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THE ETIOLOGY OF SELF ESTEEM IN CHILDHOOD AND ADOLESCENCE

by
Joseph James Sparling

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Abstract

THE ETIOLOGY OF SELF ESTEEM IN
CHILDHOOD AND ADOLESCENCE

by Joseph James Sparling

In two individuals, an apparently similar global feeling of self esteem may be based on two very different combinations of strengths and weaknesses. It is the purpose of this study to suggest what some of these combinations of characteristics are and to thereby differentiate levels of self esteem which are similar on the surface but which have differing histories.

For the present investigation 135 children are selected from those originally studied by Ketcham and Morse in Cooperative Research Project 1286. These students are from the University School, The University of Michigan, Ann Arbor. Their grade placement range is from third to eleventh grade. Fifteen children per cell are assigned in a 3 x 3 factorial design. Self esteem (Coopersmith) and academic achievement (Educational Age) are the two factors in the research design. Twenty-six personal, social, growth, and intellectual variables are explored through techniques of intercorrelation, two-way analysis of variance, and multiple regression. In addition, longitudinal achievement histories are examined for selected students, and data are simulated for selected variables.

Two groups of variables are notable for their lack of significant differences. These are the variables which measure Needs and the variables which measure perceptions of the Learning Environment.

Variables which exhibit statistically significant differences (.05 or .01 level) associated with self esteem are these:

Flexibility (of social climate)	Absence of School Anxiety
Acceptance Received	Mental Health Index
Social Climate Index	Chronological Age

Variables which exhibit statistically significant differences associated with academic achievement are the following:

Mental Health Index	PMA IQ and Individual IQ
Self Norms	Organismic Quotient

Individual IQ is the only variable which exhibits an effect related to the interaction of self esteem and academic achievement.

The multiple regression technique reveals that prediction of academic achievement for children exhibiting low self esteem

is probably best accomplished in a different manner from across-the-board prediction. The effect of segregation of students into self esteem groups shows promise of improving the usefulness of Personal-Social variables in prediction and should be studied further.

Through data simulation, specific information is gained on which to base expectations for future experiments aimed at improving self esteem.

A broad hypothesis is generated which provides explanations for observed differences in self esteem. The hypothesis suggests that many factors interact through time to progressively produce more and more patterns or types of self esteem. Nine types of self esteem (each associated with a particular level of academic achievement) are postulated.

Low Self Esteem:	Self-deprecated Type
	Rejected Type
	Dissonant Type
Average Self Esteem:	Cool Type
	Average Type
	Detached Type
High Self Esteem:	Self-satisfied A Type
	Self-satisfied B Type
	Hopeful Type

Four stages in the development of these differentiations are described and diagramatically presented.

Finally, the possibility of academic improvement or remediation for students with the Dissonant Type of low self esteem is predicted. A list of eight characteristics associated with the Dissonant Type is presented. These characteristics might be used to identify individuals of this Type through the computer search technique.

ACKNOWLEDGEMENTS

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Professor M. Clemens Johnson provided many hours of assistance on the theoretical and technical aspects of the research. These discussions gave me a unique opportunity to test and extend my skills in the area of computer-based data analysis.

My wife, Marilyn Claire Sparling, made an essential contribution to this thesis. Not only did she provide the clerical services of typing and keypunching, she intelligently discussed the contents of the project throughout its duration.

Finally, I wish to thank my committee members for allowing and encouraging me to undertake a study of the exploratory type. Along with the usual frustrations, the research experience provided unusual rewards.

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CHAPTER I

INTRODUCTION

A persistent theme running through the literature of mental health is the importance of various qualities of the self. One of these qualities is self esteem. This investigation attempts to contribute to the long process of clarifying and describing self esteem as it develops in children.

The need for more adequate understanding is pointed out by Ruth Wylie. After describing research on the self for 317 pages, Wylie concludes, "On the whole, we have found that there are enough positive trends to be tantalizing. On the other hand, there is a good deal of ambiguity in the results, considerable apparent contradiction among the findings of various studies, and a tendency for different methods to produce different results. In short, the total accumulation of substantive findings is disappointing, especially in proportion to the amount of effort which obviously has been expended" (Wylie, 1961, p. 317).

Statement of the Problem

Some of the ambiguity reported by Wylie may be due to the tendency of researchers to represent variables such as self esteem on a linear continuum. This device forces the experimenter into the habit of thinking of any one point or range on

the continuum as representing a unitary self-esteem condition—of thinking, for example, that high self esteem is high self esteem, period. Using the linear approach researchers have tried, with mixed results, to associate high self esteem with high academic achievement. The weakness of the linear approach may be due to the existence of a variety of types of high self esteem, and to the fact that the linear continuum lumps these types into a single range. If so, one would expect this lumping to artificially produce too much within-group variance for effective research.

The present investigation attempts to overcome this difficulty through the use of a two-dimensional approach to the study of self esteem. In addition to the typical self-esteem dimension, an academic achievement dimension is introduced. In other words, an individual's level of self esteem is not considered to be completely described until the individual's level of academic achievement is specified. In this way, a two-dimensional continuum is created.

It is expected that the present approach will yield new insights regarding groups which are often eclipsed by other methods. Children who simultaneously display high academic achievement and low self esteem are members of one such neglected group. It is further expected that this approach, by more fully describing a variety of types of self esteem, will be productive of hypotheses relating to the etiology of self esteem.

Self Esteem in Theory

Self esteem, as studied here, expresses "...the judgement that in balance the self is 'good,' capable, and strong" (Jahoda, 1958, p. 24). The term balance is important in this definition. It suggests that if the self is good, capable, and strong at enough points, a positive feeling may pervade all aspects of the self concept. It is this global view of the self that is specified in the term "self esteem."

From this definition, it can be inferred that in two individuals, an apparently similar global feeling of self esteem may be based on two very different combinations of strengths and weaknesses. It is the purpose of this study to suggest what some of these combinations of characteristics are and to thereby differentiate levels of self esteem which are similar on the surface but which have differing histories.

In the present study, the measurement of self esteem depends on the accessibility of the self to consciousness. Theoretical support for such accessibility is given by Gordon Allport (1955, pp. 51-54) who describes the "knowing function" of the self. Continual self-consciousness is not suggested here, but rather the accessibility of the self to consciousness when needed.

Review of the Literature

Many researchers have asked whether or not groups of students with high academic achievement have higher self esteem than groups of students with low academic achievement. Some

investigators have found such a relationship; some have not. The present investigation assumes that this type of question depends upon a linear approach and is inadequate to the task of fully understanding self esteem. However, since most of our present information has come from studies of the linear type, several representative studies of this type are summarized here.

The Relationship between Self Esteem and Academic Achievement

Using data gathered from fourth-, fifth, and sixth-grade students, Campbell (1967) found a positive relationship ($r = .308$) between self esteem and achievement scores. He found that the relationship decreased at progressively higher grade levels, that the relationship was higher for boys than for girls, and that the mean school-related self-concept score was different in value for girls and boys, with girls receiving higher scores.

On the other hand, Campbell found that a hypothesis of differing degrees of relationship between self esteem and achievement for high, middle, and low intelligence groupings was not supported. In addition, "The function of the Coopersmith Self-Esteem Inventory scores as contributors to prediction of Achievement (Iowa Composite) scores was examined. Multiple regression techniques, with intelligence quotients comprising the second independent variable, were utilized. Such use is not considered worthwhile on the basis of this analysis because the contribution of self-concept to prediction is too small" (Campbell, 1967, p. 512). Studies by Bledsoe (1964) and

Miller (1963) also revealed a positive relationship between self concept and academic achievement.

In contrast, Nemeroff (1964) found no significant correlation between self concept and academic achievement or self concept and intelligence. The subjects for the study were 229 eighth-grade public school children from a suburb of New York City. Data gathering instruments included Bill's Index of Adjustment and Values for self concept and self acceptance, the Science Research Associates Achievement Series for academic achievement, and the California Short-Form Test of Mental Maturity for intelligence.

In Cooperative Research Project 1286, Ketcham and Morse (1965) identified and measured a wide range of social and psychological variables related to the child's life at school. They concluded that a strong relationship between the personal-social variables measured and academic achievement does not exist. Clearing the air of any suspected relationship they stated, "A child predisposed to marginal academic achievement by virtue of comparatively poor organismic endowments need not at the same time be predisposed to a distorted and debilitating relationship with himself, his peers, his teacher and his classroom environment" (Ketcham & Morse, 1965, p. 199). This conclusion focuses attention on personal-social development as a significant, independent aspect of the educational process which deserves and demands attention on its own merits. Ketcham and Morse suggest the educational goal of raising the level and reducing the variability of personal-social development.

The Nature of Self Esteem: Accessibility to Consciousness

Self-report is typically used to measure self esteem and was used in the present study. The following paragraphs summarize some of the studies which have been concerned with self knowledge.

Coopersmith (1959), studying 102 fifth- and sixth-grade boys and girls, found that accuracy of self estimate was related to several other indices of good adjustment. This relation, however, was affected by whether the self concept was high and accurate, or low and accurate, the former situation being more apt to accompany good adjustment. For example, self-deprecating children who were rated by their teachers as successful were found to be popular with their peers and academically successful, yet very self critical.

Borislow (1965) studied the importance of self evaluation as a nonintellectual factor in academic achievement. Data were collected on 197 college students from a freshman class of 361 students at The University of Pennsylvania. The students filled out a presemester and a postsemester questionnaire designed to yield indices of both general and student self evaluation. Borislow found that whether or not academic achievement was a prime goal, the students who underachieved scholastically could not be recognized from those who did achieve scholastically on the basis of general self evaluation before or after their first semester in college. He also noted that "where scholastic achievement is a prime goal, where the student

has a good conception of himself as a student, and where he does achieve scholastically, his general self-evaluation becomes more favorable from pre- to postsemester assessments" (Borislow, 1965, p. 474).

McCandless (1961), in referring to his own research and the research of others, makes the following observations: children and adults with poor self concepts, when compared with those who had more positive self concepts, were more anxious and generally less well-adjusted, were less popular, were less effective in groups, and were more defensive and less honest about themselves.

The Nature of Self Esteem: Changes Over Time

A number of studies have been concerned with changes in self esteem over time. These studies are of particular relevance to the present project which attempts to produce hypotheses regarding the histories of various types of self esteem.

Morse (1964) collected data from over 600 pupils in a metropolitan area containing children from all strata of society. These students were in alternate grades from the third through the eleventh. Two tests were used: the Osgood Semantic Differential and the Coopersmith Self-Esteem Inventory. In both tests, and on all parts, the response of the third grade was significantly higher than the other grades. A sharp decrease was observed from grades three to five, with overall self regard recovering a little by grade eleven.

Morse concluded that "for the young child school is a

secure, supporting place with regard to his mental health but as he grows older confidence diminishes and school self-regard decreases" (Morse, 1964, p. 198).

Two other researchers also produced evidence indicating that self regard decreases as grade level increases. Using 675 junior-senior high school students, Pannes (1963) found that the higher the grade level, the more open the mind and the less favorable the self image. Data collected by Wickersham (1964) showed that third graders had more positive self perceptions than sixth graders.

Another study (Bowman, 1963), however, indicated that elementary students improved in self concept over a two-year period. The self concepts, ideal self concepts, interests, and self descriptions of sixth- and eighth-grade students were measured. These data were then compared with similar measures taken when the same students were in the fourth and sixth grades. Other findings showed that girls had higher mean self concepts than boys in all instances, and that boys were more variable than girls in all instances. Similarities in self descriptions over a two-year period outweighed differences. This was taken as an indication that there might be certain self perceptions which tend to remain constant over the years.

Using ninth-grade students who were below the mean grade-point average, a team of researchers (Brookover, LePere, Hamachek, Thomas, & Erickson, 1964) experimented with three techniques for self-concept enhancement: 1) by encouraging parents to communicate high achievement expectations to their children,

2) by communicating high evaluations and expectations through an outside expert, and 3) by communicating high evlauations and expectations through the regular school counselor. Of the various experimental and control groups, only the group using parents for self-concept enhancement experienced a significant increase in self concept of ability and in grade-point average. (The other groups did not increase in self concept of ability or in grade-point average.) It was concluded that an already established "significant other" was the most effective agent for self-concept enhancement, and further that self concept of ability could act as a functionally limiting variable for low-achieving students.

One study of unusual interest (Eubank, 1962) compared students who had high self concepts in the face of much negative influence and students who had low self concepts in the face of much positive influence. The sample consisted of 20 fourth-grade and 20 sixth-grade pupils in a public school system in Georgia. Data gathering instruments included the Bills-Lipsitt Self-Concept Scale and nationally standardized achievement and intelligence tests. No significant differences were found between the means of intelligence and achievement scores for high and low self-concept students. The rank of the child in the family, however, had a significant relationship to the child's self concept. The greater concentration of low self-concept students in the "oldest" category contrasted directly with the concentration of high self-concept students in the "youngest" category. It was concluded that low

self-concept students were more mature than high self-concept students, and that the former revealed a sense of humility which seemed to make them more acceptable to adults.

Summary of the Literature

Published research provides the following guides for the present investigation:

1. The relationship of self esteem and academic achievement remains unsettled.
2. The use of the concept of the accessibility of the self to consciousness is considered useful and finds strong support in theory and moderate support in research.
3. There is evidence of change in self esteem (especially downward) during childhood and adolescence which suggests that the etiology of self esteem should provide a fertile field of study.

