

THE EFFECTS OF AN INTERVENTION PROGRAM
ON THE DEVELOPMENT OF COGNITIVE CLARITY
AT THE READING READINESS LEVEL

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by
L. Anne Finkbiner
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ABSTRACT

The purpose of this study was to develop an intervention program to lessen the gap between cognitive confusion, as defined by Vernon (1957), and cognitive clarity, as defined by Downing (1970), by using the results of a reading readiness test diagnostically.

Beginning grade one children were pre-tested and post-tested with the Canadian Readiness Test. The treatment consisted of a form of Sylvia Ashton-Warner's "Key Vocabulary" using a language experience approach.

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Chapter I

THE PROBLEM

The purpose of this study was to design and measure the effectiveness of an intervention program in spanning the gap between the child's state of cognitive confusion and cognitive clarity.

Background of Problem

A growing number of researchers have shown increased interest in the prereaders concept of reading (Reid, 1966; Vygotsky, 1962; Downing, 1970, 1971a, 1973; Francis, 1973; Meltzer and Herse, 1969; Holden and MacGintie, 1969).

There is general agreement among these researchers that prereaders do not understand the purposes of reading, nor do they understand the technical language of literacy. They also agree that success in reading is dependent upon the development of this understanding.

According to Vernon, (1957) this lack of understanding may lead to a state of cognitive confusion. One of Downing's later studies (1972) supported Vernon's "cognitive confusion" theory in the early stages of learning to read. At the same time Downing also showed that this lack of understanding is related to some of the traditional components of reading readiness.

One of these, the child's development of concepts specifically related to the skills of reading and writing, and the tasks involved in learning them was the concern of Evanechko, Ollila, Downing, and Braun (1973) when they constructed their diagnostic reading readiness battery, the Canadian Readiness Test. It was constructed on the premise that if a reading readiness test was to serve a diagnostic function it had to have a range of subtests including items to measure several aspects of written language. Reading Readiness is "the stage in development when, either through maturation or through previous learning, or both, the individual child can learn to read easily and profitably."¹ It is a complex perceptual and intellectual achievement composed of many components which may develop through maturation or learning and contribute to readiness to learn to read. According to Downing and Thackary (1971) grouping these components is an arbitrary task, but the components can be dealt with adequately under the broad headings of: physiological factors, environmental factors, intellectual factors and personality factors.

Over the years many reading readiness tests have been constructed to measure these components. The scores that resulted from these tests helped to open the way for

¹J. Downing and D. V. Thackary, Reading Readiness, 1971, p. 10.

some children to begin formal reading, but often blocked the way for others to begin.

Research has shown that these reading readiness tests are satisfactory predictors of beginning reading success (Livo, 1972), (Karlin, 1957). Some reading readiness tests have been constructed to serve as screening devices. Their purpose is to help identify children who might need special help to master the complex skill of reading. Other reading readiness tests have been constructed to serve as a diagnostic tool. Diagnostic reading readiness tests make it possible for the teacher not only to identify specific strengths and weaknesses in certain areas but to suggest relevant procedures for further developing these strengths and overcoming the weaknesses. Through diagnostic tests a teacher is helped to determine the degree of readiness for reading possessed by each child.

Significance of the Problem

Children are coming to school today with varied experiences and backgrounds as a result of our increasingly mobile and affluent society. This really implies that they are coming to school with varying degrees of reading readiness. Some can read, some are ready to begin and others do not appear to be ready nor show any interest in attempting the task of reading.

It is then of great practical concern for every teacher of beginners to be able to identify the child's

cognitive level and learning style and adapt instruction accordingly. Reading will be most meaningfully taught if materials used are expressed in the child's own words based on his individual unique experiences (Cramer, 1971), (Goodman, 1965), (Weber, 1968).

In a recent monograph, Downing and Thackary (1971) expressed the belief that reading readiness is a state of the teacher as well as a state of the child. The teacher should not only fit the child for reading but also fit reading for the child. Cramer (1971) concurs with their belief. The task he sees for educators and others "is to redesign reading instruction to fit children--instead of continuing to go at it the other way around."² The above educators agree that the best way to do this is by using a child's own language as a starting point for all reading. A child is more likely to read successfully when what he reads is related with his language, experience, needs and desires. This should provide the individual with the opportunity to express and build on his own reading materials until such time as he has developed the necessary skills and confidence to successfully read materials written by others. Today more than ever before pressures are being exerted on reading and language arts teachers to meet the needs of

²Ronald Cramer, "Dialectology - A Case for Language Experience." Reading Teacher, 1971. p. 34.

children. It is all too evident that there is a need for instruction that does meet the needs and interests of all children.

The treatment used in this study is significant in that it can provide individualization within the framework of a group or class situation.

The significance of this study and the need for more research in this area is well summed up by Calfee and Venezky (1968):

Reading is a vital skill without which a child can not succeed in virtually any other area. Today it is quite possible to predict quite reliably those children who are not going to make it. This damning prediction must be changed into a prescription for treatment.³

The belief that readiness is an assessable commodity has been held since the early 1920's (Durkin, 1970). One of the fundamental questions now is specifically, what skills are prerequisites to successful reading and are they measurable? Most authors of readiness tests still report their reading readiness tests as predictive, not diagnostic in nature (Rude, 1973). The purpose of this study is to determine the effectiveness of diagnostic reading readiness test information and its use as a basis for intervention procedures to hasten a state of cognitive clarity.

³R. Calfee and R. Venezky, Psycholinguistics and the Teaching of Reading, 1963. p. 107.

Hypotheses

An effective way to assess a child's readiness for reading is to give him a variety of opportunities to read (Downing and Thackary, 1971; Cramer, 1971; Ashton-Warner, 1972). Since by design, some of the children participating in this study were given the opportunity to read and others were not, it was possible to measure the effectiveness of the intervention program in spanning the gap between the child's state of cognitive confusion and cognitive clarity.

It was, therefore, hypothesized that:

1. There is no significant difference between the control and experimental group on the total scores of the Canadian Readiness Test as a result of the intervention program.
2. There is no significant difference between the control and experimental group on the scores on subtest 1, Technical Language of Literacy, as a result of the intervention program.
3. There is no significant difference between the control and the experimental group on the scores on subtest 5, Semantics, as a result of the intervention program.
4. There is no significant difference between the control and experimental group on the scores on subtest 6, Learning Rate, as a result of the intervention program.

Definition of Terms

The following definitions were adopted for this study.

Beginner is defined as a child who is entering the first grade and has not been exposed to formal reading instruction.

Cognitive clarity is defined as the act of getting to know and understand the tasks involved in successful reading and writing. Thus normal cognitive clarity comes at the completion of the continuum of necessary tasks involved in successful reading and writing.

Cognitive confusion is defined as the confused state or inability to know and understand the tasks involved in successful reading and writing. Thus normal cognitive confusion is the uncertainty or confused state at the beginning of the continuum of tasks that a child progresses through normally in learning to read and write successfully.

Intervention Program or Treatment is defined as the independent variable in this study. It consists of recording stories two to five sentences in length from selected pictures and choosing words from the context to be printed on cards and become the "key vocabulary" for the experimental group.

Key Vocabulary is defined as the word or words chosen by the experimental group from their dictated stories to be printed on cards as words they know, thus becoming their own personal key vocabulary.

Personal Story Books are defined as the books made by and belonging to the subjects in the intervention program. The books contain the stories, under selected pictures, that have been dictated by the subjects and typed by the experimenter.

Chapter II

REVIEW OF THE LITERATURE

Cognitive Confusion and Cognitive Clarity Theories

Vernon's (1957) review of the backwardness in reading dealt in depth with some of the most credible British and American research on visual and auditory perception and their relationship to reading disabilities. Vernon concluded that there may be some failure to perceive all the details of printed shapes accurately, or to hear word sounds correctly, but that the commonest feature of reading disability is the incapacity to perform the cognitive processes of analyzing accurately the visual and auditory structures of words. "Thus the fundamental and basic characteristic of reading disability appears to be cognitive confusion and lack of system."¹

Vernon defined cognitive confusion as "...the child's general state of doubt and confusion as to the relationship between the printed shapes of words, their sounds and their meanings." Vernon stated that the child with

¹M. D. Vernon, Backwardness in Reading (London: Cambridge University Press, 1957), p. 71.

real reading disability "....may have learnt that printed words have some relation to spoken words; and with a few simple words, he has memorized the spoken word that corresponds to a particular shape. But he does not seem to understand why; it might be quite an arbitrary association. He appears hopelessly uncertain and confused as to why certain successions of printed letters should correspond to certain phonetic sounds in words."² Vernon expressed the belief that in order to make this association, a particular type of reasoning process is demanded, and that in reading disability, "the fundamental trouble appears to be failure in development of this reasoning process."³

The child with the reading disability is not suffering from some general defect in visual or auditory perception, imagery or memory, "but has broken down at some point, and has failed to learn one or more of the essential processes...."⁴ The child "remains fixed at a particular point and is unable to proceed further."⁵

To Vernon, the retarded reader is one who remains in a state of confusion over the whole process. The normal beginning reader seems to find no great difficulty in developing the necessary reasoning process, provided he goes

²Vernon, p. 48. ³Vernon, p. 48. ⁴Ibid.

⁵Vernon, p. 189.

slowly and is given the necessary help and practice.

Downing (1970) has said that if cognitive confusion in the 'particular type of reasoning process' involved in learning to read is the outstanding feature of the disabled reader, then conversely, cognitive clarity ought to be the most prominent characteristic of the normal reader. Also, "Vernon's 'particular type of reasoning process' should be observable in developmental stages beginning with normal cognitive confusion of the earliest stage through a series of problem-solving phases to a later stage of normal cognitive clarity."⁶

If Vernon's hypothesis regarding the relationship between cognitive confusion and reading disability holds, then it should follow that the normal beginning reader should possess cognitive clarity in this 'particular type of reasoning process' required in learning to read. The normal beginning reader should understand clearly the relationship between the printed forms of words, their sounds and their meanings. The normal beginning reader should know and understand why certain successions of printed letters should correspond to certain phonetic sounds in words. In the normal beginning reader there should be an observable sequence of development from the earliest stages of this 'particular type of reasoning'.

