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Possible Relationships between Realism and Comprehension in Elementary School Age Children

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POSSIBLE RELATIONSHIPS BETWEEN REALISM AND
COMPREHENSION IN ELEMENTARY SCHOOL AGE CHILDREN

THESIS

Submitted to the Graduate Committee of the
Department of Curriculum and Instruction
Faculty of Education
State University College at Brockport
in Partial Fulfillment of the
Requirements for the Degree of
Master of Science in Education

by

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Table of Contents

Chapter	Page
I. Statement of the Problem	4
A. Purpose	4
B. Need for the Study	5
C. Design of the Study	7
D. Definition of Terms	9
E. Limitations	11
F. Summary	12
II. Review of the Literature	13
A. Purpose	13
B. General Developmental Theory with a Focus on Realism	13
C. Current Theoretical Discussions	18
D. Studies Linking Piagetian Tasks to Academic Achievement	23
E. Summary	29
III. The Research Design	30
A. Purpose	30
B. The Hypotheses	30
C. Methodology	31
1. Subjects	31
2. Instruments	33

3. Procedures	37
4. Statistical Design	40
5. Inter-Scorer Agreement	41
D. Summary	42
IV. Analysis of Data	44
A. Purpose	44
B. Findings	44
1. Results of the Dream Questionnaire	44
2. Results of the <u>Stanford Listening</u> <u>Comprehension Test</u>	46
3. Results of the <u>Goodenough-Harris</u> <u>Drawing Test</u>	47
4. Results of the Informal Modality Test	48
C. Comparison of Scores	50
1. Listening Comprehension and Realism Scores	50
2. <u>Goodenough-Harris Drawing Test</u> and Realism Scores	51
3. Modality, Listening Comprehension and Realism Scores	52
D. Skewing of the Sample	54
E. Summary	56
V. Conclusions and Implications	57
A. Purpose	57
B. Conclusions	57

C. Recommendations for Future Research	58
D. Implications for Educational Testing	59
E. Implications for Reading	64
F. Summary	65
Appendices	
A. Dream Questionnaire	67
B. Criteria for Classification of Responses to Dream Questionnaire	71
C. The Revised Baxter Informal Modality Test	74
References	76
Bibliography	78

Chapter I

Statement of the Problem

Purpose

The purpose of this paper is to investigate the child's movement from realism to subjectivism, and to determine the effect this growth has on the ability to comprehend. Developmental theory as propounded by Jean Piaget and his followers attempts to describe a sequential maturation of the child across many lines of cognitive and affective functioning. One such line is the development of causal thinking over a continuum beginning with the emergence of representational thought at about two years of age and culminating with mature modes of causal reasoning at about the age of 15 years. This particular aspect of development is characterized chiefly by the child's growing ability to see himself as separate from his surroundings, to recognize that there are other viewpoints than his own, that what appears to him to be true is not necessarily reality for everyone else.

The question for this study arises then: how is the movement from realism to subjectivism related to

the child's ability to comprehend?

Need for the Study

The development from immature to mature modes of thinking has ramifications on all aspects of cognitive and affective functioning. "So long as the child supposes that everyone necessarily thinks like himself, he will not spontaneously seek to convince others, nor to accept common truths, nor, above all, to prove or test his opinions" (Piaget, 1938/1975, p. 33).

Bessell is cited by Hurta (1972) as considering "egocentricity, centration, dynamic thought, causality, and irreversibility" (p. 47) critical in the learning of language arts. Cannon (1972) also emphasizes the widespread effect this one line of development can have: "the child's egocentrism often results in his believing he knows something he doesn't or his refusal to be concerned with the unknown" (p. 57).

A brief perusal of material currently presented in reading tests, basal texts, and trade books for the primary grades will demonstrate the still rather widespread ignorance of or disregard for the effects of realism in young children. For example, an eight-

year-old who still predicts that a marble of clay will float if made smaller may be responding more to developmental cues than reading cues when he gives "sawed" as an answer rather than "dried" to the following selection from the Gates-McGinitie Reading Test (Primary C, Form 1, Comprehension Item 21):

The cheapest way to get logs to a mill is by water. Teak, a very valuable wood, is too heavy to float when green. Because of this, a deep cut is made around the trunk and the tree is left standing until it is dry enough to float.

A. Teak will float if it has been
dried logged transported sawed

Likewise, it is not difficult to imagine that a child who has not yet reached the developmental stage where he can project himself into another person's viewpoint would interpret the fox's reason for abandoning the grapes beyond his reach in Aesop's fable, "The Fox and the Grapes," literally as being too sour. Educators need to know exactly what role realism plays in the child's comprehension of verbal material, written or oral. The study described in this paper addresses itself to just that question, specifically in the area of listening comprehension.

Design of the Study

Listening comprehension was chosen over silent or oral reading comprehension so that those children who had received little or no instruction in reading could be included, and to eliminate, for the purposes of this study, poor attack skills as a factor which could affect comprehension. In applying the results yielded by this study to the broader issue of how realism is related to comprehension in general, a valid question might be raised: does comprehension while listening involve the same mental operations, with the exception of visual decoding processes, as comprehension while reading?

It is a question that has yet to be answered definitively, but it appears that there is sufficient argument to assume that even if they are not one and the same process, they exercise significant influence over each other. The complementary and sometimes reciprocal relationship of reading and listening comprehension is explored by Donald Durrell in his article, "Listening Comprehension Versus Reading Comprehension" (1969). In addition, Haskell Cannon (1973) states that

spoken language has primacy over its written counterpart. It is acquired first, and from a genetic point of view, speaking and hearing language determine the mental structures, as well as the physical habits, from which print reading develops. Also, it is the form most often used in social communication and the thinking process. Therefore, it seems logical that print must first be translated into a form of spoken language before comprehension takes place. (p. 59)

To determine the amount of realism used by the child in his causal reasoning, a questionnaire about dreams, developed by Laurendeau and Pinard (1962), was chosen. Piaget had found that answers given by children who were asked about the origins of thought, names, and dreams were most indicative of where they were along the developmental scale between realism and subjectivism. "Children's ideas on thought and on words seem to be characterized by three varieties of realism--or, if it be preferred, three 'adualisms.' All three are also present in the case of dreams and gradually disappear in the same order as with names." (Piaget, 1938/1975, p. 119). The "adualisms" mentioned here are identifying characteristics of the child in a stage of realism, and include 1) confusion

of the sign with the thing signified, 2) the internal with the external, and 3) the immaterial with the material. The Laurendeau-Pinard instrument, while only covering dreams, has the advantage of being standardized with some normative data from a previous study.

Both a listening comprehension test and the dream questionnaire, although they left open some questions as to applicability of results beyond the confines of the study, were judged to be best suited for the purposes of this research.

Definition of Terms

The following list of terms is based on Piaget's early work with causality. Some of them have more common synonyms, which can be found in parentheses next to the term. For the sake of conforming to the terminology used in the dream questionnaire, this writer will use the underlined terms.

Realism (egocentrism)--the early stage of development in which the child has difficulty differentiating his own viewpoint from the rest of the world; the most immature stage of causal thinking.

