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DEVELOPMENTAL ANALYSIS OF READING ATTITUDE, LOCUS OF CONTROL, READING ACHIEVEMENT AND SCHOLASTIC APTITUDE

DISTRIBUTION

Presented in Partial Fulfillment of the Requirements for the Degree Doctor of Philosophy in the Graduate School of The Ohio State University

By
Dorotha Brown, B.S., M.A.

* * * * *
The Ohio State University
1976

Reading Committee:
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VITA

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Columbus Education Association
National Education Association
International Reading Association

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Provisional Pupil Personnel--School Psychology
Remedial Reading
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Chapter I
INTRODUCTION

Chapter 1 is a brief introduction to the problem area which is the subject of study in this dissertation. The importance of the study will first be discussed followed by a statement of the problem and finally the definition of terms used in the study.

Importance of the Study

It has been estimated that about one-third of all elementary school students in the United States are retarded readers (Pollack & Pickard, 1963). At the secondary level there are also large numbers of pupils who read inadequately although the proportion at this level is not as high as at the elementary school level, since many pupils drop out of school as a result of their reading problems. They may be average or above average in intelligence, come from homes at all socioeconomic levels, and attend both large and small schools.

Studies tend to demonstrate that attitude toward reading and skills in reading involve different factors (Wilson, 1972). Therefore, the nature of most assessment instruments which are utilized to determine skill deficits are inadequate for determining one of the major causes of reading disability, a negative attitude (Edwards, 1957) or lack of motivation.

There is evidence to suggest that many children, although retarded readers, are reading as well as can be expected and are placed in frustrating reading situations daily in school. It does not take a
specialist to realize that reading is not much fun for these children and that they easily might have developed a negative attitude toward reading (Wilson, 1972). The most seriously retarded youngsters in reading frequently are those with high intelligence (Dechant, 1964).

Aside from the question of whether pupils can read rests a question with an even more elusive answer: Will pupils read? Certainly, how students feel about reading is as important as whether they are able to read, for, as is true for most abilities, the value of reading ability lies in its use rather than its possession (Estes, 1971).

For the classroom teacher, this means that a positive attitude (Edwards, 1957) toward reading on the part of the student must be present before the goal of making students lifetime readers can be realized (Kennedy & Halinski, 1975).

Statement of the Problem

Attitude scales, used in the measurement of attitudes, have proven to be useful in a variety of research problems (Edwards, 1957). The Survey of Reading Attitudes (Wallbrown, Brown, & Engin, 1975) has been developed for the purpose of assessing attitudes of intermediate grade children in an attempt to isolate factors that will be relevant for planning both developmental and remedial reading programs (Engin, Wallbrown, & Brown, 1976).

In the past fifteen years, a personality variable "locus of control" (Rotter, 1972) has been referred to by some investigators as the major or central concept in social learning theory. At any rate, interest has developed because of the observation that increments and decrements in the expectancies following reinforcement appeared to
vary systematically, depending on the nature of the situation and also on a consistent characteristic of the particular person who was being reinforced. Investigation of these differences has resulted in the classification of "internal" (I) and "external" (E) (DuCette & Wolk, 1972). The "internal" person is one who perceives that he is in control of his fate and that effort and reward will be correlated, whereas an "external" person perceives that powerful others or "the system" determine how well he can do, and that rewards are distributed by such powerful others in a random fashion.

Using one the I-E scales, researchers have investigated a variety of traits to determine how "locus of control" relates to other variables. Internal people have been found to be more likely to make typical or rational shifts in their levels of aspiration (Battle & Rotter, 1965); to take intermediate rather than extreme risks (DuCette & Wolk, 1972); to be more confident in their abilities (Lao, 1970); to make better use of environmental feedback (Phares, 1963); and more likely to be social activists (DuCette & Wolk, 1972). DuCette et al. is critical of the fact that social scientists have failed to do sufficient research taking into consideration the effect of different social environments. By failing to do such research, the effect of different environments on variables such as level of aspiration and risk taking has been misinterpreted. It is characteristic in research to include highly molar dependent variables which are so highly over-determined that the predictability from any one specific variable will be slight, thus masking the effect of the internal-external dimension by other variables. "It is not common for a researcher to investigate
identical dependent variables in different situation settings within
the same study. Too often the findings of one researcher who has
selected one particular social milieu to study are contrasted with the
findings of another researcher who has utilized another population.
Such comparisons . . . may suffer from a lack of actual comparability
between the studies." (p. 494)

In the present study, relating the student's "locus of control"
to reading attitude, level of intellectual ability and reading achieve­
ment should be helpful in interpreting characteristics that have not
previously been studied.
DEFINITIONS

1. alternative learning modes factor--the extent to which students prefer to use alternatives other than reading when they are faced with a learning task.

2. comic books factor--the student who reads comic books for enjoyment.

3. defensive externals--subjects who verbally express external attitudes as a defense or rationalization for expected failure but act as an internal in competitive situations.

4. expressed reading difficulty factor--the extent to which the student perceives of himself as having difficulty with reading and is willing to acknowledge the existence of a problem.

5. external L C--person perceives that powerful others or "the system" determine how well he can do, and that rewards are distributed by such powerful others in a random fashion.

6. forced choice--when number of choices is limited as for example in a questionnaire. The only options offered may be a positive or negative answer.

7. internal L C--person perceives that he is in control of his fate and that effort and reward will be correlated.

8. locus of control--an expectancy variable that describes the perception of personal control that one has over the reinforcements that follow his behavior.

9. positive attitude--an individual who has associated positive affect or feeling with some psychological object is said to like that object or to have a favorable attitude toward the object.
10. reading anxiety factor--the extent to which the student becomes upset or displays psychosomatic symptoms when faced with reading-oriented tasks.

11. reading as enjoyment factor--the extent to which reading serves as a source of enjoyment for the student.

12. reading as reinforcement factor--the extent to which reading-type activities constitute a source of reinforcement for the student.

13. reading group factor--reflects student's attitude toward his reading group and the instruction materials used in that group.

14. retarded readers--varies with grade placement and authority. Most would agree, however, that a smaller discrepancy between achievement and potential is significant in the primary grades and the amount of discrepancy for significance increases with grade placement.

15. silent vs. oral reading factor--the relative preference of the student for oral vs. silent reading.
Chapter II

LITERATURE REVIEW

This chapter will consider literature pertaining to reading attitude and the construct of locus of control.

Reading Attitude

In exploring reading attitudes, research studies are limited in quantity and scope. For example, Sartain's study (Heimburger, 1970) included a group of children ranging in age from 6-6 through 11-5 in which he utilized his own instrument to measure how children feel about reading which had been divided into four categories: recreational reading, work-type reading, learning to read, and social values. There was a forced-choice response between two statements, one which was positive toward reading and one negative. Results indicated that the greatest interest in reading occurred between the ages 8-6 through 9-11, and the least 10-6 through 11-5. Norms for the three socio-economic levels studied did not vary significantly. No statistical measures were used for analysis since the variation was so slight.

A study conducted in San Diego County, California (Department of Education, 1961) was to improve reading instruction. Three approaches of the teaching of reading were analyzed in relation to the attitude and personality of each child and also his/her reading achievement. Because there were ample references in the literature to the importance
of attitude but no instruments satisfactory for the study, an Inventory of Reading Attitude was devised by the project committee. From the original 114-item inventory, 25 items were selected to be included in the revised form because of their discriminating power. Teacher judgment was used as the validity criterion. Each child was requested to respond "Yes" or "No" to each question.

A reading inventory used in the Elmira City School system based on the Harper & Row Basic Reading Program consists of 25 questions to which the child is requested to respond with a "Yes" or "No" answer. No data are available concerning its administration, validity or reliability.

Rowell (1972) developed an attitude scale to be used with disabled readers. The reading behavior is recorded by an observer in which he/she checks one of several different degrees of reaction to reading situations in a Likert design. Interrater reliability was .88.

Estes (1971) has also used the Likert-type response for his attitude scale which consists of 20 questions. A grid is used for scoring which would indicate positive or negative attitudes, a high score indicating a positive attitude and a low score, negative. Estes stated that the younger pupils in this sample revealed more positive attitudes toward reading. No further information is available regarding research utilizing this instrument.

Shepps and Shepps (1971) conducted a study investigating the relationship of study habits and school attitudes to achievement in math and reading. A self-reporting questionnaire was used. Junior
high had been the original target group but it was also attempted at sixth grade. The sample was small and select, so generalization to other groups would be invalid. However, only the attitude subtest was a satisfactory predictor of the criterion, reading achievement. Both school attitude and total Study Habits and School Attitudes score predicted the same reading achievement among boys, and for girls, math.

**Locus of Control**

The scales determining an individual's pattern of thinking regarding whether events in his/her life are controlled externally or internally have been shown by research to be related to achievement (Rotter, Crandall, Katkovsky, & Crandall, 1965; Norwicki & Strickland, 1973). Research with these measures suggests that locus of control becomes more internal with age and that externality is associated with higher social class and white culture placement as opposed to Negro and lower socioeconomic status. Internal beliefs were found to be moderately related to intelligence, ordinal position, and size of family.

Bialer (1961), in conducting a study to investigate the developmental changes in success-failure conceptualization on the part of mentally retarded and normal children adapted a self-report questionnaire that had been developed for use with adults by Phares (1955) and James (1957). Results were in accordance with predictions in that (1) with increasing age there was a tendency (a) to perceive internal locus of control, (b) to respond to success-failure cues, and (c) to delay gratification when such delay led to the eventual attainment
of a larger reward; (2) MA rather than CA was found to be the more relevant variable in the development of success-failure conceptualization, that is, the ability to conceptualize success-failure matures more slowly in the retardate; (3) factor analysis disclosed a general factor designated as a "general intellectual maturation" factor and a group factor labelled a "success-failure awareness" factor of personality which was relatively independent of age. The bifurcation of personality types conforms to the internal-external concept.

Rotter (1975) who developed one of the early I-E scales, defends its theoretical conception on the basis that "it was developed as a broad gauge instrument -- not as an instrument to allow for very high prediction in some specific situation such as achievement or political behavior, but rather to allow for a low degree of prediction of behavior across a wide range of potential situations . . . they cannot be expected to have as high internal consistency as a power scale that samples different strengths of response in a narrow area".

In the use of the I-E scale, it has been found that some externals showed patterns of behavior much like the behavior of ambitious, aggressive, and competitive subjects previously identified in studies of level of aspiration who behaved much as internals were expected to do. Davis (1970) explored the possibility that individuals who verbalize external expectancies but otherwise behave much like internals in certain performance situations do so as a means of defending themselves against expected failure or negative reinforcement. Davis labeled these individuals "defensive externals". Externals whose I-E scores coincided with their behavior in certain other nonetest
situations she described as "congruent externals". Major findings substantiated the hypothesis that defensive externals will behave more like internals in situations in which overt action by each individual might lead to reinforcement. Hersch and Scheibe commented that the theoretical formulation of I-E may be too simplistic, suggesting a diversity in the psychological meaning of externality (1967). An investigation by Hamshe, Geller, and Rotter (1968) assisted in the differentiation between the "defensive" and "passive" externals. Studies demonstrate that the use of the Interpersonal Trust Scale (Rotter, 1967) can help select the two different kinds of externals and that differential predictions can be made regarding their behavior in a variety of situations. Other kinds of questionnaire data have also been used to make this differentiation with some success.

Rotter was unsuccessful in isolating a defensiveness by endorsement of failure versus success items in college students. However, this differentiation appears to work for children as was demonstrated by Crandall, Katkovsky, & Crandall (1965), and later by Nowicki & Strickland (1973) and Mischel, Zeiss, and Zeiss (1974).

Crandall, Katkovsky & Crandall developed the Intellectual Achievement Responsibility (IAR) Questionnaire and as its predecessors had done, it attempted to measure beliefs in internal versus external reinforcement responsibility. However, it differs from the other measures in several respects. First of all, it aimed at assessing children's beliefs exclusively in intellectual-academic achievement situations. Secondly, the IAR limits the source of external control to those persons who most often come in face-to-face contact with a
child, his parents, teachers, and peers. The scale was constructed to sample an equal number of positive and negative events. It was felt that the dynamics operative in assuming credit for causing good things to happen might be very different from those operative in accepting blame for unpleasant consequences. Thus, the IAR was constructed so that in addition to a total I (Internal) responsibility score, separate subscores could be obtained for beliefs in internal responsibility for successes (I+ score) and for failures (I-score).