CHAPTER II

RESEARCH DESIGN

The ambiguity of the literature on self esteem suggests the need for a more productive orientation to the field—the need for new hypotheses. In the present investigation, the data were approached in an exploratory manner through a two-dimensional design and through a set of general hypotheses. This exploratory approach had as its major purpose the uncovering of clues which could be used to generate a new, and hopefully more useful, set of hypotheses.

Research Background

In their three-year study Ketcham and Morse (1965) identified and measured a wide range of social and psychological variables related to the child's life at school. These investigators were interested in social and psychological development as it related to academic achievement. One of their aims was to provide new tools with which a teacher could do systematic classroom analysis. Ketcham and Morse concluded that a strong relationship between the personal-social variables and academic achievement does not exist. It was this result that led to the present research.

The absence of a significant relationship between self esteem and academic achievement suggested that esteem-achievement

combinations of all types ought to exist. A combination of high self esteem and low achievement ought to be as common as low self esteem and low achievement. Are these combinations the results of two different methods of coping with or adjusting to the same situation, or are the life situations of these two groups distinct and different? Are several distinct types of low self esteem with differing etiologies possible?

It appeared that we might be one step nearer answering questions of this type if a descriptive and exploratory study of such groups were undertaken.

Research Procedure

For the present investigation 135 children were selected from those originally studied by Ketcham and Morse. These students were from the University School, The University of Michigan, Ann Arbor, Michigan. Their grade placement range was from third to eleventh grade. Fifteen children per cell were selected according to the design presented in Table 1.

Throughout this report, the identifying number entered in the upper left hand corner of each cell in Table 1 will be used. Thus, Cell 1 or Cell 5 will be referred to. A pair of letters has also been assigned to each cell in Table 1. These letters will be used in parentheses to help the reader recall the characteristics of a cell which is being referred to by its identifying number. Thus, Cell 1 (the hL group) will be referred to. The lower case letter will always refer to the level of academic achievement, and the upper case letter will

always refer to the level of self esteem.

TABLE 1

RESEARCH DESIGN

Achievement	Self Esteem: LOW	AVERAGE	HIGH
high	1 hL	2 hA	3 hH
average	4 aL	5 aA	6 aH
low	7 lL	8 lA	9 lH

n = 15 N = 135

Even with this detailed mnemonic notation, the reader will probably wish to refer to Table 1 at several points in the report. For convenient use, this table is re-entered on page 47.

In the research design, low self esteem was defined as a standard score of 90 or below on the Coopersmith Self-Esteem Inventory. High self esteem included standard scores of 120 and over, and average self esteem covered the range between the two cutoff points. These asymmetrical cutoff points were used to compensate for a slight positive skew in the self-esteem distribution.

It was desired that levels of academic achievement be derived from something more than an abstract score which might

have had little or no relationship to the student's perception of himself. On this basis, a single criterion applied to all grade levels for all three years was rejected. Furthermore, a single criterion would have biased the sample toward older students. (It had been shown by Ketcham and Morse (1965, p. 188) that this population, like most, exhibited generally increasing variance with higher grade levels.) In order to create achievement levels which would reflect the experience of "being at the top of the class," a sliding criterion was used. The cutoff scores for high and low achievement were defined as an Educational Age score one standard deviation above or below the grade-level mean. These grade-level means were determined separately for each of the three years in which testing occurred.

Once the boundaries of the nine cells were determined, all potential members of each cell were identified. Since Cell 1 had only 15 potential members, that number was chosen as the cell size. Using a computer-generated random numbers list, a stratified sample with 15 members was drawn for each cell.

Since the sampling procedure employed stratification according to sex, the figures in Table 2 are proportional to the total potential membership of each cell. The reader should keep in mind, however, that the potential membership of the nine cells varies greatly. Since academic achievement and self esteem are for the most part normally distributed, the potential cell memberships (the base rates) are roughly as shown in Figure 1.

TABLE 2

MALE-FEMALE DISTRIBUTION IN THE RESEARCH DESIGN

Achievement	Self Esteem: LOW	AVERAGE	HIGH
high	1 2 M 13 F	2 5 M 10 F	3 3 M 12 F
average	4 6 M 9 F	5 8 M 7 F	6 9 M 6 F
low	7 8 M 7 F	8 11 M 4 F	9 14 M 1 F

N (Male) = 66 N (Female) = 69 N (Total) = 135

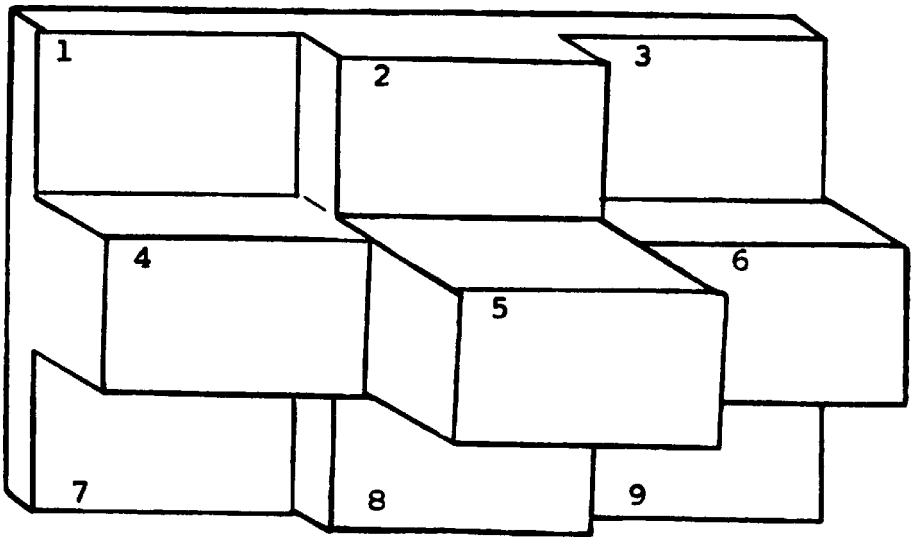


Fig. 1. Base Rates.

These base rates should be employed when drawing inferences from Table 2. For example, the proportional representation of girls in Cells 1, 4, and 7 might lead to the conclusion that a girl exhibiting low self esteem is most likely to be a high achiever or a member of Cell 1. However, when the base rates are taken into account, it is clear that a girl with low self esteem is most likely to be an average achiever or a member of Cell 4.

Variables Studied

The data used in this investigation were gathered for use in Cooperative Research Project 1286 (Ketcham & Morse, 1965). These data were chosen because of the number and variety of variables available which had not been analyzed in the manner proposed in this project. Detailed school records were available on most of the students.

Ketcham and Morse gathered data on learning, social climate, and mental health by means of a questionnaire which was constructed for their project and standardized in a large city school system. Self esteem was measured with two instruments: the Osgood Semantic Differential, and the Coopersmith Self-Esteem Inventory. A card sort entitled My Opinions was developed and was used to measure student needs. A factor analysis of the data gathered with these instruments was used to isolate and define the variables. Data on students' growth, maturation, and academic achievement were secured from the University School records.

For the current investigation all the data mentioned above were again employed. Only two changes were made. Since various age levels were being studied simultaneously, measures of growth such as Educational Age and Organismic Age could not be used. These were converted into Educational Quotient and Organismic Quotient.

Additionally, Chronological Age (in months) and Sex were included as variables under study. The numerical values male = 1 and female = 2 were assigned. Consequently, positive correlations of other variables with the variable Sex indicated higher performance by girls, and negative correlations indicated higher performance by boys.

The variables used in this study and defined largely in Project 1286 (Ketcham & Morse, 1965, pp. 224-228) were as follows:

Personal-Social Domain

1. Motivation:
   Interest and involvement in classroom activities, liking for the work and classroom

2. Teacher as Learning Facilitator:
   Teacher gives attention to you, motivates, keeps you on right track, keeps good order

3. Conventional Learning:
   Memorization and convergent thinking required in classroom learning

4. Complementary Learning:
   Utilization, innovation and divergency required in classroom learning

5. Learning Index:
   Comprised of 1, 2, 3, 4 above

6. Flexibility:
   High flexibility indicates individual choice of activities, and pace of work

7. Generally Accepting Social Climate:
   Class interpersonal support, friendliness

8. Acceptance Given:
   Total acceptance and liking given to all other pupils in classroom

9. Acceptance Received:
   Total acceptance and liking received from all other pupils in classroom

10. Social Climate Index:
    Total of 6, 7, 8, 9 above

11. Absence of School Anxiety:
    Anxiety regarding school, tests, and adequacy in school tasks; a high score is absence of anxiety

12. Emotionally Supportive Classroom:
    Emotional support found in peer relationships, teacher behavior, and class design

13. Mental Health Index:
    Total of 11, 12 above

14. Self Norms:
    Expression of self-held values covering the classroom areas above; high is in keeping with the adult standards

15. Group Norms:
    Imputed values for peer group covering area 14

16. Osgood: Self Esteem:
    A semantic differential composed of eight stimulus pairs focused on myself

17. Coopersmith: Self Esteem:
    A total index of self esteem comprised of personal self esteem (sense of self adequacy), self esteem with regard to social relationships (self adequacy with peers), and self esteem with regard to school

18. Need - Achievement:
    Need for achievement, grades, and accomplishment as basic motivational pattern

19. Need - Affiliation:
    Need for affiliation as basic motivational pattern

20. Need - Influence:
Need for influence, power, or social dominance as basic motivational pattern

Growth-Intellectual Domain

21. Chronological Age:
Age in months at time of testing

22. Individual IQ:
Index of total learning ability from the individual Binet or Weschler IQ

23. PMA IQ:
A group test yielding an index of total learning ability based on the factor theory of mental abilities which make up intelligence

24. Educational Quotient:
Educational age divided by chronological age, multiplied by 100; educational age is the average of reading, mathematics, mechanics of English, and spelling ages obtained from the California Achievement Tests

25. Organismic Quotient:
Organismic age divided by chronological age, multiplied by 100; organismic age is the average of height, weight, grip strength, dental, carpal, mental, and reading ages, an index of total development

26. Sex:
1 = Male
2 = Female

The major divisions, Personal-Social Domain and Growth-Intellectual Domain, were used throughout this report. Variables 1 through 20 were recorded in standard scores with a mean of 100 and a standard deviation of 20.

Analysis of the Data

The following hypotheses provided a general structure for the analysis of the data:

Hypothesis One

> The three groups of students (columns) characterized as the Low Self-Esteem Group, the Average Self-Esteem Group, and the High Self-Esteem Group will differ in significant qualitative ways. These qualitative differences will be evidenced in the intercorrelations of variables within each self-esteem group.

Hypothesis Two

> The variables under study will experience significant quantitative effects associated with levels of self esteem (columns) and with levels of academic achievement (rows).

Hypothesis Three

> Prediction of academic achievement for the three self-esteem groups will not be based on the same set of factors as prediction involving the entire sample.

Hypothesis Four

> Groups of students classified jointly by level of self esteem and level of academic achievement will differ in significant qualitative and quantitative ways. These characteristic differences will be productive of further hypotheses relating to the etiology of self esteem.

The statistical procedures outlined below provided the mechanics for exploring Hypothesis One through Hypothesis Three. Hypothesis Four, the real core of this investigation, was not approached by statistical procedures. Hypothesis Four involved the creative use of findings from the first three hypotheses.

Intercorrelations

All variables were intercorrelated within each self-esteem group (columns) and within the Total Group. These intercorrelations are used in Chapter III to draw inferences about qualitative differences among the three self-esteem groups.

These intercorrelations are also used in a much more speculative way to aid in the hypothesis-generating of Chapter V. Some students in the sample had incomplete data sets, and so were eliminated from this analysis.

Analysis of Variance

A two-way analysis of variance was carried out with each quantitative variable. (Coopersmith Self Esteem and Educational Quotient were not used since they were controlled by the design of the study.) For most variables the cell n equalled 15 and the Total Group N equalled 135. Where there were missing data, cells were equalized through random elimination.

The two-way design provided the best method for isolating and testing effects due to rows, to columns, and to interaction. It was expected that these effects would be a major aid in the reconstruction of the etiology of various types of self esteem.

Multiple Regression

A stepwise multiple regression was carried out for the Total Group and for each self-esteem group (column). As with the intercorrelations, only students having complete data sets were used. The stepwise nature of this procedure provided information on how the variables behaved during the predictive process as well as providing the best final predictive formula. This procedure was used to examine the third hypothesis which is discussed in Chapter III.

Data Simulation

Using an innovative computer program (Johnson, 1967), data were simulated. With this program the user supplies population values and the digital computer generates normally distributed, intercorrelated data. Mental Health Index, Educational Quotient, and Coopersmith Self Esteem were the variables simulated. The parameters supplied were the actual sample values derived earlier, except for self esteem. In the case of self esteem the parameters chosen represented a substantial improvement in self esteem.

In essence, the computer was asked the question, "What would happen if self esteem were improved and other known relationships remained constant?" The program used allows the computer to answer by saying, "In that case, you might reasonably expect your data to look like this."