⁶J. Downing, Specific Cognitive Factors in the Reading Process, (NCR, 1970).

Cognitive Development

Reading research has placed emphasis on perception and discrimination with little regard for conceptual and reasoning processes behind them. Elkonin (1970), who was influenced by the work of Piaget and of Vygotsky, wrote that "....the perception and discrimination of printed characters are only the external side of the process of reading. Behind it lies hidden the more essential and basic behavior, which the reader produces the sounds of language. Of considerably greater importance than the speed of eye-movements and the span of apprehension is the speed of those underlying and more central processes concerned with the behavior of creating the sound form of the word and connected with it its comprehension."⁷ The evidence adduced by Elkonin's studies supports Vernon's concern that the confusion expressed by some children is not purely perceptual; "it affects the reasoning necessary to comprehend the exact correspondence and association between the spatially ordered visual sequences and the temporally ordered linguistic sequences."⁸ The elements of these sequences must be integrated, and then coordinated to convey meaning.

Although Piaget didn't apply his theories directly to the problem of children's cognitive development as it

⁷D. B. Elkonin, Comparative Reading (MacMillan, 1973), p. 553.

⁸M. D. Vernon, Reading and Its Difficulties (Cambridge, 1971), p. 176.

related to learning literacy, his research has provided many insights into the thinking processes of children first introduced to the tasks of learning to read and write. He has shown that young children's perception of the process of reading and writing are not the same as that of an adult. Piaget's (1959) research was concerned with the development of the children's language and how it related to the thinking processes. According to Piaget, there is a major change in the child's style of thinking as he moves from near total dependence on perception to a greater reliance on thought to check what he sees. This change, conservation of substance, is the realization that change can take place without altering the fundamental characteristics. Decentration, considering more than one aspect of a situation at a time; and, reversibility, the mental activity of being able to go back to the starting point of some operation, contribute to the development of conservation. It might be inferred that this change in thought is necessary for a child to convert graphemes to phonemes and then validate these transformations. It might be that this ability to conserve represents what most reading-instruction programs require and its presence constitutes 'readiness'. Almy (1967) commented that "a child who has not achieved 'reversibility' in his thought process and who does not understand reciprocal relationships may lack the stability of perception necessary

for formal reading instruction."⁹ Evidence of a rather high correlation between conservation ability and beginning reading achievement has been provided by Almy, Chittenden and Miller (1966).

Because of the work of Piaget and others, (Weaver, 1967; Calfee and Venezky, 1968; Weaver and Kingston, 1972), it is a recognized fact that young children's perception of the process of reading and writing is different from that of an adult and this has crucial implications for reading readiness instruction.

Literacy

This application of Piaget's theories of cognitive development as it related to learning literacy, was expanded by another of his followers, Vygotsky. Vygotsky (1962) was very concerned with the gap between the school child's oral and written language.

"Written language demands conscious work because its relationship to inner speech is different from that of oral speech. The latter precedes inner speech in the course of development, while written speech follows inner speech and presupposes its existence (the act of writing implying a translation from inner speech)."¹⁰

Vygotsky also noted...."that at certain periods there

⁹M. Almy, Chittenden, E., and Miller, Paula. Young Children's Thinking, (New York: Teachers College Press, 1966), p. 139.

¹⁰L. S. Vygotsky, Thought and Language (Cambridge, M.I.T. Press, 1962), p. 99.

is a lag of as much as six or eight years between his 'linguistic age' in speaking and in writing."¹¹ He did not think that the difficulties of mastering the mechanics nor the novelty of writing could account for this tremendous lag between the school child's oral and written language.

Vernon (1957) shared this concern and noted that it seems probable that even some reasonably intelligent children begin to lag behind the others in reading progress almost from the beginning. She recognized the fact that often these children were placed in specific classes to receive special teaching. Children with a slight disability can overcome their difficulties by progressing slower at the beginning and receiving this special teaching. But for the child with the real reading disability, he still remains in a state of hopeless confusion over the whole process in spite of the special classes and teaching. He does not possess 'the particular type of reasoning' and can not read. The reading-disabled child does not seem to understand why written language is what it is. It is what Vygotsky called the "abstract quality of the written language"¹² that makes the task of reading so meaningless and confusing for some children.

Systems - Verbal and Graphic

Elkonin described reading as the creation of the

¹¹Vygotsky, p. 98. ¹²Vygotsky, p. 99.

sound form of the word on the basis of its graphic model. No matter how the written word is perceived visually, whether in parts or as a whole, the understanding is based on the sound formation of the word. Thus a good reader is one who knows how to create the correct sound form not only of a known word, but also of any unknown word. The disabled reader is confused and can not create the correct sound forms for most words, known or unknown. Reading involves not only the perception and memory of visual shapes and sounds, but also the more difficult cognitive processes. Children have had little experience with visual symbols before they begin learning to read. They do not understand the symbolic nature of written language.

Alphabetic writing systems, such as English, are constructed on the basis of writing a character or characters for a speech sound, there is not direct connection between the graphic form of the written word and its meaning in the language. The understanding of reading in such systems in beginning reading is realized on the basis of the sound formation of the word, with which the meaning is connected. The understanding of language, written and oral, is based on the sound formation of the word. In written language (reading), the child must take notice of the sound structure of each word, take it apart and put it back together in alphabetical symbols, which he must have previously studied and memorized. The child who has progressed to the normal

state of cognitive clarity is able to do this. But not the reading disabled child -- he remains in a state of cognitive confusion. For the beginning reader, it is a well known fact that "the smallest inaccuracy in the creation of the sound formation on the basis of graphic signs renders the word incomprehensible."¹³

Abstract Nature of Reading

Vygotsky's research, like Vernon's and Elkonin's, led him to conclude that in learning to read, "...it is the abstract quality of written language that is the main stumbling block."¹⁴ The reading disabled child does not progress through the normal stage of cognitive clarity. He remains hopelessly confused and unable to proceed any further. Since the development of written language does not repeat the development of oral language, to the child beginning to read, it is speech addressed to an absent or imaginary person, or to no one in particular. This is a very novel and foreign experience to a child. It is little wonder that the child in a state of cognitive confusion "has little motivation to learn (to read) writing when we teach it. He feels no need for it and has only a vague idea of its usefulness."¹⁵ Piaget's theory of normal development of the child by active interaction with his environment supports these findings. According to Piaget, at this age,

¹³Elkonin, p. 552. ¹⁴Vygotsky, p. 99.

¹⁵Vygotsky, p. 99.

the formation of abstract ideas has not been realized and the child's ego-centric view of his environment does not lend itself to a natural understanding of the purpose of the graphic form of language. Although language may change the way a child thinks, Piaget claims its development does not relieve the dependency of preoperational thought which evolves from sensori-motor experience. The child who has progressed through the normal stage of cognitive clarity possesses the necessary type of reasoning to see the relationship between reading and written language and has learned to read.

To test Vernon's hypothesis of cognitive confusion, Reid (1966) conducted direct Piaget-type questions with five year olds in Scotland. She confirmed the importance of cognitive development with these twelve five year olds. She had three questioning periods with them during the period of almost a year. In spite of the few subjects used in the study, the results were important. They demonstrated that the children had a general lack of any specific expectancy of what reading was, or was going to be like, or what the activity involved, what its purpose was, or could be. Reid found that the children had the greatest difficulty in understanding the technical terms of the language such as 'word,' 'letter,' and 'sound.' It is significant to note that as the year progressed the children became more certain of the tasks they were trying to learn, and their use of these technical terms of the language were used more

accurately and regularly, thus decreasing cognitive confusion and increasing cognitive clarity.

These findings are in keeping with those of Piaget, Vygotsky and Vernon. They noted that beginners did not understand the purpose and nature of the tasks of literacy. As these purposes became clearer their confusion diminished and cognitive clarity increased.

More recently, Downing (1970a) reaffirmed Vernon's hypothesis of cognitive confusion and his hypothesis of cognitive clarity in his study of English five year olds. He replicated and expanded Reid's (1966) interview study with the following conclusions: "Young beginners have difficulty in understanding the purpose of written language." Also, "they have only a vague idea of how people read and they have a special difficulty in understanding abstract terms."¹⁶ Not one single child in the study used 'a word' or 'a sound' according to the adults' concepts of these linguistic units.

These results seemed to provide the link between Vernon's study and that of Vygotsky and of Reid. Downing found that the younger children experienced the 'cognitive confusion' found by Vernon's older retarded readers.

Further evidence of 'cognitive confusion' is shown in Francis' (1973) study of tests of reading progress and

¹⁶J. Downing, Educational Research 12, p. 111.

understanding concepts with English beginners. She verified Reid's and Downing's findings concerning the difficulties children have in expressing and understanding the terminology used in teaching reading and that experience helps them to become more meaningful. Most of the children referred to letters as in spelling, reading and writing. "...almost no replies indicated an awareness of the use of words or sentences in spoken language."¹⁷ She concluded that the children "derived the concepts word and sentence from their mastery of reading and writing."¹⁸ Francis found that the concepts cleared up, letter before word, word before sentence as the child learned to read. However, she disagreed with Downing and Reid and attributed the difficulties the children experienced to unfamiliarity with an analytical approach to language and to the range and overlap of reference in use of terms rather than to the child's limited cognitive abilities and the abstract nature of the concepts.

Elkonin's studies have shown that children beginning school can manipulate words and phonemes in their own speech. They do not understand these concepts nor do they realize

¹⁷Hazel Francis, British Journal of Educational Psychology, 1973, 43, 1, p. 22.

