

4943

NATIONAL LIBRARY  
OTTAWA



BIBLIOTHÈQUE NATIONALE  
OTTAWA

NAME OF AUTHOR... JONES, PAULINE A.....  
 TITLE OF THESIS... Person-Situation Congruence  
 ..Relative to sex Differences  
 ...in...Elementary School Achievement  
 UNIVERSITY... University of Alberta.  
 DEGREE FOR WHICH THESIS WAS PRESENTED... Ph.D.....  
 YEAR THIS DEGREE GRANTED... 1969.....

Permission is hereby granted to THE NATIONAL LIBRARY  
 OF CANADA to microfilm this thesis and to lend or sell copies  
 of the film.

The author reserves other publication rights, and  
 neither the thesis nor extensive extracts from it may be  
 printed or otherwise reproduced without the author's  
 written permission.

(Signed)... *Pauline A. Jones*

PERMANENT ADDRESS:

...16 Mt. Bernard Avenue  
 ...Corner Brook  
 ...Newfoundland

DATED... *July 2* .....1969

THE UNIVERSITY OF ALBERTA

PERSON-SITUATION CONGRUENCE RELATIVE TO SEX  
DIFFERENCES IN ELEMENTARY SCHOOL ACHIEVEMENT

by

PAULINE A. JONES

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES  
IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE  
DEGREE OF DOCTOR OF PHILOSOPHY

DEPARTMENT OF EDUCATIONAL PSYCHOLOGY

EDMONTON, ALBERTA

FALL, 1969

UNIVERSITY OF ALBERTA  
FACULTY OF GRADUATE STUDIES

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies for acceptance, a thesis entitled Person-Situation Congruence Relative to Sex Differences in Elementary School Achievement, submitted by Pauline A. Jones in partial fulfilment of the requirements for the degree of Doctor of Philosophy.

...*R. S. MacArthur*.....  
Supervisor

.....*L. D. D. Fern*.....

.....*S. Hunka*.....

.....*B. R. Cormany*.....

.....*Donald E. Jansen*.....

.....*Jan K. Bishop*.....

.....*Reginald M. Douglas*.....

External Examiner

Date: *May 9* , 1969

## ABSTRACT

The study investigated the validity of a particular thesis as an explanation for sex differences in achievement. It was in general hypothesized that classroom characteristics are more suited to the personality characteristics of girls than of boys and that this greater person-situation congruence for girls may in part account for their greater school achievement. The investigation was carried out in five grade V female-taught classrooms from four elementary schools within a County neighboring Edmonton, Alberta. These classrooms provided a total sample of 120 students - 52 girls and 68 boys.

The classroom environment was characterized in terms of two subsets of press variables. These were teacher press (teacher expectations for student behavior) and task related press - including the elements of teaching behavior exhibited by the teacher and requirements set forth by her for task performance of students. Teaching behaviors were described by two dimensions, Structuring of Classroom Activity and Encouragement of Student Participation.

Factorial analysis revealed five correlated dimensions as descriptive of pupil personality. These dimensions, found to be stable across two samples, were given the labels: Acceptance of Control, Dominance, Carefree Self-reliance, Dependency, and Prosocial Aggression. Classroom press were classified in terms of the same five dimensions descriptive of student personality, and congruence between pupil personality and both teacher and task related press was assessed in terms of these five person-situation dimensions.

For four dimensions, teacher press were significantly more

congruent with the personality characteristics of girls. Pupil personality - task related press congruence was greater for girls relative to two dimensions, and greater for boys with reference to two other dimensions. Pupil personality - classroom press congruence did not consistently relate to higher achievement. However, for certain dimensions and relative to both teacher and task related press, congruent groups did achieve significantly higher than non-congruent groups, and for certain school subjects, for example, oral reading and oral language, congruence appeared to be especially related to higher achievement.

The study was not supportive of either large sex differences in pupil personality - classroom press congruence or of a high relationship between congruence and achievement; it has, however, isolated certain dimensions relative to which non-congruent groups have lower achievement, and within which the proportion of boys was significantly higher than the proportion of girls. It was suggested that adapting the classroom environment to suit the personality characteristics of students would be a useful way of providing for individual differences and would especially favor the achievement of boys.

## ACKNOWLEDGEMENTS

This study was implemented through the cooperation and assistance of several persons to whom the writer extends sincere thanks.

I am grateful to committee members who offered suggestions to the benefit of the reported research. I am especially appreciative of the assistance of my thesis chairman, Dr. R. S. MacArthur. His contribution not only to specifics of this study but to the general professional development of the writer is sincerely acknowledged.

I especially thank the five teachers who participated in this study - not simply for their cooperation but for having made my many visits to their classrooms a pleasant and profitable personal experience. The students, too, participated in a most pleasant way, and I thank each of them.

## TABLE OF CONTENTS

CHAPTER	PAGE
I	INTRODUCTION . . . . . 1
II	REVIEW OF RESEARCH AND THEORY . . . . . 4
	Sex Differences in Achievement . . . . . 4
	Explanations for Sex Differences in Achievement . . . . . 7
	Sex Differences in Personality . . . . . 10
	Person-Situation Congruence and Achievement . . . . . 13
	Summary . . . . . 19
III	DEFINITIONS, POSTULATES AND HYPOTHESES . . . . . 21
	Definitions . . . . . 21
	Personality . . . . . 21
	Press . . . . . 22
	Person-Situation Congruence . . . . . 25
	Postulates . . . . . 26
	Hypotheses . . . . . 29
IV	PILOT STUDIES . . . . . 31
	First Pilot Study . . . . . 31
	Second Pilot Study . . . . . 33
	Pupil Personality Variables . . . . . 33
	Teacher Press Scales . . . . . 47
	Summary . . . . . 51
V	INSTRUMENTATION . . . . . 52
	Personality Measures . . . . . 52
	Teacher Press Assessment . . . . . 57
	Task-Related Press Assessment . . . . . 61
	Peer-Group Press Assessment . . . . . 67

CHAPTER	PAGE
Achievement Measures . . . . .	68
Other Measures . . . . .	70
VI DATA COLLECTION . . . . .	72
Sample . . . . .	72
Procedure . . . . .	79
Testing Schedule . . . . .	79
Test Administrative Procedure . . . . .	81
VII ANALYSIS I - PERSON-SITUATION DIMENSIONALITY . . . . .	83
Personality Dimensions . . . . .	83
Summary . . . . .	91
Person-Situation Parameters . . . . .	92
Pupil Personality - Teacher Press Congruence . . . . .	93
Pupil Personality - Task-Related Press Congruence . . . . .	97
VIII ANALYSIS II - TESTS OF HYPOTHESES. . . . .	103
Part I . . . . .	103
Person-Situation Congruence Assessment . . . . .	103
Statistical Tests . . . . .	105
Hypothesis I . . . . .	105
Hypothesis II . . . . .	108
Hypothesis III and IV . . . . .	119
Part II: A Closer Look . . . . .	123
Pupil Personality - Teacher Press Congruence . . . . .	123
Hypothesis I (a) . . . . .	124
Hypothesis II (a) . . . . .	126
Pupil Personality - Task-Related Press Congruence . . . . .	128
Hypothesis I (b) . . . . .	130

CHAPTER	PAGE
Hypothesis II (b) . . . . .	130
IX DISCUSSION . . . . .	135
Person-Situation Dimensionality . . . . .	135
Personality Description . . . . .	135
Tests of Hypotheses . . . . .	138
Hypothesis I . . . . .	138
Hypothesis II . . . . .	141
Hypotheses III and IV . . . . .	147
X SUMMARY, CONCLUSIONS AND IMPLICATIONS . . . . .	150
Conclusions . . . . .	152
Hypothesis I . . . . .	152
Hypothesis II . . . . .	153
Hypotheses III and IV . . . . .	154
Implications . . . . .	155
For Theory and Further Research . . . . .	155
For Educational Practice . . . . .	159
REFERENCES . . . . .	164
APPENDIX A . . . . .	173
APPENDIX B . . . . .	180
APPENDIX C . . . . .	183
APPENDIX D . . . . .	191
APPENDIX E . . . . .	193
APPENDIX F . . . . .	197
APPENDIX G . . . . .	200

## LIST OF TABLES

TABLE		PAGE
I	FACTOR PATTERN, PERSONALITY VARIABLES OF 47 GRADE V PILOT-STUDY SUBJECTS . . . . .	38
II	ESTIMATED LOADINGS OF NINE TEACHER-RATING SCALES ON SIX OBLIQUE PERSONALITY FACTORS, PILOT STUDY SAMPLE . .	50
III	SEX DIFFERENCES IN NOVEMBER AND FEBRUARY ACHIEVEMENT FOR 5 SAMPLE CLASSROOMS . . . . .	75
IV	TEACHER ATTITUDES TO BOYS AND GIRLS . . . . .	76
V	AGE, INTELLIGENCE, OCCUPATIONAL STATUS OF SAMPLE N=120), BY CLASSROOM AND SEX . . . . .	78
VI	FACTOR PATTERN, PERSONALITY VARIABLES OF 120 GRADE V MAIN-STUDY SUBJECTS . . . . .	85
VII	FACTOR MATCHING FOR PROMAX OBLIQUE PRIMARY FACTOR PATTERNS OF PILOT STUDY AND MAIN STUDY SAMPLES . . . . .	87
VIII	PUPIL PERSONALITY AND CORRESPONDING TEACHER PRESS VARIABLES SELECTED FOR EACH PERSON-SITUATION DIMENSION .	96
IX	FACTOR PATTERN, STUDENT PERCEIVED CLASSROOM CHARACTERISTICS (TASK-RELATED PRESS) . . . . .	98
X	PUPIL PERSONALITY AND CORRESPONDING TASK-RELATED PRESS VARIABLES SELECTED FOR EACH PERSON-SITUATION DIMENSION .	102
XI	DATA DESCRIPTIVE OF STUDENT PERSONALITY . . . . .	106
XII	DATA DESCRIPTIVE OF CLASSROOM PRESS . . . . .	107
XIII	CORRELATIONS OF SEX (MALE HIGH) WITH PUPIL PERSONALITY - TEACHER PRESS CONGRUENCE . . . . .	108
XIV	CORRELATIONS OF SEX (MALE HIGH) WITH PUPIL PERSONALITY - TASK RELATED PRESS CONGRUENCE . . . . .	109
XV	CORRELATIONS OF SCHOOL ACHIEVEMENT WITH PUPIL PERSONALITY - TEACHER PRESS CONGRUENCE FOR TOTAL GROUP (N=120) . . . . .	110
XVI	CORRELATIONS OF SCHOOL ACHIEVEMENT WITH PUPIL PERSONALITY - TEACHER PRESS CONGRUENCE FOR GIRLS (N=52).	111
XVII	CORRELATIONS OF SCHOOL ACHIEVEMENT WITH PUPIL PERSONALITY - TEACHER PRESS CONGRUENCE FOR BOYS (N=68) .	112

TABLE		PAGE
XVIII	CORRELATIONS OF SCHOOL ACHIEVEMENT WITH PUPIL PERSONALITY - TASK RELATED PRESS CONGRUENCE FOR TOTAL GROUP (N=120) . . . . .	116
XIX	CORRELATIONS OF SCHOOL ACHIEVEMENT WITH PUPIL PERSONALITY - TASK RELATED PRESS CONGRUENCE FOR GIRLS (N=52) . . . . .	117
XX	CORRELATIONS OF SCHOOL ACHIEVEMENT WITH PUPIL PERSONALITY - TASK RELATED PRESS CONGRUENCE FOR BOYS (N=68) . . . . .	118
XXI	PROBABILITIES OF THE SIGNIFICANCE OF THE RELATIONSHIP BETWEEN SEX AND SCHOOL ACHIEVEMENT WHEN OTHER VARIABLES ARE HELD CONSTANT . . . . .	122
XXII	PROPORTIONS OF GIRLS AND BOYS IN PUPIL PERSONALITY - TEACHER PRESS CONGRUENCE GROUPS . . . . .	125
XXIII	MEAN ACHIEVEMENT OF PUPIL PERSONALITY - TEACHER PRESS CONGRUENT AND NON-CONGRUENT GROUPS RELATIVE TO SELECTED ACHIEVEMENT CRITERIA . . . . .	127
XXIV	PROPORTIONS OF GIRLS AND BOYS IN PUPIL PERSONALITY - TASK RELATED PRESS CONGRUENCE GROUPS . . . . .	131
XXV	MEAN ACHIEVEMENT OF PUPIL PERSONALITY - TASK RELATED PRESS CONGRUENT AND NON-CONGRUENT GROUPS RELATIVE TO SELECTED ACHIEVEMENT CRITERIA . . . . .	132

LIST OF FIGURES

FIGURE		PAGE
1.	Personality and Classroom Press Variables Entering into Person-Situation Congruence Assessment . . . . .	56
2.	Formation of Pupil Personality - Task Related Press Congruent and Non-Congruent Groups . . . . .	129

## CHAPTER I

### INTRODUCTION

The present study relates to sex differences in achievement and was an attempt to discover conditions within the school environment which may be basic to these differences. The congruence or agreement between pupil personality characteristics and the demands or press of the classroom environment was examined and the relationship of this congruence to school achievement was determined. The study may thus be thought of as generally dealing with the importance for achievement of an environment suited to the personality characteristics of the learner. More specifically, however, this study was concerned with explaining sex differences in achievement. It was in general hypothesized that classroom characteristics are more suited to the personality characteristics of girls than of boys and that this greater person-situation congruence for girls may in part account for their greater school achievement.

An abundance of material reiterates and supports the general contention that the academic performance of girls is superior to that of boys, and particularly so at the elementary school level. While researchers were strong in their belief that such sex differences were the inevitable result of a different maturational rate for boys and girls, little effort was made to further investigate the situation. Yet the adequacy of this explanation is certainly questioned in the literature.

An environmental explanation is currently prevalent, and gains

support from findings cross-culturally of less pronounced sex differences and even the phenomenon of male superiority in certain cultures.

Many North American educators and researchers see the school itself as fostering the sex differential in achievement. Maintaining that the school is more suited to the needs of girls and that the essentially feminine atmosphere of the school creates a conflict for boys, some see this boy - school conflict as one of the most fundamental problems facing our schools today.

While it is a generally held assumption that schools more satisfactorily meet the needs of girls rather than boys, very little if any attempt has been made to empirically validate that assumption. Where classroom conditions, such as the relative absence of teacher disapproval, have been found to favor girls, there is insufficient evidence to attribute girls' greater achievement to these conditions. In fact, while there is theoretical support for the contention that performance is higher in an environment which is suited to one's needs, this is supported only by scanty empirical evidence. Before schools can be expected to make the sorts of changes called for by proponents of the "boy-school conflict" hypothesis, on any scale other than the occasional experimental arrangement, research must be aimed at determining the validity of this hypothesis and at clarifying its implications in more behavioral terms.

Stern and his associates (Pace & Stern, 1958; Stern, Stein & Bloom, 1956) have postulated, via Murray (1938), that the agreement between environmental demands or press and an individual's response tendencies is positively related to one's performance within that environment. The "boy-school conflict" hypothesis may be subsumed under

this more general need-press postulate, so that the problem essentially becomes one of isolating the situational demands, or press, of the elementary classroom, and then seeking to determine whether these demands can be more effectively dealt with by girls.

Theoretical and empirical support existed for the selection of two sets of classroom characteristics as significant influences for the behavior of students. These are teacher expectations for student behavior, and classroom procedures relative to task performance. These are referred to respectively as teacher, and task-related press. These press variables are further defined in chapter III and classified in terms of five dimensions which were found to characterize pupil personality. Congruence between these classroom press variables and pupil personality was assessed and its value as a predictor of school achievement, in the context of sex differences, was determined. The study was conducted in five grade five female-taught classrooms. These were from four elementary schools within a County neighboring Edmonton, Alberta, and provided a sample of 120 students.

## CHAPTER II

### REVIEW OF RESEARCH AND THEORY

#### Sex Differences In Achievement

That there are pronounced sex differences in school attainment, retention and dropout is well documented. The Dominion Bureau of Statistics in a 1965 report indicates that the pattern of progress through the school differs widely from boys to girls. At all grades from two to thirteen in each of the ten provinces of Canada (where such grades are found) the percentage of students repeating the grade is larger for boys than girls, and hence the percentage of over-age pupils in each grade is larger for boys than girls. This is true in spite of the fact that the school entrance age is the same for boys and girls. In Canadian schools, the percentage of drop outs is much higher for boys than girls; this is true for the grades up to grade eight as well as subsequent grades. An identical pattern of school attainment appears in the United States. The United States Census (1960) data show that for all grades above three there are significantly more boys who are over-age for their grades than there are girls. In both Canadian and American Schools, the percentage of girls who are under-age for their grade is larger than that of boys.

Sex differences in overall school performance have been investigated from a variety of points of view and at various age levels. Studies have indicated a fairly distinct superiority at the elementary level for girls, and a less marked difference, still favoring girls, in the secondary school. The data summarized above relating the incidence

of over-age and under-age pupils for the two sexes are evidence of the superiority of girls since the phenomenon of over-age and under-age pupils is a function of promotion policies based on overall achievement.

Tyler reports:

. . .all studies of school achievement agree that girls consistently make better school records than boys. Differences of this sort have been reported from a wide variety of investigations, using various criteria of school success! It is recognized that girls are less frequently retarded and more frequently accelerated than boys. More of them receive high marks and fewer of them receive unsatisfactory marks. . . .

When batteries of achievement tests are used to evaluate school performance, the differences are less marked. . . , what differences there are tend to favor girls (1965, pp. 241-242).

Hoffman and Hoffman (1964, p. 158), Maccoby (1966, pp. 27-28) and Peltier (1968, pp. 182-183) support these findings.

Sex differences in specific subject areas. Brief mention will be made of findings relative to the performance of boys and girls in specific subject areas. (For summaries of such performance the reader is referred to Cardon, 1968, p. 427; Clark, 1959; Hoffman & Hoffman, 1964, p. 370; Maccoby, 1966, pp. 26-28; McCarthy, 1954; Tyler, 1965, pp. 244-247.) With reference to language development, Maccoby reports:

Through the preschool years and in the early school years, girls exceed boys in most aspects of verbal performance. They say their first word sooner, articulate more clearly and at an earlier age, use longer sentences, and are more fluent. By the beginning of school, however, there are no longer any consistent differences in vocabulary. . . . Throughout the school years, girls do better on tests of grammar, spelling, and word fluency (1966, p. 26).

Gates (1961) reports a study investigating sex differences in reading ability, using more than 12,000 subjects in grades two through eight in twelve school systems in ten states of the United States. He concludes that, on the average, girls' reading abilities exceed those of

the boys. From the results of an Alberta survey, Sly (1960) reports a pattern of sex differences in reading skills corresponding to other observed comparisons between the sexes, namely, "an early but diminishing female superiority" (p. v). A number of studies show that "by approximately the age of ten . . . boys have caught up in their reading skills" (Maccoby, 1966, p. 26).

Findings relating to arithmetic achievement are not as clear and indicate the necessity of considering part scores in examining sex differences. While a number of studies show boys to excel on tests of arithmetical reasoning (especially at the high school level), no consistent sex differences in arithmetical computation are reported.

This review has presented consistent evidence that girls get better grades than boys throughout the school years and particularly at the elementary level. When achievement is measured by standardized achievement tests, the slight differences in overall achievement which are sometimes found favor the girls. With respect to specific subject areas boys tend to be superior in some, while in others girls are consistently superior. The same may be said concerning the overall ability of boys and girls as opposed to their abilities in specific areas. Most tests of general intelligence have been standardized to eliminate sex differences. Whereas sex differences are found on some of the subtests of both the Stanford-Binet test and the Wechsler intelligence scales, no sex differences are found on total score (Tyler, 1965, p. 244). Differences in favor of boys have been repeatedly reported in tests of spatial and mechanical ability. With almost equal consistency, tests of many verbal or linguistic functions indicate female superiority. However, it appears that girls do relatively better in word

fluency and in tasks involving mastery of the mechanics of language than they do in vocabulary, verbal comprehension, and verbal reasoning tests. In the area of number ability, tests measuring speed and accuracy of computation show either no sex differences or, more often, a difference in favor of girls. On the other hand, boys usually score higher on numerical-reasoning tests (Lesser, Fifer & Clark, 1965, p. 9).

#### Explanations For Sex Differences In Achievement

As one reviews the findings of investigations into sex differences in school attainment, one notes several attempts to explain the results. Since girls mature at a faster rate than boys, it has been suggested that girls at the time of entering school have a somewhat better start. Tyler cites findings relative to this hypothesis, one which she says, "has never appeared to be very convincing".

Ames and Ilg (1964), who compared sex groups made up of 33 boy-girl pairs, matched for IQ, age, and socio-economic status, found that at the kindergarten, first, and second-grade levels, the girls scored significantly higher on four types of test that might be interpreted as measuring aptitude for school learning. W. W. Clark (1959) did not find such differences at the third-, fifth-, and eighth-grade level using the California Test of Mental Maturity, and they have not shown up in most previous comparisons (1965, pp. 242-243).

One of the strongest arguments favoring an environmental explanation comes from cross cultural studies of achievement. For example, Preston (1962) compared the reading achievement of German and American children at the fourth- and sixth-grade levels and found that the achievement of American girls exceeded that of American boys while the reverse was true among German children. He commented that the apparent superiority of German boys to German girls could be due to elements in the German culture which identify reading and learning as normal activities of the male. Cross-cultural studies of performance

on selected ability and achievement tests indicate that the sex differences normally found in European-American cultures are either absent (for example, among Eskimo) or favor the boys (for example, among Zambians) in cultures with other than a European-American orientation (MacArthur, 1966, pp. 10-11). Such findings may be taken as justification for examining variables within our culture as possible contributing factors when we find sex differences in achievement.

Elementary classroom more suited to girls. While other explanations have been offered concerning sex differences in achievement (for example, see Bentzen, 1966, pp. 13-17; Peltier, 1968, pp. 183-184; Tyler, 1965, pp. 242-243), a predominant point of view relates to the idea of the elementary classroom being essentially "feminine" in atmosphere and as being more suited to the personality characteristics of girls than of boys.

Many American researchers have expressed the view that the school environment is essentially feminine with the result that many boys are forced to assume a negative posture vis-a-vis the school. Hoffman and Hoffman (1964) suggest that "first and second grade boys have more difficulty than girls in mastering reading, writing or arithmetic because the average boy perceives the school atmosphere as excessively feminine (p. 160)." Kagan (1964) found that second-grade children do view common objects in the classroom as more clearly associated with femininity than with masculinity. This feminine orientation, Phillips suggests, alienates boys, leads to widespread failure and makes school failure more "acceptable" and less threatening (1967, pp. 8-9).

Many writers maintain that the "femalization" of schools goes beyond the fact that the majority of teachers are women. The entire tone of the school, including the behavior expected of students, suggests

a female culture (Sexton, 1965, p. 22). The school situation as a whole is seen as being more suited to the needs of girls than of boys (Auria & Chapline, 1967, p. 7; Cornell & Armstrong, 1955, p. 200; Lewis, 1947, p. 30; Waetjen, 1962, p. 14).

That the girl possesses certain personality characteristics which enable her to make a better adjustment to the learning situation has been advanced by several writers. Anastasi (1958, p. 494), Bailyn (1959, p. 37), and Goodenough (1954, pp. 482-483) have all referred to the girl's greater docility and conformability as factors influencing the higher achievement and better school adjustment of girls. Tyler's comment is characteristic of their point of view.

Probably the most plausible explanation accounts for the sex differences in school achievement by relating them to differences in attitudes and personality traits. Docility and submissiveness, usually considered feminine traits, enable girls to make a better impression on teachers than boys do. Inevitably this will show up on report cards in other places besides the deportment column (1965, p. 243).

While it is a generally held assumption that schools more satisfactorily meet the needs of girls and hold expectancies of behavior that they, rather than boys, are more likely to meet, very little, if any, attempt has been made to empirically validate that assumption. There is, however, indirect support for this point of view.

Meyer and Thompson (1963) have shown that women teachers display significantly greater disapproval of what the boys than of what the girls do in the classroom. The authors feel that these data lend indirect support to the notion that "masculine" behavior is not tolerated by the typical teacher who in turn attempts to inhibit such behavior by means of punishment. They infer that "the social mores of the typical female teacher, at least with respect to aggressive, assertive behavior, are in

sharp contrast to the behavioral tendencies of the typical male youngsters" (Meyer & Thompson, 1963, p. 157).

Jackson and Lahaderne (1966) have also noted a marked sex difference in teacher-pupil interaction. They divided teacher-pupil interaction into three categories--instructional, managerial, and control, and found that sixth-grade boys get into at least eight times more trouble than girls do on the last two categories. The idea that boys make a poorer adjustment to school and are the source of more problem behavior finds considerable support in the literature (see, for example, Eaton, D'Amico & Phillips, 1956; Beilin, 1959; Gilbert, 1957; Terman & Tyler, 1954).

The acceptability of a student's behavior to the teacher may, as Anastasi (1958, p. 494) suggests, influence the amount learned both through its influence upon the learning environment of the child (Sears & Sherman, 1964, p. 15) and its influence upon the teacher's grading behavior. Hadley (1954) found that teacher acceptance of a pupil and the pupil's actual attainment (as measured by standardized achievement tests) are components, almost equally, in school marks assigned by teachers. Furthermore, his data demonstrate that the teachers of his sample clearly favored the girls when it came to assigning their marks.

#### Sex Differences In Personality

That the school is more suited to the personality characteristics of girls than of boys is a predominant explanation for sex differences in achievement, and is the hypothesis of central concern in the present study. Since this hypothesis assumes that boys and girls differ in personality characteristics, it is important to review research relevant to this assumption.

Ausubel (1958, p. 450) states that the greatest contrast between boys and girls lies in the area of aggressiveness-compliance. He reports

boys as being more aggressive, negativistic, more dominant and insistent on their rights. Girls, on the other hand, are more obedient, more amenable to social controls and more responsive to approval.

Oetzel (1966) has prepared an extensive annotated bibliography of sex differences. Her review includes studies based on observation, rating, experiments, projective techniques, and self-report inventories, with subjects ranging from preschool children to adults. In the great majority of research reports with respect to aggressive behavior, boys turn out to be significantly more aggressive than girls. Her bibliography shows girls obtaining the higher scores in the areas of dependency, conformity and suggestibility, and nurturance and affiliation.

Hoffman and Hoffman (1964) have also summarized findings of sex differences in personality characteristics. They report more studies showing greater dependency, conformity, social passivity and affiliative and nurturant behavior for females than for males at all ages.

Studies reviewed in the preceeding paragraphs have served to characterize the girl as being more passive, dependent and conforming than the boy. Such characteristics have been identified as being among a pattern of cognitive and personality characteristics indicative of what Witkin has called a more or less differentiated "style of life" (Maccoby, 1966, p. 36; Witkin, 1964; Witkin, Dyk, Faterson, Goodenough & Karp, 1962). This dimension of differentiation has its manifestation at the perceptual level in the ability to overcome an embedding context. Persons who can readily separate an item from its context are called field independent, while those who have difficulty in separating an item from its context are called field dependent. Sex differences in the extent of field dependence have been repeatedly found and have consistently

shown boys to be more field independent than girls (Witkin, et al., 1962, p. 215).

The nature and extent of sex differences in the area of achievement motivation is a function of the specific construct referred to, and of the measuring instrument used for assessment. With respect to achievement motivation as defined mainly by McClelland and his associates (McClelland, Atkinson, Clark & Lovell, 1953) and as assessed by projective techniques, no consistent sex differences have been found (Crandall, Katkowsky & Preston, 1962; Lansky, Crandall, Kagan & Baker, 1961). While there are no sex differences with respect to need achievement the situation serving to arouse this need has been found to differ for boys and girls. Boys are more concerned with achievement when independent mastery of a task is involved, whereas girls seem to be concerned with achieving in contexts where their social acceptability is at stake.

There is no firm evidence of sex differences in achievement motivation as measured by techniques other than projective measures. Oetzel's (1966) summary of findings in this area reports no sex differences using observational or self-report measures. Furst (1966) found no sex differences in the scores of grade eight students on a self-rating scale of motivation to do well in school. Wisenthal (1965) reports that girls at the elementary school level show more favorable attitudes toward school.

The findings reported in this section are mainly summary statements for each of several personality characteristics. They are based on studies dealing with different age levels and employing a variety of instrumentation. Generally speaking, in studies where several

personality characteristics were being assessed, more than one instrument and very often more than one assessment technique, was used. This has been necessary in the assessment of the personality of pre-adolescent children due to the lack of objective measures designed to test the entire range of personality.

Recently, Cattell and his associates constructed a questionnaire (The Children's Personality Questionnaire) designed for use with elementary school children and assessing fourteen personality factors. The sex differences in personality as assessed by this instrument appear to be similar to those already cited (Porter & Cattell, 1963). Girls were found to score, significantly more often, to the left of the following four factors - E (submissive vs. dominant), F (sober - vs. happy-go-lucky), I (dependent vs. self-reliant), and Q<sub>3</sub> (self-disciplined vs. careless of social rules) and tend to score to the left of factors D (inactive vs. excitable), G (conscientious vs. undependable) and N (forthright vs. shrewd).

Pertinent to sex differences in achievement are findings relative to the relationship of certain personality characteristics to intellectual performance. Maccoby has reviewed these findings and has hypothesized that "for optimum intellectual performance, most girls need to become less passive and inhibited while most boys need to become less impulsive" (Maccoby, 1966, p. 47).

#### Person-Situation Congruence and Achievement

This study in general represents an attempt to validate the hypothesis that the school is more suited to the needs of girls than of boys. Theory and research related to the interaction between an individual and his environment thus become pertinent.

Need-press congruence and achievement. Stern, Stein, and Bloom (1956) developed a system of interaction constructs based on Murray's (1938) need-press taxonomy. From this theoretical scheme evolved the Activities Index (AI) to measure psychological needs and the College Characteristics Index (CCI) to measure environmental press (Stern, 1962b).

Aspects of the environment which are significant for the determination of behavior may be thought of in terms of what Murray has referred to as press. It is important to distinguish between the significance of environmental press as they are perceived or interpreted by the individual and the properties of those environmental press as objective inquiry discloses them. Hall and Lindzey (1957), in describing Murray's point of view, maintain that the individual's behavior is most closely correlated with the former press. Rippey (1965) advances this possibility as an explanation of the finding that a student who feels a need for affiliation does not necessarily do poorly in a class where the teacher makes a real effort to avoid involvement with students. He cites evidence suggesting that the classroom established by the experimenter as representing particular characteristics, for example, high control and low interaction, may well be perceived differently by some students.

Stern has indicated the use of the term "press" as a general label for stimulus, treatment, or process variables. His method has been to use students' perceptions of the environment as a measure of the environmental press. Both needs and press are inferred from characteristic activities and events.

Just as needs are inferred from the characteristic modes of response of an individual, so press are reflected in the

characteristic pressures, stresses, rewards, conformity-demanding influences of the college culture. Operationally, press are the characteristic demands or features as perceived by those who live in the particular environment (Pace and Stern, 1958, p. 270).

It has been hypothesized (Stern, 1960) that the extent of agreement (congruence) between one's internal forces (needs) and the external environmental forces (press) he encounters is positively related to his adaptation to that environment. Research relative to this need-press hypothesis has been carried out mainly within a college setting. Stern (1962b, p. 50) notes a significant tendency for students with particular needs to be found at institutions with appropriate press. Thistlethwaite (1959) found significant correlations between CCI scale scores and student productivity in the natural sciences, arts, humanities, and social sciences.

Pace and Stern have stressed the importance of describing environmental press both for assessment and prediction and as a basis for the modification of environments for the most effective growth of students within these environments. Referring to the importance of environmental press for prediction they state:

The complexity of relationship between person and environment is inevitably obscured by the simplified and often inappropriate symbolism of correlation between scholastic aptitude test and grade point average. The press of a college environment represents what must be faced and dealt with by the student. It is possible that the total pattern of congruence between personal needs and environmental press will be more predictive of achievement, growth, and change than any single aspect of either the person or the environment (1958, p. 276).

Stern expresses the belief that the same educational ends can be achieved by very different types of students if the environment is appropriately modified for each type. As evidence for this he cites a study dealing with the performance of a group of authoritarian students

in differing classroom atmospheres. He says (1962 a, p. 702):

In certain institutional settings these students perform very poorly, but only in relation to a particular type of instruction that lacks congruence for them. They may perform very well indeed in an appropriately modified environment.

The Stern conceptualization of press has been criticized as being too global and over-simplified. Lavin (1965) prefers to think of the social context in terms of specific role systems, allowing for dissimilarity in the press from one role system to another. Baker, too, questions the construct validity of the CCI. His findings "do not support the model of press as a global factor but suggest that an environment may contain multiple sets of press. . . . (1966, p. 975)."

While the Pace and Stern approach has not been used to predict academic performance, the importance of studying environmental variables in relation to personality variables is currently being stressed by researchers in this area (Koenig and McKeachie, 1959, p. 134; Lavin, 1965; Pace and Stern, 1958, p. 276; Solomon, Bezdek and Rosenberg, 1963, p. 14). Commenting on the relative lack of success of studies dealing either with personality characteristics or sociological characteristics as determinants of academic performance, Lavin states:

This does not necessarily mean that the variables studied are not useful. Rather we think that the strategy of research is at fault, that is, neither psychological nor sociological factors alone are capable of substantially enhancing our understanding of academic achievement. We propose that it is at the level of the interaction between these two types of factors that any major breakthrough is likely to come, and for this reason we believe that the personality and social structure approach holds the most promise, even though no solid body of research yet exists (1965, pp. 162-163).

A Study by Lauterbach and Vielhaber (1966) investigated need-press and expectation-press indices as predictors of adaptation of West Point

cadets, without, however, using the parallel measuring instruments constructed by Stern and his associates for the assessment of needs and press. While neither the need-press nor expectation-press indices were useful in the prediction of non-classroom forms of cadet achievement, need-press indices were significantly related to certain academic criteria used. However, the need-press indices correlated with each of the academic criteria in the opposite direction from that predicted from the need-press hypothesis. The less congruent a S's profile of needs was with the press, the better his academic achievement tended to be.

No attempt has been made to assess press at the elementary school level in terms of Stern's conceptualization or from the point of view of matching person-situation parameters. The elementary classroom environment has, nevertheless, been the subject of a certain type of investigation. This has mainly taken the form of interaction analysis, both teacher-pupil interaction and pupil-pupil interaction.