Longitudinal Research

As a final step, the school records of children in Cells 1 and 9 were examined. A representative from each of these two cells was chosen for further study. The condensed histories of the two selected children are presented in Chapter IV.

CHAPTER III

RESULTS OF HYPOTHESIS-TESTING

Before looking at the various groups of students, all students, as if they were a single population sample, will be examined. Of course, the 135 students in this study do not represent the total University School population (grades three through eleven) in a proportional way. High, low, and average students are represented by equal numbers in the sample, whereas average students are much more heavily present in the University School population. This sample, then, can be said to be more variable than the population with respect to academic achievement and self esteem. With this qualification, the following observations are made.

Overview: The Entire Sample

The means and standard deviations of the Personal-Social variables (Appendix, p. 131) reveal the present sample to be similar to the norming population. (It will be recalled that the norming population was metropolitan and represented all strata of society.) An exception to this similarity can be seen in the fact that the children under study have, on the average, a rather positive view (M = 119) of the Teacher as a Learning Facilitator.

As can be seen in the Educational Quotient (M = 109) and

Organismic Quotient (M = 107), this group's achievement and general growth are above average. While the Personal-Social variables are similar to a large metropolitan population cross section, the upward displacement of growth and achievement make generalizations or comparisons with upper middle class suburban populations most warranted.

The distribution of males and females provides another insight regarding the nature of this sample. The proportion of girls in each cell increases from lower right to upper left (Table 2, p. 15). The proportion of boys in each cell increases from upper left to lower right. The row differences (achievement) are of particular interest. The following observations can be made regarding the sample and inferred for the population:

1. Individuals with high achievement are more likely to be female, and
2. Individuals with low achievement are more likely to be male.

These findings provide another indication that the sample studied is similar to many public school populations. Some of the investigators who have reported this sex differential in achievement are Dowd (1952), Gowan (1955), and Curry (1961).

A final point to note is that, in general, the individually-measured IQ (WISC, WAIS, or Binet) is higher than the group-measured IQ (SRA Primary Mental Abilities Test). This difference will be referred to several times in this report.

The Intercorrelations

Hypothesis One predicted qualitative differences in the three self-esteem groups. In this and subsequent sections, the three major esteem groups are defined as follows:

Low Self-Esteem Group = Column 1 (Cells 1, 4, and 7)

Average Self-Esteem Group = Column 2 (Cells 2, 5, and 8)

High Self-Esteem Group = Column 3 (Cells 3, 6, and 9)

As a means of exploring the qualitative characteristics of these groups, selected intercorrelations within each esteem group are presented here. Selected intercorrelations within the Total Group (that is, the group composed of all 9 cells) are also presented. Intercorrelations are presented within the Personal-Social Domain, within the Growth-Intellectual Domain, and within the overlap area between these two domains. The remaining intercorrelations (those involving the subscores of the Learning Index, Social Climate Index, and Mental Health Index) along with all means and standard deviations are included in the Appendix on pages 132 through 142.

It is again pointed out that the sampling procedure produced maximum achievement variability within the three self-esteem groups and especially within the Total Group. Therefore, it would be expected that some of the correlation coefficients presented here are inflated. In addition, the production of entire matrices of intercorrelations, and the redundant use of data can be shown to increase the probability of the occurrence of extreme correlation coefficients. To offset these conditions only the most conservative level (.01) was used to test for

statistical significance. The reader should interpret this level with considerable latitude.

Intercorrelations of Personal-Social Variables

Ten variables were intercorrelated within the Personal-Social Domain. The first three were "index variables" which summarized the child's self-report in the areas of learning, social climate, and mental health. Two more variables had to do with norms which the child reported and norms which he felt the group held. Of the last five variables, two were reports of self esteem and three were reports of needs. The intercorrelations presented in Tables 3 through 6 reveal the degree of correspondence between perceptions in various areas of the child's personal-social life.

TABLE 3

TOTAL GROUP

INTERCORRELATIONS OF PERSONAL-SOCIAL VARIABLES

	Learning Index	Social Climate Index	Mental Health Index	Self Norms	Group Norms	Osgood: Self Esteem	Coopersmith: Self Esteem	Need - Achievement	Need - Affiliation
Social Climate Index	36								
Mental Health Index	14	06							
Self Norms	14	04	13						
Group Norms	27	30	-01	17					
Osgood: Self Esteem	24	27	20	21	02				
Coopersmith: Self Esteem	08	29	31	21	-04	57			
Need - Achievement	29	15	10	12	13	12	15		
Need - Affiliation	-15	14	-10	-17	-13	-06	-09	-50	
Need - Influence	-20	-16	-04	-01	-02	-06	01	-52	-28

Key: Decimal point omitted; Underlined = .01 significance;

N = 111; Critical value = .25

TABLE 4

LOW SELF-ESTEEM GROUP

INTERCORRELATIONS OF PERSONAL-SOCIAL VARIABLES

	Learning Index	Social Climate Index	Mental Health Index	Self Norms	Group Norms	Osgood: Self Esteem	Coopersmith: Self Esteem	Need - Achievement	Need - Affiliation
Social Climate Index	24								
Mental Health Index	16	-05							
Self Norms	-03	07	-07						
Group Norms	-02	26	-21	08					
Osgood: Self Esteem	10	19	-06	28	-12				
Coopersmith: Self Esteem	04	28	02	37	08	31			
Need - Achievement	-05	04	-01	15	39	11	12		
Need - Affiliation	-14	13	-03	-31	-29	-19	-08	-66	
Need - Influence	06	-13	05	15	-11	-09	-17	-34	-32

Key: Decimal point omitted; Underlined = .01 significance;

N = 38; Critical value = .42

TABLE 5

AVERAGE SELF-ESTEEM GROUP

INTERCORRELATIONS OF PERSONAL-SOCIAL VARIABLES

	Learning Index	Social Climate Index	Mental Health Index	Self Norms	Group Norms	Osgood: Self Esteem	Coopersmith: Self Esteem	Need - Achievement	Need - Affiliation
Social Climate Index	27								
Mental Health Index	07	01							
Self Norms	28	-04	24						
Group Norms	41	34	28	10					
Osgood: Self Esteem	24	06	-11	21	17				
Coopersmith: Self Esteem	-04	-01	-08	17	07	25			
Need - Achievement	<u>44</u>	04	24	01	11	-04	-12		
Need - Affiliation	-05	<u>44</u>	-34	01	-09	03	-06	-33	
Need - Influence	-<u>43</u>	-29	-02	-08	-05	02	12	-<u>72</u>	-26

Key: Decimal point omitted; Underlined = .01 significance;

N = 37; Critical value = .42

TABLE 6

HIGH SELF-ESTEEM GROUP

INTERCORRELATIONS OF PERSONAL-SOCIAL VARIABLES

	Learning Index	Social Climate Index	Mental Health Index	Self Norms	Group Norms	Osgood: Self Esteem	Coopersmith: Self Esteem	Need - Achievement	Need - Affiliation
Social Climate Index	59								
Mental Health Index	16	08							
Self Norms	16	-01	17						
Group Norms	41	39	-04	30					
Osgood: Self Esteem	38	21	28	03	14				
Coopersmith: Self Esteem	03	-14	34	46	-14	10			
Need - Achievement	35	31	-09	17	-02	09	-10		
Need - Affiliation	-27	-11	13	-13	-02	13	08	-53	
Need - Influence	-06	-06	-23	-15	07	-31	-06	-41	-28

Key: Decimal point omitted; Underlined = .01 significance;

N = 36; Critical value = .43

In Table 3, the first coefficient in the matrix shows the Learning Index and the Social Climate Index to be positively and significantly related (r = .36) in the Total Group. Tables 4 through 6 show that this relationship is most pronounced (r = .59) within the High Self-Esteem Group. These data make it necessary to entertain the possibility that for a large majority of students (those having low and average self esteem), the way they feel about the social setting is not associated with the way they feel about the learning setting.

The High Self-Esteem Group exhibits another distinctive characteristic not found in the Low and Average Self-Esteem Groups (nor for that matter in the Total Group). Self Norms are positively related (r = .46) to Coopersmith Self Esteem. It is worth noting that students with average or low self esteem may exhibit norms which have little or no relation to their opinions of themselves.

When we examine Group Norms, two correlations which are significant in the Total Group are washed out in the self-esteem groups. Group Norms will be shown to enter into several of the predictive formulas generated by the multiple regression technique.

In the Total Group the Learning Index is related positively (r = .29) to Need for Achievement. This same relationship exists significantly only in the Average Self-Esteem Group (r = .44). In addition, the Average Self-Esteem Group exhibits a positive correlation (r = .44) between Social Climate Index and Need for Affiliation. It appears that positive needs in

an area go along with positive perceptions of that area (recorded in the "index variables") for the Average Self-Esteem Group. Probably of even greater interest is the fact that such a relationship does not appear to exist in the other two esteem groups. We would assume, for example, that some students can have a high Need for Achievement and at the same time perceive the learning environment to be unfavorable.

In the Total Group, the Osgood measure of self esteem is related positively to the Coopersmith self-esteem measure. Within each self-esteem group, the range of the Coopersmith Self Esteem was highly controlled by the design of the study. Therefore, Osgood and Coopersmith self-esteem measures do not (and would hardly be expected to) correlate as highly within the three self-esteem groups.

The significant, positive correlations between Coopersmith Self Esteem and Mental Health Index ($r = .31$) and between Coopersmith Self Esteem and Social Climate Index ($r = .29$) will be further substantiated in the analysis of variance section. The lack of any such relationship between the self-esteem measures and the Learning Index is equally important. These correlations provide the first bits of evidence as to the forces which may affect self esteem and which self esteem may, in turn, affect.

Intercorrelations within the needs area are large and negative for the Total Group. This was expected since the card sort (used to measure needs) employed forced choices. With this instrument one need tended to be depressed as another

became dominant. A high negative correlation between two needs indicates that one or the other is taking precedence. In the Low and High Self-Esteem Groups, this see-saw relationship occurs between Need for Achievement and Need for Affiliation. In the Average Self-Esteem Group, Need for Influence shares this relationship with Need for Achievement.

Intercorrelations of Growth-Intellectual Variables

Six variables were intercorrelated within the Growth-Intellectual Domain. These variables were Chronological Age in months, two measures of intelligence, an index of total academic achievement (EdQ), an index of total development (OQ), and Sex. The sex variable was coded as male = 1 and female = 2. Consequently, variables on which girls scored higher correlated positively with the sex variable, and variables on which boys scored higher correlated negatively with the sex variable. Tables 7 through 10 give the intercorrelations within the Growth-Intellectual Domain.

TABLE 7

TOTAL GROUP

INTERCORRELATIONS OF GROWTH-INTELLECTUAL VARIABLES

	CA	Ind IQ	PMA IQ	EdQ	Sex
Ind IQ	-36				
PMA IQ	16	60			
EdQ	14	66	75		
OQ	04	44	46	47	
Sex	05	01	28	34	16

Key: Decimal point omitted; Underlined = .01 significance; N = 111; Critical value = .25

TABLE 8

LOW SELF-ESTEEM GROUP

INTERCORRELATIONS OF GROWTH-INTELLECTUAL VARIABLES

	CA	Ind IQ	PMA IQ	EdQ	OQ
Ind IQ	-33				
PMA IQ	01	62			
EdQ	-11	54	74		
OQ	-02	46	58	47	
Sex	01	-01	37	30	12

Key: Decimal point omitted; Underlined = .01 significance;

N = 38; Critical value = .42

TABLE 9

AVERAGE SELF-ESTEEM GROUP

INTERCORRELATIONS OF GROWTH-INTELLECTUAL VARIABLES

	CA	Ind IQ	PMA IQ	EdQ	OQ
Ind IQ	-20				
PMA IQ	-04	60			
EdQ	10	65	70		
OQ	-17	61	58	62	
Sex	03	-28	04	12	-20

Key: Decimal point omitted; Underlined = .01 significance;
N = 37; Critical value = .42

TABLE 10

HIGH SELF-ESTEEM GROUP

INTERCORRELATIONS OF GROWTH-INTELLECTUAL VARIABLES

	CA	Ind IQ	PMA IQ	EdQ	OQ
Ind IQ	-56				
PMA IQ	-33	58			
EdQ	-32	77	80		
OQ	06	28	30	37	
Sex	-03	37	49	63	54

Key: Decimal point omitted; Underlined = .01 significance;

N = 36; Critical value = .43

The Growth-Intellectual variables form a tight, highly-intercorrelated unit in all four tables. Of prime interest is the fact that, in the Total Group, Educational Quotient correlates positively and significantly with all other variables except Chronological Age. These positive correlations (with Individual IQ, Organismic Quotient, and Sex) again confirm the expectation that these children, taken as a total group, are similar in some basic ways to most school populations. That is, high achievers in this sample can be expected often to be intelligent, to be physically precocious, and more often than not, to be female.

The two intelligence tests provide some interesting information. In the Total Group and in the High Self-Esteem Group, both IQs are related to achievement (EdQ), to a general index of growth (OQ), and to each other. However, despite these similarities the Individual IQ is negatively related to Chronological Age, and the PMA IQ is positively related to Sex. We can infer that the Individual IQ favored younger students and that the PMA IQ favored female students. Apparently older boys in this population were in a "high risk" group with regard to receiving a low IQ measurement. This risk was especially great if the older boy had high self esteem (Table 10).