¹⁸Ibid.

that the continuous flow of human utterances can be analyzed into letters, phonemes and words in a definite sequence. Printed characters represent words and phonemes of spoken language. Elkonin stated that the sound form of a word was created by a definite successive pronunciation of characters (symbols for sounds) in time. Characters follow one another spatially in the same succession as sounds do in time in the spoken word. Different words consist of the same sounds but differ in the temporal order in which the sounds occur. Because of this abstractness in associating the temporal flow of words (utterances) with the spatial flow of characters the beginning reader sees little relationship between the spoken word and the written word. The beginning reader who understands the basic concept of written symbolization and its relation to the spoken word has progressed to the normal state of cognitive clarity, and is able to read.

Word Boundaries

By this time, North American studies, like that of Meltzer and Herse (1969), have also supported Vernon's cognitive confusion theory, and substantiated Reid's (1966) experimental results. Even though Meltzer's and Herse's study had only a limited number of subjects and lacked experimental controls, their findings on word boundaries are worth noting. There was sufficient internal consistency to suggest that with beginners there is a general state of doubt and confusion as to the relationship between printed

shapes of words, their sounds and their meanings. The inability to perceive word boundaries decreased as the children progressed from a state of cognitive confusion to a state of cognitive clarity. The data also suggested that children make reasonable deductions from materials presented to them but they may not be those expected by teachers or authors. Similar results were noted by Holden and MacGintie (1969) in their study of word boundaries as a function of linguistic concepts of pre-school children. It was evident that many kindergarten children are not familiar with the printing convention. The few children who did understand that spaces between words formed word boundaries, tended to divide utterances into units rather than entire printed words, indicating that their conceptions often reflect linguistic rather than traditional definitions of words.

Because of this apparent lack of understanding of technical terms of the language displayed by beginners, Reid advocated that letter names not be stressed. This contradicts the research of Durrell (1965) and Fries (1963). Vygotsky's agreement with Reid on not stressing letter names is shown by his statement that "...direct teaching of concepts is impossible and fruitless. A teacher who tries to do this usually accomplishes nothing but empty verbalism. A parrot like repetition of words by the child, simulating a knowledge of the corresponding concepts but actually covering up a

vacuum."¹⁹

Testing Reading

It is generally agreed, however, that letter-name knowledge is the best single predictor of reading achievement at the end of first grade (Monroe, 1932; de Hirsh and Jansky, 1966; Bond and Dykstra, 1967). Based on the conclusions of his research, Barrett (1965) agreed with the above researchers but stated that "it should not be assumed from this study that success in first grade reading will be insured by simply teaching children to discriminate, recognize and name letters..."²⁰ Similarly, Silveroli (1965) Ohnmacht (1969), Johnson (1969), Rosen and Ohnmacht (1969), and Samuels (1971), indicated that teaching letter-names, per se, will not improve reading. On the contrary, they stated that letter-name teaching gives the child no help whatsoever in learning to read. It is interesting to note that many of the studies have indicated that the skill or knowledge required in knowing letter-names is likely the same as is required for reading. It may, in fact, be that the kind of environmental stimulation -- story telling, story reading and general exposure to linguistic stimuli -- that facilitates letter knowledge also enhances development of cognitive clarity.

¹⁹Vygotsky, p. 83.

²⁰T. C. Barrett, Reading Teacher (January, 1965), p. 281.

This appears to have been Downing's (1971a) concern when he hypothesized that a pre-school child's lack of understanding of technical linguistic terms is one facet of normal cognitive confusion of beginners and that growing cognitive clarity in this respect should be a measurable factor in the development of reading ability. If Downing's hypothesis is so, "then one might anticipate that the young beginner's initial understanding of such linguistic concepts would constitute a factor of some importance in reading readiness."²¹ To test this hypothesis, Downing, Evanechko, Ollila, and Braun (1973) related children's linguistic concepts to the teacher's practical concern of reading readiness. Even though the children in their study were older than the children who participated in Reid's (1966) and Downing's (1970) studies and were predominantly middle class rather than lower class, the results do show that the children's development of these concepts is an important factor in reading readiness.

Closely allied to the concept of the child's understanding of linguistic concepts as a factor in cognitive clarity is the recent work of Elkonin. The translation of his work from Russian to English has had a great impact on understanding the child's thought processes that

²¹P. Evanechko, L. Ollila, J. Downing and C. Braun, A manuscript. 1973.

systematically relate written language to speech. His research in Russia was geared for the school beginner who lacked the understanding of how the alphabetic writing system worked.

Recently, his method was adapted by Ollila, Johnson, and Downing (1973) for the English language and tested on Canadian children. They compared the effectiveness of Elkonin's method with two well-known American readiness programs. The authors felt the results were quite promising because this method created superior reading readiness in comparison to the other two programs. They also thought that possibly the adaption of Elkonin's technique could be improved and that the criteria of evaluation should be expanded. Elkonin's method demonstrated what the child needs to know and understand about linguistic concepts. Downing recognized still another importance in Elkonin's method. He hypothesized that teachers who study or try Elkonin's method are likely to become better teachers of reading because of the clearer understanding of the problems which the child has to solve in learning to read.

By improving the technique for testing a child's concept of the spoken word, Downing and Oliver (1974) attempted to clarify the instructions of the tester for the beginner. The results were the same as in the previous studies, thus confirming the fact that Canadian children begin in the same normal state of cognitive confusion as do

the English, Scottish and American beginners when learning to read.

These studies confirm the fact that a most important factor in reading readiness is the child's development of concepts and reasoning abilities which are specific to the skills of reading and writing and to the tasks involved in learning them. Being satisfied that the young beginners' initial understanding of linguistic concepts does constitute an important factor in reading readiness, and is of practical concern to the teacher, Evanechko, Ollila, Downing and Braun (1973), constructed a reading readiness battery which includes a pencil and paper test of several aspects of written language. The authors wanted to measure non perceptual component skills and determine the degree to which each contributes to the child's readiness. The test results indicated that "to serve as a diagnostic function, a readiness test should have a range of subtests including items which measure the child's concept of the readiness task, his perceptual ability, linguistic competence, and cognitive functioning."²² A practical implication for the teacher being that the way the child thinks and learns should be the starting point for all teaching. If this is so, then teaching reading will be the most meaningful when the materials being read are expressed in the child's own language and are

²²P. Evanechko, L. Ollila, J. Downing, and C. Braun, Research in Teaching English, 1973, p. 78.

rooted in his own experiences. Goodman (1969) believes that to a large extent, a beginner's oral language controls his reading and that reading materials must always say something to the beginner that is worth saying, and in a language he can understand and involving concepts within the scope of his interest and comprehension. It is an undisputed fact that in teaching beginners, one of the most valuable built-in aids children have is the instant recall of their experiences.

The language patterns in these recorded experiences are determined by the child's speech and his experiences will determine the content. Theoretically, this requires reading materials and reading instruction to be developed on an individual basis since language and experiences are personal, unique, and meaningful to the individual. As the child sees his personal spoken thoughts converted into manuscript print before his eyes, he is being introduced to the linguistic terms of the language such as letters, words, phrases, and sentences. Overcoming, what research has shown to be one of the main stumbling blocks in learning to read, the abstract quality of written language. As the child sees his spoken thoughts recorded in printed symbols and reads them the communication of the meaning of his speech in written form should be evident to him. As he looks at and reads these printed symbols and associates them with his previously spoken thoughts, he is communicating through reading. He has now established a purpose for reading. And by so doing,

he has overcome the second stumbling block in learning to read, lack of motivation and purpose, and has cleared the way for the progression from normal cognitive confusion through to normal cognitive clarity.

Chapter III

PLAN OF THE STUDY

Introduction

The study was conducted over a three month period from September 1974 to December 1974. The subjects were from one elementary school in metropolitan Winnipeg with a highly stable population. The following procedures were involved:

1. The selection of a sample;
2. The administration of subtest 1, Technical Language of Literacy of the Canadian Readiness Test as a pre-test;
3. The administration of subtest 5, Semantics, of the Canadian Readiness Test as a pre-test;
4. The administration of subtest 6, Learning Rate of the Canadian Readiness Test as a pre-test;
5. The selection of matched experimental and control groups;
6. The treatment or intervention program;
7. The administration of subtests 1, Technical Language of Literacy, 5, Semantics, and 6, Learning Rate, as a post-test.

Population and Sample

The subjects in this study were selected from the three grade one classes in the same school. All subjects were using the Ginn Integrated Language Program¹ as a basal reader.

¹Ginn Integrated Language Program. Ginn and Company, Toronto, 1969. See Appendix.

The teachers of these subjects had an average of six years experience in teaching.

All subjects in the sample were six years old by December 31, 1974 and achieved a total score of 26 or below on subtests 1, 5, and 6 of the Canadian Readiness Test.² Any child who had already spent a year in beginning class was not included in the study.

The subjects in the experimental and control groups were matched on several levels of readiness ability based on the following pre-test ranges: 0-4, 5-8, 9-12, 13-16, 17-20, 21-25, 26-29. As well as being stratified by pre-test scores the subjects were matched by sex to try to eliminate any possible differences favoring girls over boys on reading readiness measures (Downing and Thackary, 1971; Barrett, 1965; Dykstra, 1969).

Table 1 presents the levels of readiness ability for the control and experimental groups before the intervention program. The subjects were matched as closely as possible by sex and levels of readiness scores.

²See Appendix.

Table 1

Levels of readiness ability for Treatment and Control groups

Treatment				Control		
<u>Total Readiness</u>	<u>Boys</u>	<u>Girls</u>	<u>N</u>	<u>Boys</u>	<u>Girls</u>	<u>N</u>
Score						
0-4	1	3	4	2	2	4
5-8	7	1	8	6	2	8
9-12	1	1	2	0	2	2
13-16	2	5	7	3	4	7
17-20	1	1	2	2	0	2
21-25	4	1	5	3	2	5
26-29	3	2	5	4	1	5

Instruments

Three of the six subtests of the Canadian Readiness Test were administered as a pre-test and a post-test. Subtests 1, 5, and 6 were selected.

Subtest 1, Technical Language of Literacy, is a 16 item test which samples the child's knowledge of technical terms such as letter, word, and number, that are used in describing language. Researchers Vernon (1957), Downing (1970a), Reid (1966), Vygotsky (1962), have found that children do not understand the technical terms of their language.