There are 34 forced choice items, with each stem describing either a positive or a negative achievement experience which routinely occurs in children's daily lives. The stem is followed by one alternative stating that the event was caused by the child and another stating that the event occurred because of the behavior of someone else in the child's immediate environment.

In research utilizing the IAR by Crandall et al. (1965), the scale predicted differently for the two sexes at different age levels. The authors stated that because of the inconsistencies and small magnitude of many of the relations found, the scale needed further refinement and research relative to achievement behaviors. "Although the IAR may be in need of further refinement, its basic utility seems to have been established and marks it as perhaps the most serviceable measure of locus of control beliefs in children in the relatively specific areas of intellectual-academic achievement" (Phares, 1976, p. 55).

Using the IAR, Chance (1965) found that children's internality was associated with mothers' scores on the acceptance-rejection factor
of the Parental Attitude Research Instrument (PARI). Permissive and flexible maternal attitudes and expectations for early independence seemed to be associated with internality. Similarly, Katkovsky, Crandall, and Good (1967) also using the IAR, reported that protective, nurturing, approving, and nonrejecting parental behavior is associated with the child's belief in internal control.

The work of Crandall, Katkovsky, and Crandall (1965) on academic achievement provides evidence consistent with this general role of age. The trend was for the I-E score to be relatively external at third grade, with internality increasing to a maximum at the eighth and tenth grades.

The purpose of the Nowicki-Strickland Locus of Control Scale (1973) was to produce a reliable, methodological precise measure of generalized locus of control of reinforcement that could be group administered to a wide age range of children. The 40-item scale is to be read to the children after which they check a "yes" or "no" response on the test sheet. All correlations with socioeconomic level and achievement were negative. Only fifth and seventh grade females show a trend toward significant relationship with achievement scores.

Using the Nowicki-Strickland scale, Roberts (1971) found significant correlations between internal locus of control and reading achievement for both sexes and a significant relationship with math achievement for males but not for females. With third grade students, he found no significant relationships between the school achievement measures and locus of control, but he did find significant relationships between internal scores and self-esteem as measured by the Coopersmith and Piers-Harris instruments for both males and females.
Ludwigsen and Rollins (1971) found the subjects of low socio-economic status to be more external than high socioeconomic subjects. Aside from school-related variables, other behavioral correlates of internality include delay of gratification for white elementary school subjects, involvement in extra-curricular activities for twelfth grade females, and popularity for both elementary and secondary school mates. These research findings suggest that, particularly for males, an internal score on the Nowicki-Strickland Scale is significantly related to academic competence and to social maturity.

DuCette & Wolk (1972) state that the general conclusion from research is that internality is an adaptive and positive personality characteristic while externality is not. However, they concur with the necessity for making a distinction between different types of internality, especially for minority groups (Gurin, Gurin, Lao, & Beattie, 1970) and that no simple or linear relationship exists between internality and adaptive behavior (DuCette, Wolk, & Soucar, 1972). They are critical of many social scientists who have misinterpreted the effects of different environments on variables such as level of aspiration or risk-taking, thus restricting the generalizability of findings. The problem of masking of the internal-external dimension by other variables detracts from the theoretical understanding of predicting behavior in different environments.

DuCette & Wolk (1972) investigated the locus of control variable in relation to risk-taking and level of aspiration involving Blacks and Whites on different socioeconomic levels. Results indicated that an internal Black adolescent has lower occupational and cognitive
estimations, prefers less difficult tasks and makes more atypical shifts in level of aspiration than his external counterpart. The White internal adolescent, on the other hand, differs from his external peer in exactly the opposite manner— he is more confident, will attempt harder tasks, and raises his level of aspiration after success, all behaviors which are much less characteristic of the external in this social setting. The researchers contend that both groups are acting exactly the same, and that locus of control is making exactly the same predictions, given the environment in which these internals or externals live. Their hypothesis is that the most parsimonious explanation of the behavior of the internal student, regardless of social setting, is that he is acting rationally and responding correctly in an environment which he accurately perceives. The external student, on the other hand, because he does not perceive the environment veridically, acts in a manner which is for him incorrect and essentially irrational.

DuCette & Wolk (1972) are arguing for a more complex definition of the construct of locus of control. They see the internal person as not simply perceiving that the environment can be controlled; instead, he/she accurately perceives whether the environment can be controlled and then responds to this perception with appropriate behavior. Such a reinterpretation implies that the genotypic consequences of an internal or external orientation are always the same but that the prediction of behavior from this individual difference variable must take into account what is rational for the individual in his environment. The internal student in both mileus will still
be the one who obtains from his environment the most it will allow.
Only by specifically looking at situation-personality interactions
can the dynamics of such interactions be understood.

It is obvious that there are inconsistent findings from the
studies regarding locus of control which may be accounted for in part
by methodological errors and attempts to generalize from one situation
to another. However, there are correlations that have been found
between similar variables repeatedly enough to warrant continued
exploration. The associations found among demographic variables and
achievement behaviors lend some additional support to the construct
validity of children's beliefs in their control of reinforcements, as
well as providing evidence for the utility of measuring this construct
with the instrument, the IAR Questionnaire. It is evident, however,
from the inconsistencies and small magnitude of many of the relations
found that the scale is in need of further refinement. Item analysis
would provide a basis for eliminating non-discriminating items and
improving the internal consistency of the two subscales. In addition,
further research seems warranted relating IAR scores to achievement
behaviors such as task persistence and striving, where motivational
factors may be primary determinants (Crandall, Katkovsky, & Crandall,
1965).

Because of the failure of educators to find solutions to many
educational problems related to lack of motivation and absence of
adequate learning, a new approach through assessment of attitudes and
cognitive style of the individual seems logical to supplement informa-
tion that is now commonly accumulated.
In answer to the question as to whether or not internal-external beliefs can be modified, Nowicki and Barnes (1971) administered the Nowicki-Strickland scale to 291 seventh, eighth, and ninth grade males, predominantly Blacks from inner-city ghetto schools as they entered a structured camp situation in which the counselors sought to make clear the connection between the camper's behavior and resultant rewards. As hypothesized, campers were significantly more internal on a readministration of the scale at the end of their camp session, usually one week. Phares (1976) cites other research studies in which training programs were effective in a variety of settings. Locus of control as a generalized expectancy can be altered by a variety of environmental forces. Some of these forces include factors that accompany age changes, conditions that affect a subject's certainty that control can be exerted, world or national events, special training programs, and a variety of therapeutic techniques.

Internal control can be construed as a very specific expectancy or as a very general one, but in either case it is important to understand the conditions that will affect its strength. To enhance the individual's capacity to cope with the world successfully, one must influence the generalized expectancy for internal control. Focus on the investigation of techniques to bring about such influence is only in the beginning stages.

Another relevant area of research is related to antecedents of locus of control beliefs. In the broader social context, there is a strong suggestion that persons in groups with restricted access to
significant power or material advantages often develop external orientations. Blacks and other minority groups seem much more external than Whites. Similarly, lower socioeconomic status is associated with externality. And, of course, minority groups typically occupy the lower socioeconomic levels.

However, one must interpret such findings carefully. Most of the I-E instruments that are utilized force the individual to compare himself to White, middle-class norms and values. It is conceivable that one could construct I-E measures that would reveal that a Black person was internal in behavior within the Black culture even though looking like an external in the wider social and political context.

It is certainly hoped that research on the antecedents of locus of control beliefs will be carried out vigorously. We cannot adequately understand the meaning of an individual's locus of control beliefs, and thereby be in a position to change such attitudes, until we have gained insight into the factors that give rise to their beliefs (Phares, 1976).
Chapter III

METHOD AND PROCEDURE

The present chapter was divided into five sections for purposes of clarity and organization. The first section consists mainly of a statement of the four research questions along with a few comments on the nature of the inquiry process. The second section includes a description of the sample selection and sample characteristics of potential relevance to the study. The third section includes a description of the assessment procedures used in the study. The next section is devoted to a description of the data collection procedures and the final section contains a detailed description of the procedures employed at the different stages of data analysis.

Research Questions

Within this context, four research questions were formulated to provide structure for the present investigation. The use of research questions seemed more appropriate for the present study than the statement of null hypotheses. Specific hypotheses are more appropriate for a well developed area of knowledge whereas research questions are more suitable for exploratory research in a new area. In this regard, the area of reading attitudes is clearly new in that it has been characterized by a dearth of empirical research (Engin, Wallbrown, & Brown, 1976). Thus, the general concern of the present study was phrased in terms of the four following research hypotheses:

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1. What is the relationship between locus of control and the following eight dimensions of reading attitudes: expressed reading difficulty, reading as direct reinforcement, reading as enjoyment, alternative learning modes, reading anxiety, oral vs. silent reading, reading group, and comics?

2. To what extent does adding information about reading attitudes improve the predictability of reading vocabulary and reading comprehension beyond that predicted by scholastic aptitude taken alone?

3. Are the reading anxiety scores of children with a more external locus of control higher than those for children with a more internal locus of control?

4. What developmental changes occur in the basic dimensions of reading attitude from grade four through grade six?

The concept of "locus of control" appears to have a meaningful relationship to reading attitude. One purpose for studying attitudes of students in conjunction with the variables achievement and aptitude is to determine the utility of attempting to change a student's attitude. This change might occur according to one hypothesis only if the student possesses an internal locus of control. The basis for the assumption lies in the fact that a student would assume no advantage to altering his thinking if he perceives that external forces are in control over events in his life.

Sample

The sample for the present study includes 431 intermediate grade children from three elementary schools in the inner-city area
of Columbus, Ohio. The three elementary schools were selected so that they could be described as inner-city on the basis of the proportion of the total school enrollment coming from homes receiving assistance through the federal Aid for Dependent Children (ADC) program. In specific, the percentage of children coming from such families was greater than 33½% for each of the three schools. All children enrolled in the regular classroom at the fourth, fifth, and sixth grade levels were included in the sample, a total of 20 different classrooms. However, all children enrolled in special education classes were excluded from the sample to avoid the confounding effects which might be associated with the different forms of special programming. Convenience played some role in the selection of the three specific schools since it was necessary that the building principals and intermediate grade teachers agree to cooperate in the conduct of the study.

Instrumentation

It was necessary to administer two scales to obtain the essential data for the present study. One scale was A Survey of Reading Attitudes (SRA; Wallbrown, Brown, and Engin, 1974) which consists of 88 items which measure eight dimensions of reading attitude (Engin, Wallbrown, & Brown, 1976). The reading attitude scale is concerned with the student's perceptions about school work with particular emphasis on reading. The second scale was the Intellectual Achievement Responsibility Scale (IAR; Crandall, Katkovsky, & Crandall, 1965) which measures locus of control. The locus of control scale measures the students' beliefs concerning the amount of control they
have over factors influencing their lives. Both instruments are suitable for group administration at the intermediate level; therefore, total classroom groups were requested to respond individually. Because of the probability of the presence of reading disabled pupils within the groups, the items and directions were included in a taped presentation which accompanied the test administration. The SRA Survey required use of a separate answer sheet while the IAR responses were marked directly on the test booklet.

The directions for the SRA are as follows:
Look at your answer sheet first. In the upper right hand corner, you are to write your last name first and then your first name. Place only one letter in each box. When you have finished, look at the front of your test booklet. We will read the directions aloud to you.
The statements in this booklet are concerned with the way you feel about reading. There are no right or wrong answers because students have different opinions and feelings about their school work. For example, if I say "Reading is more fun than math", I'm sure the students in this room would not all agree. Some people would agree because they think reading is more interesting than math but some other people would disagree because they enjoy math more than reading. Probably some other students would not be sure about how to answer because they like both reading and math. So, you can see there are no right or wrong answers. The important things is to mark the answer that shows how you really feel or what your opinion is.
I will read each statement aloud while you read it silently from the booklet. After each statement has been read, you are to decide how you feel about it and mark the answer sheet which you have. Fill in 1 to show that you strongly agree with a statement. Mark 2 to show that you agree with a statement. Black in 3 if you are not sure how you feel about a statement. Fill in 4 to show that you strongly disagree with a statement. Be sure to use the answer sheet if one is provided rather than marking on the booklet since other students will be using it. Do not use a pen. Be sure each mark is dark. Erase completely any answer you wish to change. Please be sure that you mark the answers which show how you really feel rather than the way you think I want you to mark them. The numbers and what they stand for are at the top of each page.

Directions for the IAR state that the subject is requested to "pick the answer that best describes what happens to you or how you feel" about each statement and circle either A or B to indicate your choice. Emphasis is placed on the fact that there are no right or wrong answers to the statements.