Other differences among the three self-esteem groups include the following:

1. PMA IQ, EdQ, and OQ are positively and significantly related to Sex only in the High Self-Esteem Group (positive correlation indicates that females score higher).

2. Individual IQ, PMA IQ, and EdQ are positively and significantly related to OQ in the Low and Average Self-Esteem Groups only.

Correlations Involving Growth-Intellectual Variables vs Personal-Social Variables

To complete the intercorrelation analysis, the six Growth-Intellectual variables were correlated with the ten Personal-Social variables. Tables 11 through 14 provide the results of this final step in the intercorrelation analysis.

TABLE 11

TOTAL GROUP

CORRELATIONS INVOLVING GROWTH-INTELLECTUAL VARIABLES VS PERSONAL-SOCIAL VARIABLES

Personal-Social Variables	Growth-Intellectual Variables: CA	Ind IQ	PMA IQ	EdQ	OQ	Sex
Learning Index	-36	22	01	10	04	13
Social Climate Index	-21	17	13	19	09	06
Mental Health Index	10	12	13	11	20	-07
Self Norms	-01	21	26	15	17	03
Group Norms	-07	-08	-21	-23	-13	00
Osgood: Self Esteem	00	04	07	18	11	04
Coopersmith: Self Esteem	-21	11	13	08	07	-18
Need - Achievement	-26	11	10	08	10	19
Need - Affiliation	03	-10	-11	-10	-10	-16
Need - Influence	21	-06	-09	-04	-05	-23

Key: Decimal point omitted; Underlined = .01 significance; N = 111; Critical value = .25

TABLE 12

LOW SELF-ESTEEM GROUP

CORRELATIONS INVOLVING GROWTH-INTELLECTUAL VARIABLES VS PERSONAL-SOCIAL VARIABLES

Personal-Social Variables	Growth-Intellectual Variables					
	CA	Ind IQ	PMA IQ	EdQ	OQ	Sex
Learning Index	-54	19	00	01	-10	-06
Social Climate Index	-14	32	20	26	14	01
Mental Health Index	08	15	34	20	21	03
Self Norms	15	14	13	05	12	-05
Group Norms	02	-19	-19	-18	-29	00
Osgood: Self Esteem	02	06	12	15	19	11
Coopersmith: Self Esteem	17	24	21	00	11	-01
Need - Achievement	06	-13	-10	-22	-01	18
Need - Affiliation	15	-12	-14	-07	-11	-16
Need - Influence	-15	22	14	19	17	-25

Key: Decimal point omitted; Underlined = .01 significance; N = 38; Critical value = .42

TABLE 13

AVERAGE SELF-ESTEEM GROUP

CORRELATIONS INVOLVING GROWTH-INTELLECTUAL VARIABLES VS PERSONAL-SOCIAL VARIABLES

Personal-Social Variables	Growth-Intellectual Variables					
	CA	Ind IQ	PMA IQ	EdQ	OQ	Sex
Learning Index	-<u>50</u>	28	03	06	06	22
Social Climate Index	-26	21	20	27	16	25
Mental Health Index	10	28	21	14	23	-17
Self Norms	-10	25	42	17	37	-04
Group Norms	-33	28	04	-04	00	-02
Osgood: Self Esteem	09	00	09	22	-03	10
Coopersmith: Self Esteem	-08	16	09	-10	-09	-26
Need - Achievement	-32	10	-03	05	12	31
Need - Affiliation	-16	-01	-01	-02	17	-06
Need - Influence	<u>43</u>	-06	-10	-03	-31	-28

Key: Decimal point omitted; Underlined = .01 significance;

N = 37; Critical value = .42

TABLE 14

HIGH SELF-ESTEEM GROUP

CORRELATIONS INVOLVING GROWTH-INTELLECTUAL VARIABLES VS PERSONAL-SOCIAL VARIABLES

Personal-Social Variables	Growth-Intellectual Variables					
	CA	Ind IQ	PMA IQ	EdQ	OQ	Sex
Learning Index	-08	16	-01	18	11	22
Social Climate Index	-08	-04	-05	01	-05	09
Mental Health Index	37	-08	-17	-05	16	12
Self Norms	-04	26	29	22	08	23
Group Norms	-03	-27	-38	-39	-10	-01
Osgood: Self Esteem	37	02	-09	11	14	32
Coopersmith: Self Esteem	06	25	10	20	13	17
Need - Achievement	-35	30	38	32	16	15
Need - Affiliation	04	-17	-18	-19	-32	-32
Need - Influence	27	-29	-24	-24	04	-13

Key: Decimal point omitted; Underlined = .01 significance; N = 36; Critical value = .43

The small number of statistically significant coefficients in Tables 11 through 14 is immediately apparent. The independence of the two large domains will be of interest throughout this study.

Referring to the few significant correlations, it can be seen that in the Total Group and in the Low and Average Self-Esteem Groups, Learning Index is negatively related to Chronological Age. In contrast, personal feelings toward learning in the High Self-Esteem Group do not take on a negative tone with age. This characteristic alone makes the High Self-Esteem Group a group worthy of closer investigation.

Two significant relationships in the Total Group (Self Norms vs PMA IQ = .23, and Need for Achievement vs CA = -.26) are no longer significant in the three self-esteem groups. Finally, the Average Self-Esteem Group shows a unique relationship in which Need for Influence is positively and significantly related to Chronological Age. This is a relationship which might well be expected; it is informative to learn that it seems to occur mainly in groups in the middle range of self esteem.

Summary of Intercorrelations

Significant intercorrelations within the Growth-Intellectual Domain were numerous and were typically strong. Significant intercorrelations within the Personal-Social Domain were moderately numerous and were typically weak. Between the two domains, significant correlations were very

few. In fact, the High Self-Esteem Group had only one significant coefficient out of a possible 120 (Table 14 and Table 89).

The data presented here have provided some support for Hypothesis One. Some of the qualitative differences in the three self-esteem groups are summarized below.

1. Feelings about learning and feelings about the social setting go together only in the High Self-Esteem Group.
2. Sex differences in academic achievement are most pronounced in the High Self-Esteem Group.
3. Needs in an area and positive perceptions of that area go together only in the Average Self-Esteem Group.
4. The Need for Influence increases with age only in the Average Self-Esteem Group.
5. Feelings about learning take on a negative tone with age only in the Low and Average Self-Esteem Groups.
6. Total development (OQ) has the strongest relationship to academic achievement in the Low and Average Self-Esteem Groups.

The Analysis of Variance

As a second step in the examination of the various groups defined by this study, Hypothesis Two was tested. This very broad hypothesis was stated in Chapter II as follows:

The variables under study will experience significant

quantitative effects associated with levels of self esteem (columns) and with levels of academic achievement (rows).

Interaction effects were not specifically predicted in this hypothesis, but were naturally of great interest.

This very broad hypothesis was tested by carrying out a two-way analysis of variance with each of the 25 quantitative variables. In each case the null hypothesis was set as $\mu_1 = \mu_2 = \ldots \mu_n$ or "No differences exist in the population means." The following tables summarize these analyses. A table of cell means accompanies each Summary Table.

For clarity of presentation, the variables within the Personal-Social Domain have been organized in five areas. A discussion will follow each of the five groups of tables. The sixth group of tables report all variables within the Growth-Intellectual Domain and will be followed by a final discussion.

At this point, Table 1 is re-entered as Table 15 for the reader's use. The many references in the text to individual cells may be clarified by a quick glance at this table.

TABLE 15

RESEARCH DESIGN

(Table 1: Presented a second time for the reader's reference)

Achievement	Self Esteem: LOW	AVERAGE	HIGH
high	1 hL	2 hA	3 hH
average	4 aL	5 aA	6 aH
low	7 lL	8 lA	9 lH

n = 15 N = 135

Variables Based on Students' Perceptions of Learning

The first group of tables report the Personal-Social variables in which individuals gave their perceptions of their learning experiences. Each child reported his own feeling of involvement in learning activities, his opinion of how well the teacher helped the class to learn, and his perception of the degree to which classroom activities involved convergent and divergent thinking. The last variable in this group, Learning Index, incorporated all the foregoing aspects of learning.

TABLE 16

ANALYSIS OF VARIANCE FOR MOTIVATION

Source	SS	df	MS	F
Self Esteem	2430.71	2	1215.36	1.75*
Achievement	1840.58	2	920.29	1.32*
Interaction	6397.91	4	1599.48	2.30*
Within Cells	87517.75	126	694.59	
Total	98186.95	134		

*Not significant

TABLE 17

CELL MEANS FOR MOTIVATION

		Self Esteem		
		LOW	AVERAGE	HIGH
Achievement				
high		1 103	2 99	3 124
average		4 95	5 119	6 101
low		7 103	8 87	9 105

n = 15 N = 135

TABLE 18

ANALYSIS OF VARIANCE FOR TEACHER AS LEARNING FACILITATOR

Source	SS	df	MS	F
Self Esteem	1232.28	2	616.14	—
Achievement	73.97	2	36.99	—
Interaction	3915.41	4	978.85	1.04*
Within Cells	118170.54	126	937.86	
Total	123392.20	134		

*Not significant

TABLE 19

CELL MEANS FOR TEACHER AS LEARNING FACILITATOR

	Self Esteem		
Achievement	LOW	AVERAGE	HIGH
high	1 119	2 113	3 134
average	4 116	5 123	6 110
low	7 122	8 115	9 117

n = 15 N = 135

TABLE 20

ANALYSIS OF VARIANCE FOR CONVENTIONAL LEARNING

Source	SS	df	MS	F
Self Esteem	284.93	2	142.47	—
Achievement	1552.13	2	776.07	1.74*
Interaction	1172.93	4	293.23	—
Within Cells	56111.73	126	445.33	
Total	59121.73	134		

*Not significant

TABLE 21

CELL MEANS FOR CONVENTIONAL LEARNING

Achievement	Self Esteem: LOW	AVERAGE	HIGH
high	1 88	2 95	3 92
average	4 97	5 101	6 94
low	7 104	8 95	9 101

n = 15 N = 135

TABLE 22

ANALYSIS OF VARIANCE FOR COMPLEMENTARY LEARNING

Source	SS	df	MS	F
Self Esteem	1300.86	2	650.43	1.18*
Achievement	1521.84	2	760.92	1.20*
Interaction	2254.07	4	563.52	1.02*
Within Cells	69485.89	126	551.48	
Total	74562.66	134		

*Not significant

TABLE 23

CELL MEANS FOR COMPLEMENTARY LEARNING

	Self Esteem		
Achievement	LOW	AVERAGE	HIGH
high	1 92	2 96	3 102
average	4 85	5 105	6 92
low	7 95	8 88	9 91

n = 15 N = 135

TABLE 24

ANALYSIS OF VARIANCE FOR LEARNING INDEX

Source	SS	df	MS	F
Self Esteem	2935.75	2	1467.87	1.76*
Achievement	496.01	2	248.01	—
Interaction	7935.72	4	1983.93	2.39*
Within Cells	104766.00	126	831.48	
Total	116133.48	134		

*Not significant

TABLE 25

CELL MEANS FOR LEARNING INDEX

Achievement	Self Esteem: LOW	AVERAGE	HIGH
high	1 95	2 99	3 119
average	4 94	5 118	6 95
low	7 107	8 89	9 103

n = 15 N = 135

The first and most striking result is the fact that none of these analyses provides evidence which would lead to the rejection of the associated null hypothesis. Neither are we provided with evidence that the cell means are, in fact, equal on all learning variables, but this is left open as an intriguing possibility. It is possible that the average perceptions which groups of students have regarding learning are not affected by their level of academic achievement or their level of self esteem.

The approach of this investigation commits us to look beyond the testing of hypotheses. The analysis of variance aids in these further steps by providing a method of partitioning the total variability in the data and assigning it to various sources. In this design, the sources are academic achievement (rows), self esteem (columns), the interaction of these two, and the variability within cells. In examining the variability assigned to these sources, it is found that the interaction effect is noteworthy for three of these variables: Motivation, Teacher as Learning Facilitator, and Complementary Learning. Under Motivation, for example, it can be seen that the sum of squares associated with the interaction effect is about seven per cent of the total. The row and column effects each account for only about two per cent of the total. Using this difference as a guide in further examination of the tables of means, it can be seen that self esteem and academic achievement appear to interact in such a way as to enhance these three learning variables for the high

achiever who has high self esteem, for the average achiever who has average self esteem, and for the low achiever who has either high or low self esteem. The possibility that each achievement level may have its own unique level of self esteem which is optimum with regard to perceptions of the learning environment, is well worth further study.

The remaining learning variable, Conventional Learning, has a tendency to increase as the achievement level goes down. This suggests the possibility that low-achieving students perceive their learning tasks as involving much memorization and other forms of convergent thinking. It is worth noting in passing that the lowest cell mean for the variable Conventional Learning occurs in Cell 1 (the hI group). It will be suggested later that this score reflects success in conventional learning and is a key characteristic of this group.

Variables Based on the Classroom Social Climate

Tables 26 through 35 report the Personal-Social variables which have to do with the social climate of the classroom. Variables 5 and 6 represent the individual's perceptions of the flexibility and acceptance of the classroom. Variables 7 and 8 are sociometric in nature and therefore do not represent the perceptions of individuals. These variables more nearly represent an "objective" measure of acceptance. It will be interesting to compare Generally Accepting Social Climate and Acceptance Received since these represent a subjective and an objective measure of the same area. The final variable is an index derived from the other four variables.