Subtest 5, Semantics, has 12 items. It requires

students to classify stimuli by circling three from a group of five pictures that are conceptually identical. This information should indicate something of the child's capabilities in describing meaning to words. According to Piaget, it is during the intuitive phase (4-7 years of age), that most children experience instruction in initial reading. It is during this phase that the child realized that changes may take place without altering the fundamental characteristics. The child moves from near total dependence on perception to a greater reliance on thought. It is very likely that this change represents what most beginning reading programs require and its presence constitutes 'readiness'.

Twenty-two items make up subtest 6, Learning Rate. The purpose of this subtest is to measure the child's capacity to learn sight words of varying length and configuration. The child is asked to select one out of three words in each group. According to Vernon(1957) Downing (1970a), Reid (1966) and Vygotsky (1962) the child in a state of cognitive confusion will not be very successful in doing this task. The child who has progressed through a state of cognitive clarity will be successful.

Treatment

The treatment or intervention program was carried on for 12 weeks. Grade one children were pre-tested by the experimenter the week of September 9 to determine who would

be included in the experiment. The treatment began the week of September 16 and continued through to the end of the week of December 9.

Because of the length of the subtests and the age of the children, subtest 1 and subtest 5 were administered one day and the following day subtest 6 was administered. The tests were given to all the children in their classroom to minimize experimental effects. The practice samples were done together before the items to be scored were attempted by the children. Approximately ten seconds were allowed for the completion of each item.

A perfect score on subtests 1, 5, and 6 is 60. Any child scoring 26 (44 percent) or below was selected to participate in the study to be assigned to either the experimental or the control group.

To minimize the Hawthorne Effect, all the subjects participating in this study were taken out of their rooms in groups. The experimental or treatment group was in small groups of three to five. The control group was divided into two groups.

A collection of at least 100 primary picture and story books, from the library, were used during the treatment period. Both the control group and the experimental group had access to these books, but at different times.

The experimental group received a 10-15 minute daily session in small groups of three to five. The control group

was divided in half for convenience of handling, and each group received a 10-15 minute daily session. The order that the control and experimental groups were taken out of their rooms was rotated daily.

When the experimental groups were out of the room, the classroom teacher instructed the remaining members of the class in their regular program. When the control groups left the classroom, the classroom teacher read one of the library books to the experimental group and then continued with the regular program. The control group was read to by the experimenter from one of these library books. Thus both groups had the same books read to them but at different times. This eliminated the possibility of the picture and story books from the library becoming a factor favoring one group over the other.

The language experience approach features children as authors. It is predicated upon the notion that reading can be most meaningfully taught when the reading materials accurately reflect the child's own experience as described by his language. (Cramer, 1971) Children's unique language abilities bring reading and other communications skills together. "What I can think about, I can talk about. What I can say, I can write -- or someone can write for me. What I can write, I can read, I can read what I can write and what other people can write for me."³ For Allen, (1967) this is the language experience

³R. V. Allen. Issues and Innovations in Teaching of Reading. 1967. p. 171.

approach in reading as it is conceptualized by each child. Accepting this as valid for beginners, the treatment for the experimental group consisted of the subjects dictating stories to the experimenter. These stories provided the vocabulary which was their own story. Each subject was placed in such a manner that he could see the words being typed as he said them. (A primary typewriter was used to record these stories.) Each story was typed at the bottom of the selected picture. The subject was encouraged to think of and tell a complete sentence before the experimenter would type it. The subject was reminded to watch as the words and sentences were being typed. The stories were two to five sentences in length.

After the story was typed it was placed in front of the subject. The experimenter read the story to the subject, pointing to each word as she read it making sure the subject was attending. The subject was asked to read the story orally with the experimenter. Once again the experimenter pointed to each word as it was being read. The third time the subject was asked to read the story orally by himself with help being provided when necessary. As the subject was reading the experimenter was pointing out each word as it was said.

Markers, made from 3" X 11" cardboard, were available for any subject who wished one.

After the subject read the story he was asked to

point out any word(s) he knew in the story. If the subject was correct in his responses he was asked to circle, with pencil, the word(s) he knew in the story. The subject was asked to say the word while he was circling it. Making sure the subject was looking at the word, the experimenter printed, as the subject said the word, with black felt marker on white cardboard cards, 3" X 11". These words were said and put into an envelope with the subject's name on it. These words were referred to as "Your Words" when talking to the subject about them. In the event that the subject made a wrong response in naming the word (s), the experimenter told the subject to listen to and look at the word while the experimenter said it. Then the experimenter pointed to the word while reading the sentence the subject had dictated to make sure the subject was aware that the word he had said was not the correct one. If the subject did not know any words he pasted his picture and story into his book. As soon as each subject had his picture pasted into his book he was able to take it back to the group. This book was referred to as the subject's own personal story book.

While one subject was having his first story recorded the other subjects had library books to look at or activities similar to the ones used in the regular class by the classroom teacher. During the time the experimental group was out of the room, the control group was continuing with regular work in their classroom.

Session Two -- the next day

The subjects were encouraged to find their own folder and personal story book. They would again select a picture about which they wanted to tell a story.

One by one the subjects from the experimental groups had their words checked and their new stories recorded. The subject took all the words from the envelope. If he could remember the words on the cards and say them to the experimenter, they were put back into his envelope. If the subject forgot any of the word(s), the experimenter would tell it (them) to him and show him the word(s) in his story from the day before. The experimenter would then read the entire sentence from which the word was taken. The subject was asked to say the word. A small circle was put on the lower right hand corner of the card and then it was put back into the envelope. If the subject didn't have any words in his envelope, he began his new story. The new stories were recorded in the same manner as the initial story, and so were the new words the subject knew recorded in the same manner as the initial words. The subjects, who were waiting to have their words checked and their new stories and words recorded, were encouraged to share their personal story books with each other and try to read their stories to one another, as well as look at and read the library books.

Once again, the subjects were asked to put their folders and personal story books away before leaving.

Session Three and Subsequent Sessions -- the next day

The subjects were encouraged to find their own personal books and folders. One at a time the subject had their words checked and their new stories and words recorded as before. Any word the subject knew, and could say to the experimenter, went back into his envelope. Any word with a circle on it that the subject could not remember and say was discarded. If any previously-known word was forgotten, a circle was put on the corner and it received the same treatment as the forgotten words had in the second session.

When ten or so pictures had been selected from the folders and stories had been recorded, ten or so new pictures were placed in the folders to ensure a good selection of pictures to choose from.

Technical terms such as letters, words, sentences, stories, numbers and names were used by the experimenter where applicable and the subjects were encouraged to use these terms.

The treatment period ended the week of December 9. The following week, December 16, the experimenter tested all the subjects who participated in the study with sub-tests 1, 5, and 6 of the Canadian Readiness Test. The same form was used in the post-test as was used in the pre-test. The treatment period was long enough to offset any learning that might have occurred at the time of the pre-test.

Design of Study

The research design selected for this study was the

Pretest-Posttest Control Group (Popham 1972). The initial equivalence of the two groups has been maximized through randomization and allows clearer inferences regarding the merits of the treatment.

The dependent variables were the scores on the subtests 1, Technical Language of Literacy, 5, Semantics, and 6, Learning Rate, and the total on the post-test of the Canadian Readiness Test. The independent variable was the intervention program of a "Key Vocabulary" approach used on the experimental group. The pre-test data was analyzed by Analysis of Variance to determine the significant differences between the experimental group and the control group. It was also used to determine the significant differences among the subtests 1, Technical Language of Literacy, 5, Semantics, and 6, Learning Rate.

Correlation analysis of the pre-test and post-test (Program ST 32) was used to determine the existence of any correlations of the subtests and the total scores.

The data to test the first hypothesis were analyzed by Analysis of Variance and planned comparison of Control and Experimental groups on subtests 1, Technical Language of Literacy, 5, Semantics, and 6, Learning Rate. Factorial analysis with equal replication in each cell was used (Program ST 43). Duncan's Test, multiple comparisons among means, was used on the data to test hypotheses 2, 3, and 4 (Program ST 45).

Chapter IV

FINDINGS

Introduction

The purpose of this study was to develop an intervention program to lessen the gap between cognitive confusion and cognitive clarity by using the results of a reading readiness test diagnostically.

Subtests 1, Technical Language of Literacy, 5, Semantics, and 6, Learning Rate, of the Canadian Readiness Test were administered to three classes of grade ones in September. The subjects were matched as nearly as possible by sex and several levels of readiness ability. Children scoring 26 or below were included in the study. Any child scoring 27 or above did not participate in the study. A treatment or intervention program based on a form of Ashton-Warner's "Key Vocabulary" with a language experience approach was carried on for twelve weeks with the experimental group. At the end of the intervention program subtests 1, 5, and 6 of the Canadian Readiness Test were administered to both the experimental and control groups.

The data were analyzed by Statistics on Line (SOL) programs which consisted of a Correlational Analysis (Program ST32), Analysis of Variance (Program ST43), and Duncan's New Multiple Range Test (Program ST45), and are

reported in Tables 2 through 6.

Correlational Analysis was used to determine whether a relationship existed between the subtests 1, 5, and 6 and the total scores on the pre-test and post-test of the Canadian Readiness Test.

Analysis of Variance was used in both the pre-test and post-test data to determine whether a significant difference existed between the experimental and the control group. It was also used to determine the existence of any significant differences among subtests 1, Technical Language of Literacy, 5, Semantics, and 6, Learning Rate.

The pre-test and post-test scores on subtests 1, 5, and 6 were compared by Duncan's New Multiple Range Test to determine what accounted for the significant difference in the Analysis of Variance analysis.

Analysis of data

Table 2 presents the analysis, by Analysis of Variance, of the pre-test scores for the experimental and control groups on subtests 1, Technical Language of Literacy, 5, Semantics, and 6, Learning Rate. Prior to the intervention program the experimental and control groups had been matched on several levels of readiness ability. The F ratios indicate that prior to the intervention program there was no significant difference between the experimental and control groups, but that there was a significant difference among subtests 1, 5, and 6 of the

Canadian Readiness Test at the .01 level of significance.