Teacher-pupil interaction and achievement. Generally speaking, emphasis has been on describing patterns of teacher-pupil interaction, for example, a democratic vs. a dominative approach, subject-centered vs. student-centered approach. Such patterns of teacher approach have usually been related to group measures and have been shown to have no consistent effect upon learning (Berelson and Steiner, 1964; Getzels and Jackson, 1963, pp. 506-582; Koenig and McKeachie, 1959, p. 134; Lavin, 1965, p. 144). Reviewers of findings in this area have suggested that the approach of investigating teacher behaviors in interaction with relevant student characteristics may ultimately help explain the lack of more consistent outcomes in earlier studies. An extensive study is currently being conducted by Tuckman

using such an interaction model (1967 a, 1967 b). He has hypothesized that teachers who employ directive teaching techniques will produce a better course performance in students who are highly directive-oriented, and that teachers who rely on a non-directive approach will produce a better course performance in students who are non-directive oriented. Koenig and McKeachie (1959), however, found no support for the hypothesis that highly independent students would perform better and be more involved in an independent study situation; and Flanders and Amidon (1961) found that dependent-prone students show greater geometry achievement with indirect teacher influence, rather than with direct teacher influence. The indirect teacher influence is characterized by less lecturing and increased verbal participation.

Very little is known about teacher behavior with regard to the sex of students. Most studies of teacher classroom behavior have not indicated to whom - boy or girl - this behavior was directed (Sears & Feldman, 1966, pp. 30-31). With reference to teaching at the college level, Solomon, Bezdek and Rosenberg (1963) have identified ten dimensions of teacher behavior, the one accounting for the greatest proportion of teacher variation being lecturing versus encouragement of broad, expressive student participation. They report sex differences in response to this factor - the learning gain among females being far greater in response to a lecturing technique than to one that emphasizes expressive participation.

Even though investigators concerned with the prediction of academic performance are stressing the importance of studying personality variables in interaction with environmental factors, the studies discussed above certainly do not provide any definitive statements about

the effects on academic performance of such interactions.

Other studies in the area of teacher-pupil interaction have focused on the degree of congruity between students and teachers with regard to expectations defining their respective roles. Such research has shown that the degree of congruence in student-teacher values, attitudes, and expectations is directly related to the academic performance of the student (Lavin, 1965, p. 144).

Pupil-pupil interaction and achievement. A second class of studies dealing with the classroom environment have focused on pupil-pupil interactions. Most of this research has dealt with the influence of acceptance within the peer group culture on students' attitudes and performance. Very little attention has been given to the norms or values of the peer group. Specifically, the question of the effects of a conflict between student norms and teacher norms is thought to be of considerable importance in connection with academic performance (Lavin, 1965, p. 138). Cardon (1968, p. 431), Kagan (1965, p. 557) and Meyer and Thompson (1963, p. 517) have speculated concerning the conflict resulting from a discrepancy between teacher norms and typical male behavior.

#### Summary

Research has indicated fairly widespread sex differences in elementary school achievement. A commonly proposed explanation for such differences points to the girl's greater suitability to an essentially feminine classroom atmosphere. Boys and girls of elementary school age have been found to differ consistently in such personality characteristics as aggressiveness, dependency, conformity or submissiveness, passivity and affiliation. Some research has been conducted

relative to the significance of need-pressure congruence for adjustment within a college environment and of pupil-pupil and teacher-pupil interaction patterns for the performance of elementary school children. Very little research has considered individual personality characteristics in relation to either interaction patterns or other classroom characteristics and those classroom environmental variables that have been studied have not been related to the differential achievement of elementary school boys and girls.

## CHAPTER III

### DEFINITIONS, POSTULATES AND HYPOTHESES

The present study attempted to investigate the validity of a particular thesis as an explanation for sex differences in achievement. It was in general hypothesized that classroom characteristics are differentially suited to the personality characteristics of boys and girls. The major elements of this proposition are defined in this chapter and related hypothetically to sex differences in school achievement.

#### Definitions

##### Personality

Personality is defined as the sum-total of an individual's behavior tendencies or traits. In order to describe an individual in terms of a particular trait, this trait must be accompanied by a measurement procedure. Thus the trait may be operationally defined in terms of the test items of its accompanying measurement instrument.

At the theoretical level, five traits were thought to be of most significance for the description of student behavior. These do not cover the whole range of personality. They do, however, represent aspects of personality in terms of which individuals can be usefully compared and were specifically selected as being potentially capable of indicating differences across the sexes, as supported by the review presented on pages 10 to 13.

These five traits are the following; they may for operational purposes be referred to as dimensions:

1. Passive (placid)	Active (excitable)
2. Non-aggressive	Aggressive
3. Dependent (seeking help)	Independent (self-reliant)
4. Submissive (conforming, other-directed)	Dominant (autonomous, self-directed)
5. Affiliative (company-seeking)	Less affiliative (aloof)

Each pair of these left-right attributes may be considered as the end points of an underlying personality dimension. Evidence is fairly conclusive in positioning girls, on the average, at the left of each of the dimensions and boys, on the average, at the right.

Each of these traits may be operationally defined in terms of the measuring instruments selected as being potentially valid indicators of that particular trait. The instruments thus selected, arranged according to their hypothesized relevance for a given personality trait, are presented in chapter IV.

### Press

The classroom environment may be characterized in terms of press variables. A press is defined as any characteristic of the classroom environment relative to either persons or objects of that environment, which can affect the outcome of behavioral tendencies of a given person. By affecting the outcome of a behavioral tendency is meant either facilitating or impeding the behavioral response and/or having an influence upon a person's experiencing of that response. Such a characteristic may objectively relate to an environmental object or person or it may be attributed to an object or person by a perceiver.

For purposes of this study, certain press variables will be assessed by the students and so will represent the environment as they perceive it; others will represent aspects of the environment assessed by means other than student perception. Both types of press are assumed to be significant classroom influences. Propositions relative to this assumption are stated in conjunction with definitions of the types of press to be assessed.

A classroom characteristic becomes a press for a certain behavioral tendency to the extent that it can influence the outcome of that tendency. While theoretically it would be possible for a characteristic to affect the outcome of various behavioral tendencies jointly, the press of concern in this study are defined and were assessed in such a manner that each press is considered as being potentially most influential for a particular behavioral tendency. By classifying a press in terms of this behavioral tendency, common psychological terms may be used to characterize the individual as well as the environment. For example, a person may be said to be dependent or to have a tendency toward behaving in a dependent manner. Any characteristic of the classroom environment capable of affecting the outcome of this behavioral tendency would be labeled a press for dependency. Elements of the classroom, both physical and social, may thus be classified in terms of their relevance for specific behavioral tendencies; any one element being given that label corresponding to the behavioral tendency which it can potentially most influence.

Three subsets of press were thought to be of most significance in terms of their representativeness of the classroom environment and their

relevance for the achievement of students in the context of sex differences. These subsets represent respectively classroom characteristics relative to the teacher, the tasks, and the peers. A given set of press may or may not be coincident with or reinforce another set of press. By considering each set separately and in interaction with other sets, a more accurate representation of classroom functioning may be obtained and more meaningful relations to achievement hypothesized.

Teacher Press. One of the most significant persons of the classroom environment is undoubtedly the teacher. Characteristics relative to the teacher are assumed to be influential in affecting the outcome of students' behavioral tendencies and thus may be considered press. Specifically, the teacher's values or preferences concerning student behavior constitute a subset of press referred to as teacher press. The teacher's preference with respect to the behavioral tendencies of students were obtained in a manner described in chapter V.

While the teacher's behavior in the classroom is perhaps more influential in determining student responses and more accurately perceived by the students than a teacher's values concerning student behavior, the latter may be justifiably considered as press. A teacher's values and preferences concerning student behavior would be reflected in the teacher's classroom behavior (Sears & Sherman, 1964, pp. 15 & 32). They would, for example, be expected to partly determine the opportunities given a student to behave in a particular way and to influence the reinforcement of student behavior. These conditions would in turn influence the outcome of a student's behavioral tendencies.

Task-related press. Characteristics related to classroom tasks

constitute a second subset of press, referred to as task-related press. Neither the tasks themselves nor curriculum materials as such are considered as components of this subset; rather it includes classroom characteristics which determine how tasks may be carried out. The main influence in structuring the setting in which students perform their tasks is the teacher. Thus elements of her teaching behavior and the requirements set forth by her for task performance of students are the main components of task-related press. This subset of press will take on greater behavioral meaning later when measuring instruments are described - those being drawn mostly from among a group of instruments designed to assess teacher behavior patterns. Justification for the specific labeling of these press elements in terms of the behavioral tendencies of students is given along with the description of these measuring instruments.

Peer-group press. A third subset of press includes characteristics relative to a student's peer group and is thus referred to as peer-group press. Specifically, this subset includes the preferences which a peer group holds with regard to the behavior of its members. Those preferences may be taken as an indication of the type of behavior which would be reinforced by the peer group and as such would be expected to influence the outcome of behavior tendencies of group members.

It may be assumed that stable sociometric structures are to be found within the elementary school classroom and that male and female peer groups are of most importance for boys and girls respectively (Bidwell, 1965; Gronlund, 1959).

#### Person-Situation Congruence

Having described the pupil's personality in terms of traits and

the classroom environment in terms of press, the degree of congruence between the two may be assessed. When an environmental press is such as to facilitate the manifestation of a behavioral tendency, a state of congruence exists between that press and the behavioral tendency. While theoretically a press may be such as to impede the expression of a behavioral tendency, the press assessed in this study were operationally described as being more or less facilitative of a behavioral response and thus may be thought of as being more or less congruent with that response tendency. While the absence of facilitating press within an environment may be described as representing dissonance (provided it is not taken to mean the presence of impeding press), for clarity of description such a condition is considered less congruent, or as lacking congruence.

Since the pupil's personality characteristics and the classroom press were described in terms of the same five dimensions (which are thus referred to as person-situation dimensions), congruence with respect to a given dimension may be operationally defined as the absolute difference of the pupil's score on that dimension and the press score on the same dimension. The method of expressing the congruence between the pupil's personality and environmental press in statistical terms is discussed more precisely in chapter VIII.

#### Postulates

Congruence in general may be assumed "to produce a sense of satisfaction or fulfillment" and to be associated with "productivity, achievement and other measures of relative mastery." Lack of congruence would be accompanied by "discomfort and stress" (Stern, 1967, pp. 13-14).

It may be assumed that pupil personality-classroom press congruence as defined in this study is related to achievement partly through its influence upon the motivation of the learner. While there are no sex differences with respect to need achievement (as defined by McClelland et al., 1953) the situation serving to arouse this need has been found to differ for boys and girls. Classroom characteristics serving to arouse the achievement motive for girls may not be a press for achievement for boys, or conversely. A student's orientation to achieve in school may thus be thought of as conceptually different from his need to achieve and as reflecting the degree to which the classroom environment is one which represents for that student an "achievement situation" in the sense of serving to arouse the achievement motive. The degree of congruence between a pupil's personality and the subsets of press characteristic of the classroom may in part contribute to the student's overall attitude toward the classroom and to his orientation to achieve within it.

The significance for behavior and for school achievement in particular of congruence between pupil characteristics and classroom press may be further described by a series of postulates relative to each subset of press.

Pupil personality-teacher press congruence may be taken to indicate greater acceptance of the pupil by the teacher.

This is expected to lead to greater reinforcement of the pupil's behavior, which in turn would have a positive influence upon the student's adjustment to the classroom and to the learning situation in particular.

In as much as a teacher's grading behavior is influenced by a

student's acceptability to that teacher, pupil personality-teacher press congruence would favor marks assigned by the teacher.

Teacher press indirectly and more directly task-related press represent the opportunities students have of behaving in certain ways. It is generally assumed that a person prefers to behave in a manner congruent with his behavioral predispositions and works better in an environment where such congruence exists.

Theoretically it is possible that behaving in a certain way may interfere with task requirements. Maccoby's hypothesis relative to the relationship of personality to intellectual performance would support this contention. If behavior somewhere between the extremes of male or female sex-appropriate behavior is best for certain types of intellectual performance (Maccoby, 1966, p. 47), boys and girls as a group are equally suited to such performance. Thus, to the extent that congruence between a pupil's personality and task-related press may interfere with achievement, such interference would on the average be equal for the two sexes. Beyond this, such congruence would facilitate classroom learning and differentially favor boys and girls.

Peer group press is expected to reflect sex-appropriate behavior. Elementary school girls, and especially boys, are concerned with behaving in a sex-appropriate manner; this would in part explain their attraction to the peer group and their commitment to the values of that group.

Pupil personality-peer group press congruence scores may be taken to indicate the degree of acceptance of a student in a particular group and may, thus, relate to achievement. However, since the pattern of acceptance is expected to be quite similar with respect to male and female peer groups, such congruence scores would be more predictive of

achievement within a given sex group than across sex groups.

Of more significance for the differential achievement of boys and girls, is the degree of congruence between teacher press and peer group press.

The pupil is viewed as being aware of and, to a degree, concerned with behaving in accordance with the behavioral expectations of both the teacher and the peer group. The greater the congruence between the two sets of expectations, the less the conflict for the pupil. Since the two sets of press are viewed as being related to reinforcement patterns, where the two are discrepant, the pupil is subjected to conflicting patterns of reinforcement.

This chapter has presented several propositions with respect to the nature of the classroom environment and its significance in relation to the personality characteristics of the learner. These propositions may be related hypothetically to sex differences in school achievement.

#### Hypotheses

One aim of this study was to examine the factorial pattern of several personality measures postulated as being valid indicators of five theoretically significant traits and to determine the dimensions of most significance for the description of sex differences in personality. With reference to these dimensions, the following hypotheses were investigated; these rest on the assumption that there are sex differences in school achievement.

1. There are significant sex differences in pupil personality-classroom press congruence.

- (a) Teacher press are more congruent with the personality characteristics of girls than of boys.

- (b) Task-related press are more congruent with the personality characteristics of girls than of boys.
2. Pupil personality-classroom press congruence is significantly related to school achievement.
- (a) There is a significant positive relationship between pupil personality-teacher press congruence and school achievement.
- (b) There is a significant positive relationship between pupil personality-task-related press congruence and school achievement.
3. Sex differences in school achievement will diminish when the variance attributable to pupil personality-classroom press congruence is controlled.
4. The relationship between school achievement and pupil personality-classroom press congruence will remain significant when variance attributable to intelligence and socio-economic status is controlled.

No hypotheses relative to peer-group press were investigated in this study. A set of hypotheses relating peer-group press--teacher press congruence to school achievement in a manner similar to those stated above and resting on certain of the postulates presented could, however, be formulated.

## CHAPTER IV

### PILOT STUDIES

#### First Pilot Study

Prior to sample selection visitation was made to one elementary school of the Edmonton Public School System to judge the suitability of schools of this system for sample selection. Observation was carried out in three grade five classrooms mainly to note how the continuous progress plan in effect within this system influences teaching and grouping practices. For purposes of this study, it was considered necessary for students to have been with the same teacher and the same peer group for the grade five year in order to assess the influence of these factors upon their grade five achievement. This specification was satisfied only with respect to the so-called average achievement group; the lower achievement group (observed to be composed of a significantly higher proportion of boys and thus being an important group for study) carried out their grade five work under the guidance of two different teachers and did not have the same classmates for the whole year. This situation, thought to be characteristic of most schools within the Edmonton Public School System, along with other considerations, was the basis for a decision not to sample within Edmonton.

While visiting this school, an attempt was made to determine the extent of sex differences in achievement at the grade five level and the nature of sex differences in personality as shown by the Children's Personality Questionnaire. CPQ variables were selected as being potentially valid measures of four of the five personality traits,

postulated on page 22 as being descriptive of the personality of elementary school-age students. The relevance of each of these CPQ variables for a specific hypothetical personality dimension is given at the beginning of the following section.

On a sample of 51 grade five students (20 girls and 31 boys) sex differences were found on the following eight CPQ variables<sup>1</sup> (as indicated by the point biserial correlations between sex and each of the CPQ variables):

CPQ - E (Submissive vs. Dominant)

CPQ - F (Sober vs. Happy-go-lucky)

CPQ - G (Attentive to people and rules vs. Disregards obligations to people)

CPQ - H (Restrained vs. Impulsive)

CPQ - I (Dependent vs. Self-reliant)

CPQ - N (Company-seeking vs. Aloof)

CPQ - O (Guilt-prone vs. Self-confident)

CPQ - Q<sub>3</sub> (Self-controlled vs. Rejection of cultural demands)

The only grade five achievement indices available at the time of visitation were those from November examinations. The teacher-assigned grades of one grade five class (composed of students of high - and low - average ability) were examined for sex differences. Girls received significantly higher grades in oral reading, written language and writing ( $p. < .05$ ) and tended to obtain higher grades in silent reading,

---

<sup>1</sup> Cattell refers to the CPQ variables as factors, since he derived his personality traits through factor analysis of a pool of behavioral items. His use of 'factor' should not, however, be confused with the use of 'factors' in this study to describe the patterning of a number of personality measures.

oral language, spelling and social studies (.10  $< p < .15$ ); no sex differences were found in arithmetic and science.

### Second Pilot Study

Further pilot study was conducted at an elementary school in a small town approximately 100 miles to the north of Edmonton. The subjects involved were all grade five students who resided in or adjacent to this town.

#### Pupil Personality Variables

The primary aim of this second pilot study was to examine the validity of the five dimensions hypothesized, on page 22, as being descriptive of elementary school age children, and specifically as being descriptive of sex differences in personality. As mentioned above, certain variables of The Children's Personality Questionnaire were judged as being potentially valid measures of certain of the five personality dimensions. Other measures were selected since the CPQ variables were thought not to cover all of the hypothesized dimensions and also for the purpose of introducing redundancy to define the personality dimensions more comprehensively. Accordingly, a battery of seven personality instruments was compiled and administered to 91 students, 48 girls and 43 boys. These instruments, consisting of a total of 31 scales, were selected as being capable of validly assessing the five personality traits of theoretical concern in this study. They were the following; the relevance of each scale for a hypothetical personality dimension is given, along with justification for this proposed relevance.

Trait 1: Passive (placid) vs. Active (excitable)

CPQ - Factor D (placid, deliberate vs. overactive ) (The IPAT Children's Personality Questionnaire, Porter & Cattell, 1963).

CPQ - Factor F (sober, taciturn vs. happy-go-lucky, enthusiastic)

CPQ - Factor H (restrained vs. impulsive)

AI - Exhibitionism - to the right (Activities Index, Stern, 1963).

AI - Impulsiveness - to the right

AI - Conjunctivity - to the left

AI - Order - to the left

Fels - Compulsivity - to the right (self-rating scale developed at Fels Research Institute, Lansky, Crandall, Kagan & Baker, 1961).

The CPQ - Factor D, according to Porter & Cattell (1963), refers to placidity of temperament or phlegmatic behavior at the low end and excitability at the high end. The four AI scales, based on the Murray need taxonomy (1938) were expected to relate to the CPQ Factor D and to be indicators of a passive - active dimension in accordance with Murray's description of these needs. The variables n Order, Conjunctivity, Deliberation vs. Impulsion, are viewed as being related to the degree of organization of a personality and to the trait, Emotionality vs. Placidity where "placidity stands for a calm, passive, phlegmatic or well-controlled emotional system" (Murray, 1938, p. 200).

#### Trait 2: Non-aggressive vs. Aggressive

AI - aggression

AI - abasement - Abasement is viewed by Murray (1938, p. 15) as being "directly opposite to aggression"

Fels - need aggression

Fels - need hostility - these are taken in combination as a measure of need aggression

Sears' Antisocial Aggression Scale - to the right (Sears, 1961)

Sears' Aggression Anxiety and Prosocial Aggression Scales - to the left

Trait 3: Dependent (seeking help) vs. Independent (self-reliant)

CPQ - Factor I (Dependent vs. Self-reliant)

AI - Supplication (Dependency vs. Self-reliance)

Fels need Dependency

Fels need acceptance - to the left

Dependence Proneness Scale (Flanders, Anderson & Amidon, 1961)

Trait 4: Submissive (conforming) vs. Dominant (autonomous)

CPQ - Factor E (Submissive vs. Dominant)

CPQ - Factor G (Attentive to people & rules vs. Disregards obligations to people)

CPQ - Factor O (Guilt-prone, worrying vs. Self-confident)

CPQ - Factor Q<sub>3</sub> (Self-controlled, approving ethical standards vs. Rejection of cultural demands)

FIRO-B - Expressed Control - to the right (Schutz, 1958, pp. 63-64)

FIRO-B - Wanted Control - to the left

Submission - Dominance Scale (Brown, 1957)

AI - Dominance

AI - Deference - to the left - Deference is viewed as being related to Dominance, where Deference is manifested by a willingness to follow and cooperate with a superior and Dominance is manifested by a desire to control the behavior of others (Murray, 1938, p. 151).

Trait 5: Affiliative vs. Less affiliative

AI - Affiliation

CPQ - Factor N (Company - seeking vs. Aloof)

With the obvious purpose of selecting instruments which were likely to be valid measures of the traits of theoretical concern, certain additional considerations guided the selection of the 31 instruments included. It was considered especially relevant to include Murray-based instrumentation because of the significance of need-press theory for this study. Certain other instruments, for example, the Dependence Proneness Scale (Flanders, et al, 1961), were considered of special appropriateness for this study since they had been theoretically linked with environmental press elements in the context of school achievement. Additionally it was felt desirable to have a large pool of items in order to construct for each of the dimensions of concern, instruments for the measurement of peer-group and task-related press, with the latter being along the lines of the High School Characteristics Index (Stern, 1963). Their construction was anticipated as a direction for future investigation in the area of concern in the present study. Scales for the assessment of peer group press have been constructed and are briefly described in chapter V.

The instruments listed above, if selected for use in the main study, are described more fully in chapter V.

This battery of personality tests was administered for several purposes, chief of which was to determine whether the patterning of relationships among these measures would substantiate the validity of the five personality traits outlined in the rationale of page 22.

Factor pattern of pupil self-ratings. Scores on the 31 instruments, plus sex, were intercorrelated and the resulting matrix was factor analyzed (this matrix of intercorrelations appears in Appendix F). The factor analysis of pupils' self ratings was performed with reference

to 47 students instead of the 91 students for whom personality scores were available. The reason for using this number of students is stated later in this chapter, along with a discussion of the teacher press scales.

A principal components factor solution was first obtained, and a varimax orthogonal rotation was then applied to the principal axes factors. The matrix of orthogonal factor loadings was finally transformed to oblique simple structure by the Promax method (Hendrickson & White, 1964). For the 31 personality variables administered to the pilot study sample (N=47), Table I presents the primary factor pattern resulting from the Promax rotation. While the correlation matrix had ten eigenvalues greater than one, the number of common factors rotated was six. Thus the criterion for judging the number of significant factors was more conservative than that commonly used, but still more liberal than that recommended by some analysts. Vernon, for example, has indicated that a factor be judged significant if at least half of its loadings are twice the S. E. of a loading,  $r$ , where  $S. E. r = \frac{(1-r^2)\sqrt{n}}{\sqrt{N(n-S+1)}}$  with  $n$ = number of variables, and  $S$ = the number of the factor (1950, p. 130).

Factor I: Anxious Other-reliance vs. Carefree Self-reliance.

The most highly loaded personality variables on this factor are three from the Children's Personality Questionnaire (Porter & Cattell, 1963). These are the following - the verbal labels have been reversed wherever that is required by a negative sign in the loading: CPQ-F (Desurgency,  $F^-$  vs. Surgency,  $F^+$ ). Surgent persons generally have a more happy-go-lucky attitude and a lack of general inhibition. Desurgent individuals have generally been brought up with more severe, sobering standards and are more serious and concerned.

TABLE I  
 FACTOR PATTERN\*, PERSONALITY VARIABLES  
 OF 47 GRADE V PILOT-STUDY SUBJECTS

Variables	Promax	Oblique	Primary	Factor	Pattern		h <sup>2</sup>
	I	II	III	IV	V	VI	
	Carefree Self-reliance	Acceptance of Control	Dependency	Dominance	Prosocial Aggression	Venture- someness	
1. CPQ-E	668						735
2. CPQ-F	966						837
3. CPQ-I	-891						817
4. CPQ-D		-654					707
5. CPQ-N	428	-491					671
6. CPQ-G		738			707		793
7. CPQ-Q <sub>3</sub>		788			521		808
8. AI-Conjunctivity				-497			437
9. AI-Order		595				389	523
10. AI-Dependency		361	648				639
11. AI-Deference			637				616
12. AI-Abasement		456					260
13. Fels n Dependency	455		857				701
14. Dependence Proneness			428				443
15. Fels n Aggression	353	-426					482
16. Fels n Hostility		-644					597
17. AI Aggression	437						582
18. AI Dominance				779			701
19. B. Dominance				591			605
20. Antisocial Aggression	589						479
21. Aggression Anxiety					615		765
22. Prosocial Aggression					703		505
23. Fels Compulsivity (Low)						417	414
24. AI Impulsiveness	499						558
25. Fels n Acceptance			441		489		459
26. AI Affiliation			683	432			681
27. AI Exhibitionism				533			419
28. Wanted Control		-394		-723			555
29. Expressed Control					-381		428
30. CPQ-H		357				781	608
31. CPQ-O						-841	624
32. Sex (Male high)	909						769
Proportions of total Variance	155 010 -012 001 010 -006	125 005 -002 -015 -003	092 -002 002 000	088 -000 000	083 -006	075	600
Correlations of Oblique Primary Factors	I	II	III	IV	V	VI	
I Carefree Self-reliance	-						
II Acceptance of Control	-218	-					
III Dependency	-386	192	-				
IV Dominance	272	-165	-183	-			
V Prosocial Aggression	-320	-186	152	-142	-		
VI Venturesomeness	-258	-076	010	-013	312	-	

\* Entries to three decimal places; coefficients below .350 omitted (the minimum value at which all variables are represented).

CPQ-I (Tender minded,  $I^+$  vs. Tough minded,  $I^-$ ).  $I^-$  individuals are more self-reliant, self sufficient and hard, to the point of cynicism;  $I^+$  persons are more dependent and gentle.

CPQ-E (Submissiveness,  $E^-$  vs. Dominance,  $E^+$ ).  $E^+$  persons are assertive, self-assured, hard and rebellious, whereas  $E^-$  individuals are dependent, kindly and conforming.

The person scoring high on this Factor is self-reliant. His assertiveness is accompanied by a carefree attitude which, it would be suggested by the fairly high loading of the antisocial aggression variable, will sometimes lead him to assert himself in a socially unacceptable manner. Sex has its highest loading on this factor, with males scoring consistently higher than females.

Factor II: Rejection of control vs. Acceptance of control. The largest coefficients appear for the following variables:

CPQ- $Q_3$  (Lax,  $Q_3^-$  vs. Self controlled,  $Q_3^+$ ). The student high in  $Q_3$  is self-controlled, strives to accept approved ethical standards, is disposed to control expressions of emotion, and conscientious. The  $Q_3^-$  person is uncontrolled emotionally and rejects cultural demands.

CPQ-G (Super ego weakness,  $G^-$  vs. Super ego strength,  $G^+$ ). This factor is also indicative of controlled vs. emotional behavior. The  $G^+$  person views himself as correct in, and a guardian of manners and morals, and is consistently ordered, and attentive to rules. The  $G^-$  person disregards obligations to people.

CPQ-D (Excitability,  $D^+$  vs. Placidity of temperament,  $D^-$ ). The  $D^-$  student is placid, self-effacing and constant, whereas the  $D^+$  student is excitable and distractible. The high D child reports that he is "hurt and angry . . . whenever he is restrained or punished", and he

"is apt to be regarded as a considerable nuisance in restrictive situations" (Porter & Cattell, 1963, p. 28).

CPQ-N (Shrewdness,  $N^+$  vs. Naivete,  $N^-$ ). The  $N^-$  person lacks self insight and is simple and credulous; coupled with being controlled by rules, one could suggest that he is cognitively simple in the Harvey, Hunt & Schroder (1961) sense. The  $N^+$  person is insightful regarding self and others and "is a clear thinker with a trained, realistic but sometimes expedient approach to problems" (Porter & Cattell, 1963, p. 34) - perhaps cognitively complex.

AI - Order. The ordered person shows compulsive organization of details, whereas the person low in need order is characterized more by carelessness.

Students who obtain high scores on Factor II are acceptant of control and this is evidenced in several aspects of their behavior. They accept rules and are controlled by moral and cultural standards; they have a well controlled emotional system, and exercise control in organizing or ordering their possessions and daily activities. Students who obtain low scores reject control of their behavior either in the form of standards for behavior or orderly structuring of their activities. This rejection of control tends to be accompanied by aggressive behavior indicated by the negative coefficients for need aggression and need hostility. This would be in line with Porter & Cattell's comment with reference to the high D child.

Factor III: Dependency. This third factor has been designated as "dependency" because the largest positive coefficient appears for need dependency, and two other measures of dependency, namely, the AI dependency scale and the dependence proneness scale, have moderately high

coefficients. It is interesting to note that deference appears not at the negative pole of the Dominance Factor as postulated, but loads the same factor as the dependency variables. It seems appropriate, however, to view the tendency to follow and cooperate with a superior, characteristic of a deferent person, as a form of dependency. One does note, however, that the Dependency Factor (III) and the Dominance Factor (IV) are themselves negatively correlated.

The need for approval or acceptance is related, as is often suggested, to the dependency measures. Thus dependency may be thought of as being manifest in several forms of behavior. Persons are dependent on others for guidance, advice and direction in making decisions and solving problems. These are the behaviors referred to in the AI dependency scale. Persons are dependent on or deferent to others whom they view as leaders and they are dependent on others for approval.

The high loading of affiliation on this Dependency Factor is particularly interesting. As measured by the Activities Index, affiliation refers to wanting to be with a lot of people as opposed to being alone, or rejecting crowds. One's behavior while in a group of people can, however, take two forms; it may be directed by others, thus affiliation and dependency would go together as evidenced by this Factor. On the other hand, persons may wish to be with others because of the opportunities provided for dominant behavior. The moderate loading of affiliation on Factor IV, designated Dominance, would support this combination of tendencies. This suggests that the affiliative motive may be secondary to more basic needs. One may wish to be with other people because of the opportunities they provide for the expression of

other tendencies, for example, for the seeking of advice and approval, or for influencing the behavior of others.

While dependency, as defined, for example, by the Activities Index, is viewed as being to the right of a continuum labelled self-reliance versus dependency, it was thought preferable not to label Factor III as self-reliance versus dependency, as if these were at opposite ends of the same dimension. The patterning of relationships shown in Table I indicates that these are best viewed as two separate dimensions. The self-reliance measures define a separate factor rather than appear with negative coefficients on the Dependence Factor. It may be seen, however, that Dependency as a Factor (III) is negatively related to self-reliance as a Factor (I). It will be recalled that Factor I was labelled as "Anxious other-reliance vs. Carefree self-reliance". In view of the above discussion this would perhaps be better referred to as "Carefree self-reliance"; the decision to label the negative as well as the positive end of Factor I and of Factor II, was based on the fact that both Factors are defined by Cattell variables, all of which have the negative as well as the positive end point defined.

Factor IV: Dominance. The fourth factor has been designated as "Dominance" because the largest positive coefficient appears for dominance, as assessed by the AI scale, and dominance as measured by Brown's scale has a moderately high coefficient. At the same time, wanted control, which was postulated as being to the left of a submissive-dominant dimension, has a high negative loading on this Factor. One notes that exhibitionism, manifested by behavior, such as speaking before a group, which makes a person the centre of attention, has a fairly high positive coefficient on this factor. This seems meaningful

in that dominant behavior is also characterized by wanting to be the centre of attention, usually in the sphere of decision making and activity planning where one wishes to have his ideas the centre of such activity.

Once again it seems preferable, in view of the factorial pattern presented in Table I , to consider Dominance as being a separate Factor rather than as the positive pole of a submissive (conforming) versus dominant dimension. Factor II which has been labelled at the positive end, acceptance of control, may be viewed as a form of submissive or conforming behavior. It is thus interesting to note that Factor IV (Dominance) is negatively related to Factor II (Rejection of control versus Acceptance of control). It is further interesting to note that "Dominance" is positively related to Factor I (Anxious other-reliance versus Carefree self-reliance). It may be speculated that persons who are self-reliant and self-assertive do, in group decision making or activity planning, assume a dominant role rather than accept the control of other persons.

Factor V: Prosocial Aggression. This factor brings together Factor G of the CPQ, which at its positive end assesses Super ego strength, and Prosocial Aggression, these having the two highest coefficients. As Porter & Cattell say of the  $G^+$  person, he "views himself as correct in, and a guardian of manners and morals". This description is most similar to that of the person high in prosocial aggression as defined by Sears. "The form of aggression" characteristic of such a person, "is in favor of socially acceptable controls and disciplines. In its extreme form, prosocial aggression probably represents moral righteousness" (1961, p. 471). Also loading on this

factor is CPQ-Q<sub>3</sub> which at the positive end assesses self-control, with the Q<sub>3</sub><sup>+</sup> person seen as striving to accept approved ethical standards. This variable relates meaningfully to CPQ-G here as it did in Factor II (Rejection of control versus Acceptance of control). Also meaningful as loading on this Factor is the Aggression Anxiety scale of Sears. This scale measures feelings of fear, discomfort, and dislike of aggression. A person exhibiting such behavior would be expected to be also high in Prosocial Aggression, and to be insistent, as this scale assesses, on appropriate rules about aggression and on punishment for rule breaking.

Factor VI: Apprehension versus Venturesomeness. This factor is of questionable significance, particularly as judged by Vernon's criterion (1950, p. 130). It has, however, been labelled according to the two CPQ Factors which have high coefficients on it.

CPQ-O (Worrying, apprehensive, O<sup>+</sup> versus Self-assured, serene, O<sup>-</sup>)

CPQ-H (Shy, timid, restrained, H<sup>-</sup> versus Venturesome, uninhibited).

The two other loadings do not appear meaningful. One would have predicted that order and low compulsivity would have been correlates of apprehension and restraint; the signs of these variables are, however, opposite to this interpretation. The factor interpretation given must, therefore, be considered tenuous.