TABLE 26

ANALYSIS OF VARIANCE FOR FLEXIBILITY

Source	SS	df	MS	F
Self Esteem	2368.24	2	1184.12	3.53*
Achievement	1003.08	2	501.54	1.49
Interaction	791.67	4	197.92	—
Within Cells	42301.87	126	335.73	
Total	46464.86	134		

* .05 significance

TABLE 27

CELL MEANS FOR FLEXIBILITY

	Self Esteem		
Achievement	LOW	AVERAGE	HIGH
high	1 90	2 104	3 108
average	4 92	5 93	6 100
low	7 99	8 101	9 104

n = 15 N = 135

TABLE 28

ANALYSIS OF VARIANCE FOR GENERALLY ACCEPTING SOCIAL CLIMATE

Source	SS	df	MS	F
Self Esteem	1017.88	2	508.94	1.08*
Achievement	1560.46	2	780.23	1.65*
Interaction	1889.72	4	472.43	—
Within Cells	63566.55	126	504.50	
Total	68034.61	134		

*Not significant

TABLE 29

CELL MEANS FOR GENERALLY ACCEPTING SOCIAL CLIMATE

Achievement	Self Esteem: LOW	AVERAGE	HIGH
high	1 109	2 109	3 111
average	4 95	5 111	6 103
low	7 103	8 97	9 106

n = 15 N = 135

TABLE 30

ANALYSIS OF VARIANCE FOR ACCEPTANCE GIVEN

Source	SS	df	MS	F
Self Esteem	2077.38	2	1038.69	2.05*
Achievement	2565.28	2	1282.64	2.53*
Interaction	599.33	4	149.83	—
Within Cells	54755.08	108	506.99	
Total	59997.08	116		

*Not significant

TABLE 31

CELL MEANS FOR ACCEPTANCE GIVEN

	Self Esteem		
Achievement	LOW	AVERAGE	HIGH
high	1 98	2 102	3 102
average	4 88	5 96	6 91
low	7 89	8 94	9 105

n = 13 N = 117

TABLE 32

ANALYSIS OF VARIANCE FOR ACCEPTANCE RECEIVED

Source	SS	df	MS	F
Self Esteem	4768.83	2	2384.41	3.97*
Achievement	2424.40	2	1212.20	2.02
Interaction	3040.08	4	760.02	1.27
Within Cells	70266.65	117	600.57	
Total	80499.95	125		

* .05 significance

TABLE 33

CELL MEANS FOR ACCEPTANCE RECEIVED

Achievement	Self Esteem: LOW	AVERAGE	HIGH
high	1 104	2 107	3 97
average	4 82	5 98	6 109
low	7 81	8 90	9 105

n = 14 N = 126

TABLE 34

ANALYSIS OF VARIANCE FOR SOCIAL CLIMATE INDEX

Source	SS	df	MS	F
Self Esteem	4844.59	2	2422.29	3.58*
Achievement	3953.78	2	1976.89	2.91
Interaction	1281.56	4	320.39	—
Within Cells	79104.72	117	676.11	
Total	89184.64	125		

* .05 significance

TABLE 35

CELL MEANS FOR SOCIAL CLIMATE INDEX

	Self Esteem		
Achievement	LOW	AVERAGE	HIGH
high	1 99	2 109	3 108
average	4 78	5 98	6 99
low	7 84	8 90	9 103

n = 14 N = 126

In reviewing the Summary Tables, three statistically significant F ratios are of immediate interest. These results suggest that the social climate area is different from the learning area in that the social climate is more strongly involved with self esteem and achievement. At the .05 level of confidence, the null hypotheses of equal population means can be rejected for the variables Flexibility, Acceptance Received, and the Social Climate Index. The differences can be said to be related to differences in levels of self esteem (column effects). By examining the tables of means it can be seen that higher self esteem is accompanied by perceptions of higher Flexibility in the social climate, and higher self esteem is accompanied by higher Acceptance Received.

This is not a completely adequate description of the Acceptance Received variable. A relatively large proportion of the total sum of squares is attributed to interaction, and this signals need for a further look at the table of means. While it is true that column means increase as we procede from low to high self esteem, it is apparent that the highest cell scores are not <u>all</u> in column three. Cells 1, 2, 6, and 9 are the notably high cells. If we were to assume a causal relationship between self esteem and acceptance, these means might cause us to predict the following: high achievers who wish to receive high peer acceptance should exhibit average or low self esteem (Cells 1 and 2, the hL and hA groups), and low or average achievers who wish to receive high peer acceptance should exhibit high self esteem (Cells 6 and 9, the aH and lH groups).

An investigation of the present type offers no evidence regarding such a causal relationship. However, the detection of trends as presented here is a type of circumstantial evidence and indicates the likelihood that controlled, experimental investigation along these lines would pay off.

Comparing the variable Generally Accepting Social Climate with the variable Acceptance Received gives first a measure of the individual's perception of the acceptance he receives and then a measure of the actual acceptance of this individual as reported by his peers. The means tables for these two variables reveal that the four cells previously described as receiving the most peer acceptance (Cells 1, 2, 6, and 9) also perceive themselves as receiving high acceptance. Cell 3 members (the hH group) which, it will be shown later, are the highest achievers of all) also perceive themselves as highly accepted, but peer report does not substantiate this perception. The tendency can be noted for members of Cell 4 (the aL group), Cell 7 (the lL group), and Cell 8 (the lA group) to perceive themselves also more highly accepted than they are in actuality. One might suspect this discrepancy to represent a protective self-deception.

Comparing the variables Acceptance Given and Acceptance Received it can be seen that the cell means are in most cases very similar. Groups which receive high acceptance also tend to give high acceptance. Cell 6 (the aH group) represents a group which is a marked exception to this generalization. This group receives the highest level of acceptance yet gives

acceptance at one of the lowest levels.

Variables Based on Mental Health

Tables 36 through 41 report variables which are aspects of Mental Health. The first two variables, Absence of School Anxiety and Emotionally Supportive Classroom, are combined to form a third variable, Mental Health Index.

TABLE 36

ANALYSIS OF VARIANCE FOR ABSENCE OF SCHOOL ANXIETY

Source	SS	df	MS	F
Self Esteem	9660.67	2	4830.33	8.30*
Achievement	3464.82	2	1732.41	2.98
Interaction	2201.28	4	550.32	—
Within Cells	62830.31	108	581.76	
Total	78157.08	116		

* .01 significance

TABLE 37

CELL MEANS FOR ABSENCE OF SCHOOL ANXIETY

	Self Esteem		
Achievement	LOW	AVERAGE	HIGH
high	1 94	2 124	3 105
average	4 82	5 100	6 104
low	7 78	8 98	9 107

n = 13 N = 117

TABLE 38

ANALYSIS OF VARIANCE FOR EMOTIONALLY SUPPORTIVE CLASSROOM

Source	SS	df	MS	F
Self Esteem	1683.30	2	841.65	1.92*
Achievement	400.46	2	200.23	—
Interaction	155.76	4	38.94	—
Within Cells	55146.80	126	437.67	
Total	57386.33	134		

*Not significant

TABLE 39

CELL MEANS FOR EMOTIONALLY SUPPORTIVE CLASSROOM

	Self Esteem		
Achievement	LOW	AVERAGE	HIGH
high	1 96	2 91	3 101
average	4 90	5 93	6 94
low	7 84	8 96	9 99

n = 15 N = 135

TABLE 40

ANALYSIS OF VARIANCE FOR MENTAL HEALTH INDEX

Source	SS	df	MS	F
Self Esteem	4860.55	2	2430.27	5.39*
Achievement	3386.55	2	1693.27	3.76**
Interaction	327.59	4	81.90	—
Within Cells	56788.54	126	450.70	
Total	65363.22	134		

* .01 significance
** .05 significance

TABLE 41

CELL MEANS FOR MENTAL HEALTH INDEX

Achievement	Self Esteem: LOW	AVERAGE	HIGH
high	1 93	2 102	3 103
average	4 83	5 95	6 97
low	7 78	8 94	9 100

n = 15 N = 135

Again, these analyses provide evidence for the rejection of the null hypothesis for two variables. For School Anxiety, effects or differences are associated with columns (self esteem). For the more general variable, Mental Health Index, effects are associated with both rows and columns.

Referring to the table of means for Absence of School Anxiety, it can be seen that, in general, the higher the self esteem, the lower the anxiety (lowness represented by a high score). This relationship is substantiated by correlation coefficients presented in the Appendix, p. 135. Absence of School Anxiety is shown to relate positively and significantly to both the major measures of self esteem: the Osgood Semantic Differential and the Coopersmith Self-Esteem Inventory. These correlations take on added importance since two measures of self esteem, arrived at in entirely independent ways, yield the same relationship.

The relationship between anxiety and self esteem may be one of real importance since there is already substantial research evidence relating anxiety to remembering and thinking. The linking of remembering and thinking to anxiety, and anxiety to self esteem, may offer a clue as to how self esteem may in some instances affect performance on school achievement tasks. This will be discussed in relation to Cell 7 (the lL group) in Chapter V.

The Mental Health Index is of particular interest because it appears to be involved with both self esteem and academic achievement. The group means for this variable, presented in

table form on page 65, show a tendency to increase from the lower left part of the table to the upper right. Clearly, the risk of having a low Mental Health Index can be associated with lower levels of academic achievement or lower levels of self esteem, but most dramatically with levels simultaneously low in both.

Variables Based on the Values or Norms Held by Students

For the next two variables, students reported their own values and standards, and they estimated the values and standards of their peers. The values were related to the three areas (learning, social climate, and mental health) already presented.

TABLE 42

ANALYSIS OF VARIANCE FOR SELF NORMS

Source	SS	df	MS	F
Self Esteem	674.12	2	337.06	—
Achievement	3874.68	2	1937.34	3.69*
Interaction	2173.06	4	543.26	1.04
Within Cells	56654.78	108	524.58	
Total	63376.64	116		

* .05 significance

TABLE 43

CELL MEANS FOR SELF NORMS

Achievement	Self Esteem: LOW	AVERAGE	HIGH
high	1 88	2 103	3 112
average	4 98	5 106	6 93
low	7 91	8 93	9 89

n = 13 N = 117

TABLE 44

ANALYSIS OF VARIANCE FOR GROUP NORMS

Source	SS	df	MS	F
Self Esteem	354.78	2	177.39	—
Achievement	2918.11	2	1459.06	2.89*
Interaction	2417.17	4	604.29	1.20*
Within Cells	59074.66	117	504.91	
Total	64764.72	125		

*Not significant

TABLE 45

CELL MEANS FOR GROUP NORMS

	Self Esteem		
Achievement	LOW	AVERAGE	HIGH
high	1 100	2 100	3 88
average	4 91	5 100	6 90
low	7 103	8 100	9 107

n = 14 N = 126

The statistically significant results of the analysis for Self Norms signals a trend for groups with higher achievement to have higher self-held norms. Cell 1 (the hL group) provides an exception to this trend.

Considering Group Norms and Self Norms simultaneously, it is seen that average achievers seem to hold norms which are about equal to those norms they impute to their peers, while low achievers hold lower norms than the norms they impute to their peers. Cell 3 (the hH group) is unique in that its self norms are the highest of any group and it is the most severe in imputing low norms to its peers.

A Variable Based on Reported Self Esteem

Self esteem (total score on the Coopersmith Self-Esteem Inventory) was used as one of the factors by which children in this study were grouped. It is of interest, therefore, to discover whether or not the same groupings would have been achieved with a different measure of self esteem. The significant results reported in Table 46 indicate that the use of the Osgood Semantic Differential would have produced fairly similar Low and Average Self-Esteem Groups, but would have created rather different High Self-Esteem Groups. The Osgood measure would not have been as independent of achievement as was the Coopersmith measure. In Means Table 47 the trend for means to increase from lower left to upper right is again observed. As with the Mental Health Index this trend is the result of both row effects and column effects.

TABLE 46

ANALYSIS OF VARIANCE FOR SELF ESTEEM (OSGOOD)

Source	SS	df	MS	F
Self Esteem	19274.06	2	9637.03	20.12*
Achievement	3854.77	2	1927.39	4.18**
Interaction	987.67	4	246.92	—
Within Cells	58077.22	126	460.93	
Total	82193.72	134		

* .01 significance
** .05 significance

TABLE 47

CELL MEANS FOR SELF ESTEEM (OSGOOD)

Achievement	Self Esteem: LOW	AVERAGE	HIGH
high	1 — 76	2 — 108	3 — 112
average	4 — 77	5 — 104	6 — 108
low	7 — 72	8 — 85	9 — 102

n = 15 N = 135

Variables Based on Reported Needs

The final three Personal-Social variables reported here are the result of a card sort in which children classified activities in categories from "Most Satisfying" to "Least Satisfying." This can be thought of as a forced-choice technique since there were equal numbers of items representing each need, and since students assigned equal numbers of cards to each of the categories. With this instrument, as one need predominates, another is depressed. Because of this feature, it is particularly interesting to look simultaneously at the three needs of a particular cell. The information thus revealed is likely to indicate priorities within the cell group.