Table 2

An analysis of the pre-test scores of subtests 1, 5, and 6 for the experimental and control groups

ANALYSIS OF VARIANCE				
SOURCE	DF	SUM SQUARES	MEAN SQUARES	F
TEST	2	325.500	162.750	9.68*
GROUP	1	1.021	1.021	.06+
INTERACTION	2	2.542	1.271	.08
ERROR	186	3127.750	16.816	
TOTAL	191	3456.812		

*P_{.01} (df 2,186) 4.738

+P_{.01} (df 1,186) 6.796

Table 3 presents the pre-test correlation analysis among subtests 1, Technical Language of Literacy, 5, Semantics, and 6, Learning Rate and the pre-test correlation analysis between scores on subtests 1, 5, and 6 and the total scores on the Canadian Readiness Test. The table shows that correlation between subtests 1, Technical Language of Literacy and subtest 6, Learning Rate was significant at .01 level of significance. Subtest 1, Technical Language of Literacy correlated with subtest 5, Semantics, at .01 level of significance. There was, however, no significant correlation

between subtests 5, Semantics, and subtest 6, Learning Rate at .01 level of significance. A significant correlation was noted between the scores on each subtest and the total scores on the Canadian Readiness Test at .01 level of significance.

Table 3

Pre-test correlational analysis among the scores of subtests 1, 5, and 6 and between subtests 1, 5, and 6 and the total scores

PRE-TEST CORRELATION ANALYSIS				
<u>SUBTESTS</u>	<u>1</u>	<u>5</u>	<u>6</u>	<u>Total</u>
1	1.00			
5	.41*	1.00		
6	.42*	.15	1.00	
T	.84*	.57*	.78*	1.00

*P_{.01} (df 31) .292

Table 4 presents the post-test correlation analysis among subtests 1, Technical Language of Literacy, 5, Semantics, and 6, Learning Rate and the post-test correlation analysis between scores on subtests 1, 5, and 6 and the total scores on the Canadian Readiness Test. No significant correlation is shown among subtests 1, 5, and 6 at .01 level of significance after the intervention program. There is

still a significant correlation at the .01 level of significance between each of the scores on the subtests 1, 5, and 6 and the total scores on the Canadian Readiness Test as a result of the intervention program.

Table 4

Post-test correlation analysis among subtests 1, 5, and 6 and correlation analysis between subtests 1, 5, and 6 and the total scores

POST-TEST CORRELATION ANALYSIS				
<u>SUBTESTS</u>	<u>1</u>	<u>5</u>	<u>6</u>	<u>Total</u>
1	1.00			
5	.27	1.00		
6	.21	.11	1.00	
T	.57*	.86*	.51*	1.00

*P_{.01} (df 31) .292

Table 5 presents an analysis of the post-test scores for the experimental and control groups on subtests 1, 5, and 6. The data in this table were analyzed by Analysis of Variance. Hypothesis 1 stated that there existed no significant difference between the experimental and control group on the total scores of the Canadian Readiness Test as a result of the intervention program. From the significant F value obtained when comparisons are made between total scores of the control and experimental groups as a result of

the intervention program there is a difference. This difference was significant at .01 levels thus rejecting hypothesis 1.

The rejection of hypothesis 1 indicates that there was a significant difference between the experimental and control groups on the Canadian Readiness Test as a result of the intervention program.

Table 5

An analysis of the post-test scores of subtests 1, 5, and 6 for the experimental and control groups

ANALYSIS OF VARIANCE				
SOURCE	DF	SUM SQUARES	MEAN SQUARES	F
TEST	2	7206.281	3603.141	531.77*
GROUP	1	61.880	61.880	9.13+
INTERACTION	2	40.385	20.193	2.98
ERROR	186	1260.281	6.776	
TOTAL	191	8568.828		

*P_{.01} (df 2,186) 4.738

+P_{.01} (df 1,186) 6.796

Duncan's New Multiple Range Test, which is a multiple comparison procedure for carrying out pairwise comparisons, was used to try to determine what accounted for the significant difference in the Analysis of Variance analysis for

subtests 1, 5, and 6 on the Canadian Readiness Test in the post-test.

Table 6 shows the comparison by Duncan's New Multiple Range Test of the scores on subtests 1, 5, and 6 for the experimental and control groups after the intervention program. Hypothesis 2 stated that no significant difference existed between the experimental and control groups on the scores of subtest 1, Technical Language of Literacy, as a result of the intervention program. This table shows that for a significant difference to exist at the .01 level of significance, the difference on the pre-test and post-test scores of the control and experimental groups on subtests 1, 5, and 6, must exceed the corresponding shortest range. The data given in Table 6 indicates that the difference between the experimental and control groups was significant in that it did exceed the corresponding shortest significant range: thus rejecting hypothesis 2.

Table 6

Comparison of scores of experimental and control groups on subtests 1, 5, and 6 as a result of the intervention program

DUNCAN'S NEW MULTIPLE RANGE TEST							Shortest Significant Ranges	
	1 A	2 B	3 C	4 D	5 E	6 F		
MEANS	5.563	5.688	13.562	15.594	19.781	21.281	R ₂	6.611
		.272	17.383	<u>21.799*</u>	30.889	34.157	R ₃	6.895
			17.111	21.527	<u>30.626*</u>	33.886	R ₄	<u>7.085*</u>
				4.416	13.515	<u>16.774*</u>	R ₅	<u>7.225*</u>
					9.099	12.359	R ₆	<u>7.333*</u>
						3.260		

Hypothesis 3 stated that there existed no difference between the experimental and control groups on the scores on subtest 5, Semantics as a result of the intervention program. According to Duncan's Test, to be significant at .01 level of significance, the difference must exceed the corresponding shortest significant range. Table 6 shows that the difference on the pre-test and post-test scores of the experimental and control groups was significant in that it too, exceeded the corresponding shortest significant range: thus rejecting hypothesis 3.

Hypothesis 4 stated that there existed no difference between the experimental and control groups scores on subtest 6, Learning Rate, as a result of the intervention program. Duncan's Test was used to determine if a difference existed. To be significant at the .01 level of significance the difference must exceed the corresponding shortest significant range. A significant difference at the .01 level of significance was noted, as shown in Table 6. The difference exceeded the corresponding shortest significant range: thus rejecting hypothesis 4.

According to Duncan's New Multiple Range Test, as shown in Table 6, hypothesis 2, 3, and 4 were rejected indicating that there was a significant difference between the experimental and control groups on the scores of subtests 1, Technical Language of Literacy, 5, Semantics, and 6, Learning Rate as a result of the intervention program.

Chapter V

SUMMARY AND CONCLUSIONS

Restatement of the Problem

The purpose of this research was to design and measure the effectiveness of an intervention program in spanning the gap between the child's state of cognitive confusion and cognitive clarity.

Summary of the Proceedings of the Investigation

The study was conducted with subjects from three grade one classes, over a period of three months, in one elementary school. The sample consisted of 64 children: 26 girls and 38 boys. The children were matched by sex and by scores obtained from subtest 1, Technical Language of Literacy; subtest 5, Semantics, and subtest 6, Learning Rate of the Canadian Readiness Test and were assigned to two groups. The experimental group participated in an intervention or treatment program. This program was a form of "Key Vocabulary" using a language experience approach. At the end of the three month treatment period both groups were retested with subtests 1, 5, and 6 of the Canadian Readiness Test.

Summary of Findings and Discussion

The purpose of this study was to examine the effectiveness of an intervention program to span the gap between the child's state of cognitive confusion and cognitive clarity.

Hypothesis 1 predicted that there would be no significant difference between the control and experimental group on the total scores of the Canadian Readiness Test as a result of the intervention program. A comparison of the differences by analysis of variance was significant at .01 level: thus hypothesis 1 may be rejected.

Data relevant to hypothesis 1, indicated that in the post-test scores there was a significant difference between the control and experimental groups on the total scores of the Canadian Readiness Test. This difference is attributed to the intervention program. The intervention program was based on a language experience approach. Language is learned because children need to communicate. The spoken language possessed by the beginner is his greatest asset for learning written language. (Goodman, 1970) With a language experience approach the beginner finds translating print into speech greatly simplified since he is reading that which he thought and said. The intervention program was effective in spanning the gap between a child's state of cognitive confusion and cognitive clarity.

Hypothesis 2 predicted that there would be no significant difference between the control and experimental

groups on scores on subtest 1, Technical Language of Literacy, as a result of the intervention program.

The scores on the pre-test confirmed the results of studies by Vernon (1957), Downing (1970a), Reid (1966), Vygotsky (1962), and Francis (1973), that children do not understand the technical terms of the language.

In oral language with respect to sound, the pauses heard between spoken words exist in the mind of the listener. A graphic representation of the flow of speech would show no temporal breaks between words. Words have become units in written language but do not exist in oral language. Words in print do not correspond to words in speech. The importance of particular letters and words in a sequence can be determined only in relationship to the message the whole sequence is conveying. A list of five words is not comparable to a five-word sentence. The meaning of the sentence is dependent upon the words that compose it but this meaning is always greater than the sum of the meanings of the individual words. From this it can be seen that instruction for beginners will be most meaningful if the language of instruction is the child's own natural language as he uses it to cope with his own experiences.

Research (Gray, 1948, Modiano, 1968, Goodman, 1965, Mountford, 1970, Weber 1968) shows that it is very difficult for the beginner to develop basic linguistic concepts and to understand technical terms of the language when the written language he is taught has only remote connection

with his experience of spoken language. In written language it is very difficult for a beginner to identify a word he has never heard. Instruction will be successful to the extent that it capitalizes on the beginner's language learning ability and his existing competence. There must be a close match between the language of reading instruction and the beginner's own language in the first year (Modiano 1968, Goodman 1965, Weber 1968). The basal does not accurately reflect the vocabulary and language patterns of children because no single basal can possibly reflect the diversity of vocabulary and language patterns represented by the beginners for whom it is intended.