Subjectivism (objectivity)--that level of thinking which uses "physical and objective connections" (Laurendeau and Pinard, 1962, p. 10); the most mature stage of causal thinking.

The next five terms are possible reactions a child might have when interviewed:

Answer at random--child responds with "whatever first comes into its head, without so much as trying to find fun in it or to invent an answer" (Piaget, 1938/1975, p. 10).

Romancing--"child, without further reflection, replies to the questions by inventing an answer in which he does not really believe" (p. 10).

Suggested conviction--child "makes an effort to reply to the question but either the question is suggestive or the child is simply trying to satisfy the examiner without attempting to think for himself" (p. 10).

Liberated conviction--child "replies after reflection, drawing the answer from the stores of his own mind, without suggestion, although the question is new to him" (p. 11).

Spontaneous conviction--child has "no need of

reasoning to answer the question, but can give an answer forthwith because already formulated or capable of being formulated" (p. 11).

Limitations

This study was limited to approximately thirty children of elementary school age enrolled in the after school program of a day care center. The type of comprehension investigated was limited to listening comprehension. The indicator used to determine a child's level of development along the realism-subjectivism continuum addressed the child's causal explanations of dreams only, although explanations of thought and names are also considered indicative of the degree of realism a child employs.

The study was conducted in a five-week period, and, therefore, investigated a cross-section of where the subjects were on the scale between realism and subjectivism at one point in time, rather than following their progress from one stage to the next. Some of the instruments used required subjective judgment in scoring.

Summary

The purpose of this study is to investigate a possible relationship between comprehension and the presence of realism in the child's causal thinking. Relatively small sample size, wide age distribution, and short time period are limiting factors. In addition, only one type of comprehension was examined.

The study could serve as a pilot for a more comprehensive investigation on a larger scale. Should further research support the existence of a relationship between comprehension and realism, a review and revision of reading curricula, tests, and materials will be in order.

Chapter II

Review of the Literature

Purpose

In investigating the problem of how and to what extent the child's realism is related to his listening comprehension, the literature will be reviewed in the following sections:

General Developmental Theory with a Focus on Realism, as outlined by Piaget and standardized by Laurendéau and Pinard;

Current Theoretical Discussions, by other authors linking Piagetian theory to the process of reading; and

Recent Studies Linking Piagetian Tasks to Academic Achievement, and more specifically, to functions of the reading process.

General Developmental Theory with a Focus on Realism

Throughout all of Piaget's writings, one of the major principles advanced is that children's cognitive abilities develop through the interaction of genetics and environment. The phrase "intellectual maturity" covers many parallel but not necessarily synchronized levels of cognitive and affective functioning. Fur-

thermore, although this development can occur at different rates in different individuals, a fixed sequence in which earlier abilities have to be mastered before later ones can fully emerge is common to all humankind.

Piaget has broadly classified the years of childhood into four continuous stages: sensorimotor (0 to 2 years), preoperational (2 to 7 years), concrete operational (7 to 11 years), and formal operational (11 to 15 years). During the first two years of life, the child acquires knowledge of the world through very elementary but necessary means. Through the action of his body on other bodies, he arrives at an awareness of himself as a somewhat separate entity, believes in the permanence of objects even when out of sight, and begins to look for causes as the perpetrators of events.

With the advent of speech, at approximately two years of age, the child begins to understand and use symbols, and thus moves on to the preoperational period. It is now possible for the child to represent actions to himself in the form of thought, rather than through actual manipulation. His experience of the physical world, however, is still limited and his

perceptions are often deceiving.

The ability to successfully predict physical events involving number, mass, and weight is a hallmark of the child who has moved on to the stage of concrete operations. On the average, the years from 7 to 11 are years in which the child through more accurate perceptions and constant manipulation of objects, gains increasing insight into the principles behind physical phenomena. This period is finally followed, beginning at the average age of 11 years, with that of formal operations, in which the ability to make deductions logically without the aid of physical manipulation, is practiced and mastered.

One danger of such a synopsis of Piaget's stages is that the reader is left with the impression that once a new stage is entered upon, the preceding one is entirely mastered. It is preferable to look upon these stages as successive but somewhat overlapping parts of a continuum, and to remember that a child of two who has started talking may still need to be reassured that an object not in view exists, or that a child who can successfully identify the number of pennies in a rearranged group may still have difficulty explaining verbally why he picked the right

number.

Within the framework outlined above, the child's notions of causality can be traced beginning with the advent of speech. In his books, The Child's Conception of the World (1938/1975) and The Child's Conception of Physical Causality (1927/1930), Piaget identifies five distinct "adherences" or modes of thought used by children in their explanations of physical phenomena: magico-phenomenism, dynamism, animism, artificialism, and finalism. The movement from realism to subjectivism parallels a decrease in the use of these adherences. In other words, as children mature, they use progressively less and less such explanations as "clouds move in order to carry rain to other regions" (an example of finalism found in Laurendeau and Pinard, 1962, p. 12). At the same time, the ability to look outside their own viewpoint, to reject mere appearances as the ultimate reality, grows. Piaget aptly summarizes this development:

Not only do these adherences lose ground little by little in correlation with each other but their progressive disappearance seems to be proportional to the increasing clarity with which the child becomes conscious of his subjectivity. In other words, the better the child succeeds

in dividing off the internal world from the external, the less stubborn are the adherences (1927/1930, p. 246).

Realizing that much of the criticism aimed at Piagetian theory on childhood realism was actually criticism of the subjective nature of the "methode clinique," Laurendeau and Pinard (1962) developed a set of questionnaires specifically to investigate, in a normative and statistically sound manner, the various modes of precausal thinking, or "realistic adherences." These questionnaires were then administered individually to 500 French-speaking children in Montreal, Canada, equally distributed across the age levels between four and twelve years. A statistical analysis was performed and age norms for the successive developmental stages of each adherence were obtained.

The questionnaire developed to measure the extent of a child's realistic thinking deals with the explanation for the origin and substance of dreams, a topic familiar to children of all cultural groups and age levels. A translation of the questionnaire can be found in Appendix A. Laurendeau and Pinard found, based on the Montreal sample, that although their

explanations still contain moralistic or finalistic factors until the average age of 9 years and 7 months, 50% of the children ceased to employ realistic modes of thinking in their explanations of dreams on the average at the age of 6 1/2 years, which is coincidentally a typical age for beginning reading instruction in the United States.

In summary, the developmental loss of "adherences," or immature forms of causal thinking, first observed by Piaget were re-examined and affirmed by Laurendeau and Pinard almost fifty years later. Any relationship between comprehension and realism is made even more critical by the finding that 6 1/2 years is the average age at which children move from realistic to subjective modes of thinking, at least with respect to their explanations of dreams.

Current Theoretical Discussions

For years the term "developmental reading" has been applied to the normal progress that children make in reading as they proceed through the school years and into adulthood. Unfortunately, most definitive models of developmental reading are not developmental at all, but based upon research evidence gathered on groups

of older subjects who are already competent readers, or upon the abnormal behavior of those individuals who are seriously retarded in reading. (Kretschmer, 1972, p. 70)

Since this statement was first written, reports of research and theoretical discussions linking Piagetian theory to the reading process have become more numerous, although still very much in the minority, particularly when compared to the work done in the fields of science and mathematics. Not all of the discussions center around brand-new findings, but rather some fairly well established "truths" looked at in a new light. Kretschmer re-examines Thorndike's research of 1917 where children in grades 5 through 8 were asked to answer in their own words comprehension questions on short paragraphs they had read.