Data Collection

In each school, data collection was scheduled on the basis of the preferences expressed by the administration and teaching personnel in the schools selected for the study. The size of the group tested varied considerably depending upon the availability of space and the preferences of the teachers involved. In some cases, all the students
at a particular grade level were tested at one time. In other cases, each classroom was tested individually.

The investigator was present during all of the testing but teachers and graduate students were available to serve as proctors when large groups were tested. The Survey and IAR were administered on separate days to avoid the possibility of excessive fatigue on the part of participating students. The Survey was always administered before the IAR and at least a four-day interval was allowed between administration of the two scales.

The students recorded their responses on a separate answer sheet (Form 125) which was provided by the Office of Testing and Evaluation at The Ohio State University. Prior to test administration, a pre-training session was provided to familiarize the participating students with the use of this answer sheet. All testing was conducted within a four-week time interval during May and June of the 1975-1976 school year.

Data Analysis

Several steps were necessary to arrange the data in the proper form for statistical analysis. The first step involved transfer of student responses from the answer sheets to IBM cards. The second step involved preparing a small computer program which was used to sum item responses to obtain scores for each of the eight factors established through previous research. The items included in each of the eight score categories were as follows: 1) Expressed Reading Difficulty: 2, 8, 14, 21, 34, 39, 43, 44, 45, 47, 51, 53, 55, 63, 78, 84, 85; 2) Reading as Direct Reinforcement: 3, 5, 7, 10, 15, 17,

The IAR was scored to obtain measures of internality plus (I+) and internality minus (I-) as well as a total score for internality (Crandall, Katkovsky, & Crandall, 1965). The I+ score indicates the extent to which the child sees positive events as the result of his own behavior. The I- score indicates the child's willingness to accept the responsibility for negative events and attribute them to the result of his own behavior. Scores from the California Test of Basic Skills (California Testing Bureau, 1970) were used in standard form to provide estimates of reading achievement in the areas of reading comprehension and vocabulary. Scores from the Henmon-Nelson Intelligence Test (Lambke, Nelson, & Kelso, 1961) and California Test of Mental Maturity (CTMM, 1957) were used to obtain estimates of scholastic aptitude and/or general intelligence. More specifically, intelligence quotients (IQs) from the Henmon-Nelson were used for fourth graders and scores from the California were used for fifth and sixth graders. Students' sex and grade level were obtained from the teachers' records and/or roster forms.
Chapter IV

RESULTS

The findings from the present study are discussed in this chapter which is organized around the four research questions stated in the previous chapter. That is, the findings are structured around the four research questions which serve as the focal point of the study. With this approach, the four research questions serve as major side headings which divide the chapter into meaningful subsections. The first major section is devoted to examining the relationship between locus of control and the eight dimensions of reading attitude. The second major section contains an examination of the regression of the two achievement criteria on the predictor variables, i.e., academic aptitude, reading attitude score, and locus of control. The third section contains a discussion of the data concerning the relationship between reading anxiety and locus of control as well as other relevant variables. The fourth section summarizes those aspects of the data related to developmental changes in reading attitudes across the intermediate grades. Finally, it was necessary to add a further section to describe some interesting findings which were not part of the study as it was originally conceptualized. This section was important enough to deserve a side heading like the four research questions.

The findings discussed under each of these five side headings is further divided into paragraph headings. When necessary, that is, the findings examined under each side heading are divided into subsections.
indicated by the paragraph headings. The introduction to each of the major side headings contains a brief description of the findings examined and the manner in which they are organized.

**Question 1:** What is the relationship between locus of control and the following eight dimensions of reading attitude?

The data necessary to provide the answer to this question consist of product-moment correlations ($r_s$) between locus of control and each of the eight dimensions of reading attitude. In this regard, the correlations ($r_s$) between the total internality score and the eight dimensions of reading attitude were determined. However, scores for internality plus ($I^+$), the tendency to take responsibility for positive experiences, and internality minus ($I^-$), the tendency to take responsibility for lack of success, were also correlated with scores for the eight reading attitude dimensions. These correlations ($r_s$) are summarized in Table 1 which is reproduced in the following page. In addition, the intercorrelations ($r_s$) among the eight reading attitude dimensions themselves are also reproduced in Table 1. These $r_s$ are not essential for providing the answer to the research question of concern in this section but they do serve to extend and illuminate the main issues associated with the research questions.

Examination of the $r_s$ between internality indicators and scores for the eight dimensions of reading attitude suggested the presence of a few weak relationships. However, none of the $r_s$ were of sufficient magnitude to suggest a pattern of strong relationships as was hypothesized in the introductory section of the study. From this standpoint, then, the present findings tend not to support the general hypothesis.
### TABLE 1

**Intercorrelations Among Locus of Control Variables and Reading Attitude Scores**

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Survey of Reading Attitudes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Expressed Reading Difficulty</td>
<td>1.00</td>
<td>.05</td>
<td>-.003**</td>
<td>**.34</td>
<td>-.07</td>
<td>**.63</td>
<td>**.31</td>
<td>.09</td>
<td>.09</td>
<td>*15</td>
<td>*15</td>
</tr>
<tr>
<td>2. Reading as Direct Reinforcement</td>
<td>.05</td>
<td>1.00</td>
<td>**.54</td>
<td>**.28</td>
<td>**.64</td>
<td>-.02</td>
<td>**.30</td>
<td>**.44</td>
<td>.08</td>
<td>-.11</td>
<td>-.02</td>
</tr>
<tr>
<td>3. Reading as Enjoyment</td>
<td>-.003**</td>
<td>**.54</td>
<td>1.00</td>
<td>.18</td>
<td>**.53</td>
<td>-.07</td>
<td>**.29</td>
<td>**.26</td>
<td>-.02</td>
<td>-.11</td>
<td>-.02</td>
</tr>
<tr>
<td>4. Alternative Learning Modes</td>
<td><strong>.34</strong></td>
<td><strong>.28</strong></td>
<td>.18</td>
<td>1.00</td>
<td><strong>.35</strong></td>
<td><strong>.35</strong></td>
<td><strong>.25</strong></td>
<td><strong>.29</strong></td>
<td>.05</td>
<td>-.02</td>
<td>-.02</td>
</tr>
<tr>
<td>5. Reading Group</td>
<td>-.07</td>
<td><strong>.64</strong></td>
<td><strong>.53</strong></td>
<td><strong>.30</strong></td>
<td>1.00</td>
<td>-.07</td>
<td><strong>.29</strong></td>
<td><strong>.28</strong></td>
<td>.04</td>
<td>-.16</td>
<td>-.08</td>
</tr>
<tr>
<td>6. Reading Anxiety</td>
<td><strong>.63</strong></td>
<td>-.02</td>
<td>-.07</td>
<td><strong>.35</strong></td>
<td>-.07</td>
<td>1.00</td>
<td><strong>.30</strong></td>
<td>.09</td>
<td>.13</td>
<td><strong>.24</strong></td>
<td><strong>.24</strong></td>
</tr>
<tr>
<td>7. Silent vs. Oral Reading</td>
<td><strong>.31</strong></td>
<td><strong>.30</strong></td>
<td><strong>.29</strong></td>
<td><strong>.25</strong></td>
<td><strong>.29</strong></td>
<td><strong>.30</strong></td>
<td>1.30</td>
<td><strong>.36</strong></td>
<td>.04</td>
<td>.02</td>
<td>.03</td>
</tr>
<tr>
<td>8. Comics</td>
<td>.09</td>
<td><strong>.44</strong></td>
<td><strong>.38</strong></td>
<td><strong>.29</strong></td>
<td><strong>.38</strong></td>
<td>.09</td>
<td><strong>.36</strong></td>
<td>1.00</td>
<td>*.16</td>
<td>-.06</td>
<td>.05</td>
</tr>
<tr>
<td>Intellectual Achievement Responsibility</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Internality Plus</td>
<td>.09</td>
<td>.08</td>
<td>.05</td>
<td>.05</td>
<td>.04</td>
<td>.13</td>
<td>.04</td>
<td>.16</td>
<td>1.00</td>
<td>.24</td>
<td>.76</td>
</tr>
<tr>
<td>10. Internality Minus</td>
<td>.15</td>
<td>-.11</td>
<td>-.11</td>
<td>-.02</td>
<td>-.16</td>
<td><strong>.24</strong></td>
<td>.02</td>
<td>-.06</td>
<td>.24</td>
<td>1.00</td>
<td>.81</td>
</tr>
<tr>
<td>11. Total Internality</td>
<td>.15</td>
<td>-.02</td>
<td>-.08</td>
<td>.02</td>
<td>-.08</td>
<td><strong>.24</strong></td>
<td>.05</td>
<td>.05</td>
<td>.76</td>
<td>.81</td>
<td>1.00</td>
</tr>
</tbody>
</table>

* *p < .05  
** **p < .01  
*** ***p < .001
advanced earlier; i.e., the magnitude of the obtained \( r_s \) is not sufficient to indicate a substantial relationship between either the plus or minus aspects of internality and any of the eight aspects of reading attitude included in the present study. For interpreting these findings, it is important to note that significance per se is not an adequate indicator of the strength of relationship. Instead, one must have substantial variance common to the two variables of concern as well as a high degree of statistical significance (Garrett, 1966). Common variance is indicated by taking the square of the \( r_s \) between two variables which result in a decimal value which in turn can be converted to a percentage through multiplying by one hundred. This common variance must be considered since statistical significance is, to a great extent, a function of sample size. That is the larger the sample, the smaller the \( r \) needed for significance if other things are equal. This assertion can be verified by examining the formula for the standard error of a correlation coefficient \( (r) \) which is \( \frac{1}{\sqrt{N}} \).

Only one of the reading attitude dimensions showed a significant relationship to the I+ score. The \( r \) between I+ and the comics dimension was \( .16 (df = 429) \) which is significant at the .05 level. In terms of the discussion above this \( r \) is not large enough to indicate an appreciable amount of common variance even though it is significant at the .05 level. In specific, the square of this \( r \) indicates that only about 3% of variance in these two variables is held in common between them. The correlations between I+ and the other seven reading attitude scores ranged from .13 through -.02 which does not indicate a systematic relationship. In fact, it is not unreasonable to surmise that even
the $r$ between $I+$ and the comics score may be due to random error since with eight $rs$ on the same data, the chances of getting at least one significant $r$ is relatively high. Thus, on the basis of these findings there is no compelling reason to believe that there is a consequential relationship between $I+$ and any of the eight dimensions of reading attitude included in the study.

**Question 2:** To what extent does adding information about reading attitudes improve the predictability of reading vocabulary and comprehension beyond that predicted by scholastic aptitude?

The data relevant to the present question were obtained through application of the regression subprogram from the Statistical Package for the Social Sciences (SPSS: Nie, Hull, Jenkins, Steinfrenner, and Bent, 1975). That is, the SPSS program was the actual computing procedure used to determine the regression of the two respective reading criteria (vocabulary and comprehension) on the predictor variables. As indicated by the research question stated above, the purpose of these two analyses, one for each criterion, was to determine whether adding reading attitude variables results in a significant increment in the predictability of reading achievement over that provided by scholastic aptitude and/or intelligence alone. Internality scores (internal plus, internal minus, and total internality scores) were also included in the analysis to provide related information.

As stated by Kim and Kohout (1975, p. 321), multiple regression analysis provides a procedure whereby one can analyze a relationship between a criterion variable and a group of predictor variables. That is, one can determine the combination of variables which provides
maximum prediction for a specific sample. From another standpoint, multiple regression can be viewed as a tool which is useful for purposes of psychological inference as well as a descriptive tool which provides for decomposing and summarizing the linear relationship. If one is concerned with one specific sample, then we have a descriptive approach; if one is concerned with making generalizations from one or more samples to some population then we have an inferential approach. These two approaches are not mutually exclusive since in many cases they are both used together.

Several output options are available in the Regression subprogram of the SPSS program. Only those options of direct relevance were used in the data analysis for the present study. In specific the following data were obtained at each step of the forward multiple regression (R), squared coefficient of multiple regression (R²), F-ratios for the respective increments in R² standard score coefficients (β-weights), raw score coefficients (b-weights), and a constant value to complete the raw score equation which is otherwise comprised of b-weights. In addition, the F-ratio is provided for the R² which results from all variables included in the equation after each step is completed. The F-ratios for successive increments in R² are included in the tables but only the F-ratio for the R² obtained for the final regression equation is reproduced as a footnote to the table.