According to Duncan's Test, Table 6, there was a significant difference at .01 level, thus hypothesis 2 was rejected. The results of the post-test scores would indicate that the intervention program helped the experimental group in understanding the technical terms of the language and to progress from a state of cognitive clarity.

Hypothesis 3 predicted that there would be no significant difference between the control and experimental groups on the scores on subtest 5, Semantics, as a result of the intervention program. There was a significant difference at .01 level of significance according to Duncan's Test, Table 6, thus hypothesis 3 was rejected. The intervention program did improve the child's ability to ascribe meaning to words. This finding is supported by Piaget's theories of cognitive development of the child by

active interaction with his environment.

Hypothesis 4 predicted that there would be no significant difference between the control and experimental groups on the scores on subtest 6, Learning Rate, as a result of the intervention program. This hypothesis was also rejected. According to Duncan's Test, Table 6, there was a significant difference at .01 level of significance. The rejection of hypothesis 4, supports the findings of Vernon (1957), Downing (1970a), Reid (1966), and Vygotsky (1963) that the child who has progressed through a state of cognitive clarity will have the capacity to learn sight words and that the child in a state of cognitive confusion will not be very successful at this task.

Data relevant to hypothesis 2, 3, and 4 indicate that the intervention program had a significant effect on the scores of the post-tests of subtests 1, 5, and 6, thus spanning the gap between the child's state of cognitive confusion and cognitive clarity. The significance of the intervention program on the post-test scores may be attributed to what Goodman (1969) called "development of word sense."¹ First, the beginner knows a graphic sentence; then, he knows familiar words in new sentences; finally, he knows words anywhere, even in isolation.

¹Goodman, Kenneth, Psycholinguistics and the Teaching of Reading. 1969. p. 33.

Analysis of the pre-test data indicated that there were significant correlations between subtests 1 and 5, and also between subtests 1 and 6. There was no significant correlation between subtests 5 and 6. This shows that there is a significant correlation between the beginner's understanding of the technical terms of the language and his ability to ascribe meaning to words. There is also a significant correlation between the beginner's understanding of the technical terms of the language and his capacity to learn sight words. But, there is no significant correlation between the beginner's ability to ascribe meaning to words and his capacity to learn sight words.

Research (Reid, 1966, Vernon 1957, Vygotsky 1962, and Downing 1970a) has shown that beginners who do not understand the technical terms of the language experience difficulty in learning to read. But as beginners develop an understanding of the technical terms of the language, the task of reading is no longer meaningless and confusing. Based on the above research, it may well be that correlation between subtests 1 and 6 is evident because beginners who score well on subtest 1 have developed an understanding of the technical terms of the language and will be able to learn sight words, thus scoring well on subtest 6.

It is generally accepted that reading is a cognitive process. Because it is accepted as a cognitive process it is dependent upon prior experience and learning. Beginners recognize and possess control over many words in their oral

vocabulary. They have formed a variety of concepts by associating common properties of an object with the object label. The beginner conceptualizes the arbitrary nature of language itself as he understands that word labels may represent several concepts depending on its contextual use. (Vygotsky 1962). The beginner will be successful in this task to the degree that the contextual use is within the scope of his experience and understanding.

The correlation between subtests 1 and 5 might indicate that having developed an understanding of the technical terms of the language the beginner is successful in the task of ascribing meaning to words to the degree that the contextual use is within the scope of his experience and understanding.

The child who has not developed understanding of the technical terms of the language will not be able to ascribe meanings to words nor be successful at learning sight words.

Analysis of the post-test data indicated that there was no significant correlation between subtests 1 and 5, 1 and 6, or between 5 and 6. That is, there was no significant correlation among the child's understanding of the technical terms of the language, his ability to ascribe meaning to words, or his capacity to learn sight words as a result of the intervention program.

The post-test data information indicates that the intervention program was successful. The beginners have progressed through to a state of cognitive clarity. They

have developed an understanding of the technical terms of the language; they have improved their ability to ascribe meanings to words; and, they have increased their capacity to learn sight words.

In both the pre-test data, Table 2 and the post-test data, Table 3, there were significant correlations between each subtest and the total readiness scores at .01 level of significance. High correlations of .84 between subtest 1, Technical Language of Literacy and the total score, and .78 between subtest 6, Learning Rate and the total score were noted on the pre-test data. Subtest 5 had a correlation of .57 with the total score. In the post-test scores, subtests 1 and 6 dropped to .57 and .51 respectively. Subtest 5 increased to a high correlation of .86 with the total score.

From the data it can be said that subtests 1 and 6 are good predictors of the total scores in the pre-test but subtest 5 is the best predictor in a post-test with a population similar to the one considered in this study.

Limitations

One of the conditions for analyzing the data using analysis of variance is that the sample must be selected randomly. In this study the children were assigned to the experimental and control groups on the basis of their scores on the Canadian Readiness subtests, 1, 5, and 6, and sex. Since the sample used in this study was small, the children were assigned to the groups to try to match them as evenly

as possible on score and sex. As a result of assigning the children to the experimental and control group any generalizing of the results is limited to a population similar to the students in this study and may not apply to students randomly assigned. However, the two groups did not differ significantly on their pre-test scores.

Children participating in the study were from one particular area and limited to more or less one socio-economic class -- thus the results were limited to middle class children.

In the post-test many of the children achieved maximum scores on subtests 1, Technical Language of Literacy, and 6, Learning Rate, thus limiting the ranges measured.

It was also noted that in the post-test scores subtest 5 was the best predictor of the total score. Errorless scores caused by ceilings on subtests 1 and 6 in the post-test may have had an effect on the change from good predictors of the total scores in the pre-test to their present correlations of .57 and .51.

Implications for Future Study

Children who had a total score of from 0 to 12 in the pre-test showed greater improvement as a result of the treatment period, but the children whose total scores on the pre-test ranged from 15 to 26 did not seem to improve as a result of the treatment period. Research in this area is needed to determine which children benefit most and when the optimum time is to help them.

Findings from previous research indicated that children in a state of cognitive confusion could not successfully do the type of exercises on subtest 1, Technical Language of Literacy, and 6, Learning Rate, but that children who had progressed to a state of cognitive clarity can be successful on subtests like these. Since ceiling effects were particularly apparent on these subtests at the time of the post-testing, it would be of interest to try to determine at what state in the mastering of technical terms of the language was the treatment period most or least effective.

The children in this study were from one socio-economic level. Future study could involve other socio-economic levels with treatment periods of varying lengths.

It would be helpful if teachers could determine more accurately early in kindergarten which children are likely to experience a prolonged state of cognitive confusion. As a rule, kindergarten children are not familiar with the written form of their language. Specific tasks are needed to develop the special kind of reasoning required to understand the abstract quality of the language without relying heavily on the written form.

Conclusions

On the basis of the findings, the following conclusions were drawn. Children beginning grade one do not understand the technical terms of the language. But

these terms do become more meaningful to the child beginning grade one as he is exposed to and uses them. Tasks specifically designed to improve the understanding of the technical terms of the language were beneficial in terms of the improved scores on the post-tests.

Oral language should be encouraged. From the very beginning written language should be presented as meaningful units of the child's own natural language. Teachers should take every opportunity to record the child's oral speech in his presence to try to overcome the abstract quality of written language. Teachers should avoid presenting words in isolation whenever possible, but should present words as units of larger units to capitalize on the child's natural oral language ability. Experience charts based on the child's own use of language and stories dictated by the child and recorded in print are tasks designed to improve the child's understanding of technical terms of the language.

The pre-test scores indicated that the children beginning grade one have very little understanding of word boundaries. There was a marked improvement in this understanding in the children as a result of the intervention program. Teachers must realize that a child's concept of the technical terms of language are very different from that of an adult's.

Reading Readiness test information used diagnostically can be very valuable to both the child and the teacher.

It is not enough to identify a problem, efforts must be made to correct the problem at the earliest possible point in time. Reading Readiness test information used diagnostically provides a starting point from which the teacher can design the reading program to suit the individual child's changing needs. Teachers need to know and understand more about the reading process in order to cope more adequately with all children. From the very beginning written language should be presented as meaningful units of the child's own natural language based on his own experiences, however limited. Teachers need to keep in mind at all times that virtually every child's language is adequate for his needs at that specific point in time.

A more general implication of the findings of this study would seem to be that teachers who teach children like the ones in this study should not assume that children beginning grade one understand linguistic concepts. These technical terms need to be taught and used meaningfully by children. It is very likely that most of the children enter school and begin reading in a state of 'cognitive confusion' (Vernon, 1957) regarding technical terms of the language. Neglecting the development of this phase in the beginning may prolong cognitive confusion and delay cognitive clarity.

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APPENDIX

Basal Readers

Ginn Integrated Language Program. Ginn and Company.
Toronto, 1969.