Kretschmer reports:

What he [Thorndike] received was a plethora of answers for each question, ranging from accurate to ridiculous, the great majority of them incorrect. This stunned the educationists of the day, since the questions seemed so easy to the average literate adult. Thus Thorndike was able to argue that reading was indeed reasoning, and much more complex than had been thought previously. (pp. 12-13)

Kretschmer then asks, "Could the poor performance of Thorndike's and Otto's subjects in paragraph reading be the result of incomplete mental development, rather than faulty reading behavior?" and offers the following answer:

Perhaps the need is to redefine reading comprehension in light of what is known about children's thinking, and design evaluation instruments to conform to their modes of thought, rather than to those of adults, as is presently done. Simply shortening sentences and using "easy" words may not facilitate a task that is beyond the mental development of the reader. (p. 16)

In his doctoral dissertation, Cannon (1972) compares and contrasts Piagetian theory with other theories of child learning arising from the work of Freud, the Gestaltists, the neo-behaviorists, and the linguists, and then proposes that the development of the ability to read arises from the development of the ability to understand speech.

The importance of considering print reading a thinking process lies in understanding that it develops genetically from structures that exist at the time formal teaching is initiated and that it is not a simple association of printed words to known meanings. (p. 56)

Thus he criticizes reading approaches which impose a particular method on the beginning reader:

Formal logic upon which many teaching strategies are based may not be in accord with the learning strategies of a particular child. . . . If children are introduced to decoding as an incidental part of reading, the focus will be on understanding and using language. (p. 58)

Cannon advocates instead a holistic approach to reading:

Piaget's works set forth a theory of intellectual development compatible with a holistic approach to print reading. He considers all mental functioning to occur within a biological matrix which includes physical behavior, thus eliminating the false dichotomy that mental activity may occur separate from the physical. He proposes that new forms of behavior evolve from prior forms by a process of genetic development. (pp. 1-2)

MacComber (1972), in a paper presented at the Twentieth Annual Meeting of the Reading Institute, considers

the term reading comprehension unfortunate in that it tends to imply that the process of deriving meaning from the written word is an entity unto itself, independent of other processes.

. . . Reading comprehension is the culmination of the development of several earlier processes, distinct but parallel in nature. . . . Reading comprehension is not an "all or none" phenomenon but follows a continuum from the time of appearance through to the degree of skill ultimately attained by a given individual. (pp. 1-2)

She finds in Piagetian theory just such a continuum outlook and, in its application to the reading process, a new hope for educators.

[Piaget] not only deals developmentally with the variables under consideration but he also speaks to the interrelationship of variables. . . . It is the interaction of the variables which results in reading comprehension and that interaction cannot occur independently of the development. . . . The variables involve both innate and environmental factors. . . . Piaget (1970) states that the innate factors involved in the processes under consideration are not specific but rather general, including the inheritance of a healthy nervous system and body. For educators, that position is more optimistic than the specific genetic programming view for, given such genetic endowment, the child is equipped to develop all of the processes which we have identified as contributing to reading comprehension. (pp. 5-6)

Again, the child's place along the continuum is considered of major importance to the ability to comprehend.

The advent of sociocentric thought permits a marked change in the understanding of affect. Until the concrete operational period, the child is aware only of his own emotions. . . . Thus, with the elimination of egocentric thought, the child becomes able to understand emotions in others and to develop empathy for their feelings. . . . The child is no longer limited by inconstancy in perception nor is he bound to his own perceptions. . . . Due to his increased knowledge, the child can go a step farther, i.e. he can consider dimensions which he knows from previous experience to be present which cannot be perceived in a given context.
(pp. 21-22)

The articles reviewed in this section propose that comprehension is a complex process related to reasoning and, like reasoning, is developmental in nature.

Studies Linking Piagetian Tasks to Academic Achievement

In the last ten years, authors of various studies have reported finding relationships between success at various Piagetian tasks and certain areas of academic achievement. Omitting those dealing with math and science as beyond the interest of this paper, the following studies are illustrative of the kinds of

connections being found between Piagetian theory and areas of academic achievement, particularly reading.

Muir, Lester, Harris and Dudak (1968, cited in Hurta, 1972) investigated the use of Piagetian tasks as indicators of subsequent academic achievement. . . . In this study, Piagetian tasks, when compared with the Wechsler Intelligence Scale for Children, were found to be slightly better predictors of achievement with kindergarten children but approximately equal in predictive ability with children enrolled in the second grade. (pp. 49-50)

Simpson reports, in a study of 27 second graders and 29 fourth graders, that success of Piagetian tasks of multiple classification and class inclusion was positively related to decoding skills. He feels this might possibly be explained in that the child having problems grouping pictures according to varying criteria or dealing with part-whole relationships within a set of categories might have difficulty classifying the letter-sound generalizations necessary for efficient reading. A corollary of the findings of this study was that poor readers tended to be pre-operational.

Hurta (1972), in a study of two groups of children aged 7.0 to 8.5 years, one group classified as

disabled readers and the other as non-disabled, found a significant difference between the performance of disabled and non-disabled readers in overall stage of development as measured by the Concept Assessment Kit --Conservation. This kit is a package of tests based on research tasks used by Piaget and produced commercially. Differences between the two groups on most individual tasks tested, however, were not significant. When the reading classification of the two groups was disregarded, significant relationships between a child's level of functioning on specific conservation tasks and specific reading subtests of Durrell's Analysis of Reading Difficulty were found.

Kretschmer (1972) investigated the ability of 60 third and 60 sixth graders to comprehend eight concrete operational problems--four classificatory and four serial--presented verbally in a specially-designed experimental test. He found a low correlation between results from the experimental test and both standardized intelligence and reading tests, forming the

tentative conclusion that the experimental test is measuring an aspect of reading that is not measured on stan-

standardized reading tests, and is not reflected in performance on standardized group IQ tests. This could possibly be the ability that the experimental test was constructed to measure: thinking applied to reading. (pp. 53-54)

An incidental finding of this study was that both reading vocabulary and reading comprehension tests had almost identical low correlations with the experimental test, suggesting "that standardized reading comprehension subtests lack validity, that they measure hardly more than reading vocabulary tests, and that they do not measure ability to reason in reading [underlining his]" (pp. 53-56). The major finding of this study was that third graders comprehended significantly fewer items than did the sixth graders, suggesting that at least this type of comprehension, involving verbal presentation of concrete operational problems, is developmental.

Kretschmer's experimental test was admittedly "heavily-weighted toward cognitive rather than affective phenomena" (p. 61), but another study by Whiteman (1967) suggests a developmental progression in the affective domain as well.