The results of the forward stepwise regression procedure for the vocabulary criterion are summarized in Table 2 which is on the following page. Examination of the data reproduced in this table shows that the addition of reading attitude scores does not result in significantly greater predictability of reading vocabulary than that
### TABLE 2
Stepwise Regression Procedure for Reading Vocabulary

<table>
<thead>
<tr>
<th>Step</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>$R^2$</td>
<td>.19</td>
</tr>
<tr>
<td>$R$</td>
<td>.43</td>
</tr>
<tr>
<td>Statistic</td>
<td></td>
</tr>
<tr>
<td>$F$</td>
<td>27.68</td>
</tr>
<tr>
<td>df</td>
<td>1, 249</td>
</tr>
<tr>
<td>$p &lt;$</td>
<td>.001</td>
</tr>
</tbody>
</table>

Variables selected with successive $\beta$-coefficients

CIMM/HN: IQ .43

**NOTE:** Since only one variable was selected the values listed for $R$ and $R^2$ are equivalent to regular product-moment values i.e., $r$ and $r^2$. Also the $F$-ratio reported above is equivalent to $t^2$ or the square of the regular value used in a $t$-test, i.e., $F = t^2$. 
provided by a single estimate of scholastic aptitude. In fact, only this variable was selected to achieve maximum predication for the vocabulary criterion. The $R$ between the intelligence quotient (IQ) from the CTTM or H-N was .43 which with ($df = 1, 429$) was significant at the .001 level. That is, the F-ratio associated with this $R$ was 27.68 which far exceeded the significance level ($p_2 = .05$) specified a priori. The associated $R^2$ value was .19 which means that about 19% of the variance in the vocabulary criterion can be explained in terms of the ability measurement described earlier.

The statistics reported above were the ones specified a priori when it was not anticipated that only one predictor variable would be selected. Since only one predictor was selected then the values for $R$ and $R^2$ reported above are the same as simple product-moment correlation coefficients ($r$s) and their squares ($r^2$s) can be treated as such. Similarly, the F-ratio reported above is the same as the square of a t-value since only one predictor was selected.

The regression equation obtained for the Reading Comprehension subtest was more complex than the one for the Reading Vocabulary subtest which is described above. This statement is self-evident from inspection of Table 3 on the following page where the raw and standard score regression equations are available. That is, the regression equation for reading comprehension included three variables whereas the equation for reading vocabulary consisted of only a single variable.

As in the case of reading vocabulary, the first variable selected for reading comprehension was the IQ score from the CTTM or H-N. Of
### TABLE 3
Stepwise Regression Procedure for Reading Comprehension

<table>
<thead>
<tr>
<th>Step</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>(R^2)</td>
<td>.24</td>
<td>.32</td>
<td>.34</td>
</tr>
<tr>
<td>(R)</td>
<td>.49</td>
<td>.56</td>
<td>.59</td>
</tr>
<tr>
<td>Statistic</td>
<td>F</td>
<td>14.00</td>
<td>4.38</td>
</tr>
<tr>
<td>df</td>
<td>1,429</td>
<td>1,428</td>
<td>1,427</td>
</tr>
<tr>
<td>(p&lt;)</td>
<td>.001</td>
<td>.001</td>
<td>.01</td>
</tr>
</tbody>
</table>

Variables Selected with Successive \(\beta\)-coefficients

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMM/HN: IQ</td>
<td>.49</td>
<td>.42</td>
<td>.41</td>
</tr>
<tr>
<td>IAR: I Plus</td>
<td>.29</td>
<td>.27</td>
<td></td>
</tr>
<tr>
<td>SRA: Reading Anxiety</td>
<td></td>
<td></td>
<td>.16</td>
</tr>
</tbody>
</table>

NOTE: An \(F\)-ratio of 20.51 (df 3, 427, \(p<.001\)) was obtained for the \(R\) of .59 which was obtained at the third step of the regression procedure. This \(F\)-ratio should not be confused with the \(F\)-ratios reported in this table which are used to test for successive increments in \(R^2\).
course, this finding suggests that scholastic aptitude and/or intelligence is the most important predictor of reading comprehension. The $R$ between IQ score and the score on the Reading Comprehension subtest was .49 which is significant at the .001 level. This significance level suggests that one might expect to obtain such a large $R$ by chance approximately one time in a thousand. The square of this $R$ was .24 which means that approximately 24% of the variance in the Reading Comprehension subtest can be explained in terms of IQ alone. The $F$-ratio for this $R^2$ was 37.5 ($df = 1, 429$) and it resulted in the $p$-value noted above.

The second variable selected was the I+ score from the IAR which was also selected with a positive $\beta$-weight. This finding means that those students who are best in reading vocabulary also tend to be the ones who are highest in I+. By definition of the I+ score those students who are highest in reading comprehension tend also to be the ones who see positive events in their lives as being a function of their own behavior. Stated alternatively, they are quite willing to take credit for the good things which happen to them. The $F$-ratio for the increment in $R^2$ resulting from adding this variable was 14.00 ($df = 1, 428$) which was significant at the .001 level. Thus, one can conclude with confidence that those students who view positive events in their lives as the result of their own behavior also tend to achieve more effectively in the area of reading comprehension.

The third and final variable selected for the regression equation was the Reading Anxiety subtest score from the Survey. Addition of this score resulted in an increment in $R^2$ which was significant at
the .01 level. The F-ratio for this increment was 4.38 (df = 1, 427) and the actual increase in R was from .56 to .59.

The F-ratio for the R of .59 which was obtained for the three variables in the final regression equation was 20.51 (df = 3, 427) which was significant at the .01 level. By taking the square of this R, one gets an $R^2$ of .34 which means that the relationship between these three variables and reading comprehension is strong enough to account for about one-third of its variance. From a conceptual standpoint, it seems reasonable to say that this relationship is substantial as well as highly significant but at the same time, unremarkable, in terms of the predictability obtained through other methods.

Examination of the relative magnitude of the squared $\beta$-weights shows that scholastic aptitude and/or intelligence makes by far the largest contribution to the equation. The internality plus (I+) score from the IAR made an intermediate contribution but the Reading Anxiety score from the SRA made only a slight contribution.

In terms of the original research question, the present findings suggest that knowledge of reading attitudes does not result in an appreciable increment in the predictability of reading achievement beyond that which can be obtained by IQ scores alone. This position is clear-cut in the case of reading vocabulary and holds for reading comprehension because the increment resulting from the addition of the Reading Anxiety score was only slight despite a relatively high level of significance. With I+, the situation is somewhat more promising because addition of this score resulted in a more substantial increment in $R^2$. That is, I+ may well have an important relationship to achievement in the area of reading comprehension.
Question 3: Are the reading anxiety scores of children with a more external locus of control higher than those for children with a more internal locus of control?

To answer this question it was necessary to examine the product-moment correlations (rs) between scores for the Reading Anxiety factor and the internality scores, both internality plus (I+) and internality minus (I-) from the Intellectual Achievement Responsibility scale (IAR). These correlations (rs) are reported in Table 1 which contains the intercorrelations among all the variables included in the study. Examination of these correlations was necessary since this statistic provides an accurate indication of the relationship between two variables if these variables are related to each other in a linear fashion, i.e., if their relationship can be described in terms of a straight line function.

However, a product-moment correlation (r) gives an accurate indication of the strength between two variables only if the relationship between them is indeed linear as described above. If the relationship is nonlinear, then its magnitude is underestimated to the extent that it departs from linearity (Garrett, 1966). When there is reason to suspect that a relationship departs from linearity, a scattergram should always be plotted rather than assuming that the obtained r provides a true index of the strength of the relationship. There is reason to suspect that this may well be the case with the correlations of concern in this section. That is, most types of operations designed to measure anxiety have shown curvilinear relationship with other performance variables. For this reason, it was
necessary to plot scattergrams as well as examine the $r$s between reading anxiety scores and scores on the I+ and I- dimensions of the IAR.

Examination of the $r$s between reading anxiety and locus of control shows a rather small but highly significant relationship. This applies to both I+ and I- scores from the IAR. The $r$ between reading anxiety and internality minus (I-) was .24 which with ($df = 429$) attained significance at the .01 level. The square of this $r$ is approximately equal to .06 which means that the percentage of variance held in common between reading anxiety and internality minus was approximately 6%. This amount of common variance does not suggest a strong relationship even though the obtained $r$ was significant at a high probability level. Thus, these data suggest a small but highly significant positive relationship between reading anxiety and internality minus or the tendency to attribute undesirable events to one's own behavior.

The relationship between reading anxiety and internality plus was highly similar to the one described above for reading anxiety and internality minus. In fact, the magnitude of the obtained $r$ was approximately equal in both cases. The $r$ between reading anxiety and internality plus, was also .24 ($df = 429$) which attained significance at the .01 level. Again, the percentage variance common to the two variables was 6% which suggests a small but systematic relationship. That is, there appears to be an appreciable positive relationship between reading anxiety and the tendency to attribute desirable events to the consequences of one's own behavior.
The positive rs between reading anxiety and internality mean that students who attribute desirable and undesirable events to the consequences of their own behavior are the ones most likely to feel greater anxiety about their reading. As noted earlier, this tendency is relatively weak but systematic in that it cannot likely be attributed to chance. This particular set of findings was not in the direction hypothesized a priori on the basis of previous research. That is, a large collection of previous studies suggest a negative relationship between most anxiety measures and constructs similar to locus of control. This issue will be treated in the following chapter but it is of sufficient importance to warrant notice at this point in the text.

Scattergrams were plotted for the rs between reading anxiety and internality minus and internality plus. These scattergrams suggested an element of non-linearity so the next logical step was pursued. In specific, curves were fitted to describe the relationship between reading anxiety and the two locus of control variables. These two functions are reproduced in Figures 1 and 2 on the following pages. With both figures, reading anxiety was plotted across internality. That is, the mean reading anxiety scores were plotted across established score intervals for internality plus and internality minus. Examination of these plots failed to show a clear-cut case of the kind of bow-shaped curvilinear relationship ordinarily found between anxiety measures and other psychological constructs and/or performance variables. A few extreme scores tended to somewhat distort the shape of the relationships but still the number of inflection points suggested
FIGURE 1
Reading Anxiety as a Function of Internality Minus
FIGURE 2

Reading Anxiety as a Function of Internality Plus
a more complex relationship between reading anxiety and internality scores. Any attempts to analyze such a complex relationship was clearly beyond the scope of the present endeavor.

**Question 4:** What developmental changes occur in the basic dimensions of reading attitude from grade four through grade six?

The data necessary to answer this question were obtained through a one-way analysis of variance (ANOVA) with grade level as the independent variable. Eight parallel analyses were necessary since the dependent variables were scores on each of the eight respective dimensions of concern in the study. Stated in another way, each of the eight dimensions of reading attitude served as the dependent variable for one of the eight respective analyses of variance. The purpose of the analysis, as stated earlier, was to determine whether there are appreciable developmental changes in reading attitude from grade four through grade six. Since not all significant changes are large enough to be of importance, a separate tabling arrangement was used to call attention to the actual mean differences across grades as well as the results of the analysis of variance itself. That is, the results of the analysis of variance for each of the eight dependent variables or dimensions of reading attitude is first presented. After this, a second table is used to show the actual means and standard deviations at each grade level. Thus, the results of each analysis of variance are reported in two separate forms so the attention of the reader will be focused upon the magnitude of the mean differences as well as the overall results included in the ANOVA summary table.
The results of the analysis of variance for expressed reading difficulty are summarized in Table 4 on the following page. An F-ratio of 4.98 was obtained for changes across grade, i.e., from grades four through six. With \( df = 2, 428 \); this F-ratio of 4.98 attained statistical significance at the .01 level which exceeded the alpha level (.05) specified \textit{a priori} for testing the null hypothesis of no significant changes in expressed reading difficulty across the three intermediate grades. Within the framework proposed by Engin, Wallbrown, and Brown (1976) this finding indicates that there is a significant change in expressed reading difficulty or "... the extent to which a student perceives of himself as having difficulty with reading and is willing to acknowledge the existence of a problem". (p. 312) In more operational terms it means that there is a significant developmental change in the total score for the seventeen items from the \textit{Survey} which were used to define expressed reading difficulty.