The Needs Priorities or Needs Structure of some of the groups will receive brief description here. In Chapter V this feature will be elaborated as one of the key features relating to individual differences in the etiology of self esteem.

TABLE 48

ANALYSIS OF VARIANCE FOR NEED - ACHIEVEMENT

Source	SS	df	MS	F
Self Esteem	1853.86	2	926.93	1.66*
Achievement	837.45	2	418.73	—
Interaction	1030.75	4	257.69	—
Within Cells	60384.93	108		
Total	64107.00	116		

*Not significant

TABLE 49

CELL MEANS FOR NEED - ACHIEVEMENT

Achievement	Self Esteem: LOW	AVERAGE	HIGH
high	1 92	2 100	3 115
average	4 96	5 96	6 107
low	7 103	8 101	9 97

n = 13 N = 117

TABLE 50

ANALYSIS OF VARIANCE FOR NEED - AFFILIATION

Source	SS	df	MS	F
Self Esteem	1120.48	2	560.24	1.43*
Achievement	1124.43	2	562.21	1.44*
Interaction	793.47	4	198.37	—
Within Cells	42180.94	108	390.55	
Total	45219.31	116		

*Not significant

TABLE 51

CELL MEANS FOR NEED - AFFILIATION

	Self Esteem		
Achievement	LOW	AVERAGE	HIGH
high	1 106	2 97	3 95
average	4 105	5 106	6 100
low	7 103	8 100	9 108

n = 13 N = 117

TABLE 52

ANALYSIS OF VARIANCE FOR NEED - INFLUENCE

Source	SS	df	MS	F
Self Esteem	161.35	2	80.68	—
Achievement	1.25	2	.62	—
Interaction	576.65	4	144.16	—
Within Cells	41428.00	108	383.59	
Total	42167.25	116		

TABLE 53

CELL MEANS FOR NEED - INFLUENCE

Achievement	Self Esteem: LOW	AVERAGE	HIGH
high	1 98	2 103	3 90
average	4 96	5 98	6 98
low	7 91	8 98	9 98

n = 13 N = 117

Cells 6, 7, and 8 report Need Structures in which there are no large differences among the three needs and in which Need for Achievement and Need for Affiliation show a slight dominance. Cell 3 (the hH group) exhibits a similar pattern except that the Need for Achievement clearly and dramatically dominates. Cells 1, 4, 5, and 9 report a Need Structure in which Need for Affiliation dominates. Cell 2 (the aH group) reports a unique Need Structure in which Need for Influence rates highest with the other two needs not far behind. It is noteworthy that the row representing high achievers again displays three very different responses as it did with several other variables.

Finally, it is important to point out that the "differences" mentioned in the needs area were not statistically significant differences. The lack of statistically verifiable differences in needs was one of the most puzzling results of the Ketcham-Morse project. It will be suggested later that the presence or absence of a need is not of prime importance in the etiology of self esteem. The most revealing information is the presence of a need <u>plus</u> the presence of other factors which tend to aid or frustrate the gaining of appropriate need satisfaction.

Variables Based on Physical and Intellectual Development

As was mentioned in Chapter II, each cell was stratified by sex. However, the cells were not controlled with regard to the measures of development reported here. In many

experimental designs, variables of this type are controlled, with good reason. In the present case, however, interest was focused on the natural school setting. As a result of this interest, the very elements which are often controlled were included as variables under study.

We must readily admit that some of the differences detected earlier were due, in all likelihood, to cell differences in sex, in age, in intelligence, etc. On the other hand, not controlling these variables increased the variability within cells and reduced the power of the analysis of variance procedure. We suspect that some of the smaller population differences were not detected (Type II Error) by this procedure. These procedural handicaps were accepted with the hope that this holistic approach—of studying children in a natural school setting—would be fruitful of insights which could then act as guides for the appropriate experimental determination of cause and effect.

TABLE 54

ANALYSIS OF VARIANCE FOR CHRONOLOGICAL AGE (IN MONTHS)

Source	SS	df	MS	F
Self Esteem	8979.59	2	4489.79	5.61*
Achievement	1440.12	2	720.06	—
Interaction	4334.16	4	1083.54	1.36
Within Cells	100765.48	126	799.73	
Total	115519.34	134		

* .01 significance

TABLE 55

CELL MEANS FOR CHRONOLOGICAL AGE (IN MONTHS)

	Self Esteem		
Achievement	LOW	AVERAGE	HIGH
high	1 175	2 165	3 139
average	4 167	5 170	6 156
low	7 160	8 153	9 153

n = 15 N = 135

TABLE 56

ANALYSIS OF VARIANCE FOR INDIVIDUAL IQ

Source	SS	df	MS	F
Self Esteem	609.48	2	304.74	1.70
Achievement	8243.05	2	4121.52	23.00*
Interaction	1814.76	4	453.69	2.53**
Within Cells	20966.15	117	179.20	
Total	31633.44	125		

* .01 significance
** .05 significance

TABLE 57

CELL MEANS FOR INDIVIDUAL IQ

	Self Esteem		
Achievement	LOW	AVERAGE	HIGH
high	1 126	2 134	3 142
average	4 121	5 120	6 117
low	7 119	8 112	9 114

n = 14 N = 126

TABLE 58

ANALYSIS OF VARIANCE FOR PMA IQ

Source	SS	df	MS	F
Self Esteem	279.41	2	139.71	—
Achievement	18833.72	2	9416.86	30.49*
Interaction	924.04	4	231.01	—
Within Cells	27797.47	90	308.86	
Total	47834.64	98		

* .01 significance

TABLE 59

CELL MEANS FOR PMA IQ

Achievement	Self Esteem: LOW	AVERAGE	HIGH
high	1 126	2 130	3 137
average	4 115	5 108	6 116
low	7 99	8 99	9 99

n = 11 N = 99

TABLE 60

ANALYSIS OF VARIANCE FOR ORGANISMIC QUOTIENT

Source	SS	df	MS	F
Self Esteem	96.04	2	48.02	—
Achievement	2470.53	2	1235.27	12.98*
Interaction	161.16	4	40.29	—
Within Cells	11987.20	126	95.14	
Total	14714.94	134		

* .01 significance

TABLE 61

CELL MEANS FOR ORGANISMIC QUOTIENT

	Self Esteem		
Achievement	LOW	AVERAGE	HIGH
high	1 111	2 114	3 114
average	4 109	5 107	6 108
low	7 100	8 105	9 101

n = 15 N = 135

Table 54 shows significant age differences in the self-esteem groups. Apparently students with high self esteem are younger than those with average or low self esteem.

The average PMA IQ shows significant effects associated with academic achievement. In contrast, the individually-measured IQ exhibits significant effects associated with academic achievement and interaction. The interaction effect may be a result of the fact that high-achieving students with the highest IQ levels have high self esteem while low-achieving students with the highest IQ levels have low self esteem. Later it will be suggested that these able, low-achieving students are experiencing cognitive dissonance and resolving it by thinking poorly of themselves.

It should also be noted that the three Individual IQ averages in the low self-esteem column show a range of only 7 points while the three Individual IQ averages in the high self-esteem column show a range of 28 points. This very marked difference in range will be the basis of further speculation in Chapter V. In addition, discrepancies between the two types of IQs within cells will be discussed. These discrepancies range from 20 points in Cell 7 to zero points in Cell 1. It will be suggested that these discrepancies are related to the phenomena usually called over- and under-achievement.

The final variable, Organismic Quotient, is very remarkable for its clarity of direction. While there are significant row effects (academic achievement) there is hardly a whisper of variation associated with columns (self esteem) or interaction.

Summary of Analysis of Variance

Of the various areas studied, two were notable for their lack of significant results. These were the areas which measured perceptions of learning and needs.

Variables which exhibited statistically significant differences associated with levels of self esteem were these:

Flexibility (of social climate)
Acceptance Received
Social Climate Index
Absence of School Anxiety
Mental Health Index
Osgood: Self Esteem
Chronological Age

Variables which exhibited statistically significant differences associated with levels of academic achievement were the following:

Mental Health Index
Self Norms
Osgood: Self Esteem
Individual IQ
PMA IQ
OQ

Individual IQ was the only variable which exhibited an effect related to the interaction of self esteem and academic achievement. These statistically significant differences provide support for Hypothesis Two except in the perceptions of learning area and in the needs area.

The Regression Analysis

The third hypothesis of this study was stated in Chapter II in the following manner:

Prediction of academic achievement for the three self-esteem

groups will not be based on the same set of factors as prediction involving the entire sample.

To explore this hypothesis, a stepwise multiple regression procedure (using all variables) was carried out in each of the three columns and in the Total Group. This procedure was then repeated in each column and in the Total Group using Personal-Social variables only. The Personal-Social variables were separated out and given special attention because their weaker relationships tended to be obscured when all variables were used.

The multiple correlation coefficient (R) was tested throughout for statistical significance. The coefficient of determination (R^2) was not tested, but is included for the reference of the reader. The F ratios reported were used to determine whether or not each multiple correlation coefficient was significantly larger than the one preceding it. These multiple coefficients, like the simple correlation coefficients reported earlier, can be expected to be somewhat inflated. The significance levels should be interpreted with considerable latitude.

The following tables summarize the available data which bear on Hypothesis Three. The first five steps of each regression are reported. Complete details of the predictive equations produced are presented on pages 143 through 146 in the Appendix.

TABLE 62

TOTAL GROUP

MULTIPLE REGRESSION USING ALL VARIABLES

Step	Variable Entering	F	R	R^2
1	PMA IQ	139.29*	.75*	.56
2	Individual IQ	19.35*	.79*	.63
3	Sex	11.45*	.81*	.66
4	Osgood: Self Esteem	4.82**	.82*	.68
5	Motivation	4.52**	.83*	.69

* .01 significance
** .05 significance

N = 111

TABLE 63

TOTAL GROUP

MULTIPLE REGRESSION USING PERSONAL-SOCIAL VARIABLES

Step	Variable Entering	F	R	R^2
1	Group Norms	6.25**	.23**	.05
2	Social Clmt Index	9.33*	.36*	.13
3	Self Norms	4.96**	.41*	.17
4	Need - Affiliation	3.30	.44*	.19
5	Motivation	2.44	.46*	.21

* .01 significance
** .05 significance

N = 111

TABLE 64

LOW SELF-ESTEEM GROUP

MULTIPLE REGRESSION USING ALL VARIABLES

Step	Variable Entering	F	R	R^2
1	PMA IQ	44.71*	.74*	.55
2	Coopersmith: Self Esteem	2.21	.76*	.58
3	Emo Support Clrm	3.55	.79*	.62
4	Need - Achievement	1.97	.80*	.64
5	Teacher as Learning Facilitator	1.26	.81*	.66

* .01 significance

N = 38

TABLE 65

LOW SELF-ESTEEM GROUP

MULTIPLE REGRESSION USING PERSONAL-SOCIAL VARIABLES

Step	Variable Entering	F	R	R^2
1	Conventional Learning	3.01	.28	.07
2	Need - Achievement	3.48	.40**	.16
3	Need - Affiliation	3.72	.49**	.24
4	Acceptance Received	4.48**	.58*	.34
5	Group Norms	2.34	.62*	.39

* .01 significance
** .05 significance

N = 38

TABLE 66

AVERAGE SELF-ESTEEM GROUP

MULTIPLE REGRESSION USING ALL VARIABLES

Step	Variable Entering	F	R	R^2
1	PMA IQ	33.90*	.70*	.49
2	Individual IQ	6.12**	.75*	.57
3	Sex	3.79	.78*	.61
4	Abs of Sch Anxiety	4.42**	.81*	.66
5	Conventional Learn	4.92**	.84*	.71

* .01 significance
** .05 significance

N = 37

TABLE 67

AVERAGE SELF-ESTEEM GROUP

MULTIPLE REGRESSION USING PERSONAL-SOCIAL VARIABLES

Step	Variable Entering	F	R	R^2
1	Abs of Sch Anxiety	5.25**	.36**	.13
2	Gen Accept Soc Clmt	6.34**	.52*	.14
3	Coopersmith: School Self Esteem	1.22	.54*	.29
4	Osgood: Self Esteem	1.83	.58*	.33
5	Group Norms	1.52	.60*	.36

* .01 significance
** .05 significance

N = 37

TABLE 68

HIGH SELF-ESTEEM GROUP

MULTIPLE REGRESSION USING ALL VARIABLES

Step	Variable Entering	F	R	R^2
1	PMA IQ	60.41*	.80*	.64
2	Individual IQ	21.03*	.88*	.78
3	Sex	10.09*	.91*	.83
4	Group Norms	3.46	.92*	.85
5	Learning Index	3.47	.93*	.86

* .01 significance
** .05 significance

N = 36

TABLE 69

HIGH SELF-ESTEEM GROUP

MULTIPLE REGRESSION USING PERSONAL-SOCIAL VARIABLES

Step	Variable Entering	F	R	R^2
1	Group Norms	6.22**	.39**	.15
2	Motivation	11.12*	.61*	.37
3	Abs of Sch Anxiety	6.58**	.69*	.48
4	Self Norms	5.26**	.74*	.55
5	Coopersmith: School Self Esteem	3.84	.78*	.60

* .01 significance
** .05 significance

N = 36

The differences in the multiple correlation coefficients (both as they are built up and in their final value), are very pronounced for the two methods used. The use of all variables is clearly superior. It is not intended that these two methods of prediction be pitted against each other. The Personal-Social variables were separated out so that their contributions to an explanation of variance in academic achievement (EdQ) could be highlighted.