In phase I of Whiteman's research, 21 inner city kindergarteners were matched 1:1 for sex and IQ with

21 inner city third graders. The subjects were read seven paragraphs, each one embodying one of the following psychological adjustment mechanisms: displacement, wishful thinking, projection, regression, repression, rationalization, and denial. The sex of the characters in the story was changed to correspond to that of the individual subject. Subjects were instructed to tell why "Jane [or Johnnie] does something different from what she [he] usually does" (p. 145). Responses were elicited through recapitulation, posing alternatives, and occasional suggestions of possible causes, and were scored on a Motivation Index, a high score being assigned to a response showing full understanding of the character's motivation, and vice versa.

Although most of the stories were difficult for all of the children, 71% of the older children showed some understanding of the psychological motivation in at least three of the paragraphs, compared to 10% of the younger children exhibiting such understanding. In addition, 90% of the younger children scored below the older children's median score on the Motivation Index. The paragraph illustrating repression was well understood by children in both age groups.

In phase II, the repression paragraph was omitted and the remaining six were read to a new group of 36 kindergarteners and 34 third graders, 40 of whom were cross-matched for IQ and sex. Wording and sequence of questions eliciting responses were standardized, and the questionnaire on animism developed by Laurendeau and Pinard was also administered. Whiteman reports that "the older children consistently scored higher than the younger group, with five of the six items significant at least on the .01 level" (p. 151). On the Motivation Index, 94% of the kindergarteners scored below the median score of the third graders. In addition, while IQ was not a significant factor in the results, the younger children were found to be significantly more animistic than the older ones when questioned with the Laurendeau-Pinard scale. All of this, Whiteman concludes, "suggests that conceptions of psychological causality and physical causality both develop with age" (p. 154).

Results of the studies discussed in this section support a developmental approach to all aspects of the reading process. Comprehension, in particular, both cognitive and affective, appears to be developmental in nature.

Summary

The literature reviewed in this chapter, theoretical discussions and research reports alike, presents a strong case for the developmental nature of the child's ability to reason and the effect this development may have on the cognitive abilities of the child. Reading, in particular, is seen less as a mechanical operation and more as a function of the ability to reason. Durrell's article, cited earlier, supports the link between reading and listening comprehension. It remains to be seen if a direct correlation can be found between the child's ability to comprehend and the degree of realism he employs in his causal thinking.

Chapter III

The Research Design

Purpose

The level of intellectual maturity a child has reached may have some influence on his ability to comprehend oral and/or written passages, since much of listening and reading comprehension requires placing oneself in the position of the persona in the selection (i.e., stepping outside one's own world-view). This study was designed to investigate whether or not children who are as yet unable to differentiate their own point of view from objective reality would experience more difficulty in comprehending.

The Hypotheses

The following hypotheses were constructed and tested:

- 1) There will be no significant correlation between listening comprehension scores, as indicated by the Stanford Listening Comprehension Test, and realism scores, as indicated by the Laurendeau-Pinard dream questionnaire;

2) There will be no significant correlation between intelligence scores, as indicated by the Good-enough-Harris Drawing Test, and realism scores, as indicated by the Laurendeau-Pinard dream questionnaire.

Methodology

Subjects

The subjects involved in this study were 32 children from 6 to 11 years of age enrolled in the after-school program of a day care center. Children attending this program had parents who were working or attending school, and therefore needed after-school care. The only remedial work offered during the time of the study or at any time during the program year was speech therapy for two of the boys. Another three boys were also receiving psychological counselling during the experimental period.

Due to natural attrition in the program, two children dropped out before all data could be gathered on them. In addition, due to one inaudible interview and one non-classifiable interview, two more children had to be eliminated from the actual sample, leaving a final total of 28 subjects. All but seven of the chil-

dren came from families whose incomes were low enough to be eligible for public assistance in paying for after-school care, and all but four of the children came from single-parent or separated families. Four of the children were black, one biracial, and the rest white. Distribution of the sample according to sex and years of schooling is shown in Table 1.

Table 1
Distribution of Sample with Respect to
Sex and Years of Schooling

Sex	Years of Schooling						Totals
	0	1	2	3	4	5	
Boys	0	6	4	4	2	0	16
Girls	1 ^a	6	2	1	1	1	12
Totals	1	12	6	5	3	1	28

^aThis girl attended a nonstructured kindergarten program.

"Years of schooling" was chosen as a criterion in preference to grade level since some of the children had been either advanced or retained a year, and

it was felt that comprehension scores would more truly reflect precociousness or delay if compared to years in school rather than assigned grade level. It should be noted that at the time of testing all children were either in the seventh month of their respective school years, or in the first few days of the eighth month.

Approximately 68% of the children had received no more than two years of formal schooling, weighting the sample heavily toward the early primary years. Because of this weighting, and also because Laurendeau and Pinard found 6 1/2 years to be the average age for shedding realism, it was decided early in the designing of the experiment to treat only the scores of those children with up to two years of schooling statistically, and to treat the scores of those children with more years of schooling descriptively.

Instruments

In order to ascertain to what extent each child was still using realistic modes of reasoning, the questionnaire concerning dreams, developed and partially standardized by Laurendeau and Pinard (1962), was administered individually and privately to each subject. Each interview was tape recorded in its en-

tirety. It should be noted that oral reading of the questionnaire was practiced by the examiner beforehand to provide for as consistent an administration as possible. Comparison of each subject's responses to a scale developed by the authors of the interview yielded a result expressed as a stage. The scale of stages ranged from incomprehension or refusal (stage 0), through integral realism (stage 1), various sub-stages of mitigated realism (stages 2A-C), up to integral subjectivism (stages 3A and B). A more elaborate summary of the criteria used for each stage can be found in Appendix B.

To measure the level of comprehension each subject could achieve, the Listening Comprehension Test of the Stanford Achievement Test (1972) was administered to groups of children by grade level. However, since years of schooling was the important criterion to be looked at, a child who had been retained one year and was currently in the third grade would be given the test designed for fourth graders.

One valid criticism of this choice of instrument might be that it would favor those children with a strong auditory modality preference over those with strong visual or kinesthetic preferences. Although

this possibility could not be eliminated without also running the risk of biasing the results against those children who could comprehend well but had poor decoding skills, each subject's modality preference was at least made evident by the administration of a third instrument, an informal test of modality. In this way, if subjects with above average comprehension scores and few evidences of realism also consistently evidenced strong auditory modality preference, the question was raised as to whether or not it was just the modality preference which was influencing comprehension and not the maturity of reasoning. The modality test was administered individually and privately to each subject. Results are expressed in discreet rather than continuous terms, and so are to be discussed descriptively rather than statistically. A description of the test can be found in Appendix C.

The Stanford Listening Comprehension Test has the advantages of being standardized over a geographically and economically mixed population of considerable size, of providing equivalent scores over a large grade range, of including literal and interpretive comprehension questions, of requiring non-reading responses, and of affording a large number of passages

on which to base a score. The listening comprehension scores are expressed as grade equivalents. Scores are classified as average, above average, and below average depending on whether they are within five months above or below actual months of schooling, more than five months above actual months of schooling, or more than five months below actual months of schooling, respectively.

In order to ensure that the mental function being measured by the dream questionnaire was not the same as a general level of intelligence that could just as easily be measured by a conventional instrument of intelligence testing, an instrument that would yield either an intelligence quotient or some other general mental ability score was sought. The place of any such instrument, which assigns one score supposedly reflective of a general level of mental ability, within the overall framework of developmental theory can well be criticized. This question will be discussed at greater length in the last section of this paper.