Examination of the data shown in Table 5 on the following page provides a basis for determining the nature of the changes in expressed reading difficulty which take place from grade four through grade six. That is, the means and standard deviations (SDs) are reported for each grade level. In general terms, we find a sharp increase in expressed reading difficulty between fourth and fifth grade along with a slight decrease from fifth grade to sixth grade. This is shown by a mean score of 35.3 (SD = 10.6) for grade four which increased to 39.4 (SD = 11.7) at grade five and then decreased to 37.1 (SD = 10.4) at grade six. The increase in expressed reading difficulty from grade four to grade five is sharp and seems important enough to justify further
TABLE 4
Analysis of Variance Summary Table for Expressed Reading Difficulty

<table>
<thead>
<tr>
<th></th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>1183.4375</td>
<td>2</td>
<td>591.7187</td>
<td>4.98*</td>
</tr>
<tr>
<td>Within Groups</td>
<td>50884.8125</td>
<td>428</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>52068.25</td>
<td>430</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Eta Squared 0.0227

*p<.01
## TABLE 5
Means and Standard Deviations for Expressed Reading Difficulty at Grades Four, Five, and Six

<table>
<thead>
<tr>
<th>Grade</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fourth</td>
<td>35.3</td>
<td>10.6</td>
</tr>
<tr>
<td>Fifth</td>
<td>39.4</td>
<td>11.7</td>
</tr>
<tr>
<td>Sixth</td>
<td>37.1</td>
<td>10.4</td>
</tr>
</tbody>
</table>
investigation since the cause cannot be ascertained from the present study. The decrease in expressed reading difficulty from grade five to grade six is not as marked as the one noted between grades four and five. As in the previous case, the cause cannot be ascertained but one is tempted to surmise that it may simply reflect a reluctance to admit the existence of difficulties with reading rather than an actual decrease in the difficulties themselves.

The results of the analysis of variance for the reading as direct reinforcement dimension are available in Table 6 on the next page which summarizes the results of the ANOVA for this dimension. An $F$-ratio of $3.68 \,(df = 2, 428)$ was obtained and with these degrees of freedom was sufficiently large to be statistically significant at the .05 level which was the minimum $p$-value specified for significance. This finding indicates that there was a systematic change in scores on the reading as direct reinforcement dimension during the intermediate grades. Inspection of the mean scores for each grade level is necessary to ascertain the precise nature of the developmental changes which occurred during the intermediate grades.

The data necessary to determine the nature of these developmental changes are summarized in Table 7 on the following page which contains both the mean scores and their standard deviations (SDs) for each intermediate grade level. Careful examination of the data in Table 7 suggests a consistent increase in the direct reinforcement value of reading from grade four through grade six. The mean score on the reading as direct reinforcement dimension was $25.8 \,(SD = 10.0)$ at the fourth grade level which increased to $26.7 \,(SD = 8.9)$ at the
TABLE 6
Analysis of Variance Summary Table
for Reading as Direct Reinforcement

<table>
<thead>
<tr>
<th></th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>645.75</td>
<td>2</td>
<td>322.875</td>
<td>3.68*</td>
</tr>
<tr>
<td>Within Groups</td>
<td>37504.375</td>
<td>428</td>
<td>87.627</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>38150.125</td>
<td>430</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Eta Squared 0.0169

*p < .05
<table>
<thead>
<tr>
<th>Grade</th>
<th>M</th>
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<tr>
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<td>25.8</td>
<td>10.0</td>
</tr>
<tr>
<td>Fifth</td>
<td>26.7</td>
<td>8.9</td>
</tr>
<tr>
<td>Sixth</td>
<td>28.8</td>
<td>9.3</td>
</tr>
</tbody>
</table>
fifth grade level and, in turn, increased to 28.8 (SD = 9.3) at the sixth grade level. As indicated earlier, such a pattern of mean scores indicates a relatively small but systematic increase in direct reinforcement value of reading activities during the intermediate grades. In terms of the Survey items used to define this factor, one can say that students get more reinforcement for reading activities from their peers, parents, and teachers as they move through the intermediate grades from four through six.

The results of the analysis of variance for the reading as enjoyment dimension are summarized in Table 8 on the following page. This ANOVA table shows the statistics which were obtained in the course of data analysis designed to determine whether systematic changes in reading enjoyment occur between grades four and six. Inspection of Table 8 shows an F-ratio of only 1.69 (df = 2, 428) which did not attain significance at the .05 level. That is, one cannot reject the null hypothesis which states that there are no significant changes on scores for the reading as enjoyment factor during the intermediate grades. In more familiar terms, there is no reason to believe that we have a significant change in scores on the reading as enjoyment dimension from grade four through grade six.

The means and standard deviations from the reading as enjoyment dimension are reproduced in Table 9 for the benefit of readers who might be interested in inspecting them. However, the reader should be cautioned against giving credence to small differences which are neither statistically significant nor systematic.
TABLE 8
Analysis of Variance Summary Table for Reading as Enjoyment

<table>
<thead>
<tr>
<th></th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>267.125</td>
<td>2</td>
<td>133.5625</td>
<td>1.69</td>
</tr>
<tr>
<td>Within Groups</td>
<td>33827.75</td>
<td>428</td>
<td>79.0368</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>34094.875</td>
<td>430</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eta Squared</td>
<td>0.0078</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TABLE 9
Means and Standard Deviations for Reading as Enjoyment at Grades Four, Five, and Six

<table>
<thead>
<tr>
<th>Grade</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fourth</td>
<td>22.9</td>
<td>8.4</td>
</tr>
<tr>
<td>Fifth</td>
<td>24.7</td>
<td>10.0</td>
</tr>
<tr>
<td>Sixth</td>
<td>24.4</td>
<td>8.1</td>
</tr>
</tbody>
</table>
The results of the analysis of variance for alternative learning modes dimension are summarized in Tables 10 and 11. The ANOVA summary is reproduced in Table 10 and the means and standard deviations (SDs) for scores on the alternative learning modes at each grade level are reported in Table 11. Examination of the statistics reported in the ANOVA summary table does not indicate any significant changes in the alternative learning modes dimension during the intermediate grades. In specific, an $F$-ratio of 1.55 ($\text{df} = 2, 428$) was obtained, and since this value was not large enough to attain significance at the .05 level, it was not possible to reject the null hypothesis of no significant difference between scores at the three grade levels. Under these circumstances, we have no justification for believing that the scores on the alternative learning modes dimension vary systematically as the student moves from grade four through six. That is, there is no reason to suspect developmental changes in the alternative learning modes dimension during this age span.

Since the results of the analysis of variance failed to indicate appreciable developmental changes the means and standard deviations reported in Table 11 are of questionable value. They are reported, however, for the convenience of the reader who might be interested in inspecting such data. Again, the reader should be cautioned against attributing undue importance to such information.

The results of the analysis of variance for the reading group dimension are contained in Tables 12 and 13. The ANOVA summary is contained in Table 12 and the means and standard deviations (SDs) for this dimension at each grade level are reported in Table 13. Examination
<table>
<thead>
<tr>
<th></th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>115.5625</td>
<td>2</td>
<td>57.7313</td>
<td>1.55</td>
</tr>
<tr>
<td>Within Groups</td>
<td>15950.375</td>
<td>428</td>
<td>37.2672</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>16065.9375</td>
<td>430</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Eta Squared 0.0072
TABLE 11

Means and Standard Deviations for Alternative Learning Modes at Grades Four, Five, and Six

<table>
<thead>
<tr>
<th>Grade</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fourth</td>
<td>17.4</td>
<td>5.8</td>
</tr>
<tr>
<td>Fifth</td>
<td>18.7</td>
<td>6.5</td>
</tr>
<tr>
<td>Sixth</td>
<td>18.3</td>
<td>6.0</td>
</tr>
<tr>
<td></td>
<td>SS</td>
<td>df</td>
</tr>
<tr>
<td>----------------------</td>
<td>--------</td>
<td>----</td>
</tr>
<tr>
<td>Between Groups</td>
<td>29.6055</td>
<td>2</td>
</tr>
<tr>
<td>Within Groups</td>
<td>10842.2227</td>
<td>428</td>
</tr>
<tr>
<td>Total</td>
<td>10871.8281</td>
<td>430</td>
</tr>
<tr>
<td>Eta Squared</td>
<td>0.0027</td>
<td></td>
</tr>
</tbody>
</table>
TABLE 13
Means and Standard Deviations for Reading Group
at Grades Four, Five and Six

<table>
<thead>
<tr>
<th>Grade</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fourth</td>
<td>10.1</td>
<td>5.3</td>
</tr>
<tr>
<td>Fifth</td>
<td>9.8</td>
<td>4.9</td>
</tr>
<tr>
<td>Sixth</td>
<td>10.4</td>
<td>4.9</td>
</tr>
</tbody>
</table>
of the data summarized in Table 12 does not indicate any systematic change in the reading group dimension from grade four through grade six. More specifically, an $F$-ratio ($df = 2, 428$) of only 0.58 was obtained and this statistic is not sufficient for significance at the .05 level. Thus, the null hypothesis could not be rejected and we have no reason to believe that appreciable changes on the reading group dimension occur during the intermediate grades. As in previous analyses, the means and standard deviations (SDs) for this dimension at the three grade levels are reported in Table 13 for the benefit of interested readers.

The results of the analysis of variance for the reading anxiety dimension are contained in Table 14 which is on the following page. Examination of these data indicate a highly significant change in reading anxiety scores from grade four through grade six. An $F$-ratio of 11.43 was obtained which with $df = 2, 428$ attained significance at the .001 level or much beyond the p-value of .05 specified for purposes of the present study. Thus, it was possible to reject the null hypothesis of no significant differences in reading anxiety which could be attributed to developmental changes across the intermediate grades.

As noted earlier, the means and standard deviations reported in Table 15 provide the basis for determining the nature of the developmental changes across grade levels. The mean score for fourth grades was 15.3 ($SD = 6.2$) while the mean score was 18.6 ($SD = 5.8$) at the fifth grade level and then dropped to 16.9 ($SD = 5.2$) at the sixth grade level. These statistics indicate a sharp rise in reading
<table>
<thead>
<tr>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>749.457</td>
<td>2</td>
<td>374.7285</td>
</tr>
<tr>
<td>Within Groups</td>
<td>14026.668</td>
<td>428</td>
<td>32.7726</td>
</tr>
<tr>
<td>Total</td>
<td>14776.125</td>
<td>430</td>
<td></td>
</tr>
</tbody>
</table>

Eta Squared 0.0507

*p < .001
<table>
<thead>
<tr>
<th>Grade</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fourth</td>
<td>15.3</td>
<td>6.2</td>
</tr>
<tr>
<td>Fifth</td>
<td>18.6</td>
<td>5.8</td>
</tr>
<tr>
<td>Sixth</td>
<td>16.9</td>
<td>5.2</td>
</tr>
</tbody>
</table>
anxiety from the fourth grade through the fifth grade and then a moderate drop to an intermediate level during sixth grade. These findings cannot be explained within the confines of the present study. However, there is a clear parallel with the trend obtained for expressed reading difficulty where there was also a sharp increase from the fourth to the fifth grade and then a moderate decline to an intermediate level. In the case of reading anxiety, one might also surmise that the decline actually represents an increased reluctance to admit reading anxiety rather than a decline in anxiety per se. This hypothesis must, however, remain in the realm of speculation until data are available to reject or confirm it.

The results of the analysis of variance for the silent vs. oral reading dimension are summarized in Table 16, and the associated means and standard deviations (SDs) across grade levels are reported in Table 17 to facilitate interpretation of data in the ANOVA summary table. As with previous dimensions, the analysis of variance was performed to test the null hypothesis that no significant differences exist between scores on the oral vs. silent reading dimensions at the three grade levels of concern in the study, i.e., grades four, five, and six. Scrutiny of the findings reported in the ANOVA summary table shows that the null hypothesis can be rejected with a substantial degree of confidence. The F-ratio obtained for this dimension was 4.73 (df = 2, 428) which was statistically significant at the .01 level. For this reason, it seems reasonable for us to conclude that students' relative preference for silent reading rather than oral reading increases from grade four through grade six.
### TABLE 16

Analysis of Variance Summary Table for Silent vs. Oral Reading

<table>
<thead>
<tr>
<th></th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>303.3242</td>
<td>2</td>
<td>151.6621</td>
<td>4.73*</td>
</tr>
<tr>
<td>Within Groups</td>
<td>13733.3008</td>
<td>428</td>
<td>32.0871</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>14036.625</td>
<td>430</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Eta Squared 0.0216

*p < .01
# Table 17

Means and Standard Deviation for Silent vs. Oral Reading at Grades Four, Five, and Six

<table>
<thead>
<tr>
<th>Grade</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fourth</td>
<td>15.8</td>
<td>5.5</td>
</tr>
<tr>
<td>Fifth</td>
<td>17.6</td>
<td>5.9</td>
</tr>
<tr>
<td>Sixth</td>
<td>17.6</td>
<td>5.6</td>
</tr>
</tbody>
</table>
The specific nature of the developmental changes taking place between grades four and six can best be understood by examining the means and standard deviations (SDs) across grade levels. In this regard, the scores for this dimension increased from a mean of 15.8 (SD = 5.5) at grade four to a mean of 17.6 (SD = 5.9) at grade five and then remained the same with a mean of 17.6 (SD = 5.6) at the sixth grade level. In this case, the significance of the developmental effect is obviously due to the increase which occurred between grade four and grade five since the mean scores on this dimension remained constant across the fifth and sixth grades.