-Pre-primers

What a Dog

Meet my Pals

Take a Peek

Up the Beanstalk (Primer)

Rockets Away (First Reader)

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TEST REFERENCES

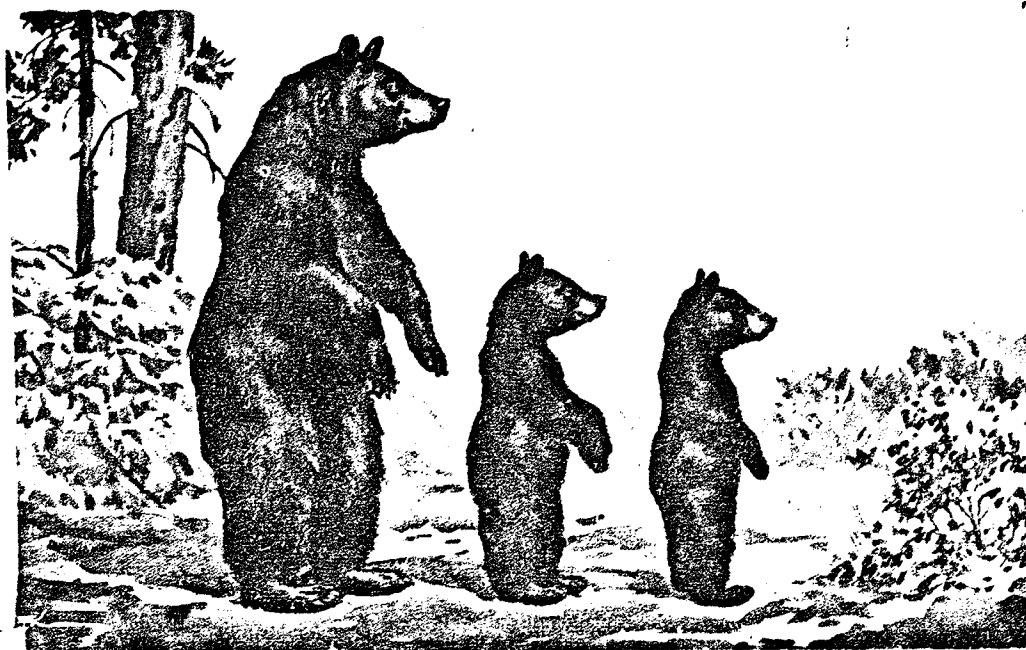
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Sept.		Experimental or Treatment				Dec.			
Sex	Sub.1	Sub.5	Sub.6	Total		Sub.1	Sub.5	Sub.6	Total
1	g	0	0	1	1	14	3	20	37
2	g	0	1	2	3	14	3	19	36
3	g	1	1	1	3	13	5	20	38
4	b	2	2	0	4	16	7	17	40
5	b	1	2	2	5	16	4	21	41
6	b	0	1	4	5	16	5	22	43
7	b	1	3	1	5	16	7	19	42
8	g	0	0	6	6	12	3	22	37
9	b	2	2	2	6	16	6	20	42
10	b	1	3	2	6	15	5	21	41
11	b	2	0	4	6	16	3	22	41
12	b	1	3	4	8	16	8	22	46
13	g	6	0	3	9	16	2	21	39
14	b	6	0	5	11	16	4	22	42
15	g	10	1	3	13	16	4	22	42
16	b	6	3	4	13	16	10	22	48
17	g	5	7	3	15	16	9	22	47
18	g	6	3	6	15	16	4	22	42
19	g	5	4	6	15	16	4	22	42
20	b	0	0	16	16	16	0	22	38
21	g	9	4	5	18	16	4	20	40
22	b	9	5	6	20	16	6	21	43
23	g	8	6	10	24	16	10	22	48
24	b	5	9	11	25	15	8	22	45
25	b	9	3	13	25	16	9	22	47
26	b	8	1	16	25	16	5	22	43
27	b	1	10	14	25	16	6	22	44
28	g	12	1	13	26	16	8	22	46
29	b	12	3	13	26	16	4	22	42
30	g	14	3	9	26	16	7	22	45
31	b	14	5	7	26	16	6	22	44
32	b	13	9	4	26	16	9	22	47

	\bar{X}	\bar{X}	\bar{X}	\bar{X}	\bar{X}	\bar{X}	\bar{X}	\bar{X}
19 b	5.406	2.844	6.125	14.281	15.594	5.563	21.281	42.437
13 g								

		Sept.				Control				Dec.			
Sex		Sub.1	Sub.5	Sub.6	Total	Sub.1	Sub.5	Sub.6	Total	Sub.1	Sub.5	Sub.6	Total
A	b	0	2	0	2	8	3	7	18				
B	g	1	2	0	3	7	5	10	22				
C	b	1	1	2	4	8	3	13	24				
D	g	2	0	2	4	9	3	12	24				
E	b	2	2	1	5	12	6	17	35				
F	g	0	4	1	5	12	7	14	35				
G	b	3	0	3	6	12	4	20	36				
H	b	1	2	3	6	12	4	22	38				
I	g	3	0	3	6	13	0	22	35				
J	b	6	0	0	6	16	7	22	45				
K	b	2	1	4	7	9	5	22	36				
L	b	3	2	3	8	11	9	20	40				
M	g	4	2	4	10	13	7	22	42				
N	g	5	1	5	11	12	4	22	38				
O	b	8	2	3	13	16	5	22	43				
P	b	0	0	13	13	12	3	21	36				
Q	g	2	5	7	14	16	10	22	48				
R	g	9	2	4	15	16	12	22	50				
S	g	13	2	0	15	16	7	20	43				
T	b	8	2	6	16	16	3	20	39				
U	g	7	7	2	16	16	6	22	44				
V	b	8	8	1	17	15	9	22	46				
W	b	9	2	9	20	16	5	22	43				
X	g	14	4	4	22	16	5	22	43				
Y	b	5	9	11	25	14	8	22	44				
Z	b	3	6	16	25	15	7	22	44				
AA	g	2	8	15	25	16	9	22	47				
BB	b	9	0	16	25	16	0	22	36				
CC	g	6	4	16	26	16	5	22	43				
DD	b	10	7	9	26	16	7	20	43				
EE	b	9	2	13	26	16	5	22	43				
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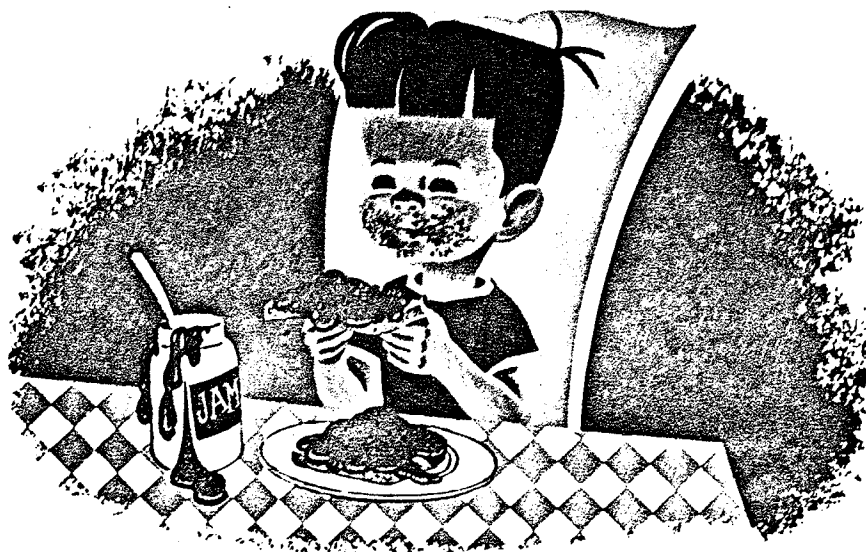
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19	b	5.281	2.973	5.694	14.0	13.562	5.691	19.782	39.094
13	g								



I (see) bears.

There are only three bears.

There are two little ones.



A boy is eating cake.

I call him Pat.

Pat is big.



I see a castle.

It's up upon a hill.

A king lives in the castle.

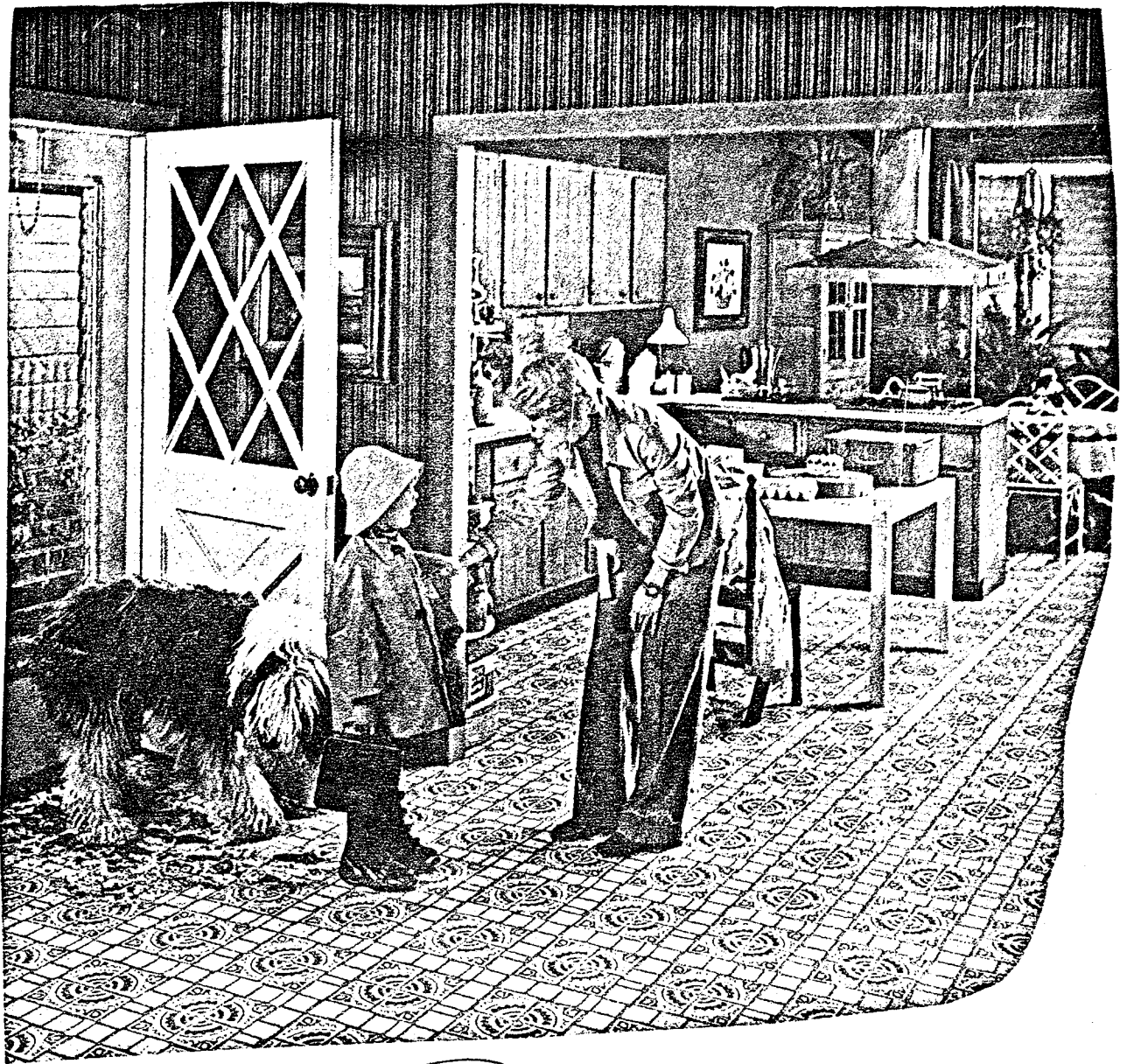


A man is painting.