While a comparison of the factor pattern found in this pilot study with that postulated on the basis of relevant literature and personality theory reveals a fair degree of similarity, it also suggests that certain of the bipolar dimensions would be better viewed as consisting of two separate but correlated dimensions. Dominance appeared as a separate

dimension rather than at the positive end of a Submissive vs. Dominant dimension. The Acceptance of Control dimension of the pilot study solution may be considered roughly equivalent to submissive behavior. Similarly, while the Dependency and Self-reliance measures did not appear at opposite poles of a common dimension as hypothesized, they do define a Dependency and a Carefree Self-reliance dimension respectively. Neither Passive vs. Active nor Affiliative vs. Less Affiliative appeared as distinct factors. The patterning of Table I suggests the need for greater precision when referring to aggressive behavior - that appearing in the pilot study as a distinct form of behavior may be considered as antisocial aggression. Points revealed through a comparison of the hypothesized personality dimensions with those obtained in the pilot - and main - study factor analyses are discussed in more detail in chapter IX.

On the basis of the factor pattern of Table I and the accompanying discussion of these factors, it was decided to retain for use in the main study those variables having fairly high coefficients on the first five factors, since these were judged roughly equivalent to certain of the hypothesized factors, after making a conceptual adjustment from bipolar dimensions. Accordingly twenty-three of the personality measures used in this pilot study were selected for use in the main study. Those omitted either failed to demonstrate sex differences or shared only a low percentage of variance in common with other instruments. The CPQ variables, H and O, were omitted because they had coefficients only on the final dimension, which was judged of questionable interpretation.

Sex differences in personality. A second purpose for administering the battery of personality instruments was to verify the existence of sex differences on the measures with respect to a sample which would be

judged similar to that employed in the main study. With reference to the sample of 91 students, significant sex differences ( $p < .05$ ) were found on the following 15 scales (as indicated by the t-values associated with the point biserial correlations between sex and each of the personality variables):

CPQ Factors D,E,F,G,I,N, and Q<sub>3</sub>;

AI scales Abasement, Aggression, and Order;

Fels scale for Compulsivity;

Sears' Aggression Anxiety and Antisocial Aggression Scales;

Brown's Dominance Scale; and

Dependence Proneness Scale

These 15 scales were all selected for use with the main study sample.

Of the eight additional scales included in the 23 measure battery used in the main study, four (AI Deference, AI Dominance, Fels n Aggression, and Prosocial Aggression) had near significant sex differences and could be expected to reveal significant sex differences with the larger main-study sample. Although they failed to demonstrate significant sex differences with the pilot study sample, the Dependency scales (AI Dependency and Fels n Dependency) were included for main study use since they were the main defining variables of the Dependency Factor and they had indicated significant sex differences as judged from the literature.

In addition to verifying the presence of sex differences relative to individual variables, this study sought also to determine those dimensions of personality most important for the description of sex differences. Sex was found to have a very high coefficient on Factor I, Anxious other-reliance vs. Carefree self-reliance, with boys scoring at the high end. The coefficient of sex on each of the other five factors

was less than .25 and considered non-significant. However, among the variables with high factor coefficients, there were, for each of the first five factors, at least two variables with significant sex differences.

Age-Level Appropriateness of the instruments. The battery of personality measures was administered to the pilot study sample to also determine the appropriateness of the instruments for grade five students. This was necessary since most of the scales were designed for use with samples differing in age and grade level from that characteristic of the sample used in the present study. Items or words causing difficulty were noted, and either changed or omitted before the measures were administered to the main study sample. One instrument, the FIRO-B scale for the assessment of expressed and wanted control, was omitted in its entirety from the main study personality battery because the pilot study sample experienced difficulty with certain words and also with the response format.

#### Teacher Press Scales

The teacher's preferences concerning student behavior constitute the subset of press referred to as teacher press. The assessment of these preferences, as explained in chapter V, made use of rating scales. Specifically the teacher was to indicate her conception of 'ideal student behavior' by the use of a series of rating scales. This pilot study served to indicate the degree of similarity between scales used by the teacher to rate such student behavior and the personality dimensions of Table I by which students describe themselves. The establishment of similarity or correspondence between the two was necessary since teacher preferences as assessed by these rating scales were to be classified as

press for a given dimension of student behavior. To determine the similarity between rating scales used for teacher press assessment and the scales used for the measurement of student behavior for the dimensions of Table I, the grade five teachers were asked to describe each of their students (the pilot study sample) by means of nine rating scales. Then the loadings of the teacher ratings on the personality dimensions of Table I were estimated by a regression technique as described by Fruchter & Jennings (1962, pp. 258 - 260). This regression procedure made use of the correlations of the rating scale variables with the personality variables in the factored battery. This correlation matrix is presented in Appendix F.

Having determined a psychologically meaningful pattern among the personality variables, it was desirable not to alter this pattern by the introduction of the rating scales in the same factor solution. Therefore, the factor estimation technique was used to determine whether the rating scales were assessing similar factor content, this procedure having the advantage of leaving the reference factors (those of Table I) unaffected by the rating scales.

As indicated in chapter V, teacher press were assessed by a battery of 30 rating scales. However, only nine of these scales were entered into the factor estimation program during this pilot study. The remaining 21 rating scales had been demonstrated to be assessing behavior traits corresponding to the personality variables measured by the CPQ, and, thus, their factorial content in terms of Factors I and II of Table I was known (Cattell & Gruen, 1953). The nine rating scales used in this pilot study were the following:

Merrill-Palmer rating scales for

Compliance with routine

Independence of adult affection or attention

Respect for property rights

Response to authority

Ascendance-submission (Roberts & Ball, 1938);

Fels Child Behavior rating scales for conformity, patience, aggressiveness, and obedience (Richards & Simons, 1941).

Since teacher ratings on all nine variables were available for only 47 students, the factor analysis of pupils' self ratings (the solution for which is presented in Table I) was performed with reference to the same students, instead of the 91 students for whom personality scores were available.

The estimated loadings of the teacher ratings of student behavior on the six factors resulting from students' self ratings are presented in Table II. The three teacher rating scales, Respect for Property Rights, Patience and Obedience, have their highest loadings on the Dependency Factor. Thus it was decided that they assess student behavior similar to that which has been labelled Dependency and that, therefore, these rating scales could be used for the valid assessment of teacher press for Dependency. Similarly, it was decided that Conformity and Response to Authority, since they had their highest loadings on the Prosocial Aggression Factor, could be used to assess teacher preferences relative to behavior labelled Prosocial Aggression. The Aggressiveness Scale (assessing what is more commonly called Dominance, as is pointed out in chapter VII) had its highest coefficient on the Dominance Factor, and, therefore, could be considered as a measure of

TABLE II

ESTIMATED LOADINGS\* OF NINE TEACHER-RATING  
SCALES ON SIX OBLIQUE PERSONALITY FACTORS, PILOT STUDY SAMPLE

Teacher- rating scales	Factors						h <sup>2</sup>
	I Carefree Self- Reliance	II Acceptance of Control	III Depen- dency	IV Domi- nance	V Pro- social Aggres- sion	VI Venture- someness	
1. Patience			308				200
2. Obedience	-273		335				257
3. Compliance with routine	-455		250		330		416
4. Respect for Property rights	-332		491		265		444
5. Conformity	-291		273		333		292
6. Response to Authority	-321				423		362
7. Ascen- dence- sub- mission	352	-275					233
8. Aggress- iveness				296			199
9. Independ- ence of adult affection							163

\* Entries to three decimal places; coefficients below .250 omitted.

teacher press for Dominance. The remaining three rating scales were not used for the assessment of teacher press in the main study. Since the estimated loading for Ascendance-Submission on the Acceptance of Control Factor was low, it was decided that it would be best omitted especially since there were, among the previously-mentioned 21 Cattell rating scales, certain ones which could be used for the assessment of teacher press relative to the Acceptance of Control Dimension. A summary of the rating scales which were selected for the assessment of teacher press as part of the main study (both scales examined during this pilot study and the additional Cattell rating scales) is presented in chapter VII.

#### Summary

Two pilot studies were undertaken, the first in the city of Edmonton and the second in a small town 100 miles to the north of Edmonton. As a result of the first study, the Edmonton Public School System was judged unsuitable for sample provision since departmentalization and the continuous progress plan operated extensively within this System. The second pilot study, using a sample judged to be very similar to that employed in the main study, accomplished the following four purposes: the factorial pattern of a battery of personality instruments was examined to establish the factorial validity of these instruments in terms of the personality dimensions of theoretical concern; sex differences with reference to these instruments were noted; the suitability of the measures for grade five students was assessed; and the factor loadings of a group of teacher rating scales on the pupil personality dimensions of Table I were estimated to establish the validity of these scales for the assessment of teacher press.

## CHAPTER V

### INSTRUMENTATION

#### Personality Measures

A battery of personality instruments selected as being potentially valid measures of the traits of theoretical concern in this study was administered to a pilot study sample, the purpose and findings of which have been presented. On the basis of these findings, eight personality scales were omitted from the main study battery, either because of their failure to demonstrate sex differences or because they shared only a low percentage of variance in common with other instruments in the battery. Accordingly six self-report instruments assessing a total of 23 personality traits were selected.

The personality measures (in the form administered in this study) appear in Appendix A. The Children's Personality Questionnaire (Porter & Cattell, 1963) and the Activities Index (Stern, 1963) are not included.

The IPAT Children's Personality Questionnaire (Porter & Cattell, 1963). The CPQ assesses 14 personality traits and was planned for use with children in the age range 8 to 12 years. It has two forms, each containing two 70-item parts, A<sub>1</sub> and A<sub>2</sub> and B<sub>1</sub> and B<sub>2</sub>, and thus giving 20 items per trait. Both forms were administered but scores were obtained for only six traits, namely:

Factor D (Placid, deliberate vs. Demanding, overactive)

Factor E (Submissive vs. Dominant)

Factor F (Serious vs. Happy-go-lucky)

Factor G (Disregards rules vs. Rule-bound)

Factor I (Tough minded vs. Tender minded)

Factor N (Forthright vs. Shrewd)

Factor Q<sub>3</sub> (Lax vs. Self-controlled)

No reliability or validity data are available for the 1963 edition of the CPQ. Reliabilities for the longer 1963 forms are, of course, expected to be higher than those reported for the 1959 edition. With reference to the scales of concern in this study, dependability coefficients for the 1959 edition range from .69 to .86 and equivalence coefficients range from .40 to .67 (Porter & Cattell, 1959, p. 11). The validity of the CPQ is discussed largely in terms of factorial analysis of items. Reported indices of construct validity (given by the multiple  $r$  of the scale items with its pure factor) range from .68 to .84 (Porter & Cattell, 1959, p. 13).

Fels self-rating scale (Lansky, Crandall, Kagan & Baker, 1961).

This scale was used for the assessment of need dependency, compulsivity, need aggression and need hostility. It was developed at Fels Research Institute for use with subjects aged 13 to 18. On the basis of pilot study information a few words were changed and four items were omitted since they did not appear to be appropriate in terms of difficulty level or content. The problem of reading difficulty with this and other instruments was further dealt with by instructing subjects to ask the examiner for help with words they did not understand.

Activities Index (Stern, 1963). The AI consists of 300 items distributed among 30 scales; items for the assessment of the following seven traits were administered for the present study:

Abasement -- Assurance: self-depreciation vs. self-confidence

Aggression -- Blame Avoidance: hostility vs. its inhibition

Conjunctivity -- Disjunctivity: planfulness vs. disorganization

Deference -- Restiveness: respect for authority vs. rebelliousness

Order -- Disorder: compulsive organization of details vs. carelessness

Supplication -- Autonomy: dependency vs. self-reliance

Dominance -- Tolerance: ascendancy vs. forbearance

The AI was normed on junior high school students (grade seven and upwards) and on adults. No data on reliability and validity are available in the interim manual. With reference to the sample under investigation, the lower bound of the reliability of a given personality instrument may be expressed in terms of its communality. The factor results of the main study personality battery appear in Table V of Chapter VII - communalities are .55 or above for all AI scales, except Abasement, its communality being .31. Examination of the items, and information gained through pilot study resulted in eight items of the AI being replaced by parallel-scale items obtained from Murray (1938) - the original source of many of the AI items. In addition, other items were slightly reworded to make them more appropriate for grade five students.

Aggression Scales (Sears, 1961). Scales were administered for assessment of three types of aggression:

antisocial aggression - "aggressions referred to here are ones that are normally unacceptable socially in the formal pattern of our culture";

aggression anxiety - this scale measured "feelings of fear, discomfort, and dislike of aggression";

prosocial aggression - "aggression used in a socially approved way for purposes that are acceptable to the moral standards of the group."

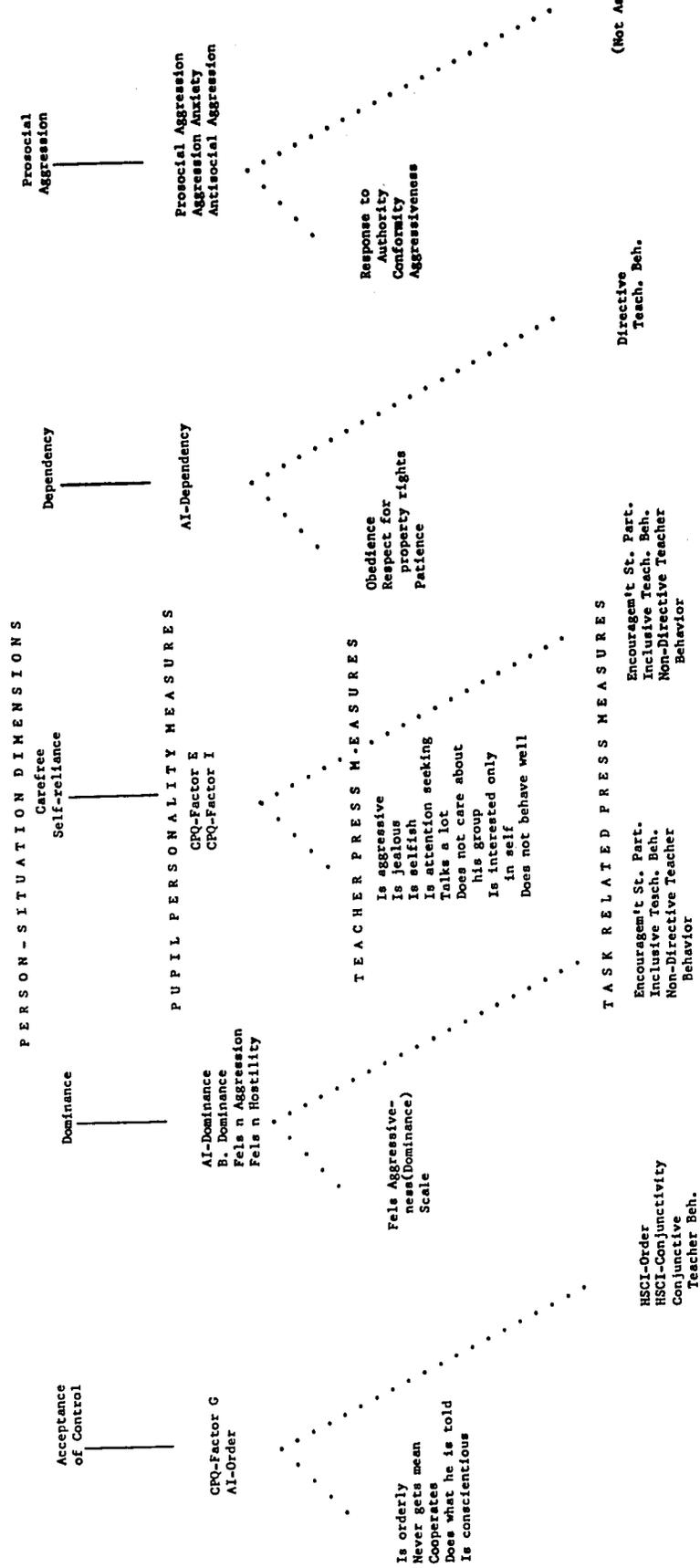
These scales were constructed for use with sixth-grade students and have reported odd-even reliabilities ranging from .61 to .64. Girls are reported significantly higher on prosocial aggression and on aggression anxiety, while boys are higher on antisocial aggression.

Dominance - Submission Scale (Brown, 1957). This scale was developed for use with grade-nine students; it is reported to have a high degree of internal consistency and an index of stability of  $.91 \pm .03$  (Brown, 1957). On the basis of demonstrated difficulty with pilot-study subjects, two items were omitted from the form used in the main study.

Dependence-Proneness Scale (Flanders, Anderson & Amidon, 1961). The 45-item scale was validated with reference to a group of grade-eight students. It has reported reliability of .68 and significant sex differences. For purposes of assessment in the present study, six items were eliminated since they proved difficult for grade-five students.

The 23 personality variables just listed were found to be characterized by five dimensions as described in chapter seven. Since classroom characteristics were classified in terms of these same five dimensions, they are referred to as person-situation dimensions. Figure 1 shows the personality and the classroom press variables entering into the person-situation congruence indices relative to each of these dimensions. Justification for the selection of these specific variables and for their classification by person-situation dimension is given in

Pupil Personality and Classroom Press Variables Matched by Person-Situation Dimension\*



\*Figure 1. Personality and classroom press variables entering into person-situation congruence assessment. For each person-situation dimension, congruence between pupil personality and each subset of classroom press (teacher press and task related press) was assessed, as indicated by the dotted lines.

chapter VII. While the present chapter describes the total battery of personality and classroom press variables used in the main study, Figure 1 lists only those variables which entered into the major person-situation congruence indices required for an examination of the hypotheses under study.

#### Teacher Press Assessment

As defined previously, the teacher's values or preferences concerning student behavior constitute the subset of press referred to as teacher press. Those preferences were assessed by means of a series of rating scales. Scales were selected on the basis of their relationship with the personality measures as indicated from two sources. Pilot study served to indicate the relationship between nine teacher-rating scales and the personality factors. Four of these scales were constructed for use at the Fels Research Institute (Richards & Simons, 1941). Each scale comprises a definition or description of the trait, along with cues considered indicative of varying degrees of the trait as described. The scale values of these cues range from one to nine. In addition to the four behavior rating scales used in the pilot study (listed in chapter IV), a Fels scale for the assessment of Planfulness was included in the main study battery. The other pilot-study rating scales were developed at the Merrill-Palmer School (Roberts & Ball, 1938). Each of these scales consists of a number of statements; a scale value indicates the degree of the characteristic measured by a given statement. These ranged from one to eleven but for purposes of this study were translated to a nine-point scale. One of the Merrill-Palmer scales, Independence of adult affection or attention, was omitted from the main-study battery because pilot study showed it to be only slightly related to the

personality factors and the relationship existing appeared not to be meaningful.

With reference to the personality factors assessed by the CPQ, rating scales, demonstrated to be assessing parallel factors (Cattell & Gruen, 1953), were selected for the assessment of teacher press. Accordingly 21 rating scales from this source were used:

As markers of Factor E,

Is assertive vs. Is submissive

Is prone to jealousy vs. Is not jealous

Is selfish (demanding, impatient) vs. Thinks of others (patient, not demanding)

Is attention-seeking vs. Does not need a lot of attention -  
These latter two scales appear as markers of Factor I  
in the adult sample, but for children load on Factor E.

Talks a lot vs. Says very little

Does not care what happens to his group vs. Wants to do his share  
for the group.

Is only interested in himself vs. Is interested in what others  
think.

Does not always behave well vs. Has good manners

As markers of Factor F,

Is bold, adventurous vs. Is cautious

Never worries about anything vs. Worries a lot

Is full of pep vs. Is slow about things

Has fun doing anything vs. Is not sure of himself

Is cheerful vs. Is often very solemn

Cannot be fooled easily vs. Always believes what other  
people say

Always needs others to help him vs. Is independent-minded

As markers of Factor G,

Is insistently orderly vs. Is disorderly

Never gets mean vs. Is mean

Cooperates vs. Does not cooperate

Does what he is told vs. Does not obey

Is conscientious vs. Is unconscientious

and the scale, Is aggressive vs. Is non-aggressive.

The Cattell rating scales have only the end points described; for assessment in this study these descriptions were taken to correspond to the high and low points of a nine-point scale.

The teacher's preference for student behavior was thus assessed by a battery of 30 rating scales, each scale having two or more positions along a nine-point continuum defined.

Realizing the possible difficulty in obtaining valid information relative to a concept as emotionally-toned as "preferable student behavior", extra precautions were taken in the assessment of teacher press. Assessment took place after the investigator felt that she had built up an atmosphere of professional trust with the teachers involved - they made their ratings after two months of periodic visitation to the schools by the investigator. An explanation of the type of assessment to be made was given to each teacher individually to insure that she understood the nature of the task. Discussion with the teacher was centered around a written statement of the purpose of the ratings. This statement appears in Appendix B. It set the context in which the teacher was to view student behavior and tried to make the ratings appear as objective professional judgments rather than personal preferences.

The teacher was asked to make three ratings. Firstly, she was asked to focus on specific students and to rate that student whose behavior was "most appropriate" in the context described and also that student whose behavior was "least appropriate". These two ratings were to serve as a stimulus for the teacher to observe classroom manifestations of the traits described in the rating scales and also to help the teacher differentiate her position along the continua of concern. Having done this the teacher was asked to draw on her total teaching experience to present her view of that student behavior "ideally most appropriate" in the context described. This final rating was used for the description of teacher press. It was thought that a rating based on experience with a large number of students would give teachers a more common basis for decision and would focus their attention on a distribution of student behavior similar to that descriptive of the personality of students under study (personality scores were normalized across classes).

As indicated, the teacher's preference for student behavior was defined in terms of 30 rating scales. It is conceivable that a given teacher would consider some of these traits to be more important than others for her description of preferable student behavior. Thus each teacher was asked to indicate the importance of a given trait in the context of the ratings made. The description of this task appears in Appendix B.

The rationale underlying this study defines classroom variables in terms of the behavioral tendencies for which they are potentially most influential. Thus with respect to teacher press, a preference for a certain type of behavioral response is taken to be a press for that response. Justification for assuming a parallelism between the traits

used for teacher ratings and those used for pupil description is based primarily on pilot study investigation, the results of which are discussed in chapter IV. Thus a preference for a behavioral tendency defined by a teacher rating scale can be taken as a press for a behavior response characteristic of the students. This point is discussed in more operational terms in chapter VII which describes the main dimensions of student behavior. The specific teacher press variables used for the assessment of pupil personality - teacher press congruence relative to each of the five person-situation dimensions are indicated in Fig. 1, p. 45.

#### Task-related Press Assessment

The main influence in structuring the setting in which students perform their tasks is the teacher. Thus elements of her teaching behavior and the requirements set forth by her for task performance of students are the main components of task-related press. Assessment of these elements was accomplished by a series of instruments designed to assess what is commonly called teacher behavior patterns or teaching style. The selection of these instruments was based on theoretical and empirical evidence that a given teacher behavior pattern can potentially influence certain behavioral tendencies of students and thus may be justifiably referred to as press. These instruments are first described; justification for their characterization in press terms is then given.

The specific teacher-behavior variables entering into the assessment of pupil personality - task related press congruence are listed in Figure 1.

Student Perception of Teacher Style (Tuckman, 1967 a, 1967 b) - a measure of teacher directiveness. This rating scale is separated conceptually into two major categories: structure, which refers to the

manner in which the teacher runs the classroom and sets up the learning situations, and interpersonal, which refers to the way the teacher relates to the student as a person. The SPOTS is a 17-item rating scale requiring the students to rate the intensity or frequency of particular teacher behaviors on nine-point rating scales. It was designed for use with vocational high school students. For purposes of this study, 10 items were administered; those omitted were thought to be inappropriate for the grade five classroom. In addition the nine point response format was changed to a three point one since it was felt that grade five students would have difficulty making discriminations as fine as those required with the original format.

Directive--non-directive teacher behavior may be shown to have behavioral relevance for dependent--independent behavior. Thus, it is maintained that directiveness on the part of the teacher is a press for dependence; whereas, non directiveness may be taken as a press for independence.

Directive teaching represents a structured situation where the expected behavior of the student is prescribed by the teacher. Tuckman (1967 c) has shown that System I students perform better in structured situations; furthermore System I individuals (classified according to a model of personality structure developed by Harvey, Hunt & Schroder, 1961) are quite dependent upon other persons, particularly authorities, for guidance and structure. It may be inferred, therefore, that dependent students would perform better with a directive teacher. On the other hand, System IV individuals are independent; they perform better in unstructured situations, and prefer them (Tuckman, 1967 c). Since the non-directive teacher creates a somewhat unstructured situation in which

the students must provide some of their own guidance, independent students should perform better in such a setting.

Preclusive vs. Inclusive teacher behavior (Cogan, 1954). Preclusive behavior is described as that which tends to keep the pupil peripheral to the processes, experiences, and decisions of the classroom; while inclusive behaviors tend to keep the pupil central to the processes, experiences and decisions of the classroom. The instrument for the measurement of such behavior was designed for use with grade eight students and consists of 23 inclusive items and 26 preclusive items. Only 15 items, all assessing inclusive behaviors, were administered in the present study.

The preclusive teacher is characterized by need dominance and actions tending to get others to cooperate. The inclusive teacher, on the other hand, is characterized by integrative and nurturant behavior, and is, in terms of Cattell's factors, self-submissive and responsive. Anderson and Brewer (1945) saw integrative teacher behavior (a close synonym for inclusiveness) as that which expands children's opportunities for self-directive and cooperative behavior. Inclusive teacher behavior may, it is thus proposed, be classified as a press for dominant pupil behavior.

Conjunctive teacher behavior (Cogan, 1954). Such behaviors structure whatever interpersonal relations the teacher may establish with his pupils and include certain technical competencies of the teacher. For example, items are concerned with the teacher's classroom management and with the level of her demands upon pupils. 26 items of Cogan's Pupil Survey assess such conjunctive teacher behavior; for this study 15 of these items were used.

The conjunctive teacher is concerned with the orderly progression of classroom functioning and is characterized as habit bound and by need order. Such behavior may be classified as a press for conjunctivity and for order with reference to student behavior.

Permissive Scale. Christensen (1960) described permissiveness in terms of such variables as whether the pupils usually helped plan what the class is going to do, whether the teacher assigned homework everyday, and whether or not pupils were able to influence the teacher to change assignments. 30 items of Christensen's 40-item permissive scale were used in the present study.

Permissive teacher behavior is considered in the literature to be closely related to what other writers have called democratic, integrative, inclusive or student-centered. Flanders (1963) has shown that if a teacher has a higher proportion of integrative contacts, pupils show spontaneity and initiative; whereas, if a teacher has a higher proportion of dominative contacts pupils show greater compliance to teacher domination. Kohn (1963) reports a higher percentage of child-initiated responses in a classroom where children are relatively free to proceed on their own as opposed to a classroom where a large number of step-by step structuring occurs. These findings, together with the theoretical support for classifying a closely related teacher behavior style, inclusiveness, as a press for dominance, lead one to propose that teacher permissiveness allows for greater student dominance and initiative and thus may be called a press for dominant student behavior.

Lecturing vs. encouragement of broad, expressive student participation. This is the first of eight dimensions of teacher behavior factored by Solomon (1966). Teachers who obtain high scores on this

factor tend to speak a great deal in class and to concentrate on factual material; those scoring low on this factor encourage students' "free and open" expression by asking them for opinions, interpretations, personal experiences, etc. 15 high-loading items on this factor were administered in the present study.

It is maintained that lecturing as opposed to the encouragement of student participation, requires of students passive and submissive behavior and may thus be classified as a press for such behavior. Solomon, Bezdek and Rosenberg found that sex differences, in interaction with this factor, accounted for a greater absolute variation in learning gain than any other combination of variables. The learning gain among females is far greater in response to a lecturing technique than to one that emphasizes expressive participation. They comment:

Perhaps the culturally developed tolerance of females for the passive role of a listener allows them to function more effectively in a lecture situation (1963, p. 71).

The scales described above all make use of student ratings of teacher behavior. That a rating scale filled out by students provides one with an accurate description of teacher behavior has been fairly well established by a number of studies. Solomon's studies support the contention that "pupil questionnaires can yield information not only about pupil's feelings for the teacher, but also about what actually happens in the classroom" (Tuckman, 1967a, p. 10). Tuckman cites further advantages of the student rating approach. Such scales are practical, easy to administer, and can be validly analyzed using powerful parametric statistical techniques. For the most part, the reliability of student rating scales has been found to be quite high. Christensen (1960)

estimated the reliability coefficient for his Permissive Scale to be .94. Cogan (1954) reports reliability coefficients for the three scales of his "Pupil Survey" ranging from .89 to .96. Thus, the usefulness and reliability of student questionnaires as measuring devices of classroom behavior has been substantiated (Tuckman, 1967a, pp. 10-11).

According to press theory, there may be a discrepancy between beta press (apperceptions of the subject) and alpha press (judgments of trained observers). The beta press is, however, the determinant of behavior, since, as Murray has indicated, "if a child believes that a situation signifies a certain thing it will be this conception that will operate rather than what psychologists believe the situation signifies" (1938, p. 290). In agreement with Murray's conception of the significance of beta press and with specific reference to learning, Hughes (1963) comments that "the teacher's behavior must gain its influence through being perceived by the learner." In the present study, the individual pupil's perception of the teacher's classroom behavior was used as an indication of task-related press for that student.

High School Characteristics Index (Stern, 1963). The HSCI is a 300 item scale for the assessment of environmental characteristics and contains 30 press scales paralleling the 30 need scales of the Activities Index. The statements are about high school life and refer to the curriculum, to high school teaching and classroom activities, to rules and policies, to student activities and interests, to features of the buildings, etc.

Items belonging to seven press scales paralleling the AI need scales administered in this study were selected for assessment of task-related press. Only items referring to classroom activities were

included; these refer to the teacher's behavior but also to student activities and in this respect differ from the other scales included for task-related press assessment. HSCI items were of interest for two specific reasons. Firstly, they are the only items relative to classroom activities which are classified specifically in press terms - they may thus serve to assess the validity of other classroom scales as assessing press variables. This point is discussed along with results of a factor analysis of the task-related press battery. Of secondary interest was the question of whether press conceived in this more global way would relate to achievement in as meaningful a manner as with the press variables specific to particular elements within the classroom, namely, the teacher and peers.

A total of 60 HSCI items were administered; they comprise the following press scales:

Press order

Press Conjunctivity

Press Supplication (Dependency)

Press Abasement

Press Impulsiveness

Press Aggression

Press Deference

Press Dominance (3 items were included for this scale but they were not scored for purposes of this study.)

The Task-related Press Scales (excluding the 60 HSCI items - Stern, 1963) appear in Appendix C.

Peer-Group Press Assessment. This subset of press theoretically includes the preferences which a peer group holds with regard to the

behavior of its members. A questionnaire, consisting of 145 items, was constructed for the assessment of those preferences. The source of the items in this scale was the personality instruments, with items from scales defining each of the five personality dimensions being included in the peer group press scale. This insures a parallelism between the behavior descriptive of the student and that in terms of which the peer-group preferences are to be made and justifies the use of this scale for the assessment of pupil personality - peer group press congruence. Such congruence was not, however, included for study with the present sample.

It was assumed that male and female peer groups are of most importance for boys and girls respectively and that the peer group would reflect in its preferences sex appropriate behavior. Choices made in response to a sociometric questionnaire supported the former assumption. The questionnaire was thus constructed in two forms - one for boys and another for girls. In the case of boys, the questionnaire was designed to indicate a given boy's perception of what his friends think is appropriate behavior for boys, and for girls to indicate a given girl's perception of what her friends think is appropriate behavior for girls. Directions from the Peer-group press scale are given in Appendix D. These serve to clarify the operational meaning of this subset of press.

#### Achievement Measures

Teacher-assigned grades. Achievement as indicated by teacher-assigned grades is of most concern in this study. To the extent that classroom press variables were influencing achievement, it was thought desirable to use those achievement indices based on the longest period of classroom learning. Thus, the final report card entries were used; these were made in June.

A five-point grading scheme was used by the teachers within the school system sampled. This grading scheme has the following interpretation which should be uniform throughout the school system:

H - Excellent (85-100)

A - Very Good (70-84)

B - Good (55-69)

C - Fair (40-54)

D - Poor (under 40)

To provide further discrimination within the centre of the scale, use is made of + and - with respect to the letters A, B and C. It is understood that use of these signs varies somewhat from teacher to teacher and that there is no clear-cut policy concerning cutting points, for example, between B+ and B. In effect, therefore, the teacher in the assignment of grades makes use of an 11 point rating scale. (For analysis in this study these points were assigned values from 1 to 11, with 11 corresponding to H and 1 to D.)

Letter grades were assigned for eight subjects, some of which had two or three sub sections. Thus grades for these 13 sub scales were available: Reading (Phonics, Comprehension, and Oral); Language (Oral and Written); Spelling; Arithmetic (Computational Skills and Problem Solving); Social Studies (Learning Facts and Note Book); Science; Health; and Writing.

Objective testing within the various subject areas is theoretically the main basis on which achievement grades are assigned. With reference to some subjects, for example, Reading and Arithmetic, standardized achievement tests are used; for others, tests are standardized for use throughout the system; and for a subject such as social studies

where a teacher is mainly responsible for the course content, teacher-made tests are used. Achievement scores on these tests are, however, translated into letter grades. Subjective elements enter into this translation; the teacher's evaluation of a student's classroom work being one.

Standardized Achievement Tests. Standardized tests were used for the assessment of achievement in three basic subject areas, arithmetic, language, and reading. The language test was administered by the investigator in late May; the other two were administered as part of the June testing program undertaken by the school system.

Fifth-Reader Achievement Test (McCullough & Russell, 1961). This test accompanies the Ginn Basic Readers which are used in the schools sampled. It assesses vocabulary, word analysis and comprehension.

Seeing Through Arithmetic Test (Hartung, Van Engen, Gibb & Knowles, 1960). STAT 5 assesses arithmetic achievement in the areas of problem solving, computation, information, and concepts. It is considered a valid instrument to assess achievement of students using the Seeing Through Arithmetic textbook.

Canadian Tests of Basic Skills - Language (King, 1967). Items, at the grade 5 level, were administered for the assessment of four language skills: spelling, capitalization, punctuation, and usage.