The results of the analysis of variance for the comics factor indicated a slight but consistent increase in scores across the three intermediate grades. The supporting data are available in Table 18 and Table 19. Table 18 contains the ANOVA summary table and Table 19 shows the means and standard deviations (SDs) for the comics dimension at each of the three grade levels. An F-ratio of 2.89 (df = 2, 428) was obtained for developmental effects and this value attained significance at the .05 level which was sufficient to reject the null hypothesis. In different words, this finding enables us to assert the existence of real differences between grade levels with a substantial degree of confidence. Thus, we assume that students in the intermediate grades vary systematically in terms of their attitude toward reading comics and the extent to which they value comics.

The specific nature of these differences is evident from inspection of the means and standard deviations (SDs) for each grade level on the comics dimension. In specific, we find a gradual increase
### TABLE 18

Analysis of Variance Summary Table for Comics

<table>
<thead>
<tr>
<th></th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>121.1797</td>
<td>2</td>
<td>60.5898</td>
<td>2.89*</td>
</tr>
<tr>
<td>Within Groups</td>
<td>8962.2969</td>
<td>428</td>
<td>20.9399</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>9083.4766</td>
<td>430</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Eta Squared** 0.0133

*p<.05*
TABLE 19
Means and Standard Deviations for Comics
at Grade Four, Five, and Six

<table>
<thead>
<tr>
<th>Grade</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fourth</td>
<td>9.3</td>
<td>4.8</td>
</tr>
<tr>
<td>Fifth</td>
<td>10.2</td>
<td>4.7</td>
</tr>
<tr>
<td>Sixth</td>
<td>10.6</td>
<td>4.2</td>
</tr>
</tbody>
</table>
in scores on the comics dimension which extends across all three intermediate grades. The mean score for fourth graders was 9.3 (SD = 4.8) which increased to 10.2 (SD = 4.7) for fifth graders and to 10.6 (SD = 4.2) in the case of sixth graders.

Other Findings

As noted in the chapter introduction it seemed advisable to add a fifth section to the present chapter. This section was added to present data not directly related to any of the four research questions which were specified in the dissertation proposal and subsequently transferred to Chapter III of the dissertation itself. In brief, the data reported in the present section were not actually required insofar as meeting the requirements for the dissertation. However, some of the findings which emerged in an indirect fashion are probably as important as the results obtained through strict adherence to the research design specified a priori. Given such conditions, it seemed reasonable to present all findings of importance to the areas of reading attitude, locus of control, and related variables.

For example, examination of the intercorrelations among scores for the eight dimensions of reading interest is instructive. In this regard, it is interesting to note that the correlation (r) between scores on the Expressed Reading Difficulty and Reading Anxiety subtests of the Survey was .63 which attained significance at the .001 level. This finding is not only significant from a statistical standpoint but also important from the standpoint that it shows that a substantial variance component is common to these two dimensions of reading attitude. From a conceptual perspective, this finding has the effect of
suggesting that the student who perceives of himself as having difficulties with reading and is willing to acknowledge these difficulties is also more likely to feel anxiety about his adequacy in reading.

Since the Survey was developed on the basis of an orthogonal factor analysis of reading attitudes, one might be tempted to leap to the conclusion that such a finding detracts from the construct validity of the scale. However, this is not necessarily the case and some related issues should be considered. For example, the scores of these two dimensions are obtained by taking a straight linear combination of the items which in previous research loaded the two respective factors above a certain minimum cut-off point. All of the items selected to measure a factor did not have the same loadings. Theoretically speaking, one should use a procedure whereby the items loading highest on a factor are given the greatest weight in determining the score for that factor. If, for example, a given item had a loading of .92 on the Expressed Reading Difficulty factor, then it should receive greater weight in determining the score for that factor than the weight for an item with a loading for only .50.

Procedures exist for determining scores in this manner. In fact, one obtains factor scores in just such a manner. That is, factor scores are determined through stepwise regression (or some other form of regression procedure) in which item-factor correlations are treated as predictor-criterion correlations and interitem correlations are treated as predictor-intercorrelations. Such a regression procedure results in a combination of items which give an optimum estimate of the score for the factor of concern. From this perspective, the
scores for the Expressed Reading Difficulty and Reading Anxiety factors are not as accurate as the ones which might be obtained from a weighted linear combination of items comprising the respective scales. Thus, some of the correlation between these two factors can be explained on the basis of equal weighting of all items measuring the factors.

From a practical standpoint, however, the consumers of educational and psychological tests have not been willing to spend the effort necessary to obtain weighted factor scores. In the case of the Survey, for example, it is most unlikely that a classroom teacher would be willing to perform up to eighteen sequential multiplication operations and the same number of associated addition operations to obtain a student's score on one dimension of reading attitude. Getting scores for the other seven factors would require parallel operations. Under these circumstances, teachers would not use the scale, so from the standpoint of practicality, simple unit weight must be used.

Another consideration in evaluating the correlation between the scores for Expressed Reading Difficulty and Reading Anxiety is the possibility that these two dimensions are related to one another in an oblique rather than an orthogonal manner. Not all dimensions of human behavior especially in the attitudinal and personality domains, need be independent of each other. This is the reason we have both oblique and orthogonal methods of factor analysis. Some researchers and statisticians favor one approach and others favor the reverse. From this finding a meaningful research problem can be designed. This would involve determining whether the relationship between these two dimensions can best be characterized as oblique or orthogonal or even whether this varies from sample to sample.
The discussion above was focused around the Expressed Reading Difficulty and Reading Anxiety dimensions about the concepts are of equal importance in the case of several other dimensions as well. For example, there was also a moderately strong relationship between the Expressed Reading Difficulty dimension and the Alternative Learning Modes dimension. The correlation (r) between scores for these two dimensions was .34 which attained significance at the .001 level. The square of this correlation is of sufficient magnitude to indicate the existence of a moderate amount of common variance between these two dimensions, i.e., approximately 12%. In conceptual terms, this finding indicates that students who perceive of themselves as having difficulty with reading are somewhat more likely to prefer to learn new things through approaches other than reading, e.g., being shown, being told, or looking at charts and graphs.

To proceed one step further, the two dimensions showing significant positive correlations (rs) with the Expressed Reading Difficulty dimension can both be considered in relationship to it. In this context, it is important to note that the Expressed Reading Difficulty dimension is the strongest and most invariant single dimension of reading attitude measured by the Survey. This statement can be supported by the results of earlier unpublished research as well as the results of the Engin, Wallbrown, and Brown (1976) study and research currently in progress. From this standpoint, scores on the other two dimensions should probably be interpreted in terms of their relationship to the Expressed Reading Difficulty dimension. That is, we will consider the question of how and why a student scoring high on Expressed Reading
Difficulty might also score high on Reading Anxiety and Alternative Learning Modes. Here it is important to note the student who scores high on Expressed Reading Difficulty is the one who feels that he has a reading problem and is willing to admit it. In these terms, we can understand how a student who sees himself as having a reading problem would be much more likely to feel anxiety about this problem. This explains the correlation between the Expressed Reading Difficulty and Reading Anxiety dimensions; i.e., students who have reading problems and acknowledge them also show a strong tendency to feel anxiety about these problems. From a conceptual standpoint, then, it is not difficult to defend the assertion that individuals who have problems in an area are also the ones who feel an anxiety about their adequacy in that area. This line of reasoning has the effect of suggesting that one should expect an oblique relationship between the two dimensions of concern.

The same line of reasoning also applies to the correlation between the Expressed Reading Difficulty and Alternative Learning Modes dimensions even though this relationship is not as strong as the one discussed above. That is, we can easily see how an individual who has difficulty with reading would also prefer to learn through other modes when they are available. In these terms, we can also see how an orthogonal relationship might exist between the Expressed Reading Difficulty and Alternative Learning Modes dimensions. Here again, the suggestion seems to be that one should consider using an oblique rather than an orthogonal solution in future research with reading attitudes.
Several other sets of correlations suggest that using oblique rather than orthogonal solutions might improve the quality of research in the area of reading attitudes. In specific, the Reading as Direct reinforcement dimension showed the following pattern of correlations with other dimensions: Reading as Enjoyment ($r = .54, p < .001$), Reading Group ($r = .64, p < .001$), and Comics ($r = .44, p < .001$). As in the previous case, this pattern of correlations is not difficult to rationalize and interpret. The magnitude of the correlation between Reading as Enjoyment and Reading as Direct Reinforcement can be understood in terms of a developmental process. That is, one can see how receiving reinforcement from peers, teachers, and parents results in habituation of reading activities to the point that the student is very successful at the reading-type activities and comes to enjoy them because of their intrinsic value. Here one can see how different students might be at different stages in this process of habituation and split between the two factors. This position implies, of course, that these two stages of attitude development are distinguishable but at the same time related in terms of a developmental sequence.

The same interpretation can be extended to the Reading Group and Comics dimensions. There is a tendency for students who enjoy reading because of its direct reinforcement value to also enjoy their reading group and reading the comics because they get reinforcement through such activities. Here again we have distinct but related processes. Students who, in general, get reinforcement from their reading also tend to be the ones who enjoy reading the comics and activities involved in their reading group. The distinctiveness of
these two factors from Reading as Direct Reinforcement can be understood from the standpoint that not all of the students who get reinforcement for reading happen to be reinforced for either their reading group or reading comic-type material. However, there is a sufficient number of individuals who do enjoy these activities to account for the relationships among the three dimensions. Obviously, the same type of reasoning can be used to explain the correlations between Reading as Enjoyment and the two other related dimension, i.e., Reading Group ($r = .53, p < .001$) and Comics ($r = .26, p < .001$). In this regard, it is interesting that the correlation between Comics and Reading as Direct Reinforcement ($r = .44$) is significantly higher ($p < .01$) than the correlation between Comics and Reading as Enjoyment ($r = .26$). This finding seems to support the developmental hypothesis that reading enjoyment develops from reinforcement which parents, teachers, and peers provide for reading-type activities. In more concrete terms, this finding suggests that students who read for direct reinforcement are more likely to read comics than those who read for intrinsic satisfaction. Here it may well be that students who read for intrinsic satisfaction tend to find materials other than comics to be more satisfying. This hypothesis seems worthy of attention from researchers concerned with the area of attitudes and values.
Chapter V

DISCUSSION

The present chapter was devoted to examining some of the issues involved in conducting attitudinal research for the area of reading. That is, the results of this study are considered from the standpoint of their meaning as it relates to designing and implementing future research in the area of reading attitudes. One of the major objectives of this discussion is to identify and delineate areas of uncertainty identified in the present study and make suggestions for the benefit of those who will be involved in future research. Insofar as possible, an attempt was made to provide a logical anchor point for further research in the area. Such an approach necessarily involves making specific suggestions as to what kind of studies should be conducted as well as providing a more generalized examination of the issues involved in planning future research which will be meaningful in nature. The remainder of this chapter is divided into sections indicated by side headings designed to serve the purpose of organizing the material discussed in the chapter.

Locus of Control and Reading Attitude

The findings discussed in the previous chapter did not indicate a substantial relationship between internal locus of control and any of the eight dimensions of reading attitude considered in the present study. A few of the rs between locus of control variables (internality
plus, internality minus, and total internality) and reading attitude dimensions attained significance, but the magnitude of the obtained $r_s$ was in all cases too small to indicate a substantial amount of common variance. Moreover, given the number of correlations ($r_s$) considered, one would expect several to attain significance on the basis of chance alone. For all practical purposes, then the present findings do not suggest a noteworthy relationship between internal locus of control and any of the eight dimensions of reading attitude included in the study. The results of the study were disappointing from the standpoint that the anticipated findings did not emerge. That is, the general hypothesis developed earlier was not supported.