Since most of the children were from a low-income class and some were of minority backgrounds, an instrument that would be as free from culture-bias as possible was sought. In addition, the instrument could

not involve reading responses, nor could it appear too academic to the children. The nonverbal Good-enough-Harris Drawing Test was chosen. This test measures more expressive than receptive skills (and in that respect resembles the dream interview more closely than other intelligence tests), and also has the advantages of applicability to all ages represented in the sample. Ease in administration to small groups is another of its advantages. Scores from this instrument are expressed as standard scores and correlate highly to scores yielded by more conventional intelligence tests.

Procedures

The four instruments were administered to the subjects over the course of approximately five weeks. Because the after-school program was not a setting in which the performance of academic tasks was usually demanded, cooperation of the subjects was secured by telling them they were helping this writer with her homework (a novel role reversal for the children), and by giving such rewards as stickers and treats upon completion of each test.

Administration of the tests was in most cases

(except where absenteeism prevented it) in the following order: 1) modality test, 2) Goodenough-Harris Drawing Test, 3) Stanford Listening Comprehension Test, and 4) Laurendeau-Pinard dream questionnaire. The modality test and dream questionnaire were administered individually, with the latter being tape recorded at the time of administration. The drawing test and listening comprehension test were administered in small groups.

Because subjective judgment was required in scoring the drawing test and dream questionnaire, three scorers were used to rate each drawing and dream protocol. One, the author of this paper, has a Bachelor of Science degree in elementary education, graduate level training in reading and psychology, and several years of experience working in children's educational and recreational programs. The second scorer has two years of college education, including general psychology courses, a background in art, and experience in working in children's educational and recreational programs. Both these scorers rated the drawing test and the dream questionnaire.

The third scorer differed for each test. The person acting as third scorer for the drawing test has

a Bachelor of Arts degree in philosophy, is a candidate for a Master of Education degree, has graduate training in child psychology, and many years of experience working with children. The third scorer for the dream questionnaire has two years of college education and experience in working with children.

Both the Draw-A-Man and Draw-A-Woman Tests were administered to subjects in groups of eight or nine. Points were tallied for each drawing in accordance with criteria described in the test manual. Then point totals credited by each scorer were translated into standard scores, resulting in three standard scores per drawing. Each subject's standard scores for the drawing of a man were averaged, each subject's scores for the drawing of a woman were averaged, and then those means were averaged with each other, resulting in one composite standard score for each subject. The composite score was then classified average, above average, or below average depending on whether the score fell within one standard deviation (15 points) above or below 100, more than one standard deviation above 100, or more than one standard deviation below 100, respectively.

In the case of the dream questionnaire, each

interview was assigned to a stage by the following process: each scorer listened to the taped interview; noted whether responses were subjective or realistic, internal or external, substantial or immaterial; and then determined which stage best described the interview, based on his notes. In cases where all three scorers agreed, the final stage assignment was obvious. In cases where only two scorers agreed, the final stage assignment concurred with their opinions. And where all three disagreed, but by consecutive stages, the mean stage was the one finally assigned. In only one case did the scorers disagree non-consecutively; the interview was deemed non-classifiable and all the scores of this subject were dropped from the analysis of data. Each stage (except stage 0) was then assigned value points from 1 point for stage 1 to 6 points for stage 3B. Interviews carrying 1 to 3 points were considered indicative of a significant amount of immature, realistic thinking, and those carrying 4 to 6 points were considered indicative of more mature, subjective thinking.

Statistical Design

To determine if significant correlations existed

between scores on the dream questionnaire and scores on the listening comprehension test, or the drawing test, a Pearson product-moment correlation coefficient was computed for both hypotheses, and examined at the .05 level of significance. Analysis of variance, originally included in the statistical design, was precluded by the reduced actual sample size, particularly of those children with 0 to 2 years of schooling.

Inter-Scorer Agreement

Inter-scorer agreement in rating the dream questionnaire is illustrated in Table 2.

Table 2

Inter-Scorer Agreement on Laurendeau-Pinard Dream Questionnaires

Type of Agreement	Subjects' Questionnaires		
	Boys	Girls	Total
All three scorers concurred	5	1	6
Two scorers concurred; third scorer differed by one stage	9	7	16

Table 2: (Continued)

Type of Agreement	Subjects' Questionnaires		
	Boys	Girls	Total
Two scorers concurred; third scorer differed by more than one stage	1	2	3
Three scorers differed in three successive stages; score is mean of three stages	1	2	3
Totals	16	12	28

In the majority of cases, either all three scorers agreed or one disagreed by one stage only. As stated previously, only one interview was scored differently by each scorer in non-successive stages. This subject was eliminated from the actual sample.

Summary

Twenty-eight elementary school age children were

administered the Stanford Listening Comprehension Test and the dream questionnaire developed by Laurendeau and Pinard in order to investigate a possible correlation between a child's ability to comprehend and the degree of realism employed in his causal reasoning. An informal modality test and the Goodenough-Harris Drawing Test were also administered to control for modality and "intelligence." Three scorers rated those tests requiring subjective judgment in scoring. The Pearson product-moment correlation coefficient, at the .05 level of significance, was to be computed for protocols of those children with 0 to 2 years of schooling. Responses of older subjects were to be analyzed descriptively.

Chapter IV

Analysis of Data

Purpose

This chapter will report the results obtained in investigating the hypothetical relationship between comprehension and realism in elementary school-aged children. First, results of the administrations of the dream questionnaire, the Stanford Listening Comprehension Test, the Goodenough-Harris Drawing Test, and the informal modality test will be reported. Then, an interpretation of results, examining the relationships among the various scores, will be presented.

Findings

Results of the Dream Questionnaire

The distribution of realism scores over the total sample is shown in Table 3.

Table 3
Numerical Distribution of Realism Scores
over Total Sample

Realism Scores ^a	Years of Schooling						Totals
	0	1	2	3	4	5	
0	-	-	-	1 ^b	1 ^b	-	2
1	-	-	-	-	-	-	0
2	-	1	-	-	-	-	1
3	-	5 ^c	1	1	-	-	7
4	-	1	2	-	-	1	4
5	1	2	2	1 ^d	2	-	8
6	-	3	1	2	-	-	6
Totals	1	12	6	5	3	1	28

^aA score of 1 to 3 points was considered evidence of realistic (immature) thinking; a score of 4 to 6 points was considered evidence of subjective (mature) thinking.

^bA score of 0 meant that the interview did not reveal enough information for classification purposes.

^cOne of these interviews lacks four responses but was scored based on remaining responses.

^dThis interview lacks three responses but was scored based on remaining responses.

Of the total sample, 8 subjects or 29% evidenced a considerable amount of realism in their causal thinking, 18 subjects or 64% evidenced a considerable amount of subjectivism, and 2 subjects or 7% did not reveal enough information to allow classification.

Results of the Stanford Listening Comprehension Test

Listening comprehension data was even less evenly distributed as can be seen in Table 4, illustrating the distribution of listening comprehension data over the total sample.