#### Other Measures

Lorge-Thorndike Intelligence Test (1957). Level 3, Form A, of the Lorge-Thorndike Verbal Battery was administered in October, 1967, as part of the schools' regular assessment program. Raw scores on this test were used to statistically control for pupil variation in intelligence.

Socio-Economic Index for Occupations (Blishen, 1967). The home educational environment has been shown to influence both an individual's intelligence as well as his achievement (Farquhar, 1965). In as much as an index of occupational status reflects the home educational environment, the former may be used to control for the influence of parental press for achievement.

Pineo & Porter (1967) constructed an occupational prestige scale using the average evaluation made of an occupational title by a national sample to establish its social standing. Using Pineo-Porter prestige scale scores, Blishen (1967) determined the multiple relationship between prestige rating and income and educational levels accompanying Canadian occupations as obtained during the 1961 census. Using this function he assigned a socio-economic index score to each of 320 occupations. This scale was used to determine fathers' occupational status for the students of this study.

## CHAPTER VI

### DATA COLLECTION

#### Sample

Research within the natural classroom setting is made difficult by the complexity of factors potentially influential for the achievement of students. To provide a classroom situation where the hypotheses under study could be tested with as few known confounding influences as possible, the following guide lines for the purposive selection of a sample were set up.

The review of literature has suggested that sex differences in achievement are more pronounced within the elementary classroom. It was decided, therefore, to sample classrooms at this level.

A characteristic of most elementary classrooms within any practical area for the research undertaken is that of departmentalized grades. There is a great possibility that a pupil's achievement in such grades may be influenced by several teachers rather than by one. It was felt necessary for the purpose of examining the significance of teacher preferences and behavior for student performance to confine the investigation to non-departmentalized classrooms. Such classrooms may be readily found at the primary school level. This level would have had the advantage also of reducing the influence of previous classroom environments upon achievement within a current classroom. It is also felt that sex differences in achievement are still more prevalent at the primary level. However, a decision not to sample at this level was based on the judgment that primary students would have had a great deal

of difficulty with the instrumentation used - most of which was modified from its original form for use at the elementary level.

While sex of the teacher may represent a significant variable for the differential achievement of boys and girls (and this at the present time seems to be an open question - Sears & Feldman, 1966, p. 34), the independent variables of this study were examined with reference to female teachers only. It was felt that a possible interaction between sex of teacher and the variables under investigation would create analytical and interpretive difficulties which would be best avoided in this investigation.

A listing of the composition of school systems within Alberta with respect to size of school and grades taught was examined as a first step towards sample selection. Accordingly a County neighboring Edmonton was selected as having a number of schools sufficiently small as to prohibit the practice of departmentalization at the elementary level. Four such schools providing five female-taught classrooms were thus selected as being suitable for sample purposes as far as the above considerations were concerned.

The extensiveness of the information sought and the care with which it had to be gathered made necessary the selection of a relatively small number of classrooms to be studied as the main phase of data collection. Preliminary investigation of a larger number of classrooms was proposed for the purpose of showing the nature of sex differences in achievement and especially of giving a rough indication of the range of classroom environments - allowing the selection of the maximum range available. However, there was considerable difficulty in finding

classrooms with the above-mentioned specifications within limits for practical investigation. It was, thus, decided to sample within these four schools mentioned, provided they appeared to offer a reasonable range of classroom environments and did show sex differences in achievement at the grade five level. To have included schools from one or two other Counties would have resulted in a sample of classrooms differing with respect to curriculum and grading practices, and thus would have made cross-class analyses questionable if at all feasible.

Four schools within a County adjacent to the city of Edmonton were selected to provide the classrooms of concern in this study. Two of these schools are located in a town of approximately 4,000 people about 25 miles from Edmonton. Most of the students attending these schools reside in the town, while some commute by bus from neighboring farms. From one of these schools, two grade-five classrooms, each female-taught, were selected for the present study sample. The other school, a much larger one, provided only one female-taught grade five classroom. The other grade five classrooms were judged unsuitable either because of shared teaching duties involving male teachers, or because of having students whose grade five work was covered over more than one year and thus involved more than one teacher. The two other schools were each located in a small hamlet about 10 miles from Edmonton. Each of these schools had one female-taught grade five classroom and it was included in the present sample. The students of both those schools commuted by bus and were mostly farm dwellers.

Preliminary investigation was made in these five classrooms to reveal the sex differential in achievement. For this purpose the distribution of letter grades assigned by teachers for both the November,

1967, and the February, 1968, examinations for boys was compared with that assigned for girls. This comparison was based on the total letter assignments for the 13 achievement areas outlined in chapter V.

Chi square tests of significance were applied to test the null hypothesis that the distribution of letter grades was independent of sex of student. Table III reports findings for the five classrooms for both the November and February achievement grades.

TABLE III  
SEX DIFFERENCES\* IN NOVEMBER AND FEBRUARY  
ACHIEVEMENT FOR 5 SAMPLE CLASSROOMS

Classroom	No. of Boys	No. of Girls	November, 1967		February, 1968	
			df	$\chi^2$ Probability	df	$\chi^2$ Probability
1	15	9	4	4.64 .50 > p > .30	6	3.54 .80 > p > .70
2	15	11	8	63.00 p < .001	8	57.37 p < .001
3	15	11		(Not available)	4	10.41 .05 > p > .02
4	13	14	5	12.55 .05 > p > .02	5	20.21 .01 > p > .001
5	13	11	8	14.66 .10 > p > .05	4	17.74 .01 > p > .001

\* p needed for significance, .05.

In four classrooms sex differences in achievement were significant for both the November and February examinations, with girls receiving the higher grades; in a fifth classroom, girls tended to receive higher grades than boys, but the difference was not significant.

As an indication of the environmental variation within the five classrooms, an instrument designed to assess teacher's attitudes towards the classroom behavior of boys and girls (Wisenthal, 1964) was

administered. Such an assessment may be taken as an indication of teacher press to the extent that a favorable attitude towards a given type of behavior is indicative of a preference for such behavior. The Wisenthal instrument (appearing in Appendix E) assesses teachers' attitudes with reference to twenty classroom behaviors; it was designed for use with Junior High School students. Scores may range from 0 to 2,000 with a high score indicating an unfavorable attitude in comparison with a low score. Table IV shows the scores obtained by the five teachers of this sample.

TABLE IV  
TEACHER ATTITUDES TO BOYS AND GIRLS

Classroom	Teacher Attitude		
	to Boys	to Girls	Discrepancy
1	450	282	168
2	415	360	55
3	780	1100	-320
4	518	246	272
5	247	125	122

Teachers' attitudes towards boys ranged from 247 to 780 and those towards girls from 125 to 1100. Four of the teachers' attitudes favored the girls with the teachers varying with reference to their differential attitude towards boys and girls from 55 to 272. One teacher favored boys in her attitudes, but nevertheless had, with reference to other teachers, the most unfavorable attitude towards boys, and differed from

the other four teachers to an even greater extent in her attitude to girls. While no significance tests could be meaningfully applied to these raw scores, they were taken as evidence for an expectation that the teachers would vary with reference to their preferences for the behavioral characteristics of boys and girls.

On the basis of the above preliminary investigation these five classrooms, their teachers and students (N = 120), were chosen for the present study sample. Further data, descriptive of the teachers and students, are given to guide generalization of findings to a population of teachers and students similar to those sampled in this study.

The five classrooms, belonging as they did to a single school district, all offered the same formal curriculum. The testing program was constant across classrooms, with respect to both the instruments used and the schedule followed. At least with reference to the basic five-point grading scheme, the same interpretation was employed by all teachers. Thus a comparison of achievement across classrooms would seem to be justified.

Data descriptive of the student, given for each classroom separately, are presented in Table V. While no inter-class comparisons were proposed or made in this study, where data are presented for individual classrooms with classrooms numbered from 1 to 5, labelling remains constant for all such descriptions - thus such comparisons by the reader become possible.

TABLE V

AGE, INTELLIGENCE, OCCUPATIONAL STATUS OF  
SAMPLE (N=120), BY CLASSROOM AND SEX

Unit	N	Age (in years and months)		Lorge-Thorndike Verbal (raw score)		Occupational Status	
		Mean	Range	Mean	Range	Mean	Range
Classroom 1	22	10-5	9-11 to 11-5	66.3	51-74	40.8	26.6 - 76.7
Classroom 2	24	10-7	9-10 to 11-5	63.9	43-78	33.8	27.8- 57.8
Classroom 3	26	10-6	10-0 to 11-6	59.5	39-74	34.7	29.3- 40.2
Classroom 4	26	10-5	9-9 to 10-11	71.3	60-81	45.2	29.0- 74.3
Classroom 5	22	10-5	9-11 to 11-11	66.4	56-82	39.9	27.8- 70.4
Total Boys	68	10-7	9-10 to 11-11	64.7	39-82	36.9	26.6- 70.1
Total Girls	52	10-5	9-9 to 11-7	66.3	39-81	41.4	27.8- 76.7
Total Sample	120	10-6	9-9 to 11-11	65.4	39-82	38.9	26.6- 76.7

The average age of the 120 students was 10 years 6 months - this being fairly representative also of the class and sex means.

Intelligence test scores across the five classrooms ranged from 39 to 82, with classrooms 2 and 3 being more variable with respect to intelligence than the other three classrooms. While girls tended to score higher on the Lorge-Thorndike Verbal Test, the difference was not significant ( $r_{pbi} = -.09$ ,  $p = .30$ ).

The occupational status of the students ranged throughout the extremes of the Blishen scale. Two classrooms were lower and less variable than the other three; this having resulted from the fact that most of the students from these two classrooms were farm dwellers. The occupational status of the girls was significantly higher than that of the boys ( $r_{pbi} = -.20$ ,  $p < .05$ ). This appears to have resulted from the fact that within these two classrooms having lower occupational status, there was a higher proportion of boys comparative to the other classrooms where the proportion of boys and girls was approximately equal.

Further data, describing the students' average position relative to the personality traits, as well as their dispersion throughout the continua assessed, are given in chapter VII. There dimensions for person-situation congruence are described. At that time data descriptive of the classroom press are presented relative to the same dimensions.

### Procedure

Testing schedule. The entire testing program, which was begun following preliminary investigation to judge the suitability of the classrooms for sample selection, was spaced over a period of approximately two and one-half months, covering the period from April to mid

June, 1968. It was thought desirable, if not essential, that a considerable period of time be allowed for the students to have worked together and with a given teacher so that the influence of the teacher and the peers could be potentially influential for the achievement of students in their grade five year. The first instruments to be administered were the personality scales. These were administered in four testing sessions of approximately 50 minutes each - this time being either the period before the mid-morning recess or that following this recess. One such testing session was conducted on each of four consecutive school days for any one classroom. The order in which the personality instruments were administered was as follows - this order being constant across the five classrooms.

<u>Testing Session</u>	<u>Tests Administered</u>	<u>No. of Items</u>
1	CPQ Form A	140
2	CPQ Form B	140
3	Fels Self-rating Scale Activities Index	98 (total)
4	Brown's Dominance Submission Scale Dependence Proneness Scale Sears Aggression Scale	90 (total)

The Teacher Press Scale was given to each teacher individually and a period of approximately two weeks was taken by each teacher for its completion. This was carried out following visitation to the schools for the preliminary study outlined in a previous section and following administration of the personality instruments.

The assessment of achievement was conducted largely by the teachers themselves as part of the school system's testing schedule. One standardized achievement test, the Canadian Tests of Basic Skills -

Language, was administered by the investigator. The four language subscales were administered in the order in which they appear in the test booklet; one period of approximately 70 minutes was used.

The task-related press scales were administered towards the end of the school year. The following testing sessions of approximately 40 minutes each were taken for their administration.

<u>Testing Session</u>	<u>Tests Administered</u>	<u>No. of Items</u>
1	Permissive Scale Solomon's Scale for lecturing vs. encourage- ment of student Participation	45 (in combined format)
2	Cogan's Scale for Inclusive and Conjunctive Teacher Behavior SPOTS	40 (in combined format)
3	HSCI	60

A "Pupil Background Sheet" was administered to all students towards the end of the testing sessions. Its purpose was to bring together information needed for the identification of subjects by classroom, age and sex and for the assessment of the occupational status of the subjects' families. This sheet appears in Appendix E; items 7 and 8 were used for the assessment of occupational status.

Test administrative procedure. All tests were administered by the investigator and in the students' own classroom. The classroom teacher was usually present and, during the administration of the personality scales, assisted students with words which were causing difficulty.

For most scales, students supplied their answers on the test

form itself; in the case of the Children's Personality Questionnaire and the Canadian Tests of Basic Skills, answer sheets were used.

Testing sessions were spaced so that only one was given per day and most use was made of the early morning period. Although students were asked to respond to a large number of instruments, their administration was spaced over a period of approximately two and one-half months. It was the opinion of the investigator, as well as of the teachers involved, that the students in general were thus not bored or tired by the program. This could also be attributed to the fact that the type of questions asked varied throughout the program and the students showed new interest when asked to rate their peers and teachers.

Special precautions were taken in gathering information relative to the teacher's classroom behavior. The task-related press scales were first shown to the teachers and their approval for administering them to the students was obtained. In each classroom the teacher assured the students that she approved of their completing these scales and encouraged them to be honest in responding with the knowledge that their responses would be seen only by the investigator. During the administration of these scales, the teacher was absent from the room. Such scales were administered at the end of the school year, following the final examinations; it was felt that this would minimize any feeling on the part of students that their responses could influence teacher approval and be reflected in her judgment of their achievement.

The testing schedule as outlined above, along with the administrative procedure, remained as constant as the investigator's efforts could effect, within the five classrooms studied.

## CHAPTER VII

### ANALYSIS I - PERSON-SITUATION DIMENSIONALITY

#### Personality Dimensions

One purpose of the present study was to examine the factorial pattern of several personality measures descriptive of elementary school age pupils. A battery of 31 instruments was administered to a pilot study sample of grade five students. The factorial pattern of these measures was examined and has been described in Chapter IV. On the basis of this pattern, 23 instruments, descriptive of the first five factors, were selected for personality assessment in the main study. With reference to this main study sample, scores on these measures were again intercorrelated and the resulting matrix was factor analyzed. (This matrix of intercorrelations appears in Appendix G.) Five factors were found to characterize this matrix and were judged as being equivalent to five of the factors descriptive of the pilot study sample. This chapter presents this factorial solution for the main study sample and discusses how the resulting dimensions entered into the person-situation descriptions used as the independent variables of this study.

The same factor analytic techniques were used with reference to the main study sample as were outlined in chapter IV for the pilot study analysis. With unities inserted in the main diagonal of the correlation matrix, a principal components factor solution was first obtained. A varimax orthogonal rotation was then applied to the principal axes factors. The matrix of orthogonal factor loadings was finally transformed to oblique simple structure by the Promax method (Hendrickson &

White, 1964).

Table VI presents the factor pattern obtained by the Promax oblique rotation. While the correlation matrix had nine eigenvalues greater than one, the number of common factors rotated was five. The factors of Table VI are considered in the light of those interpreted in chapter IV since a factor match of the factors from the two samples, as presented in Tables I and VI, indicates the close similarity of the factor solutions.

Knowledge of the similarity between the factor patterns from the pilot and main study samples was necessary primarily to justify the use of certain teacher rating scales for the assessment of teacher press. It will be recalled that the loadings of nine such rating scales on the pilot study factors were estimated and on the basis of these estimated loadings, it was decided that certain rating scales were assessing behavior similar to that labelled by the pilot study personality factors, and that they could, therefore, be used for the assessment of teacher press for these dimensions. The use of these teacher rating scales for the assessment of teacher press relative to the main study sample would, however, be justified only if the personality factors of the main study could be considered equivalent to the factors of the pilot study sample. The factor match was performed to determine whether the solutions were equivalent across the two samples. Knowledge of this equivalence can also be considered to strengthen the construct validity given to the personality variables by the factor patterns from the two samples.

Table VII presents the relationships between the factors across these two samples. A method proposed by Ahmavaara (1957) as discussed by Fruchter and Jennings (1962, p. 256) was used to compare these factors.

TABLE VI  
 FACTOR PATTERN\*, PERSONALITY VARIABLES  
 OF 120 GRADE V MAIN-STUDY SUBJECTS

Variables	Promax Oblique Primary Factor Pattern					h <sup>2</sup>
	I	II	III	IV	V	
	Acceptance of Control	Dominance	Carefree Self-reliance	Dependency	Prosocial Aggression	
1. CPQ-E			577			668
2. CPQ-F			835			758
3. CPQ-I			-744			774
4. CPQ-D		632	-394			624
5. CPQ-N	-793					686
6. CPQ-G	903					681
7. CPQ-Q <sub>3</sub>	945				-369	732
8. AI-Conjunctivity	627					545
9. AI-Order	398					549
10. AI-Dependency				839		629
11. AI-Deference	353			426		601
12. AI-Abasement				350		306
13. Fels n Dependency				882		692
14. Dependence Proneness	608					584
15. Fels n Aggression		868				646
16. Fels n Hostility		649				574
17. AI Aggression		474				653
18. AI Dominance		841				592
19. B. Dominance		731				557
20. Antisocial Aggression					-744	642
21. Aggression Anxiety					679	677
22. Prosocial Aggression	361				502	451
23. Fels Compulsivity (Low)			430		568	455
24. Sex (Male high)			823			686
Proportions of Total Variance	169 -002 008 -008 000	148 002 -005 003	125 -000 006	088 003	078	615
Correlations of oblique Primary Factors	I	II	III	IV	V	
I Acceptance of control	-					
II Dominance	-588	-				
III Carefree self-reliance	-277	237	-			
IV Dependency	488	-308	-067	-		
V Prosocial Aggression	412	-311	-274	181	-	

\* Entries to three decimal places; coefficients below .350 omitted.

The 23 variables common to the two personality batteries were used in this comparison with the sixth factor from the pilot study being omitted from the analysis.

In interpreting the indices of similarity as presented in Table VII, it will be useful to remember that the factor solutions being compared are both oblique solutions. It will, therefore, be noticed that while a given Factor from one sample is most like a given Factor from the second sample, there are other moderately high correlations in the comparison matrix. For example, Factor II (Dominance) of the main study is most like Factor IV (Dominance) of the pilot study sample, but at the same time is fairly similar to Factor II of the pilot study sample (Rejection of control vs. Acceptance of control). This is meaningful in that the "Dominance" and "Acceptance of control" factors are, in both studies, negatively correlated.

Factor I: Rejection of Control versus Acceptance of Control.

Factor I of Table VI is considered to be equivalent to Factor II of the pilot study solution. The largest coefficients appear for the same variables, namely, CPQ-Q<sub>3</sub>, CPQ-G, and CPQ-N. Hence the factor was given the same interpretation as Factor II of Table I. The factor match solution as presented in Table VII indicates that Factor I of the main study is most like Factor II of the pilot study solution, the relationship being .72. Students who obtain high scores on Factor I are acceptant of control. They accept rules and are controlled by moral and cultural standards; they exercise control in organizing or ordering their possessions and daily activities. This latter type of control is more evident in this study than in the pilot study; in addition to the loading of order on this Factor, conjunctivity has a moderately high coefficient.

TABLE VI I

FACTOR MATCHING FOR PROMAX OBLIQUE PRIMARY  
FACTOR PATTERNS OF PILOT STUDY AND MAIN STUDY SAMPLES\*

Factors Obtained From Pilot-Study Sample	Factors Obtained From Main Study Sample				
	I Acceptance of Control	II Dominance	III Carefree Self- reliance	IV Dependency	V Prosocial Aggression
I Carefree Self- reliance	023	302	882	-015	-361
II Acceptance of Control	721	-555	050	-003	-412
III Dependency	-167	-023	012	920	355
IV Dominance	010	997	022	-004	-076
V Prosocial Aggression	583	464	-022	-081	662

\* Entries to three decimal places.

Murray views these two needs as being highly related, both referring to the degree of organization in one's personality; with n Order indicating the organization of one's possessions and conjunctivity referring to the organization or orderly progression of one's daily activities. One notes the absence in this Factor of the emotional control variable, CPQ-D<sup>-</sup>, it being more related in this study to the Dominance Factor, with D<sup>+</sup> being indicative of a demanding attitude and therefore meaningfully relating to the dominance variables. The idea that "Dominance" may be considered opposite to the "Acceptance of control" is supported by the fairly high negative correlation (-.59) between these factors as shown at the bottom of Table VI. The other change in this factor from one sample to the other is the presence in the main study solution of the Dependence Proneness variable. Its presence, however, in a Factor interpreted as "Acceptance of control" is meaningful. Many of the items in the Dependence Proneness Scale refer to following rules and instructions, obeying parents and teachers and are thus indicative of accepting control. The idea that the "Acceptance of control" may be considered a form of "Dependency" is further supported by the correlation of .49 between these two factors.

Factor II: Dominance. This factor is equivalent to Factor IV of the pilot study solution, the index of similarity between the two being .997. High positive coefficients again appear for the dominance variables as assessed by the AI and Brown's Scales. The presence of CPQ-D<sup>+</sup> on the Factor has already been explained. The other noticeable difference in this factor across the two samples, is the presence in the main study solution of the aggression scales, their having positive coefficients on the Dominance Factor. This is, however, meaningful and

was somewhat expected. Aggression from a theoretical point of view has generally been linked with Dominance. Murray, for example, on whose theory the AI Dominance and Aggression Scales are based, sees the aggression drive as operating "to supplement Dominance when the latter is insufficient" (1938, p. 151).

One finds also a confusion of terms in the literature with dominance being labelled aggressiveness. This seems to be the case, for example, with aggressiveness as defined by the Fels Research Institute.

Their definition accompanying the rating scale for aggressiveness is as follows:

The behavior of the aggressive child is characterized by attempts to dominate social situations, to take the initiative, to plan activity of the group. He need not be successful as a leader; he attempts leadership (Richards & Simons, 1941, p. 265).

This definition is undoubtedly very similar to that given to dominance by some theorists, for example, by Murray (1938, p. 151). Examining the estimated loadings of this and other teacher rating scales on the six pilot-study personality factors, as presented in Table II, one notes that aggressiveness thus defined has its highest loading on Factor IV, Dominance. In the pilot study solution, the Fels self-rating scale for need aggression (a combination of the n aggression and n hostility scales) does not appear on the Dominance Factor; it has, however, a negative loading on Factor II, Acceptance of control, and it will be recalled that "Dominance" and "Acceptance of control" are themselves negatively correlated.

Other variables loading the Dominance Factor in the pilot study, namely, Affiliation, Exhibitionism, and Wanted Control, were omitted

in the main study, the factor solution of which is here being interpreted.

Factor III: Anxious Other-reliance vs. Carefree Self-reliance.

Those variables which load highly on this factor are CPQ-F, CPQ-I, and CPQ-E. Table VII indicates this factor to be highly similar to Factor I of the pilot-study solution where those same three variables load and were the key to interpreting Factor I of that study. Sex again has a high coefficient on this factor, indicating boys to be more self-reliant.

Factor IV: Dependency. The highest coefficient on this factor is need dependency as was the case with Factor III of the pilot study solution, which has an index of similarity of .92 with the present factor. Also loading highly on this factor is AI dependency. Deference has a moderately high loading, this being similarly interpreted as with the pilot study equivalent factor. In this main study solution Dependence Proneness appears on the "Acceptance of control" factor as previously explained. While Abasement was postulated as being the opposite of Aggression (based on Murray's statement to this effect, 1938, p. 151), it has a positive but low coefficient on this Dependency Factor. It seems fairly meaningful, however, to consider abasement, or passive submission to external pressures, as a form of dependency or as being accompanied by dependency.

At the same time, it will be noticed that need aggression as defined by Murray does not appear with the Aggression Factor of this and the pilot study. Rather need aggression is fused with "Dominance" and the "Rejection of control", a phenomenon which is not incongruent with the Murray need theory. Similarly with need Abasement; postulated

the opposite of need aggression, it is fused with "Acceptance of control" and "Dependency", these factors being negatively related to Dominance. The Aggression Factor which does appear in this and the pilot study solution, is defined mainly in terms of Sears Aggression traits and refers to the support of or (at the negative end) the rejection of social and moral standards.

Factor V: Prosocial Aggression. This factor is defined at its positive end by the two Sears aggression scales, aggression anxiety, indicating a dislike of and discomfort about aggression, and prosocial aggression, indicating the vigorous support of social controls and moral standards and the enforcement of rules against aggression. At the opposite end of this dimension appears antisocial aggression indicating the opposite of prosocial aggression, namely, a non-sanction of social controls and behavior which is socially disapproved. The only difference in this factor and the equivalent factor of the pilot study solution, namely Factor V, is the presence in the latter of the Cattell Factors, Q<sub>3</sub> and G. The relationship of these variables with Prosocial Aggression was considered very meaningful as was pointed out in an earlier discussion. These variables, while not significantly loading the Prosocial Aggression Factor, are, nevertheless, related to Prosocial Aggression in this main study solution. Prosocial aggression has a positive but low coefficient on the Acceptance of control Factor, defined primarily by CPQ-Q<sub>3</sub> and CPQ-G. Furthermore, as is shown at the bottom of Table VI, the Acceptance of control Factor has a fairly high positive correlation with the Prosocial Aggression Factor.

#### Summary

A group of 23 personality variables descriptive of elementary

school children were found to be characterized by five correlated factors shown to be stable across two samples. These factors were labelled as follows:

Acceptance of Control

Dominance

Carefree Self-reliance

Dependency

Prosocial Aggression

The combination of defining variables with respect to each factor, derived from different sources, adds validity to specific variables. For example, the Cattell factors, hitherto supported only by construct validity data factorially-specific, were found to relate meaningfully to the Murray-based Activity Index variables. The empirical linkage of operational indicators from quite diverse theoretical systems adds valuably to the construct validity of the variables involved.

#### PERSON-SITUATION PARAMETERS

One purpose of the factor analyses of the personality battery was to determine the major dimensions for the description of sex differences in personality. Person-situation parameters were then to be assessed relative to these dimensions. As may be seen from Table VI sex is significantly loaded on Factor III, Carefree self-reliance, but has negligible loadings on the other factors. Thus while the dimensionality of the personality descriptions guided the selection of pupil variables to enter into the person-situation congruence indices, personality factor scores were not calculated. Criteria in addition to the factor loadings were used for this selection, as is discussed on page 94. The pupil descriptions thus used, together with corresponding press measures, as

they entered into congruence indices, are now described.

#### Pupil Personality - Teacher Press Congruence

As described in chapter V, a series of rating scales was used for the assessment of teacher press. The relationship of nine of these scales to the pupil personality factors was determined by pilot study investigation as described in chapter IV. In addition to these nine rating scales, 21 scales shown to be assessing behavior traits corresponding to the personality variables measured by the CPQ (Cattell & Gruen, 1953), were used for teacher press assessment. This section indicates in more detail which particular rating scales were used for the assessment of teacher press relative to each of the personality dimensions of Table VI (and referred to as person-situation dimensions).

While, as shown by the estimated loadings of Table II, several teacher rating scales were loaded on Factor I in a meaningful manner, they were not used in this study for the assessment of teacher press relative to the Carefree Self-reliance Dimension. The Carefree Self-reliance personality factor was defined primarily by CPQ variables; thus the rating scales shown by Cattell & Gruen (1953) to be assessing behavior corresponding to these CPQ variables (8 rating scales assessing CPQ - E -- two of which may also be considered as markers of CPQ - I, and 7 assessing CPQ - F) as outlined in chapter V, were used.

Similarly the Acceptance of Control Factor was defined mainly by CPQ variables; thus teacher press relative to this dimension was assessed by rating scales corresponding to these variables (5 assessing CPQ - G, there being none available for CPQ - Q<sub>3</sub> and CPQ - N). While ascendance-submission (ascendance high) was negatively loaded on Factor II, as shown in Table II, it was not used for the assessment of teacher

press relative to the Acceptance of control Dimension.

Teacher press relative to the remaining three person-situation dimensions was assessed by certain of the nine rating scales shown by pilot study investigation to be assessing student behavior similar to that which is described by the Dependency, Dominance and Prosocial Aggression personality factors. The estimated loadings of these rating scales on these three personality factors are presented in Table II of chapter IV, where the justification for using these scales for teacher press assessment is discussed.

Teacher press for dependency was assessed by the three teacher rating scales, Respect for Property Rights, Patience and Obedience, since these had their highest loadings on the Dependency Factor. Teacher press for Dominance was assessed by the Fels Aggressiveness rating scale; and teacher press for prosocial aggression was assessed by the two rating scales which have their highest loadings on the Prosocial Aggression Factor, namely, conformity and response to authority. In addition the Cattell rating scale for aggressiveness (negatively scored) was used to assess teacher press relative to this dimension.

The pupil's personality score relative to each of the dimensions appearing in Table VI and used for person-situation description, was calculated in terms of the personality measures satisfying three criteria, namely, those loading highly on the dimension, those having significant, or in a few cases near significant sex differences and, with respect to the CPQ variables, those having corresponding teacher rating scales for teacher press assessment. For example, a pupil's personality score for the Acceptance of Control Dimension was simply his score on the CPQ -G variable -- since this was the only personality

variable relative to the Acceptance of Control factor which satisfied the above three criteria. (While Table VI shows CPQ variables, N and Q<sub>3</sub>, to have high coefficients on this Dimension, there were no corresponding teacher rating scales for teacher press assessment for CPQ - N and - Q<sub>3</sub> behavior. Also, AI Conjunctivity had a high factor coefficient but it did not indicate significant sex differences.) For the Dominance Dimension, personality scores (one for each student) were calculated in terms of four personality measures (AI Dom., B. Dom., Fels n Agg., and n Hostility), all of which satisfied the three criteria listed above.

The only exception to these criteria was the CPQ-F which was omitted from teacher press assessment and, therefore, not included in the personality scoring. While teachers were fairly similar in their preference for the type of behavior assessed by the CPQ-F, they tended to differ with regard to the importance they placed on this behavior as judged by the rating scale outlined in chapter V ( $\chi^2 = 13.87$ , d.f. = 12,  $p = .30$ ) and furthermore tended to regard CPQ-F behavior as less important for classroom adaptation than CPQ-E behavior ( $\chi^2 = 5.71$ , d.f. = 3,  $.20 > p > .10$ ). Further, while both CPQ-F and CPQ-E were positively loaded on the Carefree self-reliance Dimension, teacher press for CPQ F and CPQ E behavior were not in the same direction. Thus, it did not appear meaningful to average over E and F rating scales. It was, therefore, decided to assess teacher press relative to the Carefree self-reliance Dimension in terms of the rating scales shown to be measuring behavior corresponding to CPQ-E and CPQ-I (Cattell & Gruen, 1953).

Variables entering into pupil personality - teacher press congruence assessment are summarized in Table VIII; the method of calculating these congruence scores is described more precisely in chapter VIII.

TABLE VIII

PUPIL PERSONALITY AND CORRESPONDING TEACHER PRESS  
 VARIABLES SELECTED FOR EACH PERSON-SITUATION DIMENSION

Person-situation Dimension	Variables	
	Pupil Personality	Teacher-Press
1. Acceptance of Control	CPQ - G	5 rating scales assessing the G variable (Cattell & Gruen, 1953)
2. Dominance	AI-Dominance Brown's Dominance Fels n Aggression Fels n Hostility	Fels Aggressiveness rating scale
3. Carefree Self- reliance	CPQ - E CPQ - I	8 rating scales assessing the E variable-2 also assess the I variable (Cattell & Gruen, 1953)
4. Dependency	AI - Dependency	rating scales for obedience, Respect for property rights, and Patience
5. Prosocial Aggression	Antisocial Aggression Aggression Anxiety Prosocial Aggression	rating scales for Response to Authority, Conformity, and Cattell Aggressiveness

### Pupil Personality-Task-related Press Congruence

A series of instruments assessing teacher behavior patterns was used to measure task-related press. Based primarily on the theoretical structure underlying these instruments, they were classified in press terms as outlined in chapter V. This classification was further accomplished by a factorial analysis of the 12 task-related press variables. Since several teacher behavior patterns were classified as being press for the same behavior trait, a factor analysis was performed to indicate whether such patterns could be so considered. The factor analysis also included press scales from the High School Characteristics Index (Stern, 1963). These scales contain items relative to classroom activities which are classified specifically in press terms, and were introduced in this factor analysis as a basis for assessing the validity of the teacher behavior patterns as press variables.

Using the analytic techniques described for the factorial analysis of the personality batteries, the factor pattern presented in Table IX was obtained. The number of factors rotated corresponded to the number of eigenvalues greater than one. The following interpretation was given to these factors.

Factor I: Structuring of classroom activity. The variables positively loaded on this factor all refer to teacher control, with this control taking the form mainly of structuring classroom activity. Press Order refers to teacher emphasis on classroom tidiness and orderly student activity. Press Conjunctivity refers mainly to teacher planning of lessons and assignments and the expectation for student planning in study and classroom work. Conjunctive teacher behaviors (Cogan, 1954, p. 30) "structure whatever interpersonal relations the teacher may

TABLE IX  
 FACTOR PATTERN\*, STUDENT PERCEIVED  
 CLASSROOM CHARACTERISTICS (TASK-RELATED PRESS)

Variables	Promax oblique primary factor pattern			h <sup>2</sup>
	I Structuring of Class- room Activity	II Encouragement of Student Participation	III (Not named)	
1. Encouragement of student Participation		870		726
2. Inclusive		749		713
3. Directive- Non Direct- ive	-501	493		482
4. Conjunctive	488	498		585
5. Press Order	563		632	331
6. Permissive	-498			541
7. Press Conju- nctivity	432		557	667
8. Press Depend- ency			695	475
9. Press Abase- ment			-734	533
10. Press Impul- siveness	-581			400
11. Press Aggre- sion	-568			480
12. Press Defer- ence	539			309
Proportions of total variance	188 -000 001	168 001	162	520
Correlations of oblique Primary Factors	I	II	III	
I Structuring of Class.Activity	-			
II Encouragement of St.Partici- pation	047	-		
III Not named	127	301	-	

\* Entries to three decimal places; coefficients below .350 omitted.

establish with his pupils". The joint appearance of positive coefficients for press order, press conjunctivity and conjunctive teacher behavior supports the earlier classification of conjunctive teacher behavior as a press for conjunctivity and/or order. The appearance of the Directive-Non-directive variable on this and Factor II is especially interesting. Tuckman has indicated that conceptually the behaviors assessed by this scale were separated into two major categories: "Structure, which refers to the manner in which a classroom is run and learning situations manipulated, and interpersonal, which refers to the way the teacher relates to the student as a person" (1967a, p. 6). The negative loading of this variable is indicative of teacher control being opposite to non-directive teacher behavior or conversely, is supportive of Tuckman's characterization of the directive teacher as "one for whom procedure, order, and organization were extremely important" (1967a, p. 6).