However, several issues should probably be considered in evaluating these findings. As noted by Phares (1976) the failure to obtain congruent results in locus of control research has often been the result of selecting the wrong scale to measure the construct in a given population. In operational terms, the present findings were obtained through use of the IAR scale which is only one of several instruments available for measuring the construct locus of control. That is, the reader should exercise caution in generalizing from the IAR scale to locus of control as a construct. By this we should understand that locus of control as a construct can be operationalized in different ways such as situational testing, observations, ratings, and projective tests as well as using several other types of opinion and/or questionnaire scales. It may also be that the IAR scale was not particularly appropriate for use with inner-city children such as those who participated in the present study. Under these circumstances,
other researchers should not be discouraged from pursuing research concerning the relationship between locus of control and reading attitude.

Another possibility exists which might account for the failure to obtain significant relationships between the locus of control variables and any of the dimensions of reading attitude. In retrospect, the present endeavor may have been too simplistic in the design from the standpoint of expecting a direct linear relationship between the variables of concern. Such is often the case, but as indicated by Kaplan (1962), knowledge is incremental in nature and emerges from the process of inquiry itself. Underwood's (1957) comments serve to emphasize this point when he pointed out that most of the initial studies involving a new area or topic tend to be naive and simplistic when they are viewed in retrospect.

Both authorities cited above call attention to the incremental nature of research and the fact that one should not abandon a topic which has theoretical significance. Their comments are relevant to the areas of locus of control and reading attitude because they call attention to the need to reevaluate, redesign, and redirect research efforts until one is sure that the topic is unfruitful. The mistakes of the study, if indeed there were mistakes, should be pointed out for future researchers.

Within this vein, it may well be that one of the shortcomings of the present study was to overlook the fact that both the Survey and the IAR scale require the student to report his own self-perceptions. Nunnally (1967) called attention to the fact that
self-report instruments are dependent on the examinee's understanding of himself as well as his willingness to reveal what he actually knows about himself. From this perspective we can see how the results of the present study might well have been confounded by such variables. Borg (1971) suggests that one of the best ways to control confounding variables is to make them part of the design of the study.

With this approach in mind, the elements of a promising study can be outlined. First, one would identify a large sample of intermediate grade children and administer measures of reading achievement, scholastic aptitude, reading attitude, and several different measures of locus of control. These measures would be counterbalanced to control for order effect and administered over an appropriate time span. After this stage, one would then identify those students with accurate and inaccurate perceptions about their level of reading achievement and compare these two groups on locus of control. At this stage the most appropriate statistical technique would probably be discriminant function analysis but one might want to use analysis of variance with degree of discrepancy between self-perceptions of reading achievement as the independent variable and locus of control as the dependent variable.

The general hypothesis for such a study would be that those students with accurate self-perceptions of their reading skills are those with an internal locus of control, whereas those students with inaccurate self-perceptions would be those with an external locus of control. Even within this framework it might be necessary to consider internality plus (I+) and internality minus (I-) in data analysis. In
any case, defining the discrepancy between actual reading achievement and self-perceptions would be somewhat of a problem but either self-ratings of behavior or scores on the Expressed Reading Difficulty dimension could be used. For example, scores on the Expressed Reading Difficulty dimension could be standardized into the same units as an achievement test so that discrepancy scores (real vs. self-perceptions) of reading difficulty could be compared. A similar approach could be developed for self-ratings of reading achievement so that they could be compared with actual achievement as indicated by standardized tests.

Reading Achievement and Reading Attitude

Generally speaking, the results of the present study suggest that adding information about reading attitudes does not appreciably improve the predictability of reading achievement over that which can be attained by using a single measure of scholastic aptitude and/or general intelligence. Obviously, this finding is not in agreement with either the general hypothesis for the present study or the results of previous research (see Engin, Wallbrown, & Brown, 1976). The results of the Engin, Wallbrown, and Brown (1976) study as well as several unpublished studies showed a substantial (and significant) correlation between scores on the Expressed Reading Difficulty dimension and achievement in both vocabulary and comprehension. In addition, the force of logic compels one to suspect that reading attitude should exercise a significant influence on reading achievement. Stated in an alternative fashion, given two students with comparable scholastic aptitude and/or intelligence, one would expect the student with the more positive attitude to achieve appreciably higher than the student...
with a poor attitude. Somehow, the results of the present study indicate that this does not occur. Here again, it may well be that the contaminating variable is either the accuracy of the student's self-perceptions or his/her willingness to report these perceptions accurately (Nunnally, 1967). Another possibility is that correlations are lower because of restriction of range in the present sample. Certainly the logic of the argument presented above would lead one to question the nature of the present findings.

From the discussion above, the need for further research on the topic is clearly evident. That is, one must question either the accuracy of the students' self-perceptions about their adequacy in reading or their willingness to report the perceptions truthfully. Further research seems indicated as in the case of the locus of control variable. Again, there is a need to identify those students who, for one reason or another, do not have and/or do not report an accurate perception of their achievement in the area of reading. A strategy similar to the one proposed for investigating the relationship between reading attitudes and locus of control seems indicated. The present study should, however, be replicated with several samples of children with different backgrounds before the present results are taken as representative of the population as a whole. The caution is necessary in light of the findings of Engin, Wallbrown, and Brown (1976) as well as unpublished data for preliminary studies.

In any case, a study should be designed to identify those children who give accurate self-reports of Expressed Reading Difficulty and those who give inaccurate reports. It would also be helpful to
go a step further and identify groups of children who give inaccurate self-reports of Expressed Reading Difficulty because they are reacting from the influence of social desirability or "faking good", and those who give inaccurate self-reports because they truly do not understand their own level of reading achievement. There does not exist, of course, any clear-cut proof that such a dichotomy exists among those students who have reading problems but do not indicate them when responding to the Survey. In the terminology of Underwood (1957), the hypothesis stated above does seem to make sense in that it is analytical in nature and has a substantial degree of logical compulsion. That is, we are breaking down a global phenomenon into meaningful sample components by establishing subgroups which can help us identify interaction processes suggested by logical analysis.

These two subgroups can be identified through comparing actual achievement scores with scores for Expressed Reading Difficulty and/or self-ratings of reading achievement. However, this procedure would still leave the two groups, those with inaccurate self-evaluations and "faking good" together so some means of discriminating between them would be necessary if we wish to proceed from an analytic standpoint. Some preliminary research would be necessary to discriminate between the two groups, but it would seem that an interview approach could be developed to discriminate between them. Another possible approach would be to develop a lie scale similar to the one used in Minnesota Multiphasic Personality Inventory (MMPI) which gives the individual a chance to "fake good" on a series of unrealistic items such as "I've never told a lie", or something similar. In the initial stages
of research it might be rather difficult to discriminate between the two groups but there are enough precedents so that one could eventually discriminate between those with inaccurate perceptions because of inadequate self-knowledge and those "faking good". In this regard, both Edwards (1957) and Phares (1976) cite and discuss several methods where by one can identify those individuals who "fake good".

Another approach would be to use a measure of defensiveness such as the one developed by Efran (1963) whose work is quite relevant to the topic at hand. In this study, Efran (1963) found that when students experience failure they are likely to free themselves from its effect through use of the defense mechanism of denial. His findings would suggest that those individuals "faking good" would earn low defensiveness scores whereas those with poor veridicality in their self-perception would emerge with a high defensiveness score.

When procedures are developed for discriminating between the two groups of students with large discrepancies between their self-perceptions of reading adequacy and their actual reading level, these groups would then be studied in detail to determine how they differ in terms of relevant variables such as personality structure, adaptive behavior, socialization level, sociometric status, educational history, and classroom behavior. Such data could be obtained through use of group and individual tests, teacher ratings, school records, and direct observation. The most useful procedure for analyzing such data would be discriminant function analysis which is highly suitable for determining differences among groups.
From a theoretical standpoint, it would also be useful to identify those individuals who have a discrepancy in the opposite direction between self-ratings of achievement and actual achievement as measured by standardized tests. Here we would be concerned with students who, by relative standards, have adequate reading achievement but perceive of themselves as inadequate in terms of their response to the Expressed Reading Difficulty dimension or self-ratings of reading achievement. The students identified in this fashion could also be studied in depth and compared with those two groups of students whose self-ratings are too high.

The students with accurate self-perception of the reading adequacy could also be studied in several ways, e.g., in terms of family background, home environment, educational history, personality structure, ability level, and a host of other relevant variables. Finally, those students with accurate self-perceptions of their reading adequacy could be compared with the three groups of students reporting inaccurate self-perceptions in this area.

**Other Issues**

The developmental changes obtained for some of the reading attitude dimensions are noteworthy and deserve consideration in further research. For example, an interesting developmental trend was obtained for both Reading Anxiety and Expressed Reading Difficulty. For both dimensions, there was a sharp rise in scores between fourth and fifth grades but this was followed by a moderate decrease from the fifth grade to the sixth grade. These parallel trends might conceivably be attributed to the magnitude of the correlation ($r = .63, p < .001$)
but it probably makes more sense to explain the trends on the basis of a common causal element rather than on the basis of their correlation with each other. In the previous chapter, an hypothesis was advanced which explained the rise in scores for both dimensions. According to this hypothesis, the decrease in scores for the two dimensions between fifth and sixth grades can best be explained in terms of a decrease in students' willingness to acknowledge their weakness in reading rather than a decrease in the problems themselves.

Such an interpretation seems justified on the basis of logic, since there is no reason to believe that there is an increase in reading achievement between fifth and sixth grade students. Standardized test scores for the schools where the study was conducted suggest that by and large, the reading achievement test scores remain relatively constant between fifth and sixth grades. Furthermore, there is no reason to believe that sixth grade teachers maintain lower academic standards than fifth grade teachers or encourage unrealistic expectancies and/or self-evaluations. On the contrary, there is reason to believe that quite the opposite of this probably transpires. As one moves up through the different grades from kindergarten through twelfth grade, there is reason to believe that teachers become more subject matter conscious and less child centered. If anything then, one would actually expect an increase in the difficulty of academic material and less humanistic concern.

It may well be, however, that as the sixth graders move on through that grade toward junior high school, they become increasingly sophisticated in academic matters and are subsequently less willing to
admit the existence of academic difficulties or the existence of any anxiety about the adequacy of their academic performance. This hypothesis seems to provide the most parsimonious explanation of the decrease in scores for Reading Anxiety and Expressed Reading Difficulty which occurs between fifth and sixth grades. As such, this hypothesis appears to be worthy of consideration in further research. Research aimed at exploring this possibility should be designed with care because it may well be that the present findings are an artifact of sample selection or some special influences existing within the schools selected for the study. Consequently, the first step in research designed to clarify this issue should consist of replicating the present study in school systems with enrollment drawn from different ethnic, socio-economic, and geographical areas. If the trend stands up to cross-validation, then one can be assured that it represents a widespread phenomenon worthy of detailed investigation. Otherwise, the finding should be regarded as a sampling artifact of which researchers should take account in future research. That is, the trend should then be considered as a localized phenomenon which has meaning largely for the school system where this study was conducted.

In the case of three reading attitude dimensions; Reading as Direct Reinforcement, Silent vs. Oral Reading, and Comics; there was an overall tendency for scores to increase from grade four through grade six. This was especially true for Reading as Direct Reinforcement and Comics where the increase was incremental across all three grades. In the case of Silent vs. Oral Reading, however, a noteworthy increase was evident between grades four and five but the increase did not
continue on between fifth and sixth grades. The abrupt increase between grades four and five is similar to those found for Expressed Reading Difficulty and Reading Anxiety which, again, has the effect of suggesting that a reshuffling of reading attitudes takes place at this time. The direction of this increase means that students develop an increased preference for silent reading as opposed to reading aloud. In conceptual terms, such a change is congruent with the parallel increase in Expressed Reading Difficulty and Reading Anxiety which appears at the same time.

For the other three dimensions of reading attitude; Reading as Enjoyment, Alternative Learning Modes, and Reading Group; there were no appreciable developmental changes across the intermediate grades. Thus, the present findings suggest that some aspects of reading attitude develop early during the primary grades and then remain stable whereas other dimensions continue to develop and change up through sixth grade. These trends should be replicated with different samples and then research should be extended up to the secondary level and down to the primary grades. Insofar as possible, a common core of items appropriate to all grade levels should be identified so that the development of reading attitudes can be studied from the primary grades through the completion of high school.