Table 4

Numerical Distribution of Stanford Learning Comprehension Test Data over Total Sample

Test Results	Years of Schooling						Totals
	0	1	2	3	4	5	
Above Average ^a	1 ^d	8	3	2	-	-	14
Average ^b	-	1	3	1	3	1	9
Below Average ^c	-	3	-	2	-	-	5
Totals	1	12	6	5	3	1	28

^aMore than 5 months above present month of schooling.

^bWithin 5 months below or above present month of schooling.

^cMore than 5 months below present month of schooling.

^dExtrapolated score.

Of all the subjects, 14 or 50% had listening comprehension scores more than five months above actual months of schooling. Nine subjects, or 32% of the sample, scored within five months above or below actual months of schooling. Five subjects or 18% had listening comprehension scores more than five months below actual months of schooling.

Results of the Goodenough-Harris Drawing Test

Table 5 illustrates the distribution of data obtained from the Goodenough-Harris Drawing Test over the total sample.

Table 5
 Numerical Distribution of Goodenough-Harris
Drawing Test Data over Total Sample

Test Results	Years of Schooling						Totals
	0	1	2	3	4	5	
Above Average ^a	1	3	2	1	1	1	9
Average ^b	-	8	4	4	2	-	18
Below Average ^c	-	1 ^d	-	-	-	-	1
Totals	1	12	6	5	3	1	28

^aMean standard score greater than 115

^bMean standard score between 85 and 115

^cMean standard score less than 85

^dScore is suspect, due to poor motor skills and vision caused by cerebral palsy. Subject scored above average on Peabody Picture Vocabulary Test.

Since only one subject or 4% evidenced a below average score, it appears that, again, there is a heavy skewing of the data to the right of the normal curve. Nine subjects or 32% scored above average and 18 subjects or 64% scored average on the drawing test.

Results of the Informal Modality Test

The distribution of the modality test results is shown in Table 6.

Table 6
Numerical Distribution of Modality Data
over Total Sample

Modality Test Results	Subjects		
	Boys	Girls	Totals
No indication of auditory weakness	12	8	20
Auditory mode weak, but best mode or equal to other modes	2	-	2
Auditory mode weak; at least one other mode stronger	2	4	6
Totals	16	12	28

For purposes of this study, only those six subjects in the last category, showing a weakness in the auditory mode with at least one other mode stronger, were considered to have an auditory modality weakness.

Comparison of Scores

Listening Comprehension and Realism Scores

This section will address the first null hypothesis of this study: there will be no significant correlation between listening comprehension scores, as indicated by the Stanford Listening Comprehension Test, and realism scores, as indicated by the Laurendeau-Pinard dream questionnaire.

When listening comprehension and realism scores of only those children with 0 to 2 years of schooling were used to compute a Pearson product-moment correlation coefficient, a coefficient of .06 was obtained, not significant at any level. Therefore, the first null hypothesis was accepted within the limits of this study.

Of the 9 children with 3 to 5 years of schooling, 2 produced interviews classified as stage 0. One of these had an average listening comprehension score and the other had a below average listening comprehension score. Of the remaining 7, 6 had realism scores reflecting subjective thinking and listening comprehension scores that were either average or above average. One child in this age group had a realism score

of 3, indicative of realistic thinking, and a below average listening comprehension score. However, as will be discussed later, this subject also showed weakness in the auditory modality.

Goodenough-Harris Drawing Test and Realism Scores

This section will address the second null hypothesis of this study: there will be no significant correlation between intelligence scores, as indicated by the Goodenough-Harris Drawing Test, and realism scores, as indicated by the Laurendeau-Pinard dream questionnaire.

When drawing test and realism scores of only those children with 0 to 2 years of schooling were used to compute a Pearson product-moment correlation coefficient, a coefficient of .14, not significant at any level, was obtained. Therefore, the second null hypothesis was accepted within the limits of this study.

Of those children with 3 to 5 years of schooling, none had below average drawing test scores. The one child in this age group whose realism score reflected immature causal thinking obtained an average drawing test score. Of the remaining 6, all of whom had

realism scores of 4 and above, 3 had average drawing test scores and 3 had above average scores.

Modality, Listening Comprehension, and Realism Scores

Table 7 summarizes the modality data in relation to comprehension and realism scores for the total sample.

Table 7

Numerical Summary of Modality Data

in relation to

Comprehension and Realism Scores over Total Sample

Comprehension and Realism Data	Modality Test Results		
	Auditory Weakness	No Auditory Weakness	Totals
<u>Above Average Comprehension</u>			
Stage 0	-	-	0
Realism	1	3	4
Subjectivism	2	8	10
<u>Average Comprehension</u>			
Stage 0	-	1	1
Realism	-	-	0
Subjectivism	1	7	8

Table 7 (Continued)

Comprehension and Realism Data	Modality Test Results		
	Auditory Weakness	No Auditory Weakness	Totals
<hr/> Below Average Comprehension			
Stage 0	-	1	1
Realism	2	2	4
Subjectivism	-	-	0
<hr/> Totals	<hr/> 6	<hr/> 22	<hr/> 28

The results are again inconclusive. Of the 4 below average comprehension scores combined with immature realism scores, 2 could possibly be attributed to an auditory modality weakness. Of the 4 subjects with above average listening comprehension scores but immature realism scores, only one showed an auditory modality weakness. The remaining 3 subjects with an auditory modality weakness obtained mature scores on the realism questionnaire and either average or above average listening comprehension scores.

None of the 5 children with below average comprehension reached a significant level of subjective thinking, or stated positively, all children with

below average comprehension scores (with the exception of one who scored at stage 0) also evidenced considerable amounts of realism in their causal thinking. Also, there were no children with average comprehension scores that still evidenced realism in their thinking (one scored at stage 0). However, 4 children with above average comprehension scores seemed to still be bound by realistic modes of thinking.

Skewing of the Sample

In discussing the results of the testing, a major limitation to be considered is the paucity of the sample size. When only those children with 0 to 2 years of schooling were considered, the sample size was reduced to 19 subjects. When out of those 19 subjects, 18 scored average or above average on the drawing test, 16 scored average or above average on the listening comprehension test, and 12 showed signs of having shed realistic modes of thinking, it can be seen that even this younger group of subjects is skewed to the right of the normal curve.

In addition, it should be remembered that within the group of younger subjects, children with one year

of formal instruction, as well as one kindergartener, were grouped statistically with children with two years of formal instruction. A score of 2.2 on the listening comprehension test could be considered low for a child with 2.7 years of schooling but high for a child with 1.7 years of schooling, but this distinction is lost when computing the coefficient. In addition, the negative relationship between realism and chronological age found by Laurendeau and Pinard could also bias the coefficient.

The skewing of the test results is particularly interesting in light of the usual generalizations made about the academic performance of low-income children, particularly when most of them also come from separated homes. One explanation could be that they are not "street kids;" their very attendance in an after school program may signify a nurturing family that does not believe a child of seven is old enough to fend for himself until the adult arrives home from work. The after school program itself, although mostly recreational in nature, may have an enriching effect on the cognitive development of the child enrolled, and more than 1/3 of the children had day care experience prior to enrollment in grade school,

which may have had a "headstart" effect on them.