The classification of directive teacher behavior as a press for dependency is given some support by the composition of this factor. While press dependency does not appear, press deference has a high positive loading. With reference to the Dependency Factor characterizing pupil personality, deference is amongst a group of high loading variables. Further, the task-related press factor, structuring of classroom activity, and, therefore, the variables loading on it, constitute press for the acceptance of Control. It will be recalled that the personality factor, Acceptance of Control, has a fairly high positive correlation with the Dependency factor.

Factor II: Encouragement of Student Participation. The two highest coefficients appear for inclusive teacher behavior and behavior

which encourages broad, expressive student participation. Inclusive teacher behaviors "tend to keep the pupil central to the processes, experiences and decisions of the classroom" (Cogan, 1954); in other words, as does Solomon's teacher behavior variable, it encourages student participation. The same may be said for non-directive teacher behavior; in interpersonal relationships with students, the non-directive teacher provides for student leadership and guidance.

Factor III. No interpretation of this factor was attempted. The joint appearance of positive coefficients for teacher permissiveness, postulated as a press for dominance, and press dependency appears to be contradictory. This could possibly be partly explained by reference to the HSCI press scale's including press originating with the peers as well as with the teacher, thus making the presence of both variables conceivable. This, however, is a tenuous explanation. The negative loading of permissiveness on Factor I appears to be meaningful. The fact that this scale was not positively loaded along with the teacher behaviors encouraging student participation may be explainable by the fact that while the behaviors referred to in the Permissiveness Scale seem to encourage student participation, they refer less to interpersonal activity and expressiveness and more to specific work assignments. The validity of permissiveness as a press for dominance, however, remains unsupported by the factorial pattern of Table IX.

In summary, a factor analysis of the task-related press variables revealed three oblique factors. The first two were interpreted as assessing teacher behavior aimed respectively at the structuring of classroom activity and at the encouragement of student participation. A third factor was not interpreted. The patterning of the task-related

press variables was considered to be highly supportive of the validity of the theoretical foundations of those variables in ways indicated in the interpretation discussion.

In accordance with the above factor interpretation and the propositions stated in conjunction with the description of task-related press instrumentation, variables as summarized in Table X were selected for the assessment of pupil personality - task related press congruence. In addition to the assessment provided for in Table X the six HSCI press scales were individually related to the parallel AI need scales for congruence assessment.

TABLE X

PUPIL PERSONALITY AND CORRESPONDING TASK-RELATED PRESS VARIABLES  
SELECTED FOR EACH PERSON-SITUATION DIMENSION

Person-Situation Dimension	Variables	
	Pupil Personality	Task-related Press
1. Acceptance of Control	CPQ-G AI-Order	HSCI-Order HSCI-Conjunctivity Conjunctive teacher behavior
2. Dominance	AI-Dominance Brown's Dominance Fels n Aggression Fels n Hostility	Inclusive teacher behavior (alone) Permissive teacher behavior (alone) Encouragement of student Participation + Inclusive + Non-directive teacher behavior
3. Carefree Self-reliance*	CPQ-E CPQ-I	Encouragement of student Participation + Inclusive + Non-directive teacher behavior
4. Dependency	AI Dependency	Directive-Non directive teacher behavior
5. Prosocial Aggression (This dimension was not used for the description of pupil personality-task related press congruence)		

\* As outlined in chapter V, the variables, encouragement of student participation and inclusive teacher behavior, were judged to be primarily press for Dominance. Their classification also as press for the correlated dimension, Carefree Self-reliance, does, however, appear justified.

## CHAPTER VIII

### ANALYSIS II - TESTS OF HYPOTHESES

#### PART I

##### Person-Situation Congruence Assessment

The pupil's personality characteristics and the classroom press were described in terms of the same five dimensions as outlined in Tables VIII and X of chapter VII. Congruence with respect to a given dimension was thus operationally defined as the absolute difference of the pupil's personality score on the variable (s) selected to represent that dimension (as summarized in Tables VIII and X) and the press score on the same dimension.<sup>1</sup> Both personality and press variables entering into such person-situation congruence assessment were transformed to nine-point scales as outlined below. Relative to both teacher and task-related press, congruence scores were assessed for each student on each of the five person-situation dimensions.

---

<sup>1</sup> For example, a student's personality score for the Dominance Dimension was his average stanine across the four personality measures selected to represent the Dominance Factor as indicated in Table VIII. The teacher press measure for that student was his teacher's position relative to the Fels Aggressiveness scale (nine-point) selected to measure teacher press for Dominance, again as indicated in Table VIII. Thus the student's personality - teacher press congruence score for the Dominance Dimension was the absolute difference between his personality score (average stanine) and the teacher press score. A similar personality - teacher press congruence score was calculated for this student relative to each of the other four person-situation dimensions using the measures summarized in Table VIII. (Thus for each student there were five pupil personality - teacher press congruence scores.) For each student, the personality - task related press congruence score for each of four dimensions was calculated in a similar manner but involved the measures summarized in Table X - giving for each student, four pupil personality - task related press congruence scores.

Pupil Personality-Teacher Press Congruence. The personality measures entering into this congruence assessment were transformed into stanine distributions, with the transformations based on the total sample. Where more than one measure was used for personality assessment relative to a given personality dimension, the mean stanine was used. Personality variables having negative loadings on a dimension received reversed scoring.

All teacher press scales were nine-point. Where more than one scale was used for teacher press assessment corresponding to a given person-situation dimension, the average position was obtained. Thus both pupil personality and teacher press were defined in terms of nine-point continua, the absolute difference being taken as an indication of congruence, with the lower score being indicative of a greater degree of congruence between pupil personality and teacher press.

Pupil personality - Task related Press Congruence. Personality variables entering into this congruence assessment were primarily the same variables used with respect to pupil personality - teacher press congruence and their statistical treatment was the same.

All task-related press scales were linearly transformed to a mean of 5 and a standard deviation of 2. This equated their range with that characteristic of pupil personality and teacher press measures. Congruence was again described by the absolute difference of the personality score (or mean score) on a dimension and the task-related press score (or mean score) on the same dimension. Personality scoring was reversed where necessary to ensure that the low score was always coincident with a greater degree of congruence.

Data descriptive of student personality and of classroom press

for the sample under study are presented in Tables XI and XII respectively.

### Statistical Tests

Hypothesis I: (a) Teacher press, and (b) task related press are more congruent with the personality characteristics of girls than of boys.

The Pearson product - moment correlations of sex with pupil personality - teacher press congruence relative to the five person-situation dimensions are presented in Table XIII. Those of sex with pupil personality-task related press congruence relative to four person-situation dimensions and relative to six AI - HSCI parallel scales are presented in Table XIV. One-tailed tests of significance were applied and the level of significance was set at .05.

The positive correlations of Table XIII may be taken as support for hypothesis I (a) (for sex, female is scored low, and for congruence, a low score is indicative of a greater degree of congruence). There was significantly greater pupil personality - teacher press congruence for girls relative to the dimensions: Acceptance of Control, Carefree Self-reliance, Dependency and Prosocial Aggression. There was a tendency toward greater congruence for females relative to the Dominance dimension.

Pupil personality - task related press congruence relative to the Dominance dimension (re Permissive teacher behavior) was significantly greater for girls than for boys (Table XIV,  $r = .17$ ,  $p = .03$ ). The only other significant relationship was opposite to prediction; congruence relative to AI - HSCI aggression was greater for boys (Table XIV,  $r = -.15$ ,  $p = .05$ ). Relative to the other dimensions of major concern in this

TABLE XI  
DATA DESCRIPTIVE OF STUDENT PERSONALITY

Variable	Obtained raw score range	Possible raw score range	Significance* of sex differences
CPQ G	6 - 20	0 - 20	< .01
AI order	0 - 10	0 - 10	.01
AI Dominance	0 - 10	0 - 10	< .01
Brown's Dominance	41 - 85	18 - 90	.01
Fels n Aggression	7 - 25	7 - 28	.40
Fels n Hostility	7 - 28	7 - 28	.08
CPQ - E	3 - 16	0 - 20	< .01
CPQ - I	0 - 18	0 - 20	< .01
AI Dependency	3 - 10	0 - 10	.20
Antisocial Aggression	14 - 42	9 - 45	< .01
Aggression Anxiety	24 - 59	12 - 60	< .01
Prosocial Aggression	17 - 38	8 - 40	.11

\* p needed for significance, .05.

TABLE XII  
DATA DESCRIPTIVE OF CLASSROOM PRESS

Variable	Obtained raw score range	Possible raw score range	Mean
<u>Task-related press</u>			
Directive-Non Directive	12 - 25	10 - 30	19
Encouragement of student Participation	25 - 60	15 - 75	41
Inclusive	32 - 73	15 - 75	49
Conjunctive	40 - 75	15 - 75	58
Permissive	4 - 18	0 - 30	10
Press Conjunctivity	1 - 8	0 - 8	5.9
Press Order	0 - 8	0 - 8	4.1
Press Dependency	0 - 8	0 - 8	3.9
Press Abasement	0 - 7	0 - 7	3.3
Press Aggression	0 - 7	0 - 7	2.9
Press Deference	3 - 9	0 - 10	5.8
<u>Teacher Press</u>			
for Acceptance of Control	7.8 - 8.4	1 - 9	
for Dominance	2 - 5	1 - 9	
for Carefree Self-reliance	2.0 - 2.5	1 - 9	
for Dependency	6.6 - 7.4	1 - 9	
for Prosocial Aggression	6.6 - 8.3	1 - 9	

study, pupil personality - task related press congruence tended to be greater for girls as to Acceptance of Control, and Dominance. For the Dependency dimension, congruence tended to favor the boys.

TABLE XIII  
CORRELATIONS OF SEX (MALE HIGH)  
WITH PUPIL PERSONALITY-TEACHER PRESS CONGRUENCE

Pupil Personality-Teacher Press Congruence Relative to	r	p
Acceptance of Control	.20	.015
Dominance	.10	.14
Carefree Self-reliance	.58	< .001
Dependency	.15	.05
Prosocial Aggression	.28	.001

Hypothesis II: There is a significant positive relationship between (a) pupil personality - teacher press congruence and school achievement, and (b) between pupil personality - task related press congruence and school achievement.

Pearson product - moment correlations of pupil personality - teacher press congruence and school achievement relative to the five person-situation dimensions are presented in Tables XV, XVI and XVII, these being for the total group, for girls, and for boys respectively. Twenty-five achievement indices, 18 representing teacher assigned grades and 7 representing standardized achievement measures, were used. Correlations of school achievement with pupil personality - task related press congruence relative to four person-situation dimensions and relative to

TABLE XIV  
CORRELATIONS OF SEX (MALE HIGH) WITH  
PUPIL PERSONALITY - TASK RELATED PRESS CONGRUENCE

Pupil Personality - Task Related Press Congruence Relative to:	r	p
Acceptance of Control	.06	.27
Dominance:		
re Inclusive Teacher Behavior	.11	.11
re Permissive Teacher Behavior	.17	.03
re Encouragement of St. Participation	.07	.22
Carefree Self-reliance	.00	
Dependency	-.07	.22
AI - HSCI Abasement	-.04	.35
AI - HSCI Aggression	-.15	.05
AI - HSCI Conjunctivity	-.10	.13
AI - HSCI Deference	-.14	.07
AI - HSCI Order	.12	.09
AI - HSCI Dependence	.04	.35

TABLE XV  
CORRELATIONS\* OF SCHOOL ACHIEVEMENT WITH  
PUPIL PERSONALITY-TEACHER PRESS CONGRUENCE FOR TOTAL GROUP (N = 120)

Achievement Indices**	Pupil Personality-Teacher Press Dimensions				
	Acceptance of Control	Dominance	Carefree Self-Reliance	Dependency	Prosocial Aggression
Reading - Phonics	-.07	.07	.03	-.21	-.14
Reading-Comprehension	-.01	.18	.03	-.06	-.07
Reading-Oral**	-.19	.12	-.12	-.13	-.15
Total Reading**	-.10	.14	-.02	-.15	-.13
Language-Oral**	-.23	.15	-.14	-.02	-.19
Language-Written**	.10	.07	.02	-.21	-.04
Total Language**	-.05	.12	-.06	-.15	-.12
Spelling**	-.11	.26	-.04	-.11	-.14
Arith-Computational skills	.10	.12	.15	-.03	.02
Arith-Problem Solving	-.03	-.03	-.02	-.02	-.10
Total Arith.	.04	.05	.07	-.03	-.04
Social Studies-Facts	-.03	.00	-.06	-.06	-.04
Social Studies-Notebook**	-.03	.01	-.21	-.24	-.07
Total Social Studies**	-.04	.01	-.16	-.17	-.06
Science	-.06	.00	.03	-.13	-.03
Health**	-.01	-.06	-.06	-.08	-.07
Writing**	.02	-.10	-.09	-.14	-.03
Total Teacher assigned grades**	-.05	.10	-.04	-.15	-.11
CTBS-Spelling**	-.03	.01	-.01	-.10	-.09
CTBS-Capitalization**	.01	-.05	-.03	-.07	-.16
CTBS-Punctuation**	.14	-.07	.02	-.05	-.12
CTBS-Usage**	-.13	.02	.00	-.02	-.18
CTBS-Total**	.00	-.03	-.02	-.08	-.17
Arithmetic (STAT)	.15	.07	.09	-.05	-.12
Reading (Ginn)	.03	.20	.03	-.06	-.25

\* r needed for significance, .15

\*\* Indices thus marked have significant sex differences - with girls achieving more highly than boys ( $p < .05$ ).

TABLE XVI

CORRELATIONS\* OF SCHOOL ACHIEVEMENT WITH  
PUPIL PERSONALITY-TEACHER PRESS CONGRUENCE FOR GIRLS (N = 52)

Achievement Indices	Pupil Personality - Teacher Press Dimensions				
	Accept- ance of Control	Domi- nance	Carefree Self- Reliance	Dependency	Prosocial Aggression
Reading - Phonics	-.10	.12	.04	-.34	-.03
Reading-Comprehension	.03	.25	.10	-.11	.01
Reading-Oral	-.16	.41	.03	-.16	-.10
Total Reading	-.08	.30	.07	-.23	-.05
Language-Oral	-.10	.30	.10	-.08	.08
Language-Written	.04	.23	.22	-.24	.02
Total Language	-.03	.29	.18	-.18	.05
Spelling	-.19	.53	.15	-.11	-.02
Arith-computa- tional skills	.02	.21	-.05	-.16	.06
Arith-Problem Solving	-.11	.07	-.10	-.26	-.09
Total Arith.	-.04	.15	-.08	-.22	-.01
Social Studies-Facts	-.09	.10	.09	-.20	.04
Social Studies - Notebook	-.05	.18	-.05	-.40	.04
Total Social Studies	-.08	.16	.02	-.35	.04
Science	-.12	.07	.02	-.23	.04
Health	.08	.02	-.05	-.30	.02
Writing	.00	.12	.12	-.10	-.13
Total Teacher assigned grades	-.07	.27	.05	-.29	.00
CTBS-Spelling	-.08	.05	.00	-.16	-.12
CTBS-Capitalization	.03	.14	.08	-.11	-.12
CTBS-Punctuation	.15	.00	-.02	.01	-.14
CTBS-Usage	-.15	.10	-.03	.02	-.14
CTBS-Total	-.01	.08	.01	-.07	-.14
Arithmetic (STAT)	.06	.15	-.02	-.36	-.03
Reading (Ginn)	-.13	.30	.02	-.14	-.14

\* r needed for significance, .23

TABLE XVII

CORRELATIONS\* OF SCHOOL ACHIEVEMENT WITH  
PUPIL PERSONALITY - TEACHER PRESS CONGRUENCE FOR BOYS (N = 68)

Achievement Indices	Pupil Personality - Teacher Press Dimensions				
	Accept- ance of Control	Domi- nance	Carefree Self- Reliance	Dependency	Prosocial Aggression
Reading-Phonics	-.01	.06	.16	-.08	-.16
Reading-Comprehension	.00	.14	.13	.00	-.07
Reading-Oral	-.12	-.01	.12	-.05	-.04
Total Reading	-.05	.08	.16	-.05	-.10
Language-Oral	-.26	.09	-.06	.08	-.30
Language-Written	.26	.03	.27	-.13	.08
Total Language	.05	.07	.16	-.05	-.10
Spelling	.01	.17	.16	-.04	-.09
Arith-computa- tional skills	.14	.04	.23	.06	-.03
Arith-Problem Solving	.05	-.09	.10	.17	-.07
Total Arithmetic	.11	-.02	.18	.12	-.06
Social Studies- Facts	.04	-.04	-.04	.06	-.04
Social Studies- Notebook	.14	-.03	.09	-.04	.07
Total Social Studies	.10	-.04	.02	.02	.01
Science	-.02	-.03	.07	-.06	-.07
Health	.00	-.07	.11	.10	-.04
Writing	.20	-.20	.25	-.08	.25
Total teacher assigned grades	.06	.03	.16	.01	-.08
CTBS-Spelling	.07	.02	.22	-.01	.02
CTBS-Capitalization	.09	-.14	.19	.02	-.07
CTBS-Punctuation	.22	-.08	.26	-.05	-.02
CTBS-Usage	-.05	.00	.23	-.01	-.13
CTBS-Total	.11	-.07	.24	-.03	-.07
Arithmetic (STAT)	.24	.03	.23	.18	-.16
Reading (Ginn)	.18	.15	.16	.02	-.28

\* r needed for significance, .20

six AI - HSCI parallel scales are presented in Tables XVIII, XIX and XX (for total group, girls, and boys respectively). One-tailed tests of significance were applied and the level of significance was set at .05. In interpreting the tables relating person-situation congruence to achievement, it will be useful to remember that a low congruence score means greater congruence, and a high achievement score means greater achievement; thus a negative sign is indicative of a positive relationship between congruence and achievement and a positive sign is indicative of a negative relationship between congruence and achievement.

Pupil personality - teacher press congruence and Achievement.

Relative to the Acceptance of control dimension, pupil personality - teacher press congruence for the total group was significantly related, in the direction predicted, to only two achievement indices, oral reading (Table XV,  $r = -.19$ ) and oral language ( $r = -.23$ ). However, congruence tended to be associated with higher achievement as indicated by the predominance of negative coefficients.

Such congruence relative to the Dominance Dimension tended to be negatively related to achievement.

Congruence for the Carefree Self reliance dimension tended to be positively related to achievement but this relationship was significant only with respect to Social Studies (Notebook) Achievement.

The most significant positive relationships of pupil personality - teacher press congruence with achievement were with respect to the Dependency and Prosocial aggression dimensions. Congruence for one or both was significantly related to total teacher assigned grades, to reading, language, social studies (notebook) and, for standardized achievement measures, to CTBS - language and Ginn-reading. With the

exception of only two coefficients, the correlation indices for Dependency and Prosocial Aggression indicated that congruence was positively associated with higher achievement.

As shown in Tables XVI and XVII, pupil personality - teacher press congruence relative to acceptance of Control tended to be positively related to achievement for girls but negatively related to achievement for boys, except with respect to oral reading and oral language.

While congruence relative to the Dominance dimension tended to have either no relationship or a positive relationship with achievement (especially writing) for boys, for girls such congruence was negatively related to achievement - the relationship being significant with respect to reading, language, spelling, total teacher assigned grades and Ginn reading.

Congruence with reference to the Carefree Self-reliance dimension tended to be negatively related to achievement for boys, the relationship being significant for written language, writing, CTBS language, and arithmetic (both teacher-assigned and standardized indices). This tended to be the case for girls, only with respect to written language and writing.

While congruence relative to Dependency has very little relationship with achievement for boys, except with reference to arithmetic achievement, where the relationship is negative (Table XVII), such congruence for girls was positively related to achievement in all areas and significantly so with respect to reading (Phonics) language (written) arithmetic (problem solving and STAT), Social Studies (note book), Science, Health, and total teacher assigned grades (Table XVI).

Pupil personality - teacher press congruence relative to Prosocial

Aggression tended to be positively related to achievement for both boys and girls, the relationship being more prominent for boys especially with respect to oral language.

Pupil personality - task related press congruence and achievement.  
 Tables XVIII, XIX and XX summarize the relationship of pupil personality - task related press congruence and achievement. For the total group, such congruence relative to the person-situation dimensions of major concern in this study, bears no clear relationship to achievement. Pupil personality - task related press congruence tended to be positively related to achievement for the dimensions of Dependency and Dominance (re inclusive teacher behaviors and re encouragement of student participation). Such congruence tended to be negatively related to achievement for the Dimensions, Acceptance of Control and Carefree Self-reliance.

For girls, pupil personality - task related press congruence for the Dependency Dimension was significantly related to greater achievement in reading (comprehension) language (oral), spelling, social studies (facts), science, health, total teacher assigned grades, CTBS - Language (Spelling, Capitalization, Punctuation and Usage), and Ginn-reading. With respect to the Dominance Dimension (re encouragement of student participation), congruence tended to relate to greater achievement in all areas, and significantly so with respect to language (both teacher assigned and CTBS). Relative to the other person-situation dimensions, congruence did not significantly relate to achievement. For the Dominance Dimension, re inclusive and permissive teacher behaviors, congruence tended to be positively related to achievement; for Acceptance of control, congruence tended to negatively relate to achievement.

For boys only, pupil personality - task related press congruence

TABLE XVIII  
CORRELATIONS\* OF SCHOOL ACHIEVEMENT WITH PUPIL  
PERSONALITY-TASK RELATED PRESS CONCURRENCE FOR TOTAL GROUP (N = 120)

Achievement Indices**	Pupil Personality - Task related Press Dimensions												
	Acceptance of control	Inclusive Teach. Beh.	Permissive Teach. Beh.	Dominance re Encouragem't of St. Part.	Self Reliance	Carefree	Dependency	AI-HSICI Abasement	AI-HSICI Aggression	AI-HSICI Conjunctivity	AI-HSICI Deference	AI-HSICI Order	AI-HSICI Dependence
Reading-Phonics	.14	.05	.04	.02	.08	-.03	.16	-.01	.14	.05	.02	-.01	-.01
Reading-Comprehension	.09	.03	.03	.01	-.04	-.03	.07	.04	.05	.07	.07	-.12	-.06
Reading-Oral*	-.06	-.07	-.08	-.08	.01	-.04	.17	.04	-.01	.17	.04	-.12	-.06
Total Reading**	.07	.00	.00	-.02	.01	-.04	.15	.03	.06	.05	.05	-.04	-.03
Language-Oral**	.05	-.05	-.04	-.10	-.05	-.05	.09	.03	.02	-.02	.04	-.05	-.07
Language-Written**	.13	-.07	-.05	-.05	.04	-.06	.12	.16	-.01	.12	.02	.01	.00
Total Language**	.11	-.07	-.05	-.08	.00	-.06	.12	.12	.01	.09	.02	-.06	-.06
Spelling**	.03	-.10	-.13	-.07	-.01	.00	.16	.05	-.03	.02	.09	-.06	-.06
Arith-computational skills	.01	-.08	.11	-.15	.02	-.05	.17	.05	-.03	-.06	-.06	-.05	.00
Arith-problem Solving	.05	-.03	.04	-.05	.10	.00	.08	-.03	-.01	-.00	-.00	-.05	.05
Total Arithmetic	.04	-.06	.09	-.11	.06	-.03	.14	.01	-.02	-.03	-.03	-.06	.02
Social Studies-Facts	.01	-.05	-.06	-.06	.21	-.09	-.04	.06	-.03	.12	.12	-.07	.02
Social Studies-													
Notebook**	-.02	-.02	-.02	-.02	.08	-.02	.05	.06	.04	.04	.04	-.08	-.06
Total Social Studies**	.00	.02	-.02	-.05	.17	-.07	.05	.06	.01	.09	.09	-.09	-.02
Science	.11	.00	.05	-.01	.09	-.12	.03	.08	.05	.07	.07	.03	-.01
Health**	.15	-.08	.14	-.03	.05	-.12	.02	.08	.10	.13	.07	.01	.01
Writing**	.04	-.14	-.03	-.08	.13	-.01	.11	.04	-.08	.15	-.02	-.02	-.02
Total Teach. Assigned Grades**	.06	-.04	.00	-.07	.07	-.06	.13	.06	.02	.04	.04	-.05	.00
CTBS-Spelling**	.07	-.09	-.08	-.07	.07	-.08	.04	.04	-.01	.08	.08	.05	-.07
CTBS-Capitalization**	.04	-.17	-.13	-.16	.01	-.14	.01	.03	.09	.03	.03	-.10	-.09
CTBS-Punctuation**	.03	-.13	-.12	-.15	-.01	-.13	.10	.04	.08	-.03	-.03	-.02	-.16
CTBS-Usage**	-.01	-.01	.06	-.04	.01	-.02	.03	.11	.10	.05	.05	-.10	-.10
CTBS-Total**	.04	-.10	-.08	-.12	.02	-.11	.03	.05	.06	.03	.03	-.06	-.11
Arithmetic (SPAT)	.01	-.12	.03	-.09	.02	-.03	.11	.01	-.05	-.01	-.01	.05	-.05
Reading (Ginn)	.02	-.06	-.15	-.06	.05	-.06	.01	.04	.04	.10	.10	-.03	-.03

\*r needed for significance, .15

\*\*Indices thus marked have significant sex differences - with girls achieving more highly than boys (p < .05).

TABLE XIX  
CORRELATIONS\* OF SCHOOL ACHIEVEMENT WITH PUPIL  
PERSONALITY-TASK RELATED PRESS CONGRUENCE FOR GIRLS (N =52)

Achievement Indices	Pupil Personality - Task related Press Dimensions											
	Acceptance of Control	Inclusive Teach. Beh.	Dominance re Permissive Teach. Beh.	Encouragem't of St. Part.	Carefree Self Reliance	Dependency	AI-HSCI Abasement	AI-HSCI Aggression	AI-HSCI Conventivity	AI-HSCI Deference	AI-HSCI Order	AI-HSCI Dependence
Reading-Phonics	.16	.05	.06	-.13	.03	-.13	.14	-.11	.03	-.10	-.03	-.05
Reading-Comprehension	.06	-.06	-.01	-.12	-.12	-.28	-.02	-.07	-.05	-.09	-.18	-.07
Reading-Oral	-.02	-.14	-.03	-.17	.01	-.20	.17	-.14	-.08	-.08	-.08	-.08
Total Reading	.08	-.06	.01	-.16	-.04	-.25	.11	-.12	-.04	-.11	-.09	-.08
Language-Oral	.15	-.27	-.03	-.28	-.07	-.18	.23	-.08	.01	-.13	-.04	-.13
Language-Written	.16	-.07	-.05	-.16	-.07	-.18	.01	-.05	-.06	-.10	-.01	-.01
Total Language	.17	-.18	-.05	-.24	-.08	-.26	.12	-.07	-.03	-.12	-.03	.06
Spelling	-.02	-.02	-.21	-.11	-.08	-.24	.08	-.17	-.24	-.02	-.07	-.11
Arith.-computational skills	.06	.00	.08	-.14	-.06	-.17	.15	.05	.02	-.21	-.11	-.01
Arith.-problem solving	.17	.03	.09	-.09	.10	-.09	.02	.07	.03	-.14	-.01	.03
Total Arithmetic	.12	.09	.09	-.13	.02	-.14	.09	.06	.02	-.19	-.07	.01
Social Studies-Facts	.07	-.02	-.09	-.10	.20	-.26	-.08	.11	-.18	.04	.08	.06
Social Studies-Notebook	-.01	.01	-.08	-.19	.03	-.14	.02	-.06	-.21	-.14	-.09	.09
Total Social Studies	.04	-.01	-.10	-.16	.14	-.24	-.04	.03	-.22	-.06	.00	.09
Science	.11	.03	-.05	-.13	-.02	-.23	.01	.03	.04	-.17	.00	-.01
Health	.17	-.11	.00	-.26	.01	-.31	.04	-.03	-.02	-.03	.02	-.03
#riting	-.10	.01	-.05	-.09	-.09	-.13	.13	-.24	-.20	-.13	.00	-.03
Total teacher assigned grades	.12	-.06	-.01	-.20	.01	-.26	.09	-.03	-.07	-.14	-.06	.02
CTBS-Spelling	.14	.00	-.12	-.14	.13	-.31	.05	-.17	.09	-.02	-.02	-.14
CTBS-Capitalization	.07	-.26	-.13	-.24	.03	-.27	-.03	-.07	.15	-.05	-.12	-.23
CTBS-Usage	.04	-.14	-.20	-.24	.00	-.29	.07	-.15	.14	-.06	-.15	-.15
CTBS-Total (STAT)	.10	-.00	-.13	-.21	.11	-.14	.04	-.06	.16	-.01	-.14	-.33
Reading (Ginn)	.00	-.11	-.10	-.21	.08	-.29	.04	-.14	.15	-.03	-.01	-.23
		-.02	.05	-.01	.04	-.12	.09	-.03	.02	-.07	-.01	-.07
		-.14	-.19	-.14	.06	-.32	.02	-.03	.08	.04	-.16	-.19

\*r needed for significance, .25

TABLE XX  
CORRELATIONS\* OF SCHOOL ACHIEVEMENT WITH PUPIL  
PERSONALITY - TASK RELATED PRESS CONGRUENCE FOR BOYS (N = 68)

Achievement Indices	Pupil Personality-Task related Press Dimensions											
	Acceptance of Control	Inclusive Teach.	Dominance Permissive Teach.	Re Encouragem't of St. Part.	Carefree Self Reliance	Dependency	AI-HSICI Abasement	AI-HSICI Aggression	AI-HSICI Conjunctivity	AI-HSICI Deference	AI-HSICI Order	AI-HSICI Dependence
Reading-Phonics	.14	.07	.07	.16	.12	.04	.17	.05	.21	.17	.03	.02
Reading-Comprehension	.12	.11	.09	.13	.01	.17	.13	.12	.13	.09	.13	.01
Reading-Oral	-.06	.03	-.03	.02	.01	.05	.17	.10	-.03	.12	-.09	-.04
Total Reading	.08	.08	.05	.12	-.05	.11	.18	.10	.12	.14	.03	.00
Language-Oral	.01	.14	.01	.06	-.03	.12	-.04	.06	-.01	.02	.00	.11
Language-Written	.15	-.02	.05	.06	.11	.00	.18	.25	-.03	.07	.16	-.09
Total Language	.12	.06	.04	.08	.06	.06	.11	.21	-.03	.06	.11	-.01
Spelling	.09	-.10	-.04	-.02	.02	.12	.20	.13	.06	.11	-.01	-.02
Arith-computational skills	-.02	-.15	.12	-.16	.08	.07	.18	.06	-.06	.10	-.03	.00
Arith-problems solving	-.05	-.06	.04	-.01	.09	.07	.12	-.14	-.07	.11	-.06	.12
Total Arithmetic	-.03	-.11	.08	-.09	.09	.07	.17	-.04	-.07	.12	-.05	.07
Social Studies-facts	-.01	-.04	-.01	-.02	.23	.03	-.01	.00	.09	.16	-.15	.02
Social Studies-												
Notebook	.01	.04	.14	.18	.13	.02	.06	.07	.21	.10	.01	-.13
Total Social Studies	.00	.00	.07	.08	.21	.03	.02	.03	.17	.16	-.09	-.06
Science	.12	.00	.12	.16	.16	-.05	.05	.07	.07	.25	.05	-.01
Health	.16	-.02	.27	.14	.08	-.01	.00	.11	.18	.22	.13	.04
Writing	.18	-.18	.09	-.03	.31	.03	.08	.17	-.08	.32	.06	.01
Total teach. assigned grades	.05	.01	.07	.06	.12	.08	.15	.08	.06	.15	.00	.00
CTBS-Spelling	.05	-.10	.00	.01	.03	.09	.01	.18	-.16	.07	.11	-.02
CTBS-Capitalization	.05	-.08	-.08	-.08	-.01	-.08	.03	.04	.00	.04	-.03	-.01
CTBS-Punctuation	.01	-.09	-.02	-.07	-.02	-.04	.11	.14	-.01	-.06	.10	-.15
CTBS-Usage	-.02	.02	.07	.05	-.05	.05	.00	.21	.02	-.02	-.03	.02
CTBS-Total	.03	-.06	.00	-.03	-.02	.01	.01	.15	-.07	.01	.03	-.04
Arithmetic (STAT)	-.03	-.19	.04	-.15	.01	.11	.12	.03	-.13	.03	.11	.01
Reading (Ginn)	.04	.00	-.11	.01	.05	.11	.00	.06	-.02	.13	.07	.05

\*r needed for significance, .20

did not significantly relate to achievement. In general, such congruence tended to be negatively related to achievement. The major exceptions to this statement are the finding with respect to the Dominance dimension (re permissive teacher behavior), of a positive relationship between congruence and reading achievement (both oral and Ginn) and, with respect to the Dominance dimension (re inclusive teacher behavior and encouragement of student participation), the finding of a positive relationship between congruence and arithmetic achievement (both teacher assigned and STAT) and writing, and the finding also for the Acceptance of control dimension of a positive relationship between congruence and oral reading achievement.

In general, pupil personality - task related press congruence relative to the AI - HSCI scales did not significantly relate to school achievement. For abasement, Congruence tended to be negatively related to achievement, both within and across sex groups. Congruence relative to the other scales related differently to achievement for the sexes; for aggression, deference and order, congruence for girls tended to be positively related to achievement, whereas the reverse was true for boys, except with reference to AI-HSCI order where congruence was related to higher achievement in oral reading and social studies facts. No clear tendency exists for dependence and conjunctivity. It is, however, interesting to note that for conjunctivity, congruence tended to relate positively to girls' achievement but only with respect to teacher assigned grades; the reverse tendency exists for all standardized achievement indices.

Hypotheses III and IV. Hypothesis III assumes that sex is significantly related to pupil personality - teacher press and - task

related press congruence, the latter being also significantly associated with achievement. Since these relationships were not found to exist for pupil personality - task related press congruence, hypothesis III was not examined relative to such congruence.