Finally, the issues associated with methods of factor rotation were discussed earlier in the previous chapter but are of sufficient importance to be mentioned briefly again. That is, the significant correlations obtained between several factors can be partially explained on the basis of the choice not to compute factor scores and the tendency
for errors to correlate systematically across subjects. But in the case of some dimensions such as Reading Anxiety and Expressed Reading Difficulty it is unlikely that their high correlations can be explained on the basis of such considerations. Here the most parsimonious explanation seems to be that the two dimensions are related in an oblique fashion and this kind of rotation should be used to explore their relationship in a systematic fashion. That is, one can build a logical argument to defend the idea that those students who perceive of themselves as having reading problems would also tend to be the ones experiencing the most intense anxiety over reading. A similar pattern of logic can be used to explain the magnitude of the correlation between Reading as Direct Reinforcement and Reading as Enjoyment which seem to be related to each other in terms of developmental differentiation. Thus, future researchers would be wise to make provisions for exploration of an oblique relationship among all of the reading attitude dimensions.


Bendig, A. & Hughes, J. Effect of amount of verbal anchoring and number of rating-scale categories upon transmitted information. *Journal of Experimental Psychology*, 1953, 46, 87-90.


A SURVEY OF READING ATTITUDES

Intermediate Level

Form A

by

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— DO NOT MAKE ANY MARKS ON THIS BOOKLET OR ANSWER SHEET UNTIL THE DIRECTIONS ARE COMPLETED —

DIRECTIONS

Look at your answer sheet first. In the upper right hand corner, you are to write your last name first and then your first name. Place only one letter in each box. When you have finished, look at the front of your test booklet. We will read the directions aloud for you.

The statements in this booklet are concerned with the way you feel about reading. There are no right or wrong answers because students have different opinions and feelings about their school work. For example, if I say “Reading is more fun than math.” I’m sure the students in this room would not all agree. Some people would agree because they think reading is more interesting than math but some other people would disagree because they enjoy math more than reading. Probably some other students would not be sure about how to answer because they like both reading and math. So, you can see there are no right or wrong answers. The important thing is to mark the answer that shows how you really feel or what your opinion is.

I will read each statement aloud while you read it silently from the booklet. After each statement has been read, you are to decide how you feel about it and mark the answer sheet which you have. Fill in 1 to show that you strongly agree with a statement. Mark 2 to show that you agree with a statement. Black on 3 if you are not sure how you feel about a statement. Fill in 4 to show that you disagree with a statement. Mark 5 to show that you strongly disagree with a statement. Be sure to use the answer sheet if one is provided rather than marking on the booklet since other students will be using it. Do not use a pen. Be sure each mark is dark. Erase completely any answer you wish to change.

Please be sure that you mark the answers which show how you really feel rather than the way you think I want you to mark them. The numbers and what they stand for are at the top of each page.

— Experimental Edition —

© 1975
1 - strongly agree  
2 - agree  
3 - not sure  
4 - disagree  
5 - strongly disagree

EXAMPLES

a. Reading is more fun than math.

[ ] [ ] [ ] [ ] [ ]

b. I would like to travel in outer space when I am older.

[ ] [ ] [ ] [ ] [ ]

1. I learn better when someone shows me what to do than if I just read what to do.

2. I need a lot of help in reading.

3. I would like to help someone else who can't read as well as I.

4. I get upset when I think about having to read.

5. Whenever my friends read a good story, they usually tell me all about it.

6. I make more mistakes when I read out loud than I do when I am reading silently.

7. My teacher thinks that I read well.

8. I can read but I don't understand what I've read.

9. I often read comic books.

10. My parents feel that I am doing well in reading.

11. There are better ways to learn new things than through reading a book.

12. Most of the stories in our reading books are interesting.

13. I would rather read silently to myself than out loud for the whole class.


15. I enjoy helping other students with their reading.
1 - strongly agree  4 - disagree
2 - agree            5 - strongly disagree
3 - not sure

16. Talking about something is much more enjoyable than reading about it.
17. My friends like to have me tell them about the stories I read.
18. When I am at home, I read a lot.
19. For me, reading isn't the best way to learn new things.
20. I often buy comic books with my own money.
21. Most books in the school library are too difficult for me.
22. I often feel sick when I try to read a long assignment.
23. Reading is one of my best subjects.
24. When I read out loud, it's hard for me to understand what I am reading.
25. I wish that I could have more books of my own.
26. We learn lots of interesting things in our reading group.
27. I'd rather have the teacher explain something than try to learn it from a book.
28. My silent reading is better than my oral reading.
29. My classmates enjoy having me share the results of my reading.
30. I often get embarrassed when I make mistakes reading out loud.
31. I enjoy the comic section in the Sunday newspaper.
32. I enjoy looking up information in the encyclopedia.
33. When I have free time in class, I read a book.
34. When I look up a word in a dictionary, I still can't pronounce it.
1 - strongly agree  
2 - agree  
3 - not sure  
4 - disagree 

35. I'd rather have someone tell me what to do than to read what to do.  
36. I get upset when we take a reading test.  
37. I get a lot of enjoyment from my reading.  
38. I don't like to read out loud.  
40. Our reading group is usually enjoyable.  
41. I enjoy reading most comic books.  
42. I spend a lot of my spare time reading.  
43. Sounding out new words is hard for me.  
44. No matter how hard I try, I just can't learn to read well.  
45. I quickly forget what I read even if I have just read it.  
46. I would rather read silently to myself than out loud for the whole class.  
47. Most of our textbooks are too hard for me to read.  
48. I get nervous when I have to read a lot.  
49. When I read an interesting story, I like to tell my friends about it.  
50. It's embarrassing for me to read out loud.  
51. My parents think I need to try to improve my reading.  
52. I remember the things people tell me better than the things I read.  
53. Sometimes I miss a question on a test because I read poorly.  
54. My friends and I often discuss what we have read.
1 - strongly agree   4 - disagree
2 - agree           5 - strongly disagree
3 - not sure

55. Learning new words is the hardest part of reading.
56. I like to read out loud for the whole class.
57. I enjoy telling my family about the things we read in school.
58. Sometimes I have nightmares about reading.
59. It is easier for me to understand what I read if pictures, charts, and diagrams are included.
60. I learn a lot in our reading group.
61. I enjoy sharing what I have read with the class.
62. I like to listen to other people tell about the books they have read.
63. My grades are too low in reading.
64. I often get confused and lose my place when I try to read out loud.
65. My family enjoys having me tell them about my reading.
66. I worry a lot about my reading.
67. Reading is one of the most interesting things which I do at home.
68. I don't like to answer questions about what I've just read.
69. People sometimes laugh at me when I read out loud.
70. I get a sick feeling in my stomach when I think about reading.
71. Comic books are more interesting than other kinds of reading.
72. When I try to read, I usually get tired and sleepy.
73. I enjoy going to the library for books.
1 - strongly agree
2 - agree
3 - not sure
4 - disagree
5 - strongly disagree

74. I learn more from class discussions than I do from reading.
75. My friends think that I am a good reader.
76. Our reading group is one of the best parts of school.
77. I'm the kind of person who really enjoys a good book.
78. The teacher has to help me a lot when we are in reading group.
79. In math, story problems are harder than problems that are written out for you.
80. Reading is one of the things I enjoy most.
81. I am a poor reader, but I could do better if I tried as hard as other students.
82. I don't like to read silently.
83. I usually read several books during summer vacation.
84. People who read well are not like me.
85. I have trouble understanding what I read.
86. A book would make a good present for me.
87. I listen carefully when other students are telling about what they have read.
88. I like to read the comic section in the newspaper.
APPENDIX B
The IAR Scale

1. If a teacher passes you to the next grade, would it probably be
   __________ a. because she likes you, or
   I+ ________ b. because of the work you did?

2. When you do well on a test at school, is it more likely to be
   I+ ________ a. because you studied for it, or
   ________ b. because the test was especially easy?

3. When you have trouble understanding something at school, it is
   usually
   ________ a. because the teacher didn't explain it clearly, or
   I- ________ b. because you didn't listen carefully?

4. When you read a story and can't remember much of it, is it usually
   ________ a. Because the story wasn't well written, or
   I- ________ b. because you weren't interested in the story?

5. Suppose your parents say you are doing well in school. Is this
   likely to happen
   I+ ________ a. because your school work is good, or
   ________ b. because they are in a good mood?

6. Suppose you did better than usual in a subject at school. Would
   it probably happen
   I+ ________ a. because you tried harder, or
   ________ b. because someone helped you?
7. When you lose at a game of cards or checkers, does it usually happen
   a. because the other player is good at the game, or
   b. because you don't play well?
8. Suppose a person doesn't think you are very bright or clever
   a. can you make him change his mind if you try to, or
   b. are there some people who will think you're not very
      bright no matter what you do?
9. If you solve a puzzle quickly, is it
   a. because it wasn't a very hard puzzle, or
   b. because you worked on it carefully?
10. If a boy or girl tells you that you are dumb, is it more likely
    that they say that
       a. because they are made at you, or
       b. because what you did really wasn't very bright?
11. Suppose you study to become a teacher, scientist, or doctor and
    you fail. Do you think this would happen
       a. because you didn't work hard enough, or
       b. because you needed some help, and other people
          didn't give it to you?
12. When you learn something quickly in school, is it usually
    a. because you paid close attention, or
    b. because the teacher explained it clearly?
13. If a teacher says to you, "Your work is fine," is it
    a. something teachers usually say to encourage pupils, or
    b. because you did a good job?
14. When you find it hard to work arithmetic or math problems at school, is it
   a. because you didn't study well enough before you tried them, or
   b. because the teacher gave problems that were too hard?

15. When you forget something you heard in class, is it
   a. because the teacher didn't explain it very well, or
   b. because you didn't try very hard to remember?

16. Suppose you weren't sure about the answer to a question your teacher asked you, but your answers turned out to be right. Is it likely to happen
   a. because she wasn't as particular as usual, or
   b. because you have the best answer you could think of?

17. When you read a story and remember most of it, is it usually
   a. because you were interested in the story, or
   b. because the story was well written?

18. If your parents tell you you're acting silly and not thinking clearly, is it more likely to be
   a. because of something you did, or
   b. because they happen to be feeling cranky?

19. When you don't do well on a test at school, is it
   a. because the test was especially hard, or
   b. because you didn't study for it?

20. When you win at a game of cards or checkers, does it happen
   a. because you play real well, or
   b. because the other person doesn't play well?
21. If people think you're bright or clever, is it
   a. because they happen to like you, or
   b. because you usually act that way?
22. If a teacher didn't pass you to the next grade, would it probably be
   a. because she "had it in for you," or
   b. because your school work wasn't good enough?
23. Suppose you don't do as well as usual in a subject at school. Would this probably happen
   a. because you weren't as careful as usual, or
   b. because somebody bothered you and kept you from working?
24. If a boy or girl tells you that you are bright, is it usually
   a. because you thought up a good idea, or
   b. because they like you?
25. Suppose you became a famous teacher, scientist or doctor. Do you think this would happen
   a. because other people helped you when you needed it, or
   b. because you worked very hard?
26. Suppose your parents say you aren't doing well in your school work. Is this likely to happen more
   a. because your work isn't very good, or
   b. because they are feeling cranky?
27. Suppose you are showing a friend how to play a game and he has trouble with it. Would that happen
   a. because he wasn't able to understand how to play, or
   b. because you couldn't explain it well?
28. When you find it easy to work arithmetic or math problems at school, is it usually
   ____ a. because the teacher gave you especially easy problems
   I+ ____ b. because you studied your book well before you tried them?

29. When you remember something you heard in class, is it usually
   I+ _____ a. because you tried hard to remember, or
   _____ b. because the teacher explained it well?

30. If you can't work a puzzle, is it more likely to happen
   I- _____ a. because you are not especially good at working puzzles, or
   _____ b. because the instructions weren't written clearly enough?

31. If your parents tell you that you are bright or clever, is it more likely
   _____ a. because they are feeling good, or
   I+ _____ b. because of something you did?

32. Suppose you are explaining how to play a game to a friend and he learns quickly. Would that happen more often
   I+ _____ a. because you explained it well, or
   _____ b. because he was able to understand it?

33. Suppose you're not sure about the answer to a question your teacher asks you and the answer you give turns out to be wrong. Is it likely to happen
   _____ a. because she was more particular than usual, or
   I- _____ b. because you answered too quickly?
34. If a teacher says to you, "Try to do better," would it be

   a. because this is something she might say to get
      pupils to try harder, or

   b. because your work wasn't as good as usual?

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