When all variables are available, the most effective intellectual variable is selected as the initial predictor. From that already high point the multiple correlation coefficient is built up slowly with small but significant increases on most of the steps. However, when Personal-Social variables alone are used, the multiple correlation coefficient begins at a modest level and progresses by larger steps. It appears that the Personal-Social variables, with their relatively low intercorrelations, do their best prediction in tandem. The contribution of these variables can probably be maximized through the multiple regression technique.

Comparing Tables 64, 66, and 68 with Table 62, it can be seen that for each of the three self-esteem groups (and for the Total Group), PMA IQ is the best single predictor of Educational Quotient. The combination of PMA IQ, Individual IQ, and Sex are the first three variables for all but the Low Self-Esteem Group.

Tables 65, 67, and 69, when compared with Table 63, reveal that the variable Group Norms appears on each. Other

Personal-Social variables included on two or more tables are Self Norms, Need for Affiliation, Motivation, and School Self Esteem. (The subscales of the Coopersmith Self-Esteem Inventory were included as separate variables in the multiple regression procedure.)

The High Self-Esteem Group (column 3) is strikingly similar to the Total Group. When all variables are used, the combination of PMA IQ, Individual IQ, and Sex are common to both groups. When Personal-Social variables only are used, Group Norms, Self Norms, and Motivation are common to both. The High Self-Esteem Group builds up impressive multiple correlation coefficients. This is a reminder of the extreme variability exhibited by this column. The distinctive nature of this group is further emphasized by the fact that variables added to the predictive formula beyond PMA IQ, Individual IQ, and Sex do not significantly improve the multiple correlation coefficient (which is already very high).

The Average Self-Esteem Group (column 2) is similar to the Total Group when all variables are used but bears little similarity when Personal-Social variables are used alone.

The Low Self-Esteem Group (column 1) bears the least overall resemblance to the Total Group. The Individual IQ, with its restricted range is not included as a predictor, nor is Sex included. The PMA IQ is as good a predictor for this group ($r = .74$) as it is for the Total Group ($r = .75$), but for the Low Self-Esteem Group, the individual predictive contribution of each variable added to the PMA IQ is nonsignificant. The

total contribution of several variables was not tested. Such a test would seem desirable in view of the following observations. The Personal-Social variables when used alone start at a low and nonsignificant level but are rapidly built up in four stages to a .58 multiple correlation coefficient. It is inferred that the Low Self-Esteem Group is idiosyncratic and that the predictive contributions of Personal-Social variables may be realized only when the total contribution of a group of variables is viewed. Of equal distinction is the fact that many of these predictive Personal-Social variables display a negative relationship to academic achievement (Appendix, Table 91, p. 144).

In the four tables which report the results of multiple regression using the Personal-Social variables only, an interesting feature can be observed. In five steps of multiple regression, the Total Group and the three self-esteem groups achieve the following multiple correlation coefficients:

Total Group	R = .46
Low Self-Esteem Group	R = .62
Average Self-Esteem Group	R = .60
High Self-Esteem Group	R = .78

Larger correlation coefficients might be expected by chance alone in the self-esteem groups (due to smaller Ns). However, such a difference did not occur when all variables were employed. From the differences shown above it appears that prediction using Personal-Social variables is improved by segregation of students into self-esteem groups.

As a final contrast, it can be seen that four Personal-Social variables in the High Self-Esteem Group are as effective

a predictive group (R = .74) as the all-powerful PMA IQ (r = .74) is in the Low Self-Esteem Group. This rare level of predictive power in the Personal-Social Domain emphasizes the difference between the Low Self-Esteem Group (which exhibits least dispersion and vaguest patterns) and the High Self-Esteem Group (which exhibits most dispersion and clearest patterns). This joint predictive power is better understood when it is recalled that only one simple correlation between the two domains was statistically significant in the High Self-Esteem Group.

Summary of the Regression Analysis

The foregoing analysis provides very limited support for Hypothesis Three. While there was no methodology used which would test Hypothesis Three in a statistical sense, the following judgements are made:

1. The most powerful predictors of academic achievement (EdQ) are other variables in the same domain.
2. Variables from the Personal-Social Domain make small (but often statistically significant) contributions when used with the Growth-Intellectual variables.
3. The best prediction of academic achievement for children with average or high self esteem is not markedly different from across-the-board prediction.
4. Prediction of academic achievement for children exhibiting low self esteem is probably best accomplished in a different manner from across-the-board prediction.

5. The effect of segregation of students by self esteem on the predictive nature of Personal-Social variables shows promise and should be studied further.

The results reported in this chapter have limited interest when examined one-by-one. Their real importance will become evident in Chapter V when all the evidence is used to form a unified hypothesis regarding the etiology of self esteem.

Data Simulation

Inferences up to this point have been based on statistics from actual data. From these statistics certain population parameters and their inter-relationships have been inferred. At this point we will use these inferred parameters, project certain changes in them, simulate fictitious data from these projected parameters, and derive new statistics from the fictitious data. Briefly, the chain of events is as follows:

1. actual data
2. derived statistics
3. inferred parameters
4. projected parameters
5. fictitious data
6. derived fictitious statistics

Steps 4, 5, and 6 are reported in this section. The variables Educational Quotient, Mental Health Index and Coopersmith Self Esteem are used. The projected parameters for these variables are shown in Table 70. The actual statistics derived earlier in this chapter were chosen for the projected means, sigmas, and correlations involving Educational Quotient and Mental Health Index. But in the case of Coopersmith Self Esteem, the mean was projected to be higher ($\mu = 115$) than the original

statistic (M = 104), and the sigma was projected as smaller (σ = 15) than the original statistic (S.D. = 23).

The parameters for academic achievement (EdQ) were not manipulated since many studies have shown these to be quite stable. There was little evidence regarding the stability of self esteem, and therefore this variable was manipulated as described above. This manipulation or projection was suggested by the authors of the original study (Ketcham & Morse, 1965, p. 205).

The variable Mental Health Index was also entered unchanged into the simulation. Unlike the EdQ (for which there was theoretical reason to retain the value unchanged), the Mental Health Index was retained unchanged for the sake of clarity. Thus, it can be expected that the data simulated from these projected parameters would demonstrate what would be expected to happen if it were possible to raise the mean and reduce the variation in self esteem while other variables (EdQ and Mental Health Index) remained constant.

In these simulations, eight samples with 25 members each were produced. Summary statistics from these eight fictitious samples are presented in Table 71.

TABLE 70

TOTAL GROUP

SPECIFICATIONS USED IN DATA SIMULATIONS

Number of Variables in a Data Set = 3

Number of Data Sets in a Sample = 25

Number of Samples to be Simulated = 8

Parameter Values for Variables

Variable	Mean	Sigma	Correl with Self Est
Coopersmith: Self Esteem (Projected Values)	115	15	
Educational Quotient (Actual Values)	109	16	.08
Mental Health Index (Actual Values)	93	21	.31

TABLE 71

TOTAL GROUP

SUMMARY STATISTICS FOR ALL SIMULATED DATA SAMPLES

Mean for Each Variable

Sample	Coopersmith: Self Esteem	Educational Quotient	Mental Health Index
1	119.96	103.03	99.66
2	111.20	104.32	90.63
3	118.84	108.16	91.08
4	114.78	107.52	88.37
5	116.59	99.65	89.55
6	113.19	108.56	86.32
7	117.49	104.96	98.08
8	118.23	112.63	91.05
All	116.28	106.11	91.84

Sigma for Each Variable

Sample	Coopersmith: Self Esteem	Educational Quotient	Mental Health Index
1	12.66	10.86	19.23
2	10.87	13.25	17.36
3	15.60	15.71	21.61
4	13.63	15.51	18.90
5	16.17	15.03	21.28
6	18.32	16.97	19.00
7	13.05	15.81	22.96
8	14.55	17.08	18.34
All	14.35	15.03	19.83

Variable Intercorrelations

Sample	Self Esteem vs Educational Quotient	Self Esteem vs Mental Health Index
1	- .29	.20
2	.22	- .10
3	.47	.20
4	- .02	.45
5	.31	.65
6	- .35	.40
7	- .08	.32
8	.12	.36
All	.05	.31

One immediate insight gained from Table 71 is the amount of chance variation that might be expected under the projected conditions. For instance, if the population value of Coopersmith Self Esteem were actually changed to a mean of 115 and a sigma of 15, it would be well within the realm of possibility that samples of 25 members from this population would yield sample means varying from 113.19 to 119.96 . Similarly, sample means of the Mental Health Index could be expected to range from 86.32 to 99.66 even though the true parameters were $\mu = 93$, and $\sigma = 21$. Variations in correlation coefficients are even more striking. A true correlation of .31 between Coopersmith Self Esteem and Mental Health Index might yield sample values from -.10 to .65. On the other hand, the statistical values derived from all eight samples are very close to the specified population values. This, then, is the first contribution of this simulation. An experimenter who intends to work with these variables has some fore-knowledge of the caution he must exercise in interpreting his experimental results.

It is also helpful to examine the individual bits of data generated. In Table 72 one of the samples is presented in complete detail. All samples are presented in plot form in Tables 73 and 74.

TABLE 72

TOTAL GROUP

SIMULATED DATA, SAMPLE SEVEN

Child	Coopersmith: Self Esteem	Educational Quotient	Mental Health Index
A	98	96	114
B	97	114	77
C	99	103	81
D	127	105	77
E	136	128	120
F	97	95	118
G	128	112	96
H	101	99	70
I	105	144	64
J	121	102	120
K	122	120	122
L	134	102	113
M	109	80	76
N	142	96	132
O	126	104	92
P	134	98	82
Q	127	84	106
R	115	121	107
S	108	114	104
T	119	101	96
U	126	104	100
V	115	104	132
W	111	134	39
X	125	90	89
Y	117	74	125
Mean	117.49	104.96	98.08
Sigma	13.05	15.81	22.96
Correl with Self Esteem		- .08	.32