Multiple linear regression analysis as described by Bottenberg and Ward (1963) was used to determine the extent to which the relationship between sex and school achievement would remain significant with (a) pupil personality - classroom press congruence and (b) intelligence and occupational status statistically controlled.

Linear models having achievement as the criterion variable and sex, intelligence, occupational status, and pupil personality - teacher press congruence as predictor variables were set up - there being one such model for each person-situation dimension defining pupil personality - teacher press congruence. For example, for the Dominance dimension, the following full model was set up:

$$\text{Achievement} = f(\text{Sex, Intelligence, Occupational Status, Pupil personality-teacher press congruence for Dominance})$$

The squared multiple correlation coefficient for this full model was compared with that for a restricted model omitting sex as a predictor variable. For example, for congruence relative to the Dominance dimension, the restricted model was

$$\text{Achievement} = f(\text{Intelligence, Occupational status, Pupil personality - teacher press congruence for Dominance})$$

Such a comparison was used to determine the significance of the contribution of sex to the achievement variance, with intelligence, occupational status and pupil personality - teacher press congruence held constant. Such comparisons were made with reference to the sixteen achievement indices for which there were significant sex differences as

revealed by preliminary univariate analysis (the correlations between sex and these achievement indices are given in Appendix G). Multiple linear regression analysis was also used to determine the significance of the contribution of sex to the achievement variance with only intelligence held constant. This comparison involved the following models:

Full model: Achievement = f(Intelligence, Sex)

Restricted model: Achievement = f(Intelligence)

The squared multiple correlation coefficients accompanying these multiple regression analyses are given in Appendix G.

Pupil personality - teacher press congruence was entered as a categorical variable, thus enabling a non-linear relationship between congruence and achievement to be revealed, if such existed. For each of the five person-situation dimensions, seven categories of congruence were formed. To facilitate the formation of categories, congruence for each person-situation dimension was linearly transformed to a distribution having a mean of five and a standard deviation of two. This transformation was performed for statistical convenience and had no effect upon results.

Table XXI presents the probabilities of the significance of the relationship between sex and school achievement, with sex alone, and when other variables are held constant. As this table indicates, sex significantly relates to most achievement indices when variance attributable to pupil personality - teacher press congruence is statistically controlled. Only with respect to oral language, Health, CTBS - Usage and marginally CTBS - Spelling did the relationship between sex and school achievement change from significance to non-significance when the significance level is set at .05. Pupil personality - teacher

TABLE XXI  
 PROBABILITIES\* OF THE SIGNIFICANCE OF THE RELATIONSHIP  
 BETWEEN SEX AND SCHOOL ACHIEVEMENT WHEN OTHER VARIABLES  
 ARE HELD CONSTANT

Achievement Indices	Sex Alone or Variables Held Constant						
	Alone	Intelligence	Acceptance of Control	Dominance	Carefree Self-reliance	Dependency	Prosocial Aggression
Oral Reading	.000	.000	.001	.000	.004	.001	.001*
Oral Language	.014	.023	.025	.028	.200*	.017	.064*
Written Language	.001	.000	.000	.000	.000	.001	.000
Spelling	.003	.004	.005	.001	.001	.004	.002
Social Studies-Notebook	.000	.000	.000	.000	.000	.000*	.000*
Health	.034	.059	.039	.087*	.197*	.082	.064*
Writing	.000	.000	.000	.000	.000	.000	.000
Total Reading	.023	.029	.023	.016	.023	.036	.031
Total Language	.000	.000	.000	.000	.000	.000	.000
Total Social Studies	.001	.001	.000	.001	.005	.001	.000
Total teacher assigned grades	.009	.007	.005	.004	.007	.008	.005
CTBS - Spelling	.024	.041	.024	.007	.017	.023	.022
CTBS - Capitalization	.006	.007	.006	.007	.003	.003	.036
CTBS - Punctuation	.022	.032	.005*	.029*	.007	.012	.033*
CTBS - Usage	.031	.041	.124*	.100*	.043	.043	.060*
CTBS - Total	.006	.005	.002	.007	.001	.002	.004

\* Probabilities indicating non-significance of the contribution of sex to achievement variance are thus marked.

press congruence relative to each of the five person-situation dimensions was shown to reduce the significance of the relationship between sex and achievement - but only in the achievement areas listed above.

Hypothesis IV states that congruence, and thus sex through its relationship with it, contributes to the achievement variance when intelligence and occupational status are held constant. Column two of Table XXI indicates that sex did contribute significantly to achievement variance with intelligence held constant. Thus it may be concluded that the reductions in the contribution of sex to achievement variance as just cited resulted either from the predictor variable occupational status or pupil personality - teacher press congruence. However, since the probabilities change with reference to comparisons involving occupational status and congruence, with occupational status remaining constant, this change may be attributed to pupil personality - teacher press congruence.

#### PART II: A CLOSER LOOK

In view of the lack of clarity in the results just presented, further analyses, as described in this section, were undertaken. These were guided by questions previously proposed as having possible relevance for need-press theory.

##### Pupil Personality - Teacher Press Congruence

Among the assumptions underlying the calculation of congruence as an absolute difference, would be the equating of a difference of a unit above the teacher's ideal position with that of a unit below this position. Avoiding this assumption, congruence for further analysis was defined in such a manner as to consider the direction of pupil variance

from teacher's ideal position. Accordingly for each of the five person-situation dimensions two groups were formed: a congruent group consisting of the four or five students of each classroom nearest the teacher's preferred position, and a second group, which was labelled non-congruent, consisting of the four or five students of each classroom farthest from the teacher's preferred position - in general this group was near the position described as least preferred by the teacher. Where the teacher's preferred position was in the middle of the person-situation dimension, three groupings were formed: those nearest the teacher's preferred position, those farthest above this position, and those farthest below the teacher's position; three such groupings were formed relative to the Dominance dimension. Congruence groups (each containing approximately 25 students) were formed in this manner for the additional purpose of giving extreme groupings. Analysis with reference to these groups was carried out only with respect to hypotheses I and II, and for a limited number of achievement indices - those selected being mainly the teacher-assigned measures for which there were the most significant sex differences.

Hypothesis I (a). To determine if pupil personality - teacher press congruence is greater for girls than for boys, the proportion of girls in the congruent group was compared with the proportion of boys, and similarly for the non-congruent group. Such proportions relative to the five person-situation dimensions appear in Table XXII.

For the dimensions, Acceptance of Control, Carefree Self-reliance, Dependency and Prosocial Aggression, the proportion of girls in the congruent group was significantly higher than the proportion of boys, and for the non-congruent group, the proportion of girls was significantly

TABLE XXII  
 PROPORTIONS\* OF GIRLS AND BOYS IN PUPIL PERSONALITY-  
 TEACHER PRESS CONGRUENCE GROUPS

Person-Situation Dimensions	CONGRUENT GROUP			NON-CONGRUENT GROUP		
	N Girls	Proportion Girls	N Boys Proportion Boys	N Girls	Proportion Girls	N Boys Proportion Boys
Acceptance of Control	15	.68	7 .32	7	.29	17 .71
Dominance (Non-Congruent group being above teacher's position)	12	.52	11 .48	4	.17	19 .83
Dominance (Non-Congruent group being below teacher's position)				10	.71	4 .29
Carefree Self-reliance	22	.88	3 .12	1	.04	24 .96
Dependency	19	.70	8 .30	5	.25	15 .75
Prosocial Aggression	15	.75	5 .25	3	.13	20 .87

\* A difference in proportions of approximately .25 may be considered significant at the .05 level.

lower than that of boys. For the Dominance Dimension, the proportion of girls in the congruent group was not significantly different from the proportion of boys. There was a greater proportion of boys in the non-congruent group above the teacher's preferred position and a greater proportion of girls in the non-congruent group below the teacher's preferred position. Since teachers' least preferred positions are not consistently in one direction or the other, one non-congruent group cannot, however, be considered more favorable than another.

Hypothesis II(a). On the basis of this hypothesis, the mean achievement for the congruent group is expected to be higher than for the non-congruent group. Achievement means for these groups relative to the five pupil personality - teacher press dimensions are presented in Table XXIII. The t value required for significance with degrees of freedom, 40, the approximate number for comparisons in Table XXIII, is 1.70 at the .05 level of significance, for a one-tailed test. For practical purposes a difference in means of 1.0 may be considered significant at this level.

For Acceptance of control there were no significant differences in the mean achievement of the congruent and non-congruent groups. For the Dominance dimension, there was a tendency, throughout the achievement criteria used, for the non-congruent group (above the teacher's preferred position) to achieve more highly than either the non-congruent group (below the teacher's position) or the congruent group. The former non-congruent group had a significantly greater proportion of boys than girls.

For the Dimensions, Carefree self-reliance, Dependency and Prosocial Aggression, there was a consistent tendency, significant with

TABLE XXIII  
 MEAN ACHIEVEMENT\* OF PUPIL  
 PERSONALITY-TEACHER PRESS CONGRUENT  
 AND NON-CONGRUENT GROUPS RELATIVE  
 TO SELECTED ACHIEVEMENT CRITERIA

Pupil Personality- Teacher Press Dimension	Group	Achievement Variables				
		Oral Reading	Written Language	Spell- ing	Social Studies Notebook	Writ- ing
Acceptance of Control	Congruent	7.9	7.6	8.2	6.9	6.6
	Non-Con- gruent	7.3	7.8	7.9	6.8	6.9
Dominance	Congruent	7.3	6.6	7.0	6.1	6.3
	Non-Cong. above tea- cher	7.8	7.8	7.7	7.0	6.4
	Non-Cong. below teacher	7.4	7.4	7.1	6.5	6.1
Carefree Self- reliance	Congruent	8.0	7.5	8.0	7.6	7.1
	Non-Cong.	7.4	7.2	7.4	6.2	6.6
Dependency	Congruent	8.3	7.9	8.4	7.5	7.0
	Non-Cong.	6.9	6.5	7.3	5.8	5.7
Prosocial Aggression	Congruent	8.2	7.5	8.6	7.1	6.6
	Non-Cong.	7.1	7.0	7.2	6.1	6.3

\* A difference in means of 1.0 may be considered significant at the .05 level.

reference to the majority of the achievement criteria, for the means of the congruent group to be higher than for the non-congruent group. The most significant differences were, with reference to the pupil personality - teacher press dimensions, for the Dependency dimension, and with reference to the achievement variables, for social studies notebook.

#### Pupil Personality - Task-related Press Congruence

Further analysis was carried out relative to pupil personality - task-related press congruence in the context of hypotheses I and II. This involved mainly a redefinition operationally of pupil personality - task related press congruence to avoid the equating of a difference of a unit at one end of a person situation congruence dimension with that of one at the opposite end and also the equating of a unit of difference from personality to press with that of a unit from press to personality. These assumptions were made in computing congruence as an absolute difference. Figure 2 indicates the method for the formation of congruent and non-congruent groups for this phase of the analysis. Task-related press scores for a given dimension were divided at the median; personality scores for the variable(s) selected to represent that dimension (as summarized in Table X, p. 102) were dichotomized, omitting for each variable, the stanine five group. Students scoring low on both personality and press dimensions, and those high on both dimensions, cells A and C respectively, were both classified as congruent groups. Those students low on the personality dimension but high on the corresponding press dimension, and those students high on the personality dimension, but low on the corresponding press dimension, constituted two non-congruent groups, cells D and B respectively.

No further analysis was performed for the AI - HSCI scales which entered into pupil personality - task related press congruence as described in Part I. It will be recalled that the HSCI scales were of



secondary interest, being used mainly as markers to aid in the interpretation of the factor analysis of the task related press measures.

Hypothesis I (b). This hypothesis was tested by examining the relative proportions of boys and girls in the congruent and non-congruent groups. Such proportions for the four pupil personality - task related press dimensions appear in Table XXIV.

For acceptance of control, the proportion of girls was somewhat higher for the congruent groups and significantly lower for the non-congruent groups. For the Dominance dimension (re inclusive teacher behavior and encouragement of student participation), the proportion of boys in the congruent groups was higher than that of girls but this is offset by the fact that there was also a significantly greater proportion of boys in the non-congruent groups.

Congruence favored the girls for the Dominance (re permissive teacher behavior) dimension since their proportion in the non-congruent groups was significantly lower than that of boys, while there was no significant difference in the proportions of boys and girls in the congruent groups. Conversely, for Carefree self-reliance and Dependency, congruence may be said to favor the boys since there was a significantly greater proportion of boys in the congruent groups and no significant difference in their proportion in the non-congruent groups.

Hypothesis IIb. The mean achievement for the congruent groups was compared with that for non-congruent groups, with a difference in means of 1.0 having a t value significant at the .05 level. Table XXV presents the means for selected achievement criteria.

Students having a high degree of Acceptance of control and perceiving the classroom as exerting a press for such control, tended to

TABLE XXIV  
 PROPORTIONS\* OF GIRLS AND BOYS IN PUPIL  
 PERSONALITY-TASK RELATED PRESS CONGRUENCE GROUPS

Pupil Personality- Task related Press Dimension	Congruent Groups						Non-Congruent Groups						
	A		C		Average		B		D		Average		
	Total N	Prop. Girls	Total N	Prop. Boys	Prop. Girls	Prop. Boys	Total N	Prop. Girls	Total N	Prop. Girls	Total N	Prop. Boys	
Acceptance of Control	27	.41	25	.64	.53	.47	20	.55	13	.08	.92	.31	.69
Dominance re Inclusive teacher behavior	22	.50	17	.29	.40	.60	16	.13	22	.55	.45	.34	.66
Dominance re Permissive teacher behavior	22	.68	21	.24	.46	.54	22	.05	25	.64	.36	.36	.64
Dominance re Encouragem't St. Parti.	20	.45	27	.37	.41	.59	23	.26	24	.58	.42	.42	.58
Carefree Self-reliance	20	.65	19	.11	.38	.62	21	.10	25	.84	.16	.47	.53
Dependency	34	.44	10	.30	.37	.63	23	.39	20	.60	.40	.49	.51

\* A difference in Proportions of .25 may be considered significant at the .05 level for comparisons involving single groups; for comparing average proportions, a difference of .18 may be considered significant.

TABLE XXV

MEAN ACHIEVEMENT\* OF PUPIL PERSONALITY-  
TASK RELATED PRESS CONGRUENT AND NON-CONGRUENT  
GROUPS RELATIVE TO SELECTED ACHIEVEMENT CRITERIA

Pupil Personality- Task-related Press Dimension	Group	Achievement Variables				
		Oral Reading	Written Language	Spell- ing	Social Studies Notebook	Writ- ing
Acceptance of Control	Cong.A	7.4	7.4	7.4	6.7	6.7
	C	8.4	7.4	8.6	7.0	6.8
	Non-B	7.7	7.0	7.6	6.8	6.1
	Cong.D	6.8	8.3	7.7	6.6	6.6
Dominance re Inclusive teacher behavior	Cong.A	7.3	7.2	7.1	6.6	6.4
	C	8.2	8.1	7.8	7.1	6.7
	Non-B	7.8	7.7	7.8	7.1	6.8
	Cong.D	7.1	6.3	6.7	6.2	6.2
Dominance re Permissive teacher behavior	Cong.A	7.4	7.3	7.1	7.1	6.1
	C	7.4	7.0	7.8	6.4	6.5
	Non-B	7.6	7.7	7.3	6.5	6.5
	Cong.D	7.4	6.9	7.4	6.9	7.0
Dominance re Encouragement of Student Partici- pation	Cong.A	7.3	7.1	6.8	6.6	6.2
	C	8.2	8.1	7.6	7.0	6.9
	Non-B	7.7	7.1	7.7	7.1	6.6
	Cong.D	7.1	6.5	7.0	6.3	6.5
Carefree Self-reliance	Cong.A	7.6	7.3	7.7	7.1	6.5
	C	7.5	7.5	7.6	5.9	6.4
	Non-B	7.1	7.2	7.3	6.4	6.5
	Cong.D	7.8	7.3	7.8	7.6	7.5
Dependency	Cong.A	8.0	7.5	7.9	7.0	6.8
	C	7.7	7.2	7.3	6.6	6.4
	Non-B	6.6	6.1	6.8	5.7	5.6
	Cong.D	7.8	7.1	7.9	7.4	6.7

\* A difference in means of 1.0 may be considered significant at the .05 level.

achieve more highly than other groups, especially in the areas of reading and spelling. Their achievement in oral reading was significantly higher than for students who have a low degree of Acceptance of control but perceive the classroom press as high. Reference to Table XXIV shows the former group to have a significantly higher proportion of girls, while the latter has a significantly higher proportion of boys.

For the Dominance dimension (re both inclusive teacher behavior and encouragement of student participation) achievement in all areas tended to be higher for the congruent C group, those who score high on Dominance scales and who perceive a high press for such behavior. Their achievement was higher than the congruent group composed of students having low Dominance and perceiving the classroom press as low, and more significantly higher than the non-congruent group having low dominance but perceiving the classroom press as high. It is interesting to note that the former group was composed primarily of boys, whereas there was either an equal number or significantly more girls in the lower achieving groups.

For the Dominance dimension re permissive teacher behavior, achievement within each subject area tended to be equal across congruent and non-congruent groups. The same findings apply to the Carefree self-reliance dimension, except in the areas of social studies and writing where the highest achieving group consists of those being low on the personality dimension but who perceive the press as high.

Students who perceive the teacher's behavior as highly directive but who themselves score low on the Dependency dimension, i.e. the non-congruent B group, achieved consistently and significantly lower than either of the other three groups.

The following chapter brings together the findings of both the main analysis and the closer look, and presents a discussion and summary of these findings.

## CHAPTER IX

### DISCUSSION

#### PERSON - SITUATION DIMENSIONALITY

##### Personality Description

One aim of this study was to examine the factorial pattern of several personality measures and to determine the dimensions of most significance for the description of sex differences in personality. Five oblique factors were found to characterize the main study sample and were judged equivalent to five obtained with a pilot study sample. Thus for the small town population of Northern Alberta these five personality descriptions appear to be meaningful. It will be remembered that the measures entering into these descriptions were selected in accordance with their theoretical relevance for this study, and thus do not purport to be descriptive of the entire personality.

Grade five students may be described in terms of the five dimensions, Carefree self-reliance, Acceptance of control, Dependency, Dominance and Prosocial Aggression. These dimensions were discussed fairly extensively in chapter VII. A comparison of the factor patterns found in this study with that postulated on the basis of relevant literature and personality theory reveals several points. Statements made are based on the main study factor pattern as presented in Table V since the main study sample has the larger N. In most cases, however, the pilot study solution supports these statements.

Based on a review of the research literature, active-passive was

seen as a useful dimension for the description of sex differences in personality. This did not, however, appear as a distinct dimension. Rather the variables, order and conjunctivity, viewed by Murray as components of passivity, appear on the Acceptance of Control factor, and the activity measures, notably the CPQ-D+ and CPQ F+ variables, appear on the Dominance and Carefree Self-reliance dimensions, respectively.

It was postulated that submissive behavior would appear to the left of a bipolar factor, Submissive vs. Dominant. The factor solution of this study favors viewing these as two separate, but correlated dimensions. Variables CPQ-G and CPQ-Q<sub>3</sub> seen as measures of submissive behavior load on the Acceptance of control dimension and this is itself highly negatively correlated with the Dominance dimension. The table of intercorrelations at the base of Table V suggests that analysis would indicate a second-order factor with Acceptance of Control, together with Dependency and Prosocial Aggression, at the positive end and Dominance (and perhaps to a lesser degree, Carefree Self-reliance) at the negative end. This would be more similar to that dimension hypothesized as Trait 4 and would subsume as well the active-passive measures at the negative and positive ends respectively. It is interesting to compare this hypothetical factor with the main dimension which Maccoby sees as characterizing the sexes, and which she labels passive, inhibited vs. bold, impulsive (1966, p. 47). However, on the basis of the loadings of sex on the factors of this study, this second - order factor would not be too useful in describing sex differences. The main dimension for such description is the Carefree self-reliance factor which at the

level of second-order analysis would perhaps emerge as a separate factor only slightly related to the major second-order dimension.

The factor pattern of this study would support the need for greater precision when referring to aggressive behavior. As previously indicated, one form of aggression appears fused with dominance; this finding is consistent with Murray's view of aggression and also with the absence of aggression as a distinct factor in Cattell's sampling of the personality sphere. At the same time, it would seem useful to speak of Anti-social Aggression as being a distinct form of behavior and as loading the negative pole of a dimension, positively assessing the dislike of aggression and the vigorous support of cultural and moral standards.

In summary, the factor pattern presented in Table VI, and supported by that of Table I, has served to clarify the constructual meaningfulness of several personality variables. At the same time it questions the usefulness of several terms in wide use for the description of sex differences in personality. Passive vs. Active does not appear as a clear factor but seems to merge with Acceptance of control and Dominance; thus it may be useful to refer to submission or the Acceptance of control as a form of social passivity and to dominance as being active in the interpersonal sphere. However, if this dimension were useful, it would appear to be at the level of quite general personality functioning and would not appear to be capable of revealing significant sex differences. Affiliation does not emerge as a distinct factor, but is fused with both dependency and dominance and would thus appear not useful for the description of sex differences. The dimensions, Acceptance of control, Dominance, Dependency and Prosocial Aggression negligibly

load sex. While each dimension has one or two high loading variables on which there are sex differences, these quite specific behavior manifestations may not be too meaningful for describing sex differences since they tend to be organized at the more general level of personality functioning in such a way as to reduce sex differences. To ascribe too much psychological relevance to these specific behaviors may be an over simplification of personality functioning. This consideration would seem to be worthy of attention as a possible explanation for the lack of consistent evidence that congruence between these specific behaviors and the classroom demands thought to be press for such behaviors, results in more effective performance.

Further analysis of the sort described in this study should be aimed at clarifying the dimensions of personality which may be useful for the description of sex differences. On the basis of present analysis, the Carefree self-reliance dimension would appear to be capable of describing major sex differences at this age-level.

### Tests of Hypotheses

#### Hypothesis I

(a) Pupil Personality - Teacher press Congruence. Hypothesis I (a) was strongly supported for four person-situation dimensions. Teacher press for Acceptance of control, Carefree self-reliance, Dependency and Prosocial Aggression were significantly more congruent with the personality characteristics of girls. This is most clearly indicated by Table XXII which shows the proportion of girls in the congruent groups to be significantly higher and that in the non-congruent groups to be significantly lower than the proportion of boys. In generalizing from this finding, it

should be remembered that while the congruence assessment is based on an N of 120, teacher press were assessed for only five female teachers, all of whom were teaching in small-town schools.

The finding of greater pupil personality - teacher press congruence for girls is discussed mainly in terms of its relation to achievement since it was postulated that such congruence is psychologically most meaningful for achievement.

(b) Pupil Personality - Task related Press Congruence. Hypothesis I (b) was partially supported. Pupil personality - task related press congruence was significantly greater for girls relative to the Acceptance of control and Dominance (re permissive teacher behavior) dimensions. Congruence for Dominance (re inclusive teacher behavior and encouragement of student participation) may be said to equally favor boys and girls as far as the average proportions of Table XXIV are concerned. However, as the later discussion relating congruence to achievement points out, type of congruence and non-congruence becomes relevant when the question of meaningfulness for achievement is being considered.

Pupil personality - task related press congruence was greater for boys relative to the dimensions, Dependency and Carefree self-reliance. This is accounted for by the fact that girls perceived the teacher as significantly more non-directive than did boys and tended to perceive her as encouraging student participation. At the same time, girls on the average, are more dependent and other-reliant: thus for them pupil personality - task related press congruence was low. However, as will be pointed out in later discussion, this type of non-congruence (namely high n dependency, low p. dependency) was less detrimental to achievement than the opposite (namely, low n dependency, high p

dependency). Thus the fact that there was a greater proportion of boys in the congruent groups, for the Dependency dimension, is not as relevant a consideration for achievement as the fact that their proportion in the non-congruent group (low n dependency, high p. dependency) was significantly higher. This finding, along with others that are dealt with more fully when congruence is discussed in relation to achievement, illustrates the fact that the absolute difference approach for the description of congruence is less meaningful in that it conceals information which becomes available through the more differentiated view of congruence as presented in Figure 2.

It is thought worthwhile to comment further on the finding of significant differences in the perception of task-related press. As indicated above, girls perceived the teacher as more non-directive than did boys, and tended to perceive her as encouraging student participation. Boys, on the other hand, perceived a significantly higher press for order and tended to perceive a higher press for conjunctivity. Stern has commented on the finding of sex differences in the perception of classroom press as assessed by the HSCI (from which come the p order & p. conjunctivity scales used in this study):

The character of these relationships suggests that their cause lies in selective exposure to a high school sub culture, however, rather than autistic perception. (1967, p. 384)

The position taken here, however, ascribes as much or more importance to beta press as to the presence of press in objective reality. The possibility that such sex differences, however, do reflect exposure to different sub-cultures certainly would be supported by such findings

as those of Meyer & Thomson (1963) and Jackson & Lahaderne (1966) to the effect that, as disclosed by objective observation, boys are subjected to greater disapproval and are involved in more interaction with teachers over issues of control.

These sex differences in the perception of press results in the type of non-congruence, relative to the Dependency and Acceptance of Control dimensions, that appears to be especially conducive to lower achievement - that of low need and high press.

### Hypothesis II

#### (a) Pupil Personality - Teacher Press Congruence and Achievement.

While such congruence did not consistently relate to higher achievement, this hypothesis is partially supported in that for certain dimensions relative to all school subjects and for some school subjects relative to all dimensions congruence did significantly relate to achievement. The major exception to this positive support for hypothesis II(a) is for congruence relative to the Dominance dimension. Pupils close to the teacher's ideal position which tends to be in the centre of the Dominance dimension, achieved less well; there was an equal proportion of boys and girls in this group. This can probably be interpreted to mean that since congruence variance is low its influence for achievement is not evident; beyond this it would appear that for girls, the less dominant pupils achieved higher, whereas for boys there was no consistent trend.

For the four dimensions for which pupil personality - teacher press congruence was significantly greater for girls, congruence tended to be associated with higher achievement. Congruence across these

four dimensions was especially related to achievement in oral reading, oral language, spelling, and social studies - notebook.

The most significant relationships between congruence and achievement were for the dimensions Dependency and Prosocial Aggression as indicated both by the main analysis findings presented in Table XV and the groupings analysis of Table XXIII.

For girls congruence relative to Dependency was most significantly related to higher achievement. This tended to be the case with Acceptance of control and Prosocial Aggression, but to a less significant degree.

For boys, congruence was related to higher achievement most significantly for the Prosocial Aggression dimension, with such congruence being especially related to all forms of reading achievement and oral language. It is especially interesting to note that congruence particularly with reference to Acceptance of control and Prosocial Aggression, was related to higher achievement in oral reading and oral language. In fact relative to the Prosocial Aggression and Carefree self-reliance dimensions congruence increases boys' achievement in oral language to the extent of reducing the significance of sex differences. The supplementary information of Table XXIII indicates that for all dimensions (except dominance, where congruence variance is very low) the non-congruent group, composed of a significantly higher proportion of boys, achieved more poorly in oral reading, this being significant for Dependency and Prosocial Aggression. The finding that boys' achievement

in oral subjects was related to their congruence relative to the Acceptance of control and the closely related dimension, Prosocial Aggression, seems to be supportive of, as well as perhaps explanatory of the findings to the effect that boys are given less opportunity in class to answer questions and to participate orally.

(b) Pupil Personality - Task related Press Congruence and Achievement. The relationships of pupil personality - task related press congruence to the achievement indices are presented in Tables XVIII, XIX, and XX and were briefly discussed in the previous chapter. No additional discussion of these Tables is given since it appears that the relationships revealed by further analysis using a more differentiated approach to the computation of congruence, are clearer and more valid. The discussion will, thus, centre on the findings of this closer look, it having the limitation of considering only five achievement indices.

The findings presented in Table XXV partially support hypothesis II(b). The most significant and most meaningful findings relating pupil personality-task related press congruence to achievement were with respect to the Dependency and Acceptance of Control Dimensions. It will be recalled that there were significant sex differences in perceived press for these dimensions, with boys perceiving the higher press.

Students who perceived the teacher's behavior as highly directive (i.e. high p dependency) but who themselves score low on the Dependency dimension, i.e. the non-congruent B group<sup>1</sup>, achieved consistently and

---

<sup>1</sup> For Dependency, the personality scale was reversed, thus for comparison with other dimensions, A=C and B=D.

significantly lower than either of the other three groups. This non-congruent group was composed of a higher proportion of boys ( $.05 < p < .10$ ). In contrast, the highest achieving group for the Dependency dimension was congruent group A (those having high n dependency and perceiving the teacher as highly directive). This group has a higher proportion of boys than girls but the difference is not significant.

For the Acceptance of control dimension a near parallel situation was found to that described for Dependency. The congruent group (having a high Acceptance of control and perceiving high press control) tended to achieve more highly than the other three groups. (An exception to this general finding is with relation to written Language) On the other hand, the lowest achieving group consisted of those having a low Acceptance of control but perceiving a high press for control. The former group has a significantly higher proportion of girls, whereas the latter group is composed of a very significantly higher proportion of boys.

It should be emphasized that while the congruent (high need, high press) group for each of these two dimensions tended in general to achieve more highly than the non-congruent (low need, high press) group, the differences were especially marked for oral reading. The two lowest achievement means across all pupil personality - task related press comparisons were for these two low need, high press groupings.

Thus, the dimensions revealing the most significant achievement differences were with respect to Dependency and Acceptance of control; and, as with pupil personality - teacher press congruence, the achievement differing most across congruent and non-congruent groups was with

respect to oral Reading. With teacher press, achievement differences were especially significant with respect to both oral reading and oral language; however, this latter variable did not enter into task-related press analysis.

Relative to the Dominance dimension (re inclusive teacher behavior and encouragement of student participation), there are some consistent though not necessarily significant trends which are worth discussing in terms of their illustrative value relative to several points of theoretical concern in this study.

The highest achieving groups are C and B; both groups have high n Dominance, and both have a significantly higher proportion of boys than girls. However, the highest achieving group of all tended to be the congruent group C, characterized also by high p. dominance.

These data first of all would suggest that Dominance as a form of behavior is not necessarily detrimental to achievement. This is interesting, perhaps as validity data, in terms of the finding that, for the Dominance dimension, unlike the other person-situation dimensions, teacher press significantly favored neither girls nor boys.

While dominant students in general tended not to be disadvantaged, they did achieve more highly when they perceived the press to be congruent with their behavioral tendencies. The same may be said for the less dominant students; those perceiving low press dominance tended to achieve more highly than those perceiving high press dominance.

While findings relative to the Dominance dimension seem incapable of explaining sex differences in achievement (in fact they draw attention to a group of boys who achieve highly) they are supportive of the general

thesis under study, namely that congruence tends to relate to higher achievement.

However, the fact that this statement holds only within personality groups, points to the need when examining person-situation congruence to use this more differentiated classification, which is in line with the design for person-situation interaction analysis recommended by Lavin (1965, p. 164). In other words, the interaction between person and situation variables, which is not accounted for in the absolute difference congruence index, may very well be worth considering.

For Dominance, re permissive - teacher behavior, there were no significant differences in achievement across congruent and non-congruent groups. It is suggested that this may be attributable to the lack of meaningful congruence classification. The obtained range of perceived press as assessed by the permissive scale was 4-18 as compared with a maximum possible range of 0-30. The psychological meaningfulness of teacher behavior from 10-18 (scores were split at the median, 10) as high press for Dominance is questionable. For all press dimensions the classification as high or low is relative and this question of psychological meaningfulness is appropriate - but to a lesser degree for those dimensions where the obtained raw score range was greater. The permissive teacher behavior findings do suggest the need, before definitive statements can be made relative to the importance of congruence for achievement, for testing of the hypothesis within a sample of classrooms representing greater variance of perceived press.

Two comments relative to the findings for the Carefree self-reliance dimension seem appropriate. It was previously suggested that the classification of the Encouragement of student participation as a

press for this dimension does not find the theoretical support which the classification as a press for Dominance carries. Secondly, the fact that the Carefree self-reliant students (groups C and B) tended to achieve equally as well whether they were congruent or non-congruent may be attributable to the behavioral characterization of those students. The Carefree self-reliant person is a happy-go-lucky individual who tends to be self-sufficient; such a person may be less concerned about incongruities in his environment. The lower achievement of both those groups relative to Social Studies Notebook may be indicative of a teacher bias. This would be supported by the fact that lack of congruence with teacher press for the Carefree self-reliance dimension tended to relate to lower achievement, and this was most significant for social studies notebook ( $p < .05$ ).

#### Hypotheses III & IV

These hypotheses taken together are concerned with the degree to which pupil personality - classroom press congruence can account for the sex differences in achievement. As concluded in the previous chapter such differences are not attributable to differences in intelligence between the sexes. The design for hypothesis III was to illustrate that the sex differences in achievement diminish when variance attributable to pupil personality - classroom press congruence is controlled. Control for such congruence was carried out only with respect to teacher press and using the absolute difference index of congruence. Following such control, sex differences were no longer significant with respect to oral language, health, CTBS Usage and CTBS Spelling.

To answer this hypothesis now, in the absence of systematic

covariance control, reference is made to the prevalence of (a) more extensive evidence as a result of the closer-look analysis of a relationship between non-congruence and low achievement both with reference to teacher press using extreme groupings and with respect to task-related press which did not previously enter into overall covariance control of congruence, and (b) the finding that within these non-congruent groups there was a significantly higher proportion of boys than girls. This was most significant relative to teacher press. For task-related press, while boys were found in congruent groups achieving significantly higher, their proportion was not significantly different from the proportion of girls. On the other hand, within the lowest achieving non-congruent groups the proportion of boys was significantly higher than the proportion of girls.

On the basis of these two considerations, it is felt that covariance control of congruence would reduce sex differences in achievement to non-significance especially if such were summed across the dimensions relating to achievement in similar ways and if the lack of congruence for boys relative to task related press were considered in conjunction with that relative to teacher press. The most productive dimensions for isolating non-congruent groups whose achievement was significantly lower were Prosocial Aggression and Dependency relative to teacher press and Dependency and Acceptance of control with respect to task-related press.