And he found a cat.

And he wondered whose it was.

He thought it was his cat.



There is a dog.

He is like Mr. Mugs.

He got soaking wet.

He got mud on the kitchen floor.



Here is Pat.

He is playing with a game.

He has a gun.

The game is called Magic Shot.



There is a hippopotamus.
The hippopotamus is walking.
It lives in the water.
The hippopotamus is blue.



Some kids are playing outside.
They are playing with their sleds.
They got their winter clothes
on and their boots.

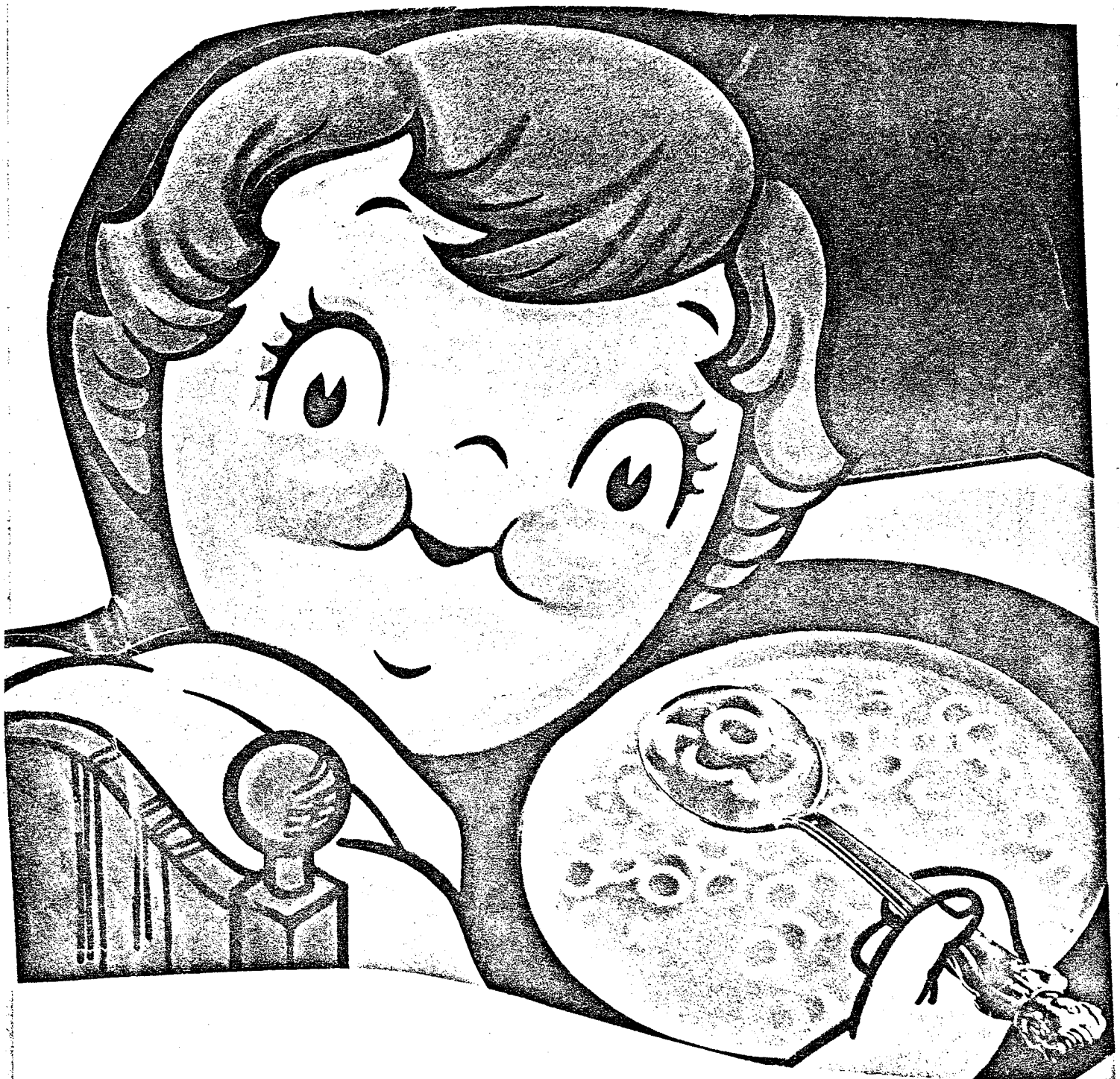
This girl is eating some soup. 79

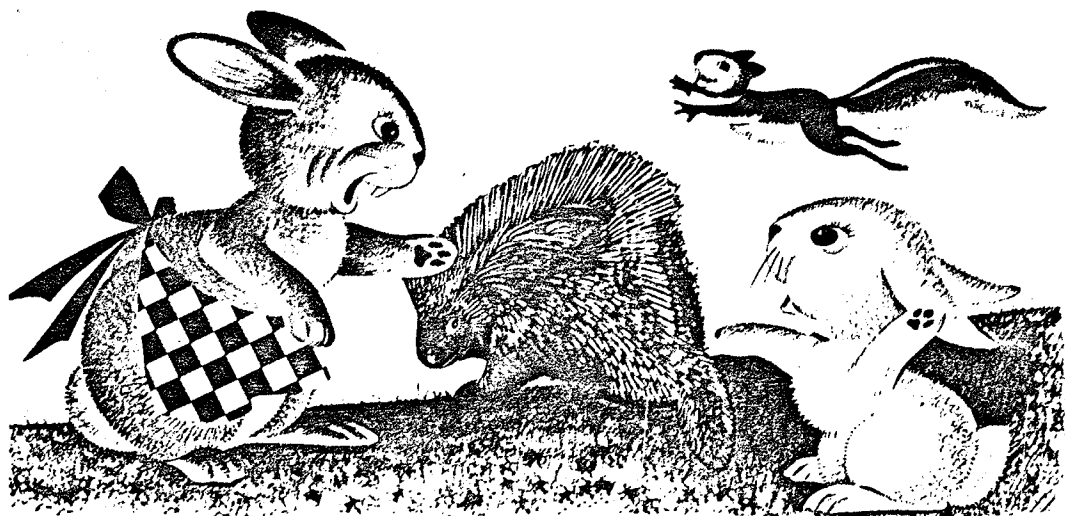
It is her favorite soup.

She likes it.

She is so happy.

She is eating the whole thing up.



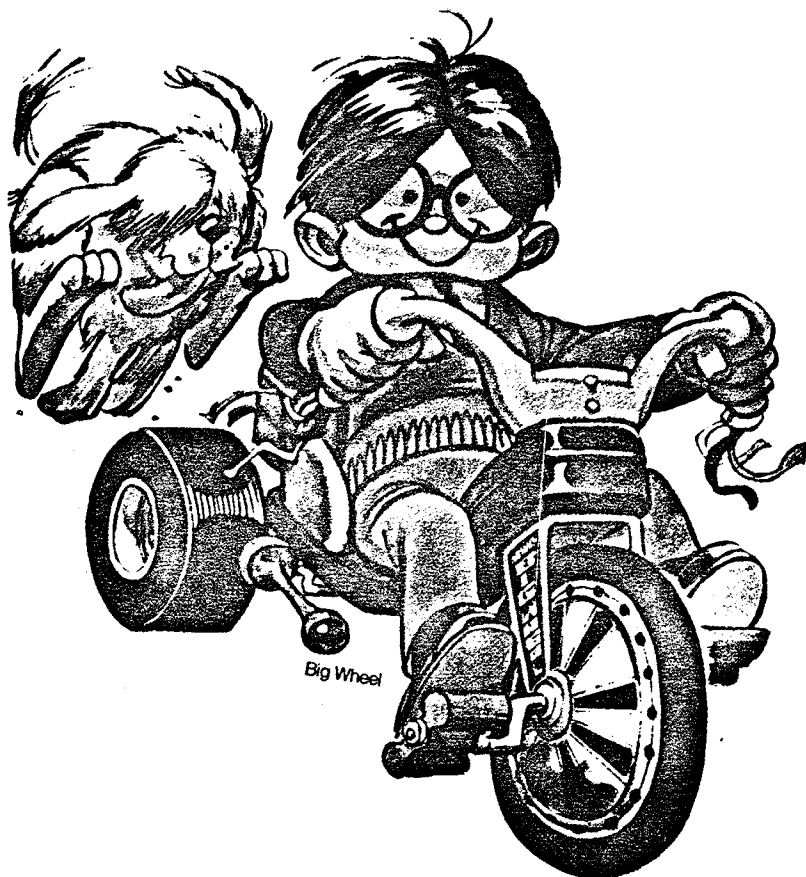


There is a bunny.

And there is a mommy bunny petting a frog.

And there is a mouse jumping on the frog.

There is a little bunny and he is worried.



There is a boy riding a Big Wheel.
Mr. Muas is chasing the boy on
the Big Wheel.

There is a brake and a handy
saddle bag.

And there are decorations on
both sides.



Their mother and dad said to the boy
and the girl, "Don't play in the
garden."

They went in it.

Their mother and dad were talking it
over about the garden.



There is a lady with a fishing rod.
She has some paddlers on her feet.
She is inside a boat.
There is an oven and a refrigerator and
some cupboards.

Typed according to "FORM AND STYLE" by William Giles Campbell
and Stephen Vaughan Ballou.