Summary

When test results of 19 of the 28 subjects, having 0 to 2 years of schooling, were analyzed through the use of the Pearson product-moment correlation coefficient, no significant correlations were found between realism scores and either intelligence or comprehension scores. Of the 28 subjects, 5 had below average comprehension scores. Of these, 2 also had a combination of immature realism scores and auditory modality weakness. When analyzed descriptively, however, it could be stated that all children with below average comprehension scores (except for one child whose questionnaire was nonclassifiable) also evidenced considerable amounts of realism in their thinking. None of the findings of this study can be considered conclusive, due to small sample size and skewing of the sample.

Chapter V

Conclusions and Implications

Purpose

The purpose of this study was to examine the hypothetical relationship between the child's ability to comprehend and the degree of realism present in his causal reasoning. The sample tested was composed of 28 subjects of elementary school age and the instruments administered were the Stanford Listening Comprehension Test, the Laurendeau-Pinard dream questionnaire, the Goodenough-Harris Drawing Test and an informal modality test.

Conclusions

Based on an analysis of the data yielded by the various test administrations, the following conclusions are offered:

(a) Although no statistically significant relationship was found between the listening comprehension and realism scores, a descriptive analysis revealed some trends between comprehension and realism that might emerge more fully in a less skewed sample.

(b) There was no statistically significant relationship between "intelligence" and realism.

(c) Auditory weakness appeared to have an ambiguous effect on the relationship between comprehension and realism scores.

Recommendations for Future Research

Should this study be replicated, it should be conducted with a larger sample over a narrower age range. Possibly three groups of subjects could be tested: (a) 4 and 5 year olds to see if there is a relationship between self-starting readers and those who shed realism early; (b) first graders to see if those who have not shed realism by 6 1/2 years of age have low listening comprehension scores; and (c) disabled readers in the intermediate grades, to see if their reading problems are in any way related to a delay in shedding realism.

Questionnaires developed around the origins of thought and words should be administered along with the dream questionnaire, and provision should be made for noting the various types of convictions expressed. A finer modality test should be used as a control,

and a general intelligence test should be omitted altogether. The listening comprehension test could be composed of two sections, one testing more literal types of comprehension and one testing more affective types.

If, after this more rigorous research, there is still no relationship found between comprehension and realism, it could be concluded that comprehension is more importantly affected by other factors than realism, such as the developmental acquisition of certain linguistic forms.

Implications for Educational Testing

The instruments used in this study, while chosen with care, are open to some criticism. Kretschmer (1972), in his review of standardized reading tests, cites Livingston as criticizing

comprehension subtests of the Stanford for basing their selections on such topics as architectural design, respiratory functions, and the astrological origins of the names of the days of the week. . . . Using a sample paragraph from the Stanford Reading Test, he also shows how the examinee is really tested on his

ability to interpret strings of awkwardly-constructed sentences, as many test paragraphs are poorly written. (pp. 6-7)

Livingston's remarks were, however, written before the 1973 revision of the Stanford battery, from which the listening comprehension test in this study was taken, and so may not pertain as well to the current test. Kretschmer's own remarks about comprehension subtests in general may have more applicability:

In general, reading comprehension subtests of standardized test batteries have been criticized on the following points:

Lack of reliability due to (a) influence of timing and (b) the short length of the tests, and lack of validity due to (c) the fact that these tests so often overestimate a student's performance on individual oral tests, (d) a lack of reading dependency, (e) a poor selection and distribution of content, (f) the over-use of signal words, (g) generally poor quality of writing in many paragraphs, and (h) lack of a clear-cut theory of reading comprehension upon which to base assumptions of behavior to be measured. (pp. 7-8)

Items a, c, f, g, and h above would, in this author's opinion, most readily apply to the listening comprehension subtest in this study. Item c in parti-

cular may have been a factor in skewing the test results.

The dream questionnaire is somewhat limited in that it is based on only one topic. Piaget's research on realism also included inquiries into the child's explanation for the origin of thought and words. Perhaps a more complete picture of the child's position along the realism continuum could be attained by administering additional questionnaires, modeled on the dream questionnaire, but developed around the origin of thought and words. Laurendeau and Pinard themselves admit:

The subject matter of the questionnaires is likely to restrict the scope of the results. In the sphere of logical operations, the child's thinking is largely affected by the character of the objects with which it is concerned. . . . It may be inferred by analogy that, in the domain of causality, the child's intellectual evolution is subject to the same time lags as in that of logic. . . . Some forms of realism, for instance, disappear earlier in the explanation of dreams than in that of thought. (pp. 251-252)

The questionnaire might also be improved by requiring the examiner to note which of the five

types of responses identified by Piaget (answer at random, romancing, suggested conviction, liberated conviction, or spontaneous conviction) the child has used in his answer. (See Chapter II for an explanation of these terms.) Under the present rating scale, it is probable that children who gave responses predominantly of the first two types would be classified at Stage 0. However, a clearer picture of the child's level of reasoning might be obtained if it were noted that he had arrived at Stage 2B, for example, mainly by suggested convictions.

The control for modality should be a finer, standardized instrument. At the present time, a real gap exists in this area of testing instruments. The retention and subsequent reproduction of five digits is likely to have been too easy for most of the children and probably does not adequately reflect the mode used for more complex series, such as those found in listening comprehension paragraphs.

The concept of "intelligence" as an isolated phenomenon to be measured by one score (standard, percentile, or mental age) is highly incompatible with Piagetian developmental theory. The hypothesis

that such a static, overall level of intelligence even exists would probably be rejected outright by Piaget when used in any but the most informal discussions of child learning, and then with a dynamic rather than static connotation to the term. His comment, that "parallelism without synchronism certainly complicates the description of causality" (Piaget, 1937/1954, p. 221), could well be applied to a description of cognitive functioning in general. A child can be precocious in some areas and delayed in others; an arithmetic average gives an inaccurate picture of both.

In addition, the particular instrument for measuring intelligence used in this study, the Goodenough-Harris Drawing Test, was not as culture-free as had been expected. An item that scores extra points for jewelry on the drawings of the woman but not on those of the man is an example of the sex bias found in this test. The loss of points for not including a part in the hair or for drawing a nose that is broader than it is long is illustrative of this test's orientation to the white child. And finally, extra points for including details like high heels and lipsticked mouths show a time lag that can result in lowered scores for some children. The last revision of

this test occurred in 1963. Since much of the scoring relies heavily on what could be called fashion, it might be advisable to revise the test at least once every five years, or allow for several alternative details in the scoring of a point.

Implications for Reading

Should, after further research, a relationship between the ability to comprehend and the shedding of realism be found, a "realism readiness" test might be warranted before beginning formal reading instruction with six-year-olds, on the assumption that it might be more fruitful to wait until a child has reached a certain level of maturity in his causal thinking before attempting reading instruction. This test could be modeled after the dream questionnaire and elicit the child's explanation for the origin and nature of thought and words, as well as dreams. Answers could then be analyzed for confusions between internal and external phenomena, the name of an object and the object itself, and material and immaterial phenomena. A child exhibiting a fair amount of confusion could then be allowed to interact with his

environment in less formal ways than reading until a more mature stage was reached.