Since the above conclusion is based to a large extent on findings from the closer analysis, it should be stressed that this analysis considered only five achievement criteria. The statements would be

expected to hold throughout these five criteria, with oral reading likely to show the most significant change. However, within the teacher-assigned grades there were only seven achievement criteria showing significant sex differences if it may be assumed that such differences relative to these subscores are mainly responsible for sex differences in total score. These were the five entering into the closer analysis, plus oral language and health; analysis had previously shown that with reference to the latter two, sex differences were reduced to non-significance when congruence relative to teacher press was statistically controlled.

## CHAPTER X

### SUMMARY, CONCLUSIONS AND IMPLICATIONS

The present study investigated the validity of a particular thesis as an explanation for sex differences in achievement. It was in general hypothesized that classroom characteristics are more suited to the personality characteristics of girls than of boys and that this greater person-situation congruence for girls may in part account for their greater school achievement. It was postulated following the theoretical approach of Stern and his associates (Pace & Stern, 1958; Stern, Stein & Bloom, 1956) via Murray (1938) that the agreement between environmental demands or press and an individual's response tendencies is positively related to one's performance within that environment. The specific hypotheses under study were derived from this general postulate and from sociological theory and empirical data suggesting specific classroom variables as significant influences, or press, for achievement within the classroom environment. Achievement as indicated by both teacher-assigned grades and standardized achievement measures was studied.

The investigation was carried out in five female-taught grade five classrooms from four elementary schools within a County neighboring Edmonton, Alberta. Preliminary investigation had indicated that as judged by February examinations there were significant sex differences in school achievement in four of these classrooms and a tendency for girls to achieve more highly in the fifth classroom. Such preliminary investigation also indicated that these schools appeared to offer a

reasonable range of classroom environments. The five classrooms selected provided a total sample of 120 students - 52 girls and 68 boys.

Based on factorial analysis of a battery of 23 personality instruments selected as being potentially valid measures of personality traits of theoretical concern in this study, five correlated dimensions were found to characterize the personality of elementary school pupils. These five dimensions, judged to be the factorial equivalents of five dimensions characteristic of a pilot study sample, were given the following labels: Acceptance of control, Dominance, Carefree self-reliance, Dependency, and Prosocial Aggression. Since classroom press variables were classified in terms of these same five dimensions, they are referred to as person-situation dimensions. Figure 1 lists personality and classroom press variables by these person-situation dimensions.

The classroom environment was characterized in terms of press variables. Theoretical and empirical support existed for the selection of two sets of classroom characteristics as significant influences for the behavior of students. These are teacher expectations for student behavior, and classroom procedures relative to task performance. These are referred to as teacher and task-related press, respectively.

Teacher preferences concerning student behavior were assessed by means of a series of nine-point rating scales; empirical evidence gained from pilot study and from the literature had shown these to be assessing factors corresponding to the five dimensions descriptive of student personality, and thus justified the classification of teacher preferences as press for these five dimensions.

Task-related press refers mainly to elements of teaching behavior exhibited by the teacher and the requirements set forth by her for task

performance of students, as perceived by the students themselves.

Factorial analysis of a series of instruments designed to assess teacher behavior patterns revealed two meaningful factors, labelled Structuring of Classroom Activity and Encouragement of Student Participation. The former was classified as a press for the Acceptance of control, and the latter as a press for Dominance, and Carefree self-reliance. A teacher behavior pattern, non-directive vs. directive, was classified as a press for Dependency. Justification for the characterization of teacher behavior patterns in press terms was based mainly on the theoretical and empirical literature surrounding these teacher behavior variables.

For both teacher press and task-related press, congruence with pupil personality was first calculated in terms of the absolute difference in the personality score and the press score with respect to a given person-situation dimension. In view of the lack of clarity in findings resulting from analysis relating these congruence indices with achievement, further analysis was undertaken using a different method for congruence assessment. For both teacher and task-related press, this method resulted in the formation of congruent and non-congruent groups. On the basis of findings resulting from both these analyses, the following conclusions relative to the hypotheses under study were made.

## CONCLUSIONS

### Hypothesis I

For the dimensions, Acceptance of control, Carefree self-reliance, Dependency and Prosocial Aggression, teacher press were significantly more congruent with the personality characteristics of girls.

Pupil personality - task related press congruence was found to be greater for girls relative to the dimensions, Acceptance of control and Dominance (re permissive teacher behavior); such congruence was greater for boys relative to the dimensions, Dependency and Carefree self-reliance. This statement is based on a comparison of the average proportions of boys and girls within congruent and non-congruent groups. Such proportions are not as relevant when the question of meaningfulness for achievement is being discussed as are the proportions of boys and girls within particular congruent or non-congruent groups.

#### Hypothesis II

Pupil personality - classroom press congruence did not consistently relate to higher achievement. However, for certain dimensions congruent groups did achieve significantly higher than non-congruent groups, and for certain school subjects congruence appeared to be especially related to higher achievement.

The congruence of pupil personality with teacher press for Dependency and for Prosocial Aggression was most significantly related to achievement, especially in the areas of oral reading, oral language, spelling and social studies - notebook. Relative to the dimensions, Acceptance of control and Carefree self-reliance, congruence tended to be related to higher achievement.

In relating pupil personality to task related press, two congruent and two non-congruent groups were formed for each person-situation dimension, and particular congruent and non-congruent groups were found to reveal significant differences in achievement.

Students' perceptions of task-related press for Dependency and Acceptance of control in comparison with their own behavioral tendencies,

created congruent and non-congruent groups which were especially discrepant in achievement. Students perceiving a high press for Dependency, namely those viewing teacher behavior as highly directive, but who themselves are low in dependency obtained low achievement especially in comparison with students perceiving a high press dependency but who themselves are highly dependent. A similar situation was found with respect to the Acceptance of control dimension. Students having a low acceptance for control but who perceive the teacher as exerting a high press for control tended to be lower achievers especially with reference to oral reading. Whether low-need - high press non-congruent groups relative to other personality dimensions for which boys are low scorers, for example, Prosocial Aggression, would be especially low achievers may be worthy of further investigation.

#### Hypotheses III and IV

The central thesis of this study was that greater pupil personality-classroom press congruence for girls can in part account for their greater achievement. While this study certainly is not supportive of either large sex differences in such congruence or of a high relationship between congruence and achievement it has isolated certain dimensions relative to which congruence was associated with higher achievement, and conversely non-congruence was associated with lower achievement. Furthermore, the proportions of boys and girls in these groups were such that non-congruence was greater for boys. While boys were found in congruent groups achieving significantly higher, their proportion was either lower than (relative to teacher press) or not significantly different from (relative to task related press) the proportion of girls. On the other hand, within the lowest achieving non-congruent groups, the proportion

of boys was significantly higher than the proportion of girls. The most productive dimensions for isolating non-congruent groups whose achievement was significantly lower were Prosocial Aggression and Dependency relative to teacher press and Dependency and Acceptance of control with respect to task related press.

It is suggested that if pupil variance in congruence relative to these three dimensions across both teacher and task-related press were statistically controlled, sex differences in achievement would be significantly reduced. It is further suggested that this reduction would be consistent across the seven sub-achievement areas for which there are significant sex differences, but most pronounced with respect to those areas which appear to be most related to congruence, namely, oral reading, oral language and social studies notebook.

A review of the relationships between sex and achievement, with intelligence, occupational status, and pupil personality - teacher press congruence held constant supports the statement that significant sex differences in achievement remain when pupil variance in intelligence and occupational status is controlled and lends some support to the above conclusion relative to the effect on sex differences in achievement of a control for variance in pupil personality - classroom press congruence.

#### IMPLICATIONS

##### For Theory and Further Research

The patterning of both the pupil personality variables and task related press variables as revealed by this study may be considered highly supportive of the validity of the theoretical foundations of

those variables. The factor pattern of the personality variables adds validity to the Murray need taxonomy and meaningfully relates variables from quite diverse theoretical systems, thus increasing the construct validity of the personality traits. The fact that this pattern was stable across two samples strengthens this validity.

The classification of teacher behavior patterns in press terms, increases the psychological meaningfulness for pupil behavior of those variables. This implication is strengthened by the empirical support for this classification as given by the patterning of task-related press variables shown in Table IX. For example, the appearance of press order and press conjunctivity, on the dimension on which conjunctive and directive teacher behavior load, supports the proposition that such teacher behavior has relevance for pupil behaviors in the areas of order and organization.

Relationships between congruence and achievement as revealed by this study are in part supportive of the need-press hypothesis (Stern, 1960) but point to the necessity for systematic study in setting forth qualifications to the general need-press thesis. For example, it is suggested that direction of non-congruence may be psychologically meaningful; a person in an environment with high press when his corresponding needs are low may function less effectively than a person of high needs in an environment where press for such needs are low.

The importance of need-press congruence for environmental adaptation may very well interact with other variables such as importance of the goal to the participant. In the context of school achievement, this would be the importance of the learning tasks. There may be thresholds below which congruence bears a negligible relationship to environmental

adaptation. Such thresholds may further vary across individuals. Findings of this study suggest that the importance of person-situation congruence for achievement varies as a function of person-situation dimension and school subject. Further investigation to reveal other possible interacting variables is required.

The importance of need-press congruence both as a factor influencing motivation and as a variable interacting with motivation in its relationship to achievement requires further study. It was postulated that such congruence may contribute to a student's orientation to achieve in school as being distinct from his need achievement. The use of criterion variables other than the achievement indices used in this study, would be of value in indicating the manner in which congruence relates to achievement. For example, measures assessing attitude toward or satisfaction with school were originally proposed as criterion measures.

The conceptualization of the classroom environment as consisting of subsets of press as compared with a global conception, appears to be useful. By using this differentiated conception of press, congruent and non-congruent groups showing meaningful achievement differences were isolated. A comparison of the relationships of congruence with achievement from one subset of press to another suggests more specifically how congruence may be influencing achievement. For example, a comparison of the relationships of congruence with social studies notebook across subsets of press, suggests that the lower achievement may be the result of a teacher bias.

Findings relative to task related press support the contention

that beta press, in this case classroom press as perceived by the students, are important for behavior.

Study should be directed towards isolating other subsets of press which may be significant for the performance of students. It was proposed that preferences which a peer group holds with regard to the behavior of its members have relevance for achievement especially if considered in relation to teacher press. Congruence between teacher press and peer-group press may be especially important for the achievement of students at the elementary level. Instrumentation for the assessment of peer-group press for the person-situation dimensions used in this study have been constructed as was indicated in chapter V.

Whereas findings of this study establish a relationship between congruence and achievement, the study did not explore the question of how such congruence operates in the promotion of greater achievement. Nor of course did it establish any causal relationship. Postulates from which the present hypotheses were derived do, however, maintain that press variables have specific behavioral meaning and that congruence influences achievement in specific ways. Further investigation arising from these postulates would be of value in establishing the behavioral implications of press variables especially prominent in the positive findings of this study.

Findings lend support to the postulate that congruence between classroom press and pupil personality relates to the opportunities which students have of behaving in certain ways. It was suggested that the lower achievement in oral reading and oral language by non-congruent groups may be taken as an indication that non-congruent students are given less opportunity in class to answer questions and to participate

orally. The observation schedule of Jackson and Lahaderne (1966) could be used to assess opportunities given for students' oral expression within congruent and non-congruent groups as defined in this study.

Findings revealed in the closer-look analysis support the use of person-situation interaction analysis for systematically relating personality variables and environmental press variables for the purpose of assessing the importance for environmental adaptation of need-press congruence. Such interaction analysis for the prediction of academic achievement as suggested by Lavin (1967, p. 164) appears to be promising in that it is capable of isolating groups who are especially low or especially high achievers in relation to particular person-situation combinations. The need-press hypothesis superimposed on this general exploratory method has the value of predicting such groups.

This study was not supportive of either large sex differences in pupil personality-classroom press congruence or of a high relationship between congruence and achievement. Further investigation within classrooms exhibiting greater press variance than that characteristic of the present sample of classrooms may reveal greater non-congruence for boys. Further investigation within grades one to three where sex differences in achievement are reportedly more pronounced may also reveal such findings.

#### For Educational Practice

The patterning of variables shown in Tables I and VI reveals five dimensions useful for the description of the personality of pre-adolescent boys and girls. The accompanying battery of self-report measures have illustrated usefulness with grade five students and their ease of administration makes them potentially valuable for both teachers

and guidance personnel. Instruments of particular usefulness for the description of sex differences in personality in relation to each of the five dimensions are presented in Figure 1 and Table VIII.

Similarly, the patterning of variables of Table IX indicates dimensions which appear to be useful for the description of teacher behavior, particularly as viewed by students. These dimensions have the added value of being conceptualized as press for the dimensions descriptive of student personality and thus carry more specific meaning for pupil behavior. Knowledge of these teacher behavior dimensions and their implications for student behavior and performance should be part of teacher training programs.

The measuring instruments accompanying these teacher behavior dimensions, having demonstrated application for the grade five classroom, should be of value for the practicing teacher. For example, their use in providing feedback for the teacher relative to how her teaching behavior is perceived by students would be prerequisite to adapting teaching style to fit student behavioral tendencies. The teacher who becomes aware of the effects of her behavior is in a position to change it. Instruments of practical use for the assessment of teacher behavior dimensions, are presented in Figure 1 and Table X. These are listed in relation to the pupil behavior dimensions for which they are most relevant and for which they may be considered press.

This study has indicated that teachers do have preferences which are more congruent with the behavioral tendencies of girls than boys. It has associated such congruence with higher achievement particularly in certain school subjects. Teachers should make a conscious effort to make their attitudes explicit and to objectively assess whether their

preferences may be operating to the advantage of certain students and to the disadvantage of certain others. Postulates presented relative to the importance of pupil personality - teacher press congruence give direction for such assessment. Teachers, for example, could assess whether their preferences result in grading bias or greater acceptance and reinforcement of certain forms of behavior. Findings of this study point to specific preferences, for example, in the areas of control, dependency and aggression, which may be operating to the advantage of certain students. The rating scales used for teacher press assessment could be used by the teacher to rate the behavior of certain students whom a teacher may be aware of particularly accepting or enjoying in class. This would bring to awareness specific behaviors for which she may have preference.

While not supportive of a high general relationship between person-situation congruence and achievement, this study has isolated certain low-achieving groups of students for whom the perceived classroom press is non-congruent with their personality characteristics. It thus substantiates the value of considering person-situation congruence in particular cases where low achievement is prevalent. It further suggests that pupil personality - classroom press congruence may be a useful way to look at adapting the classroom environment to individual differences of pupils. For example, students with low need dependency seem to achieve poorly within a classroom environment which they perceive as highly directive. Similarly, students having a low acceptance of control but who perceive the teacher as exerting a high press for control tend to be lower achievers. It is suggested that an attempt by the teacher to exhibit less direction and less control in interaction with these types of

students would have a positive influence upon their achievement.

To be effective in such adaptation, teachers would first have to be aware of the individual personality differences of students. Use of the personality instrumentation of this study, perhaps through working in cooperation with school guidance personnel, has been suggested. Secondly, teachers would need to be flexible in their interaction with students. While their teaching could perhaps be characterized in general by a particular style, they would need to be able to exhibit variations of style in interaction with certain students. Through preparation within teacher training programs, and through self-analysis within teaching practice as previously suggested, teachers can experiment with a variety of teaching patterns. The exposure of students to different teaching styles as is possible through team teaching may be an alternative way of providing classroom characteristics in agreement with the personality characteristics of individual students.

This study has indicated that within non-congruent groups, especially low-achieving ones, there was a higher proportion of boys. Thus the necessity of adapting the classroom environment to suit the personality of individual students as just discussed would appear to be more pronounced with reference to male students. However, non-congruence is not exclusively a male phenomenon and at the extremes of any of the five personality dimensions there are found both boys and girls. Thus grouping by sex would not do away with the necessity of adapting the classroom environment to the personality characteristics of individual students.

In summary, this study has clarified the dimensions useful for the description of student personality and the classroom environment and supports the usefulness of conceptualizing the classroom environment

as exerting pressure for which certain behavior is more congruent and thus more adaptable. Findings as to the relationship of person-situation congruence and achievement suggest that such congruence may be a useful way of viewing the adaptation of the classroom environment for dealing with individual differences of pupils. The necessity of adapting the classroom environment to suit the personality characteristics of students would appear to be more pronounced for boys and it is suggested that such adaptation, particularly with reference to teacher preferences and teaching style, would increase their achievement.

## REFERENCES

- Ahmavaara, Y. Transformation analysis of factorial data. Annales Akademiae Scientiarum Fennicae, Helsinki, 1954.
- Ames, L. B. & Ilg, F. L. Sex differences in test performance of matched girl-boy pairs in the 5-to-9-year-old age range. Journal of Genetic Psychology, 1964, 104, 25-34.
- Amidon, E & Flanders, N. A. The effects of direct and indirect teacher influence on dependent-prone students learning geometry. Journal of Educational Psychology, 1961, 52, 286-291.
- Anastasi, A. Differential Psychology. New York: MacMillan, 1958.
- Anderson, H. H. & Brewer, J. E. Studies of teachers' classroom personalities. 1. Dominative and socially integrative behaviour of kindergarten teachers. Applied Psychological Monographs, 1945, No. 6.
- Auria, C. & Chapline, E. Differences between school satisfied and dissatisfied adolescents in psychological functioning and classroom effectiveness. Paper presented at the meeting of the American Educational Research Association, New York, February, 1967.
- Ausubel, D. P. Theory and problems of child development. New York: Wiley, 1958.
- Bailyn, L. Mass media and children: a study of exposure habits and cognitive effects. Psychological Monographs, 1959, 73, No. 1.
- Baker, S. R. A comparative study of perceptions of a university environment between honor and non honor freshman groups. Educational & Psychological Measurement, 1966, 26, 973 - 976.
- Beilin, H. Teachers' and clinicians' attitudes toward the behavior problems of children: a reappraisal. Child Development, 1959, 30, 9 - 25.
- Bentzen, F. Sex ratios in learning and behavior disorders. National Elementary Principal, 1966, 46, 13 - 17.
- Berelson, B. & Steiner, G. Human behavior: an inventory of scientific findings. New York: Harcourt, Brace & World, 1964.
- Bidwell, C. E. The school as a formal organization. In March, J. G. (Ed.) Handbook of Organizations. Chicago: Rand McNally, 1965.

- Black, M. S. The development of personality factors in children and adolescents. Educational and Psychological Measurement, 1965, 25, 767 - 785.
- Blishen, B. R. A socio-economic index for occupations in Canada. Canadian Review Sociology and Anthropology, 1967, 4, 41 - 53.
- Bottenberg, R. A. & Ward, J. H. Applied multiple linear regression. Rep. PRL-TDR-63-6. Lackland A. F. Base, Texas, 1963.
- Brown, A. F. The self in interpersonal theory: a study of the relationship between dominance-submissiveness attitudes referring to self and to significant others. Unpublished Master's thesis, University of Alberta, 1957.
- Cardon, B. W. Sex differences in school achievement. The Elementary School Journal, May, 1968, 427 - 434.
- Cattell, R. B. & Coan, R. W. Child personality structure as revealed in teachers' behavior ratings. Journal of Clinical Psychology, 1957, 13, 315 - 327.
- Cattell, R. B. & Gruen, W. The personality factor structure of 11-year old children. Journal of Clinical Psychology, 1953, 9, 256 - 266.
- Christensen, C. M. Relationships between pupil achievement, pupil affect-need, teacher warmth, and teacher permissiveness. Journal of Educational Psychology, 1960, 51, 169 - 174.
- Clark, W. W. Boys and girls. Are there significant ability and achievement differences? Phi Delta Kappan, 1959, 41, 73 - 76.
- Cogan, M. L. The relation of the behavior of teachers to the productive behavior of their pupils. Unpublished doctoral dissertation, Harvard University, Graduate School of Education Library, 1954.
- Cornell, E. L. & Armstrong, C. M. Forms of mental growth patterns revealed by reanalysis of the Harvard Growth Data. Child Development, 1955, 26, 169 - 204.
- Crandall, V. J., Katkowsky, W. & Preston, A. Motivational and ability determinants of young children's intellectual achievement behaviors. Child Development, 1962, 33, 643 - 661.
- Dominion Bureau of Statistics. Student progress through the schools, by age and grade. Ottawa: Queen's Printer, 1965.
- Eaton, M. T., D'Amico, L. A. & Phillips, B. N. Problem behavior in school. Journal of Educational Psychology, 1956, 47, 350 - 357.

- Farquhar, R. H. Home influences on achievement and intelligence: an essay review. Administrator's Notebook, 1965, 13, No. 5.
- Flanders, N. A. Teacher influence in the classroom: I. Research on classroom climate. In A. A. Bellack (Ed.) Theory and research in teaching. New York: Bureau of Publications, Columbia University, 1963.
- Flanders, N. A. Teacher influence, pupil attitudes and achievement. Washington: Cooperative Research Monograph No. 12, 1965.
- Flanders, N. A., Anderson, J. P. & Amidon, E. J. Measuring dependence proneness in the classroom. Educational and Psychological Measurement, 1961, 21, 575 - 587.
- Fruchter, B. & Jennings, E. Factor analysis. In H. Borko (Ed.) Computer applications in the behavioral sciences. Englewood Cliffs: Prentice-Hall, 1962.
- Furst, E. J. Validity of some objective scale of motivation for predicting academic achievement. Educational and Psychological Measurement, 1966, 26, 927 - 933.
- Gates, A. I. Sex differences in reading ability. Elementary School Journal, 1961, 61, 431 - 434.
- Getzels, J. W. & Jackson, P. W. The teacher's personality and characteristics. In N. L. Gage (Ed.) Handbook of research on teaching. Chicago: Rand McNally, 1963, pp. 506 - 582.
- Gilbert, G. M. A survey of "referral problems" in metropolitan child guidance centers. Journal of Clinical Psychology, 1957, 13, 37 - 42.
- Goodenough, F. L. The measurement of mental growth in childhood. In L. Carmichael (Ed.) Manual of Child Psychology. New York: Wiley, 1954, 459 - 491.
- Gronlund, N. E. Sociometry in the classroom. New York: Harper & Brothers, 1959.
- Hadley, S. T. A school mark - fact or fancy? Educational Administration and Supervision, 1954, 40, 305 - 312.
- Hall, C. S. & Lindzey, G. Theories of personality. New York: John Wiley, 1957.
- Hartung, M. L., Van Engen, H., Gibb, E. G. & Knowles, L. Seeing through arithmetic tests. Scott, Foresman, 1960.

- Harvey, O. J., Hunt, D. E. & Schroder, H. M. Conceptual systems and personality organization. New York: Wiley, 1961.
- Hendrikson, A. E. & White, P. O. Promax: a quick method for rotation to oblique simple structure. The British Journal of Statistical Psychology, 1964, 17, 65 - 70.
- Hoffman, M. & Hoffman, L. (Eds.) Review of child development research. New York: Russell Sage Foundation, 1964.
- Hughes, M. M. Utah study of the assessment of teaching. In A. A. Bellack (Ed.) Theory and research in teaching. New York: Bureau of Publications, Teachers College, Columbia University, 1963.
- Jackson, P. W. & Getzels, J. W. Psychological health and classroom functioning: a study of dissatisfaction with school among adolescents. Journal of Educational Psychology, 1959, 50, 295 - 300.
- Jackson, P. W. & Lahaderne, H. M. Inequalities of teacher-pupil contacts. Paper presented at the meeting of the American Psychological Association, New York, September, 1966.
- Kagan, J. The child's sex role classification of school objects. Child Development, 1964, 35, 1051 - 1056.
- Kagan, J. Personality and the learning process. Daedalus, 1965, 94, 553 - 563.
- King, E. M. (Ed.) Canadian Tests of Basic Skills - Form 1. Thomas Nelson (Canada) Ltd., 1967.
- Koenig, K. & McKeachie, W. J. Personality and independent study. Journal of Educational Psychology, 1959, 50, 132 - 134.
- Kohn, M. Analysis of two kindergarten settings. In A. Bellack (Ed.) Theory and research in teaching. New York: Columbia University, 1963.
- Lahaderne, H. Attitudinal and intellectual correlates of attention: a study of four sixth-grade classrooms. Paper presented at the meeting of the American Educational Research Association, New York, February, 1967.
- Lansky, L. M., Crandall, V. J., Kagan, J. & Baker, C. T. Sex differences in aggression and its correlates in middle-class adolescents. Child Development, 1961, 32, 45 - 58.
- Lauterbach, C. G. & Vielhaber, D. P. Need-press and expectation-press indices as predictors of college achievement. Educational and Psychological Measurement, 1966, 26, 965 - 972.

- Lavin, D. E. The prediction of academic performance: a theoretical analysis and review of research. New York: Russell Sage Foundation, 1965.
- Lesser, G. S., Fifer, G. & Clark, D. H. Mental abilities of children from different social-class and cultural groups. Monograph of the Society for Research in Child Development, 1965, 30, No. 4.
- Lewis, W. D. Some characteristics of children designated as mentally retarded, as problems, and as geniuses by teachers. Journal of Genetic Psychology, 1947, 70, 29 - 51.
- Lorge, I. & Thorndike, R. L. The Lorge-Thorndike intelligence tests - Level 3 - form A - verbal battery. Boston: Houghton Mifflin, 1957.
- MacArthur, R. S. Mental abilities in cross-cultural context. Paper presented to Department of Psychology Colloquium, McGill University, Montreal, March, 1966.
- MacArthur, R. S. & Elley, W. B. The reduction of socio-economic bias in intelligence testing. British Journal of Educational Psychology, 1963, 33, 107 - 119.
- Maccoby, E. E. Sex differences in intellectual functioning. In E. E. Maccoby (Ed.) The development of sex differences. Stanford: Stanford Univers. Press, 1966, pp. 25 - 55.
- McCarthy, D. A. Language development in children. In L. Carmichael (Ed.) Manual of Child Psychology. New York: John Wiley, 1954.
- McClelland, D. C., Atkinson, J. W., Clark, R. A., & Lowell, E. L. The achievement motive. New York: Appleton-Century-Crofts, 1953.
- McCullough, C. M. & Russell, D. H. Fifth-reader achievement test. Boston: Ginn, 1961.
- Meyer, W. J. & Thompson, G. G. Teacher interactions with boys as contrasted with girls. In R. G. Kuhlens & G. G. Thompson (Eds.) Psychological Studies of Human Development. New York: Appleton-Century-Crofts, 1963.
- Murray, H. A. Explorations in personality. New York: Oxford Univers. Press, 1938.
- Oetzel, R. M. Annotated bibliography and classified summary of research in sex differences. In E. E. Maccoby (Ed.) The development of sex differences. Stanford: Stanford Univers. Press, 1966, pp. 223 - 351.

- Pace, C. R. & Stern, G. G. An approach to the measurement of psychological characteristics of college environments. Journal of Educational Psychology, 1958, 49, 269 - 277.
- Peltier, G. L. Sex differences in the school: problem and proposed solution. Phi Delta Kappan, 1968, 50, 182 - 185.
- Phillips, B. N. Anxiety as a function of early school experience. Paper presented at the meeting of the American Educational Research Association, New York, February, 1967.
- Pineo, P. C. & Porter, J. Occupational prestige in Canada. Canadian Review Sociology and Anthropology, 1967, 4, 24 - 40.
- Porter, R. B. & Cattell, R. B. Handbook for the IPAT Children's Personality Questionnaire. Champaign, Ill.: Institute for Personality and Ability Testing, 1959.
- Porter, R. B. & Cattell, R. B. The IPAT Children's Personality Questionnaire "CPQ", 1963.
- Preston, R. C. Reading achievement of German and American children. School and Society, 1962, 90, 350 - 54.
- Richards, T. W. & Simons, M. P. The Fels Child Behavior Scales. Genetic Psychology Monographs, 1941, 24, 259 - 309.
- Rippey, R. M. A study of differences in achievement due to personality differences in four classroom environments. School Review, 1965, 73, 374 - 383.
- Roberts, K. E. & Ball, R. S. A study of personality in young children by means of a series of rating scales. Journal of Genetic Psychology, 1938, 52, 79 - 149.
- Schutz, W. C. FIRO: a three-dimensional theory of interpersonal behavior. New York: Rinehart, 1958.
- Sears, P. & Feldman, D. H. Teacher interactions with boys and with girls. National Elementary Principal, 1966, 46, 30 - 35.
- Sears, P. & Sherman, V. S. In pursuit of self-esteem: case studies of eight elementary school children. Belmont, Cal.: Wadsworth, 1964.
- Sears, R. R. Relation of early socialization experiences to aggression in middle childhood. Journal of Abnormal and Social Psychology, 1961, 63, 466 - 492.

- Sexton, P. Boy-school conflict. Arizona Teacher, 1965, 53, p. 22.
- Sly, H. F. An analysis of sex differences in an Alberta school population. Unpublished doctoral dissertation, University of Alberta, 1960.
- Solomon, D. Teacher behavior dimensions, course characteristics, and student evaluations of teachers. American Educational Research Journal, 1966, 3, 35 - 47.
- Solomon, D., Bezdek, W., & Rosenberg, L. Teaching styles and learning. Center for the study of liberal education for adults research report, 1963.
- Stern, G. G. Congruence and dissonance in the ecology of college students. Student Medicine, 1960, 8, 304 - 339.
- Stern, G. G. Environments for learning. In R. N. Sanford (Ed.) The American college; a psychological and social interpretation of higher learning. New York: Wiley, 1962, pp. 690 - 730 (a).
- Stern, G. G. The measurement of psychological characteristics of students and learning environments. In S. J. Messick & J. Ross (Eds.) Measurement in personality and cognition. New York: John Wiley, 1962, pp. 27 - 68 (b).
- Stern, G. G. Scoring instructions and college norms: Activities Index, College Characteristics Index. Syracuse: Psychological Research Center, 1963.
- Stern, G. G. People in context: the measurement of environmental interaction in school and society, 1967. (Manual borrowed from Syracuse University, Syracuse, New York.)
- Stern, G. G., Stein, M. I. & Bloom, B. S. Methods in personality assessment. Glencoe, Ill.: Free Press, 1956.
- Terman, L. M. & Tyler, L. E. Psychological sex differences. In L. Carmichael (Ed.) Manual of Child Psychology. New York: John Wiley, 1954, pp. 1064 - 1114.
- Thistlethwaite, D. L. College press and student achievement. Journal of Educational Psychology, 1959, 50, 183 - 191.
- Tuckman, B. W. A study of the effectiveness of directive versus non-directive vocational teachers as a function of student characteristics and course format. Progress report #1. U.S. Office of Education Bureau of Research, February, 1967 (a).

- Tuckman, B. W. A study of the effectiveness of directive versus non-directive vocational teachers as a function of student characteristics and course format. Progress report #4. U.S. Office of Education Bureau of Research, October, 1967 (b).
- Tuckman, B. W. Group composition and group performance of structured and unstructured tasks. Journal of Experimental Social Psychology, 1967, 3, 25 - 40 (c).
- Tyler, L. E. The psychology of human differences. (3rd ed.) New York: Appleton-Century-Crofts, 1965.
- United States Census. 1960 census of population: supplementary reports. School enrollment of the population of the United States: 1960, PC (S1) - 29. Washington, D. C., U.S. Department of Commerce, 1962.
- Vernon, P. E. The structure of human abilities. London: Methuen, 1950.
- Waetjen, W. B. Is learning sexless? National Education Association Journal, 1962, LI 12 - 14.
- Wisenthal, M. A study of attitudes, reinforcement and attainment in the junior schools. Unpublished Ph.D. Dissertation, University of London, 1964.
- Wisenthal, M. Sex differences in attitudes and attainment in junior schools. British Journal of Educational Psychology, 1965, 35, 79 - 85.
- Witkin, H. A. Origins of cognitive style. In C. Scheerer (Ed.), Cognition: Theory, Research, Promise. New York: Harper & Row, 1964, pp. 172 - 205.
- Witkin, H. A., Dyk, R. B., Faterson, H. F., Goodenough, D. R. & Karp, S. A. Psychological differentiation. New York: Wiley, 1962.

APPENDIX A:

PERSONALITY MEASURES

With the exception of Sears Aggression Scale (which used a four-point response format) the following directions were given to the students:

The following statements may be used to describe boys and girls of your age. You are asked to describe yourself by using the letters SA, A, U, D or SD, which follow each statement. Here is what these letters mean:

- SA -- Strongly Agree . . . . "I would strongly agree that this statement describes me".
- A -- Agree . . . . . "I would simply agree that this statement describes me".
- U -- Undecided . . . . . "I am undecided as to whether this statement does or does not describe me".
- D -- Disagree . . . . . "I would disagree with this statement in describing myself".
- SD -- Strongly Disagree. . "I would strongly disagree with this statement in describing myself".

Please draw a circle around SA, A, U, D, or SD, whichever will best describe yourself.

Dominance-Submission Scale (Brown, 1957), Items 2, 5, 7, 8, 10, 11, 14, 16, 17 received reverse scoring.

- 1. I like to tell others what to do . . . . . SA A U D SD
- 2. I am a "follower" in a group.
- 3. I am domineering, I like to control others.
- 4. I give orders .
- 5. I belittle myself, "run myself down" before others.
- 6. I compete with others.
- 7. I seldom talk back.
- 8. I am easily led.
- 9. I am not afraid to say "No" to others.
- 10. I act shy or timid with others.
- 11. I let others "walk all over me."
- 12. I lead in a group without showing fear.
- 13. I want to manage other people.
- 14. I appear meek or humble.
- 15. I act with self-confidence.
- 16. I obey others willingly.
- 17. I usually give in to others.
- 18. I am often giving advice.

Dependence-Proneness Scale (Flanders, Anderson & Amidon, 1961). Items 3, 6, 8, 9, 10, 11, 12, 14, 15, 16, 19, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 36, 37, 39 received reverse scoring.

- 1. I often ask for help from others. . . . . SA A U D SD
- 2. I like to do things with my family.

3. It's fun to try out ideas that others think are crazy.
4. I enjoy working with students who get good marks.
5. Students ought to be allowed to help one another with their school work.
6. I don't need my friends' encouragement when I meet with failure.
7. I never argue with my parents.
8. My parents usually have to ask me twice to do something.
9. I don't like my friends to make a fuss over me when I'm sick.
10. I seldom do "little extra things" at home just to please my parents.
11. I want my friends to leave me alone when I am sad.
12. I often disagree with my parents.
13. I never do anything at home until I find out if it's okay.
14. What others think of me does not bother me.
15. Committee work is a waste of time.
16. I often disagree with what the class decides to do.
17. You should always check to see if your parents approve of your friends.
18. A good friend will never disagree with you.
19. I enjoy studying about things that my parents don't like.
20. I am apt to pass up something I want to do when others think that it isn't worth doing.
21. I don't like to show my friends how much I like them.
22. I like to make my own decisions.
23. My parents make unreasonable rules.
24. Rules are made to be broken.
25. I would rather be left alone when I am in trouble.

