcak, 1981) regarding children in other types of instructional programs.

A second conclusion reaffirms past research. Phonemic awareness is necessary for reading and writing, but is not a sufficient condition for reading and writing success. Some children who demonstrated competency on tasks of phonemic awareness in October failed

to reach grade level in April; some who began the year with little phonemic awareness, but who by April had gained competency in phonemic awareness, failed to read successfully.

A third conclusion follows from the first and second and concerns the benefit of holistic language arts instruction. Although holistic language arts instruction contributes to phonemic awareness, it is not sufficient training for all children. This implies that training other than the practice using invented spelling and the choral and independent reading provided in these programs was needed for some children to be successful readers.

The final conclusion concerns the influences on phonemic awareness that originate outside the classroom. The contribution of home literacy to the development of phonemic awareness is apparent. Children who participated in literacy activities as preschoolers and who continued to have experiences with print outside of school tended to achieve grade level reading and writing competencies.

Although from this study it is not possible to clearly separate classroom and home influences, the reading and writing success of many of the children at risk for failure bodes well for holistic language arts instruction. Previous studies (Morais, 1987; Perfetti et al., 1987; Tunmer & Nesdale, 1985) had established that children engaged in phonics-based, whole word, and basal programs made gains in phonemic awareness. This study now extends the list of types of instruction that contribute to phonemic awareness to include holistic language arts programs that focus on meaningful units of text. In view of the increasing popularity of whole language programs that, like those observed in this study, offer no explicit phonemic awareness training and little explicit sound-symbol instruction, this study warns that the reading and writing experiences of holistic language arts programs, while they contribute to phonemic awareness, are not sufficient for some children to be successful in learning to read. One plausible interpretation of this is that for those children, supplementary instruction is necessary.

Existing research describes successful training largely as an entity separate from reading and writing connected text. The need at this time is for research to determine the design of effective phonemic awareness instruction that is compatible with the goals of holistic or whole language programs. Phonemic awareness instruction must be seen to directly contribute to meaning construction.

The relationship between literacy and phonemic awareness is complex. Clearly, these skilled behaviors have a symbiotic relationship. In the future, it would be useful to determine the essential direction of that symbiosis and to design accordingly, effective instruction.

Table 1

Correlations Between October and April Measures of Phonemic Awareness, Reading and Writing

	April									
October	Blend	Seg	Del	TALS	In.Sp.	Wr.Voc.	Sen.Dic	Alpha[a]	Word Rec.	Text
1. Blend	.54	.10	.18	.19	.28	.21	.27		.54	.42
2. Seg	.36	.14	.04	.05	.20	.14	.23		.27	.19
3. Del	.01	-.09	.32	.47	.30	.22	.29		.22	.39
4. TALS	.41	.44	.44	.35	.50	.54	.53		.49	.47
5. In.Sp.	.34	.06	.17	.26	.55	.45	.55		.75	.71
6. Wr.Voc.	.08	.03	.44	.54	.55	.68	.47		.48	.57
7. Sen.Dic.	.46	.22	.48	.55	.63	.46	.62		.73	.72
8. Alpha	.46	-.06	-.03	.20	.06	.09	.21		.49	.38
9. Word Rec.	.09	.03	.21	.17	.34	.18	.36		.48	.59
10. Text	.13	-.08	.44	.52	.56	.54	.46		.67	.67

Note. With $n = 20$, $r = .44$ is significantly different from 0.0 at $p = .05$.

[a] No variance in April measure.

Table 2

Relationship of October Phonemic Awareness to April Reading Level

		April reading grade level	
October		Yes	No
Phonemic	Adequate	3	1
Awareness	Poor	8	8

Table 3

Relationship of April Phonemic Awareness to April Reading Level

		April reading grade level	
April		Yes	No
Phonemic	Adequate	11	8
Awareness	Poor		1

Table 4

Proportion of Home Literacy Activities Engaged in by Lynn, Charlotte, and Their Classes

Age Category	Lynn	Class	Charlotte	Class
Age 0-2	.55	.69	.36	.64
Age 2-4	.93	.87	.53	.68
Age 4-School	.86	.73	.68	.81
Present (child)	1.00	.63	.33	.63
Present (child with adult)	1.00	.63	.50	.69
Total	.84	.73	.53	.71

Table 5

Individual Assessment Results for Lynn and Charlotte

	Lynn		Charlotte	
Tests	October	April	October	April
Blending (13)	4	10	6	9
Segment (10)	6	10	6	5
Deletion (10)	8	10	7	6
TALS (36)	16	28	9	25
Invent. Spell (100)	56	91	54	68
Writ. Vocab.	8	50	8	27
Sent. Dictation (37)	23	37	18	33
Alphabet (54)	46	54	54	54
Word Recog. (35)	6	25	11	18
Text (18)	0	15	0	5

Table 6

Proportion of Home Literacy Activities Engaged in by Linda, Danny, and Their Classes

Age Category	Danny	Class	Linda	Class
Age 0-2	.64	.69	.73	.85
Age 2-4	.67	.87	.80	.93
Age 4-School	.68	.73	.86	.80
Present (child)	.50	.63	.67	.77
Present (child with adult)	.63	.63	1.00	.88
Total	.65	.73	.82	.85

Table 7.

Individual Assessment Results for Linda and Danny

	Danny		Linda	
Tests	October	April	October	April
Blending (10)	1	6	1	8
Segment (10)	0	6	3	8
Deletion (10)	6	8	4	9
TALS (36)	11	24	18	27
Invent. Spell (100)	25	65	57	87
Writ. Vocab.	6	22	21	52
Sent. Dictation (37)	7	27	10	37
Alphabet (54)	45	54	51	54
Word Recog. (35)	8	12	11	21
Text (18)	0	3	1	12

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