Any such finding would certainly strengthen the call for revision of reading materials--tests, texts, and trade books--currently available to elementary school children. Items purporting to test comprehension could be designed to test the child's ability to differentiate between the material and immaterial, the sign and the thing signified, and the internal and the external, as well as his ability to handle concrete operational problems in verbal form.

The confirmation of the existence of a relationship between comprehension and mature causal thinking may also explain the phenomenon of the word-caller, who may be advanced in those skills required for decoding but experiencing a lag in the cognitive functions affecting the understanding of meaning.

Summary

Although the results of this study examining the relationship between realism and comprehension are inconclusive, several implications can be drawn. Foremost among them is the need for further research in

this area with more narrowly defined samples, such as four and five-year-old self-starting readers, only first graders, or intermediate grade readers with reading disabilities. With respect to educational testing, several revisions of the dream questionnaire to include other topics and more sensitive scoring techniques are suggested. The Stanford Listening Comprehension Test and the Goodenough-Harris Drawing Test were examined critically, and the need for more standardized modality tests mentioned.

Implications for the field of reading, should further research support the existence of a relationship between comprehension and realism, include a "realism readiness" test, revision of comprehension test material based on the three "adualisms" of realism, and a possible developmental explanation of the phenomenon of the word-caller. More research is needed if the revolution that occurred on applying developmental theory to science and mathematics curricula is to happen in reading as well. This writer suggests that this study might serve as a pilot for a more thorough investigation of the relationship between comprehension and realism.

APPENDIX A

Dream Questionnaire

THE CONCEPT OF DREAM

Instructions

Ask the child each one of the following questions, trying always to make sure he understands it well. When necessary, change the wording of the questions, using terms more familiar to the child, but be very careful never to suggest more than is included in the instructions. Record all answers verbatim.

A. General questions

A "Do you know what a dream is? Do you dream sometimes at night?"

B. Specific questions1. Origin of dreams

"Tell me, where does a dream come from?"

"Where are dreams made, where do they come from?"

"Do they come from inside of you or outside of you?"

"Who makes the dreams come?"

"Is it you, or someone else? Who?"

2. Location of dreams

"While you are dreaming, where is your dream?

Where does it go on, in what place is it?

"Is it inside of you, or in your room?"

(a) If the dream is internal (in the head, in thought, etc.), say:

"If we could open your head while your are dreaming, if we could look into your head, could we see your dream?

"Why do you say that we could (not) see your dream?

"Then, where is it, in your head, your dream?"

(b) If the dream is external (in the room, on the wall, under the bed, close to the eyes, etc.), say:

"Is it in your room (on the wall, etc.) for real, or is it only as if it were there? Or does it only seem to be there?

"While you are dreaming, are your eyes closed or open?

"Then where is the dream?

"When you dream that you are playing in the street, where is your dream? In the street, or in your room?"

(c) In both cases, go on with:

"Is there something in front of you while you are dreaming?"

"Your mother, when she is in your room, can she also see your dream?"

"And I, if I were in your room, could I see your dream?"

"Why do you say that I could (not) see your dream?"

3. Organ of dreams

"Then, tell me, what do we dream with? Is it with our hands? With what, then?"

4. Cause of dreams

"What did you dream about, the last time?"

"Why did you dream about that?"

If the child says he did not dream, ask him:

"Let's make believe you dreamed you had fallen and hurt yourself. . . . Why did you dream about that?"

"Then, do you know why we dream? Why there are dreams?"

5. Substance of dreams

"What is a dream made of? Is it made of paper?"

Then, what is it made of?"

"Can we touch our dreams? . . . Why do you say that we can (cannot) touch our dreams?"

"Is a dream a thought, or is it a thing?"

6. Reality of dreams

"During the night, when you dream you are playing, are you playing for real?"

"Is it the same as when you are playing during the day?"

"Then, are our dreams true?" (Laurendeau and Pinard, 1962, pp. 263-265)

APPENDIX B

Criteria for Classification of Responses
to Dream QuestionnaireDefinition of Terms

Realism--Child does not differentiate own viewpoint from rest of world; regards own viewpoint as absolute; egocentrism.

Subjectivism--Child realizes own viewpoint is limited and personal; mature, scientific reasoning.

Stages

0--Incomprehension; refusal; confusion of dreaming with sleeping or night; no evidence of spontaneity (always accepts second suggestion in choice of two); fanciful fabulation.

I--Integral Realism--Expresses complete belief in reality of dreams; origin of dream always external to child; events of dream take place somewhere in front of him (on wall, in room, etc.) but eyes can be opened or closed; responses about organ, cause, substance, and reality of dreams are equivocal (organ is frequently "eyes" or "face," substance

is frequently "cloth," "wood," "skin," etc.); often answers "yes" to touching dreams but if he doesn't, this does not mean he is out of Stage I; may distinguish that it is not "real" but still give it external origin, so is Stage I.

II--Mitigated Realism

- A. Almost same type of response as Stage I, but faltering attempt at some interiorization even if immediately contradicted in next response.
- B. Steadier balance between realism and subjectivism; as soon as subjective elements play a definite role in child's explanation and as long as explanation still indicates a confusion between interiority and exteriority of the dream.
- C. Only trace of realism consists in granting a certain materiality to the dream (may touch it, could see if dreamer's head were opened).

III--Integral Subjectivism

- A. Dream is interior, personal, immaterial but child calls occasionally upon artificialistic, finalistic or moralistic factors, usually in response to question, "Why are there dreams?" (e.g., bad dreams come to punish us, teach us a lesson, they must come, have to have them, God

allows dreams).

B. Perfect explanation of the dream--no traces of realism at all.

N.B.--"God" cited as cause can occur at any level; does not automatically classify protocol as Stage I. (Derived from Laurendeau and Pinard, 1962, pp. 103-130.)

APPENDIX C

The Revised Baxter Informal Modality Test¹

1. Tell pupils that you want to see which way they will remember numbers the best, using three different lists. The three presentations are as follows:
 - a. Visual--The list is written on the chalkboard as pupils watch, and they are given one minute to study it visually. It is then erased, and pupils are asked to recall and state orally the numbers they remember (as the test of learning).
 - b. Audio--The list is given orally so pupils hear it. Then it is repeated. They are asked to recall the numbers they have heard (as the test of learning).
 - c. Kinesthetic--The list is given orally with

¹Derived from SUC Brockport mimeographed instructional material, citing Wynn Baxter (Magnetic Patterns of the English Language, Pasadena, California: Veritas Publications) as the author with revisions by Mary Heimberger (Falk School Research Office, University of Pittsburgh, 1971).

pupils writing it down from dictation. They then write the list again for practice. Finally they are asked to write the list from memory (as the test of learning).

<u>First List</u>	<u>Second List</u>	<u>Third List</u>
3	5 2	8 4
9	8 7	3 7
7	3 or 4	0 or 2
5	1 6	9 0
1	6 3	2 3

- The list does not have to be given in the exact order that it was presented.
- On a list of pupils' names, note the number of digits recalled after each presentation. This gives a general indication of the child's best learning mode.

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