26. I would never tell on a student who has done something wrong.
27. It annoys me when my friends tell me their troubles.
28. I dislike lending things to my friends.
29. I don't care whether or not I take home a good report card.
30. I often seem to do things my parents don't like.
31. I don't care if other students say nice things about me.
32. I like to criticize people who are in charge.
33. I try never to disobey my parents.
34. I feel better avoiding a fight than trying to have my own way.
35. I like to follow instructions and to do what is expected of me.
36. My family does not like what I intend to choose for my life work.
37. I often disagree with what the teacher says.
38. In class it is best to go along with the majority even when you disagree.
39. I don't care if others are interested in the same things I am.

Fels Self-rating Scale\* (Lansky, Crandall, Kagan & Baker, 1961) for the assessment of need dependency (items 2, 5, 9, 14, 15, 21, 24, 26), compulsivity (items 1, 7, 12, 16, 22, 27) need aggression (items 3, 10, 13, 17, 19, 25, 29) need hostility (items 4, 6, 8, 11, 18, 20, 23).

\* Items circled received reverse scoring.

1. I tend to do things very slowly and carefully. . . SA A D SD
2. I think security is the most important aspect of a job.
3. When I get mad at somebody, I usually tell them so.
4. I don't mind taking orders.
5. I sometimes rely on my friends for advice.
6. I get irritated or annoyed pretty easily.

7. I can't leave something I've started, until it's finished.
8. Sometimes, I get the impulse to smack somebody.
9. My parents often give me good advice.
10. I usually don't say anything when I'm insulted by somebody.
11. I get mad when someone tells me to hurry with some job.
12. I usually start something without too much planning.
13. I lose my temper pretty easily.
14. Sometimes I prefer to get advice with a problem rather than always decide everything by myself.
15. I tend to believe whatever other people tell me.
16. I tend to get upset when my personal things aren't in order.
17. I like to argue.
18. I think women tend to be too bossy.
19. I am generally impatient with other people.
20. I don't mind having a boss over me.
21. I like my friends to back me up when I fail at something.
22. I'm pretty sloppy around the house.
23. There are times when I get mad that I feel like throwing something.
24. When I have a problem I usually go to somebody for advice.
25. I usually avoid a quarrel or a fight, even when I'm in the right.
26. I usually take my parent's advice on a lot of things.
27. I have a hard time making decisions.
28. I usually do what I'm told or do what's expected of me.

Sears Aggression Scale (1961)\* for the assessment of Antisocial Aggression (items 4, 15, 17, 24, 25, 27, 28, 31, 33)

Aggression Anxiety (items 1, 2, 6, 7, 9, 11, 14, 16, 18, 21, 23, 26)

Prosocial Aggression (items 5, 8, 10, 12, 20, 22, 29, 32)

\* Items circled received reverse scoring - Items 3, 13, 19, and 30 were buffer items (not scored).

1. It makes me uncomfortable to see two of my friends fighting . . . . . SA A U D SD
2. If someone gets hurt in an auto accident, I usually try to get a good view of what happened.
3. When I am hungry, I would like to eat something sweet (like cake) better than something filling (like a meat or peanut butter sandwich).
4. A boxing or wrestling match is more exciting when it's a real grudge fight, and the fighters are really mad at each other.
5. Every club should have a set of definite rules for the members, and someone should be chosen to enforce the rules.
6. It upsets me to think that some thoughtless word or crack of mine might hurt someone's feelings.
7. When I get angry, I usually feel bad afterward.
8. Hitting somebody smaller than you is absolutely never excusable.
9. It makes me nervous to hear a gang of boys arguing even when I'm not involved.
10. Laws against fighting ought to be more strictly enforced.
11. When I get too angry, I'm liable to get in trouble.
12. It is all right for a teacher to criticize or scold someone in front of the class if that person has broken a rule.
13. If I had a chance to play a part in a Hollywood movie, I would enjoy it very much.
14. There are too many horrible crimes described in the newspapers.
15. If an older boy is mean to a younger one, the younger one has a perfect right to get even with him in any way he can, even in some secret or sneaky way.

16. I hate to hear people at a baseball game yelling "Kill the umpire!"
17. It is perfectly natural for boys to want to fight sometimes.
18. I usually don't show it when I get angry, but it leaves me shaking inside afterward.
19. Farming would be a good job because it gives you a chance to watch things grow.
20. When a person has broken an important rule, he should definitely be punished for it.
21. Teachers should be very careful never to let a class discussion get too heated or too personal.
22. Every boy ought to be taught how to box.
23. I like to watch a real man-sized slugging match in a movie or on TV.
24. Sometimes an actual fight is the only way to settle an argument.
25. At school, teachers should never permit any pushing or shoving among the children because someone might get hurt.
26. Arguing nearly always leads to trouble in one way or another.
27. I don't see anything especially wrong about a fight between two gangs of teen-agers; it's their business and adults should keep out of it.
28. There is too much fighting and arguing shown on TV.
29. If a fifth grader starts a fight, he should be punished in some way, no matter why he started it.
30. It is really fun to save money and watch your savings add up.
31. Football would be a better game if you could be sure nobody would get tough and mean.
32. It is all right to hurt someone as a punishment for doing wrong, but that is absolutely the only time one person should ever hurt another.
33. You have to stand up for your rights -- even to the extent of fighting -- if you want to get along in the world.

APPENDIX B:

TEACHER PRESS ASSESSMENT

1. Statement to teacher indicating the purpose for rating student behavior.
2. Directions to teacher for rating the importance of student behavioral characteristics.

To The Teacher:

It is every teacher's experience that some students are easier to work with, or easier to teach, than are others. Some students adapt more successfully to the work objectives of the classroom than do others. While many things (for example, intelligence, attitudes, etc.) contribute to a student's adaptability to the classroom, one noticeable one is his pattern of behavior. While almost any type of behavior "has its place", when it comes to successfully coping with the work requirements of a classroom some forms of behavior are more adaptive or appropriate than are others.

It is the purpose of this questionnaire to obtain a picture of such "adaptive student behavior" by asking teachers to describe the sorts of student actions which in their experience have seemed to enhance the student's adaptation to the classroom. To enable you to do this, would you think first of a student whom you are teaching this year who, in your opinion, behaves in a manner MOST APPROPRIATE for coping with the work requirements of the classroom. Listed on the following pages are thirty categories of behavior which you may use to describe this student. You are asked to rate the student on each of the categories. (Specific directions for rating are given with the category descriptions.)

Next, would you think of a student, again whom you are teaching this year, who, in your opinion, behaves in a manner LEAST APPROPRIATE for coping with the work requirements of the classroom. Please describe this student in terms of the same categories of behavior. (There is no need to name either of these students.)

Finally, would you think of the ideal in terms of adaptive student behavior. In other words, draw on your total teaching experience to present your picture of that student behavior which would be IDEALLY MOST APPROPRIATE for coping with the work requirements of the classroom. Again describe this ideal student with reference to the categories of behavior listed.

TO THE TEACHER:

The thirty categories which have been presented were chosen to cover a broad range of behavior. It is conceivable that some are more important in terms of adaptive classroom behavior than are others. For example, whether a child is obedient or disobedient may have more relevance for adapting to the classroom than whether he is cheerful or sad, or vice versa. Listed below are the thirty category descriptions. Would you please indicate by checking the appropriate box how important you think each type of behavior is in terms of coping with the work requirements of the classroom.

Example:

	Of Very Great Importance	Of Great Importance	Of Some Importance	Of No Importance
1. Obedient- Disobedient	_____	_____	_____	_____

APPENDIX C:

TASK-RELATED PRESS ASSESSMENT

The following general directions were given to the student:

Following are a number of statements which describe the sorts of things which teachers and students do in class. You are to read each statement very carefully and to choose the one alternative, out of those given following each statement, which seems to most accurately describe your teacher and this class.

Please be honest in answering the questions. Your teacher will not see this paper.

The following 30 items assess Permissive Teacher Behavior:

1. Do the pupils usually help plan what the class is going to do? . . . . . Yes No
2. Do you usually have a chance to do the things you like to do?
3. Does your teacher usually let the pupils select their own topic for compositions and speeches?
4. Does your teacher usually let the pupil decide how many arithmetic problems he should work out in order to understand the problems?
5. Does your teacher usually let you pick out an experiment to do in science?
6. If you have trouble working an arithmetic problem, does your teacher usually give you an easier one to work?
7. Do the pupils in this class usually decide when they want to study?
8. Does your teacher want you to select books from the library that you like to read?
9. If a pupil doesn't feel like studying does your teacher usually let him do something else for a while?
10. Does your teacher let the pupils do almost anything they want to do in art?
11. When you write something, does your teacher let you decide if you want to try and write it better?
12. Is it easy to get your teacher to change an assignment?
13. Does your teacher usually let the pupils decide how much work they want to do?
14. When you work arithmetic problems do you have to show all your work?
15. When you write a composition or story does the teacher correct your mistakes and then ask you to rewrite it?
16. Does your teacher make assignments every day?
17. Does your teacher assign the pages to be read in your science book?

18. Does your teacher ask the pupils to write out the answers to the questions in the books they study?
19. Does your teacher assign homework that has to be ready for the next day?
20. Does your teacher tell you what to look for when you go on a field trip?
21. Are almost all the pupils busy most of the time?
22. Does your teacher get you to try things you don't like to do?
23. Does your teacher insist that you try real hard before giving up?
24. Does your teacher push some pupils to try a little harder?
25. If a pupil has trouble with an experiment in science, does your teacher spend a lot of time showing him how to do the experiment?
26. When you write a poem or story does your teacher go over the poem or story with you and make suggestions on how it could be written better?
27. When you give a talk in front of the class, does your teacher ask you to make out an outline or plan the talk ahead of time?
28. Does your teacher assign arithmetic problems to be worked out on paper or in a workbook?
29. If you make a mistake in an arithmetic problem do you rework the problem and show it to your teacher?
30. Does your teacher suggest that you read books on science that are real hard to read?

The following 15 items assess Lecturing vs. Encouragement of broad, expressive student participation (Solomon, 1966). All items have 5 alternatives from which to choose - those being similar to the alternatives listed for item one.

- |                                  |                        |   |
|----------------------------------|------------------------|---|
| 1. Does the teacher ask students | She never does.        | 1 |
| for their personal opinions?     | She rarely does.       | 2 |
|                                  | She occasionally does. | 3 |
|                                  | She often does.        | 4 |
|                                  | She does very often.   | 5 |

2. About how much of the talking in the class is usually done by the teacher?
3. Do students ever make comments to the teacher, without her asking for them?
4. Does the teacher encourage the students to argue, or have heated discussions?
5. Does the teacher listen attentively to student comments and questions?
6. Does the teacher sometimes let the students, in effect, take over the direction of the class?
7. Are there ever discussions between teacher and students, as opposed to mere answers to questions?
8. Does the teacher usually provide the main direction in the class, even when students are participating?
9. Does the teacher ask students for interpretations or explanations about the material in the school subjects?
10. Does the teacher ever ask general questions such as "Are there any Comments?" or "Does anyone have any ideas about this?"
11. Are there ever discussions between students, to which the teacher, for a time, does not contribute?
12. Does the teacher ever ask students to describe experiences which they have had?
13. Does the teacher approve and encourage student comments, even when they turn out to be incorrect?
14. Does the teacher shift back and forth between times when she would do most of the talking, and those in which she would stand back to have the students contribute more?
15. Does the teacher encourage students to express themselves freely and openly?

The following 10 items are from the SPOTS (Tuckman, 1967a, 1967b) and assess Directive--Non-directive Teacher Behavior:

1. Your teacher is mainly interested in . . . . . 1. \_\_\_\_\_
 

1-How many facts you know	2-If she gets an idea across to you	3-Whether you can "think for yourself"
---------------------------	-------------------------------------	----------------------------------------
  
2. The teacher . . . . . 2. \_\_\_\_\_
 

1-Makes you do what she wants you to most of the time	2-Makes you do what she wants you to sometimes	3-Lets you make your own decisions most of the time
-------------------------------------------------------	------------------------------------------------	-----------------------------------------------------
  
3. The students in our class . . . . . 3. \_\_\_\_\_
 

1-Only speak when the teacher asks them a question	2-Feel free to ask the teacher questions	3-Feel free to speak up in class almost any time
----------------------------------------------------	------------------------------------------	--------------------------------------------------
  
4. When the teacher or another student says something you don't agree with . . . . . 4. \_\_\_\_\_
 

1-You try not to start an argument and feel that it's not your job to tell her she's wrong	2-You tell why you disagree when the teacher asks you to	3-You feel free to discuss and argue your point of view whether the teacher asks you or not
--------------------------------------------------------------------------------------------	----------------------------------------------------------	---------------------------------------------------------------------------------------------
  
5. When we are working on a group project or in a committee, the teacher . . . . . 5. \_\_\_\_\_
 

1-Tells us exactly what to do	2-Suggests ways that the project might be handled	3-Lets the group members decide how project should be handled
-------------------------------	---------------------------------------------------	---------------------------------------------------------------
  
6. The teacher usually . . . . . 6. \_\_\_\_\_
 

1-Makes all the students do the same thing in class (working, studying)	2-Makes some students work on projects and some students study, depending on how far behind they are	3-Lets the students do what they like as long as they complete the number of projects or chapters assigned by the end of the week
-------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------

7. When there is work which has to be done with another student we are . . . . . 7.
- 1-Usually told with whom to work      2-Can sometimes choose our own work partner      3-Can usually decide with whom we want to work
8. When you get angry at the teacher . . . . . 8.
- 1-You usually hold it in because the teacher would punish any show of anger      2-You feel that you can tell the teacher why you're angry      3-You feel that you could show your anger without the teacher becoming angry
9. The teacher . . . . . 9.
- 1-Acts like a teacher all of the time      2-Acts like a teacher most of the time but sometimes seems more like a friend      3-Acts like a friend more than she acts like a teacher
10. In our class pupils work together in group or on a committee . . . . . 10.
- 1-Never                              2-Sometimes                              3-A great deal

The following 30 items assess Inclusive or Conjunctive Teacher behavior - as indicated in the blank following each item (Cogan, 1954). There are five alternative responses to each item as shown for item one.

1. The teacher runs a well planned and well organized class. 1.   C    
1-Almost never    2-Few times    3-Sometimes    4-Often    5-Very often
2. When we express our own opinions, the teacher says we are wrong. . . . . 2.   I   (reverse scoring)
3. The teacher requires pupils to do their work neatly. . . . . 3.   C
4. The teacher lets us choose pupils to work with . . . . . 4.   I
5. The teacher has order in class . . . . . 5.   C
6. The teacher encourages us to do our own thinking . . . . . 6.   I
7. The teacher sticks to a plan of work . . . . . 7.   C

8. The teacher has us help each other in class. . . . . 8. I
9. The teacher requires pupils to do work that is correct and  
in good order . . . . . 9. C
10. The teacher gives me work that I think I need . . . . . 10. I
11. The teacher checks to see whether the pupils' class work  
is correct . . . . . 11. C
12. The teacher orders us around rather than asks us to do  
things . . . . . 12. I (reverse  
scoring)
13. The teacher corrects and returns pupils' homework. . . . . 13. C
14. When we start new work in this class, the teacher asks us  
to help in planning it . . . . . 14. I
15. The teacher knows what the pupils are doing and what is  
going on in class . . . . . 15. C
16. The teacher invites us to bring in extra things connected  
with the class work . . . . . 16. I
17. The teacher starts something and then jumps to something  
else . . . . . 17. C (reverse  
scoring)
18. The teacher makes the work interesting for me . . . . . 18. I
19. The teacher has ready the things she needs for the class  
work . . . . . 19. C
20. When we suggest an opinion, the teacher looks at both sides  
and talks it over . . . . . 20. I
21. The teacher gives clear directions during the class work . 21. C
22. The teacher does what she says she is going to do . . . . . 22. C
23. When we start new work, the teacher helps us to see why  
this work is important to all of us . . . . . 23. I  
(reverse  
scoring)
24. The teacher tries to force us to agree with her opinions . 24. I (reverse  
scoring)
25. The teacher requires pupils to be on time in doing  
their work . . . . . 25. C
26. The teacher keeps her classroom neat and clean . . . . . 26. C

27. When we suggest some good new ways of doing things,  
the teacher lets us do them that way. . . . .27. I
28. The teacher sees to it that pupils stay at their work  
until it is finished . . . . .28. C
29. The teacher encourages us to use our own ideas. . . . .29. I
30. When an important point comes up in the class work,  
the teacher has the whole class discuss it. . . . .30. I

APPENDIX D:

Directions from the Peer-Group Press  
Scale - Boys Form. (Parallel directions  
to the student were used for the Girls  
Form.)

To The Student:

This questionnaire is designed to give a picture of the sorts of activities which boys of your age find appropriate for them.

Would each of you think of your friends (the boys of this group and especially the ones whom you know well), and as you read each statement attempt to answer this question: Is this an activity which you and your friends think is appropriate for boys; in other words, is this an activity which boys should do.

Answer mainly in terms of how you think your friends feel about the activity; where you aren't sure how they feel, base your answer on what you think of the activity.

Example:

Do you and your friends think that boys should

1. obey the rules even if there is no chance of being caught ..... SA    A    U    D    SD

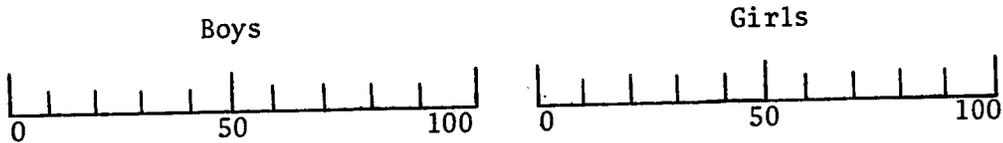
APPENDIX E:

1. Instrument to assess teacher's attitudes towards the classroom behavior of boys and girls (Wisenthal, 1964).
2. Pupil Background Sheet - items 7 and 8 were used for the assessment of occupational status.

As we are all aware, the attitudes that children bring to school exert some considerable influence on their social behavior and on their willingness to learn. A study is being undertaken to see if there are measureable differences in the attitudes of boys and girls to schools and teachers. It is believed that a more realistic appraisal of attitudes can be made by teachers, who have an intimate knowledge of children's school behaviour, than by the boys and girls themselves.

To complete the attached form objectively it is necessary that you consider your total teaching experience. Think of a group of 100 boys and 100 girls, and estimate the number of each that would show the characteristic stated. For example, item number one appears as follows:-

1. Anxious to please the teacher



If, in your experience, nearly all the girls have appeared anxious to please the teacher and only a small number of boys have shown the same trait, then you should place a check mark at 90, or 100 for girls, and a check mark at 10, or 20 for boys. Please make sure that each item is checked twice, once for boys and once for girls.

Your name .....

Number of boys in class ..... number of girls .....

Your co-operation is very much appreciated.

Thank you.

The following twenty classroom behaviors are included in the Wisenthal instrument:

1. Anxious to please the teacher .....
2. Annoy the teacher .....
3. Lazy about doing school work .....
4. Dislike school .....
5. Inattentive to lessons .....
6. Think teacher unfriendly .....
7. Take pride in school work .....
8. Stubborn .....
9. Like to help the teacher .....
10. Will not persevere .....
11. Appear to dislike teacher .....
12. Disrupting of class routine .....
13. Careless in work habits .....
14. Appear anxious to learn .....
15. Indifferent to teacher .....
16. Polite .....
17. Rude .....
18. Disobedient .....
19. Co-operative in class projects .....
20. Considerate of teacher .....



#### APPENDIX F:

1. Matrix of intercorrelations of 31 personality variables plus sex (pilot study data).
2. Matrix of correlations of 31 personality variables plus sex (as listed under 1) with the following nine teacher-rating variables (pilot study data):
  1. Compliance with routine
  2. Independence of adult affection or attention
  3. Respect for property rights
  4. Response to authority
  5. Ascendance - submission
  6. Conformity
  7. Patience
  8. Aggressiveness
  9. Obedience

INTERCORRELATIONS OF 31 PERSONALITY VARIABLES PLUS SEX (PILOT STUDY DATA)

Variable No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31					
1. CRQ - D	1.00																																			
2. CRQ - E	.57	1.00																																		
3. CRQ - F	.40	.72	1.00																																	
4. CRQ - G	.53	.42	.25	1.00																																
5. CRQ - H	.32	.11	.10	.21	1.00																															
6. CRQ - I	.48	.73	.60	.42	.03	1.00																														
7. CRQ - J	.53	.08	.61	.53	.43	.26	1.00																													
8. CRQ - K	.26	.06	.10	.06	.46	.26	.05	1.00																												
9. CRQ - L	.58	.58	.44	.72	.08	.26	.05	.09	1.00																											
10. AI Abatement	.25	.17	.16	.07	.01	.10	.00	.14	.01	1.00																										
11. AI Axiolation	.19	.11	.16	.16	.01	.01	.00	.01	.01	.08	1.00																									
12. AI Aggression	.49	.48	.42	.32	.17	.53	.40	.01	.01	.08	.09	1.00																								
13. AI Conquintivity	.16	.30	.00	.25	.04	.03	.01	.01	.23	.12	.24	.24	1.00																							
14. AI Deference	.14	.38	.25	.21	.08	.34	.26	.02	.33	.01	.20	.19	.25	1.00																						
15. AI Exhibitionism	.04	.08	.05	.02	.11	.01	.09	.10	.06	.01	.20	.19	.05	.11	1.00																					
16. AI Impulsiveness	.30	.15	.16	.10	.03	.19	.43	.06	.22	.19	.04	.15	.25	.26	.12	1.00																				
17. AI Order	.54	.36	.24	.10	.22	.27	.15	.22	.58	.07	.13	.47	.32	.27	.29	.19	1.00																			
18. AI Dominance	.32	.29	.19	.21	.05	.22	.20	.16	.28	.00	.16	.05	.11	.39	.21	.17	.20	1.00																		
19. AI Dependency	.31	.36	.23	.11	.20	.27	.07	.12	.24	.25	.12	.11	.11	.24	.04	.01	.24	.16	1.00																	
20. Felt n Dependency	.02	.03	.01	.13	.01	.01	.29	.19	.36	.19	.17	.12	.11	.24	.01	.19	.16	.34	.16	1.00																
21. Felt Compulsivity	.15	.34	.29	.08	.06	.27	.33	.07	.40	.17	.14	.21	.17	.22	.07	.28	.42	.51	.08	.68	1.00															
22. Felt n Aggression	.43	.32	.43	.28	.01	.41	.37	.07	.09	.05	.23	.06	.08	.37	.04	.28	.48	.26	.26	.09	.09	1.00														
23. Felt n Hostility	.50	.25	.36	.36	.15	.24	.46	.06	.31	.06	.13	.43	.07	.43	.07	.48	.29	.21	.21	.21	.21	.32	1.00													
24. Felt n Acceptance	.11	.19	.05	.08	.01	.03	.02	.07	.09	.03	.03	.34	.10	.23	.01	.08	.08	.08	.08	.08	.08	.10	.12	1.00												
25. Aggression Avg.	.30	.58	.16	.14	.18	.19	.23	.19	.37	.08	.10	.19	.00	.30	.05	.17	.16	.16	.16	.16	.16	.16	.16	.15	1.00											
26. Antisocial Avg.	.20	.33	.16	.14	.18	.19	.23	.19	.37	.08	.10	.19	.00	.30	.05	.17	.16	.16	.16	.16	.16	.16	.16	.15	.20	1.00										
27. Prosocial Avg.	.27	.21	.23	.18	.15	.28	.24	.24	.24	.24	.24	.24	.24	.24	.24	.24	.24	.24	.24	.24	.24	.24	.24	.24	.24	.24	.24	1.00								
28. Expressed Control	.27	.31	.17	.12	.13	.13	.13	.13	.13	.13	.13	.13	.13	.13	.13	.13	.13	.13	.13	.13	.13	.13	.13	.13	.13	.13	.13	.13	1.00							
29. Wanted Control	.19	.39	.30	.29	.11	.07	.26	.01	.32	.04	.24	.12	.12	.12	.12	.12	.12	.12	.12	.12	.12	.12	.12	.12	.12	.12	.12	.12	1.00							
30. B. Dominance	.36	.32	.12	.29	.11	.30	.19	.02	.14	.10	.04	.16	.20	.16	.30	.17	.13	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	1.00						
31. Dependence Pron.	.36	.32	.12	.29	.11	.30	.19	.02	.14	.10	.04	.16	.20	.16	.30	.17	.13	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	1.00					
32. Sex (Male High)	.72	.61	.61	.65	.06	.75	.53	.03	.60	.12	.14	.38	.04	.04	.06	.26	.43	.22	.26	.29	.25	.35	.22	.03	.08	.08	.08	.08	.08	.08	.08	.08	.08	.08	.08	.08

## CORRELATIONS BETWEEN 31 PERSONALITY VARIABLES PLUS

## SEX AND NINE TEACHER-RATING VARIABLES, PILOT STUDY SAMPLE

Variable No.	1	2	3	4	5	6	7	8	9	10	11
1.	-.25	-.57	-.46	.27	.06	.51	-.34	-.14	.39	-.07	.15
2.	.01	.24	.24	-.13	.06	-.24	.13	.06	-.06	-.08	.33
3.	-.07	-.33	-.35	.09	-.32	.35	-.31	-.09	.20	-.23	.38
4.	-.35	-.47	-.35	.44	.04	.37	-.34	-.12	.40	.00	.24
5.	.40	.23	.36	-.17	-.04	-.37	.20	.00	-.31	.03	-.09
6.	-.14	-.33	-.27	.24	-.18	.37	-.34	-.12	.24	-.19	.07
7.	-.17	-.29	-.21	.25	-.02	.36	-.19	.08	.16	-.12	.05
8.	.29	.10	.08	-.21	.09	-.16	.09	-.19	-.15	.12	.10
9.	-.26	-.28	-.28	.27	-.12	.39	-.24	-.01	.23	-.09	.18

Variable No.	12	13	14	15	16	17	18	19	20	21	22
1.	-.37	.03	.41	-.03	-.18	.17	.29	-.24	.16	.46	-.30
2.	.07	-.13	-.03	.05	.09	-.04	.08	.39	.12	.05	.11
3.	-.16	.12	.41	-.10	-.31	.18	.32	.05	.41	.38	-.11
4.	-.29	.07	.31	.00	-.13	.25	.18	-.16	.12	.27	-.19
5.	.37	-.23	-.23	-.10	.14	-.38	-.06	.20	-.03	-.27	.30
6.	-.40	.07	.44	-.19	-.30	.11	.27	-.14	.18	.27	-.21
7.	-.39	.09	.33	.05	-.12	.05	.39	-.04	.17	.15	-.49
8.	.38	-.16	-.30	.03	.19	-.27	-.30	.21	-.16	-.16	.34
9.	-.34	.08	.33	-.05	-.17	.10	.32	-.14	.30	.29	-.31

Variable No.	23	24	25	26	27	28	29	30	31	32
1.	-.02	.16	.49	-.03	.28	-.46	-.03	-.21	.41	-.56
2.	.08	.02	-.19	.35	-.01	.00	.00	.12	.08	.20
3.	-.02	.25	.40	-.06	.20	-.18	-.08	-.31	.34	-.41
4.	-.13	.06	.50	-.01	.37	-.44	-.14	-.22	.35	-.36
5.	.32	.36	-.15	.19	-.14	.07	-.01	.23	-.23	.32
6.	-.11	.03	.56	-.06	.41	-.35	-.02	-.10	.22	-.26
7.	-.16	.20	.38	.09	.10	-.24	-.13	.08	.29	-.13
8.	.26	-.03	-.23	.10	-.18	.33	-.19	.22	-.19	.02
9.	-.11	.05	.42	.01	.13	-.40	-.08	-.26	.48	-.26

APPENDIX G:

1. Matrix of intercorrelations of 23 personality variables plus sex (main study data).
2. Squared multiple correlation coefficients accompanying multiple regression analyses to examine the significance of the relationship between sex and school achievement when other variables are held constant.

INTERCORRELATIONS OF 23 PERSONALITY VARIABLES PLUS SEX (MAIN STUDY DATA)

Variable No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1. CPQ - D	1.00																						
2. CPQ - E	.20	1.00																					
3. CPQ - F	.01	.63	1.00																				
4. CPQ - G	-.29	-.15	-.25	1.00																			
5. CPQ - I	.10	-.59	-.62	.44	1.00																		
6. CPQ - M	.38	-.53	.34	-.56	-.44	1.00																	
7. CPQ - Q <sub>3</sub>	-.43	-.43	-.19	.59	.33	-.67	1.00																
8. Fels n Dependency	.00	-.01	.05	.16	-.11	-.11	.05	1.00															
9. Fels Compulsivity	-.27	-.05	.05	.16	-.02	-.11	.18	.15	1.00														
10. Fels n Aggression	.49	.27	.28	-.20	-.05	.36	-.27	-.02	-.19	1.00													
11. Fels n Hostility	.47	.33	.26	-.30	-.18	.39	-.43	-.02	-.19	.56	1.00												
12. AI Abasement	-.19	-.19	-.06	.21	.14	-.37	.36	-.05	-.20	.48	-.32	1.00											
13. AI Aggression	.38	.51	.46	-.46	-.35	.50	-.52	-.05	-.20	.48	.57	-.27	1.00										
14. AI Conjunction	-.27	-.24	-.12	.40	-.02	-.34	.30	.25	.12	-.30	-.24	.20	-.33	1.00									
15. AI Deference	-.29	-.25	-.08	.45	.11	-.45	.42	.36	.15	-.35	-.41	.44	-.48	.11	1.00								
16. AI Order	-.27	-.46	-.36	.45	.36	-.49	.53	.12	.24	-.39	-.40	.35	-.59	.34	.23	1.00							
17. AI Dependency	-.12	-.15	-.12	.28	.08	-.20	.13	.44	.15	-.20	-.17	.29	-.23	.23	.33	.28	1.00						
18. AI Dominance	.40	.39	.27	-.17	-.17	.25	-.32	.13	-.19	.45	.39	-.27	.42	.10	.25	.28	.09	1.00					
19. Antisocial Agg.	.13	.36	.33	-.27	-.40	.30	-.22	-.07	-.18	.21	.33	-.18	.38	.02	-.26	-.23	-.10	.18	1.00				
20. Prosocial Agg.	-.05	-.46	-.33	.37	.14	-.39	.28	.11	.18	-.14	-.23	.27	-.44	.06	.28	.26	.23	-.19	-.57	1.00			
21. B. Dominance	-.16	-.28	-.14	.36	.23	-.31	.39	.13	.16	-.19	-.31	.27	-.36	.17	.28	.25	.22	-.18	-.28	.41	1.00		
22. Dependence Prone.	.27	.51	.32	-.20	-.24	.31	-.31	.13	-.10	.43	.38	-.23	.50	-.14	-.24	-.38	-.10	.50	.26	-.28	-.17	1.00	
23. Sex (Male High)	-.25	-.44	-.21	.51	.33	-.56	.51	.27	.30	-.30	-.42	.29	-.47	.44	.41	.42	.31	-.19	-.33	.30	.39	-.28	1.00
	-.06	.46	.68	-.24	-.62	.37	-.25	-.03	.06	.07	.16	-.19	.31	.05	.03	-.22	-.12	.27	.27	-.39	-.14	-.22	-.25

SQUARED MULTIPLE CORRELATION COEFFICIENTS ACCOMPANYING MULTIPLE REGRESSION ANALYSES TO DETERMINE CONTRIBUTION OF SEX TO ACHIEVEMENT VARIANCE WITH OTHER VARIABLES HELD CONSTANT\*

Achievement Indices	Sex alone or variables held constant												
	Alone (r between sex & ach.)	Intelligence		Acceptance of Control		Dominance		Carefree Self-reliance		Dependency		Prosocial Aggression	
		$R_f^2$	$R_r^2$	$R_f^2$	$R_r^2$	$R_f^2$	$R_r^2$	$R_f^2$	$R_r^2$	$R_f^2$	$R_r^2$	$R_f^2$	$R_r^2$
Oral Reading	-.32	.43	.36	.45	.39	.42	.48	.45	.41	.45	.39	.50	.45
Oral Language	-.23	.29	.26	.35	.32	.31	.34	.37	.36	.33	.29	.35	.33
Written Language	-.31	.40	.33	.45	.38	.35	.42	.45	.35	.42	.36	.45	.36
Spelling	-.27	.26	.21	.31	.26	.28	.35	.31	.25	.30	.25	.34	.28
Social Studies-Notebook	-.42	.29	.14	.31	.15	.14	.29	.32	.21	.33	.20	.37	.22
Health	-.20	.26	.24	.32	.29	.28	.30	.29	.28	.30	.20	.34	.32
Writing	-.41	.27	.13	.34	.23	.18	.30	.38	.23	.32	.18	.33	.18
Total Reading	-.21	.48	.45	.48	.46	.51	.55	.50	.47	.48	.46	.51	.49
Total Language	-.32	.47	.40	.49	.42	.44	.51	.52	.45	.48	.41	.52	.45
Total Social Studies	-.31	.34	.27	.37	.28	.28	.35	.36	.31	.37	.30	.38	.30
Total Teacher Assigned Grades	-.24	.53	.50	.54	.50	.54	.57	.54	.50	.53	.50	.55	.52
CTBS- Spelling	-.21	.28	.26	.29	.26	.28	.30	.35	.31	.32	.28	.36	.33
CTBS- Capitalization	-.25	.38	.34	.40	.36	.38	.42	.41	.36	.40	.35	.41	.37
CTBS- Punctuation	-.21	.39	.36	.46	.42	.42	.40	.43	.39	.45	.42	.41	.38
CTBS- Usage	-.20	.49	.47	.52	.51	.51	.52	.51	.49	.51	.49	.51	.49
CTBS- Total	-.25	.51	.47	.53	.49	.50	.53	.56	.51	.53	.49	.53	.50

\*  $R_f^2$  represents the squared multiple correlation for the full model, and  $R_r^2$  the squared multiple correlation for the restricted model.