TABLE 73

TOTAL GROUP: SIMULATED DATA

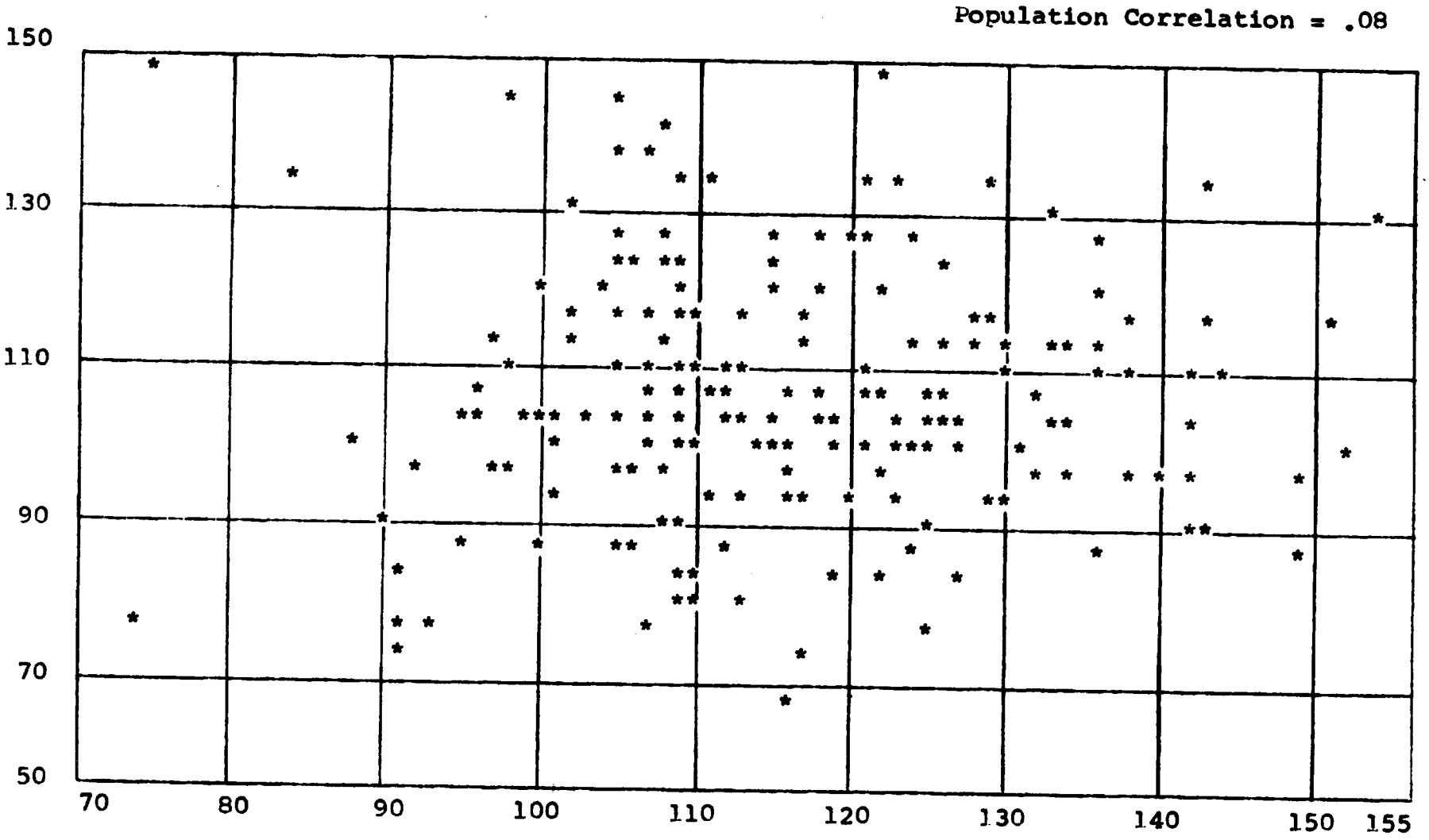
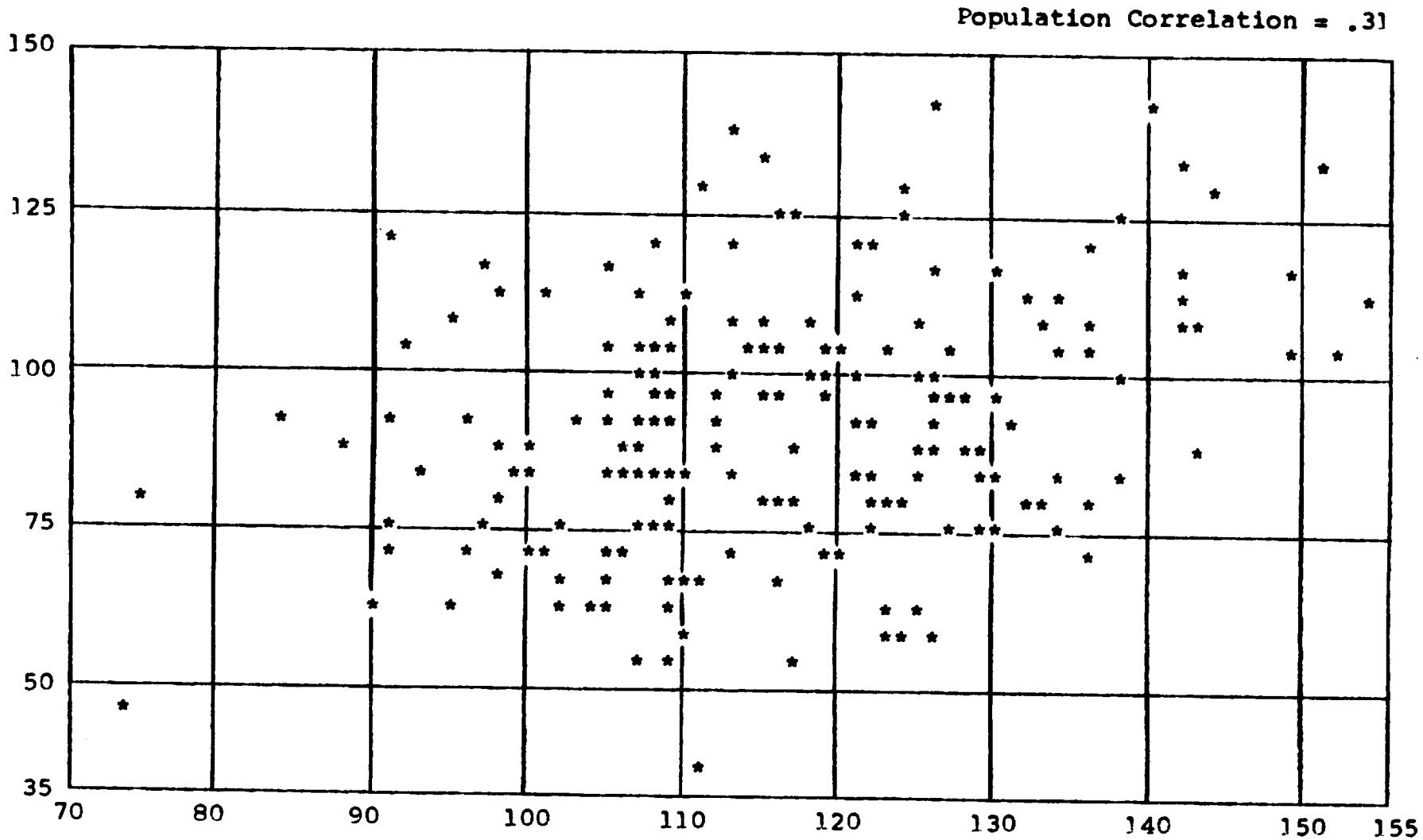


TABLE 74

TOTAL GROUP: SIMULATED DATA



A and B in Sample 7 (Table 72) illustrate the expectation that for two individuals fairly low in Coopersmith Self Esteem, one may be low in Educational Quotient and high in Mental Health Index, while the reverse may be true for the other.

A different kind of information can be gained from Table 74. As the population actually exists, it would be expected that about 66 children out of 200 would have a Mental Health Index score below 100 and a Coopersmith Self Esteem score below 100. Table 74 predicts that only about 17 children out of 200 would have scores below 100 on both these measures if self esteem were raised as projected. Here is the heart of this simulation. Specific information has been gained on which to base expectations for experiments aimed at improving self esteem.

For the sake of simplicity, this simulation has assumed that mental health would remain unchanged if self esteem were raised. The investigator does not believe this is what would happen. Earlier in this chapter, effects in the Mental Health Index significant at the .05 level were associated with columns (self esteem). This suggests that a change in self esteem (such as the one simulated here) would be accompanied by a change in the Mental Health Index. There is strong support in theory for such a link between self esteem and mental health. Jahoda (1958, pp. 24-30) lists ten writers who define positive mental health through some aspect of self esteem.

In summary, theory and research results strongly suggest that an improvement in self esteem could be expected to be

accompanied by unchanged academic achievement and improved mental health. It would be informative to simulate more data in which population values for Coopersmith Self Esteem and the Mental Health Index were changed.

CHAPTER IV

RESULTS OF THE LONGITUDINAL RESEARCH

Cells 1 and 9 were chosen for special attention since they contained individuals with the largest discrepancies between achievement and self esteem. The school records of the 30 children in these two cells were examined, and one child from each cell was chosen for further study. Two criteria were used in these choices:

1. The child must have records covering a long period of time and containing numerous anecdotal notes, and
2. The child must be judged to be a reasonably representative member of his group.

Cell 1, The Low Self Esteem / High Achievement Group

The representative from this cell, Child A, a girl, was characterized by teachers as the "ideal student." She received the highest academic honors upon graduation, participated in sports, and was an outstanding cheerleader.

An examiner who administered the WISC recorded, "On tasks she was not able to do she accepted the fact in stride and would then go on calmly to the next task."

An event which occurred after an absence in the third grade gives a clue to Child A's approach to school: "When spelling club time came, she looked the words over, wrote them

once or twice and said she was ready for her trial test. When she took it, she misspelled another. The recorder said that she had done very well to learn them so quickly, but she said, 'Not good enough though because I should have gotten another too.'" Here is evidence of very high self norms at an early age. By the time members of this cell reached an average chronological age of 175 months, they reported the lowest Self Norms (M = 88) of any cell. Since school success and social acceptance remained high, these low norms are taken to be evidence of progressive self-deprecation.

The record of individually-administered intelligence tests shows the following scores:

Grade		IQ
Kdg	-	153
2	-	161
4	-	147
8	-	128
10	-	142
12	-	140

The score in the eighth grade is enough lower to create an interest in this period of Child A's school history. A note from the Core teacher during this year said, "We hope to help her to develop more self-confidence during the year."

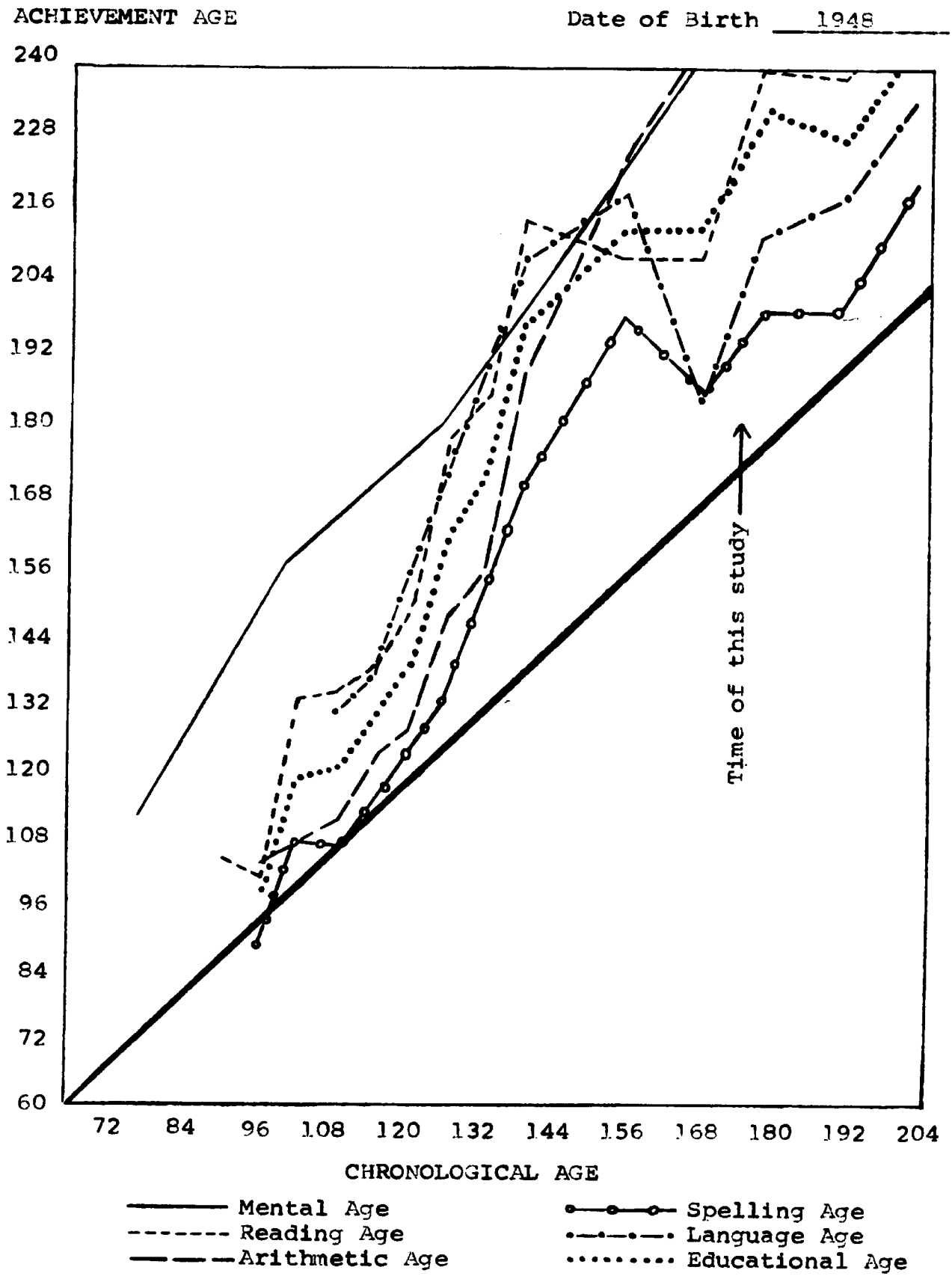
The two preceding observations seem to have a possible connection with the general academic achievement pattern of Child A as shown in Table 75. After having sustained a steep slope during more than half of her school history, Child A's achievement (except Reading) changed slope and made very modest progress. This change in progress suggests that Child A's later achievement was not up to expectation. The period of

modest progress covered approximately age 156 months through 192 months or ninth through eleventh grades. The data on which this investigation is based were collected when Child A was in the tenth grade and in this period of reduced achievement.

It is important to note that Child A's grades apparently did not suffer during this time. We are reminded again of the relative and subjective nature of school grading. It is well worth wondering what the teachers meant who described Child A as the "ideal student" and what effect this opinion had on their grading.

TABLE 75

CHILD A, LONGITUDINAL RECORD



Cell 9, The High Self Esteem / Low Achievement Group

The representative from Cell 9, Child B, a boy of small build, was often ill in the lower grades, and was late in developing small muscle coordination. He did poorly on the performance tests of the WISC, and teachers often commented about his poor writing. In addition to health problems, Child B was also taken to the speech clinic after much teasing from his peers.

In second grade this boy was described as very active and excitable, affectionate toward the teacher, and very interested in sports. Participation in sports was mentioned throughout the elementary grades. It is inferred that peer recognition was gained through sports activities. Child B had an older brother whom he appeared to idolize and often mentioned.

By grade three, Child B was reading at the pre-primer level. In the fourth grade he read at the lowest level in his class. He pretended to read difficult books and told his parents he was "reading hard books." At this time he was still vomiting occasionally at home after school—an occurence which had begun with his early school years. His parents felt no need for pressure due to his late reading. An older brother had had a similar developmental pattern.

Child B's fifth grade teacher made this comment which foreshadowed better days: "...has grown emotionally. He appears to be calmer and has himself under better control. ...He has gained much self-confidence which seems to be the most outstanding of his accomplishments this year." In the

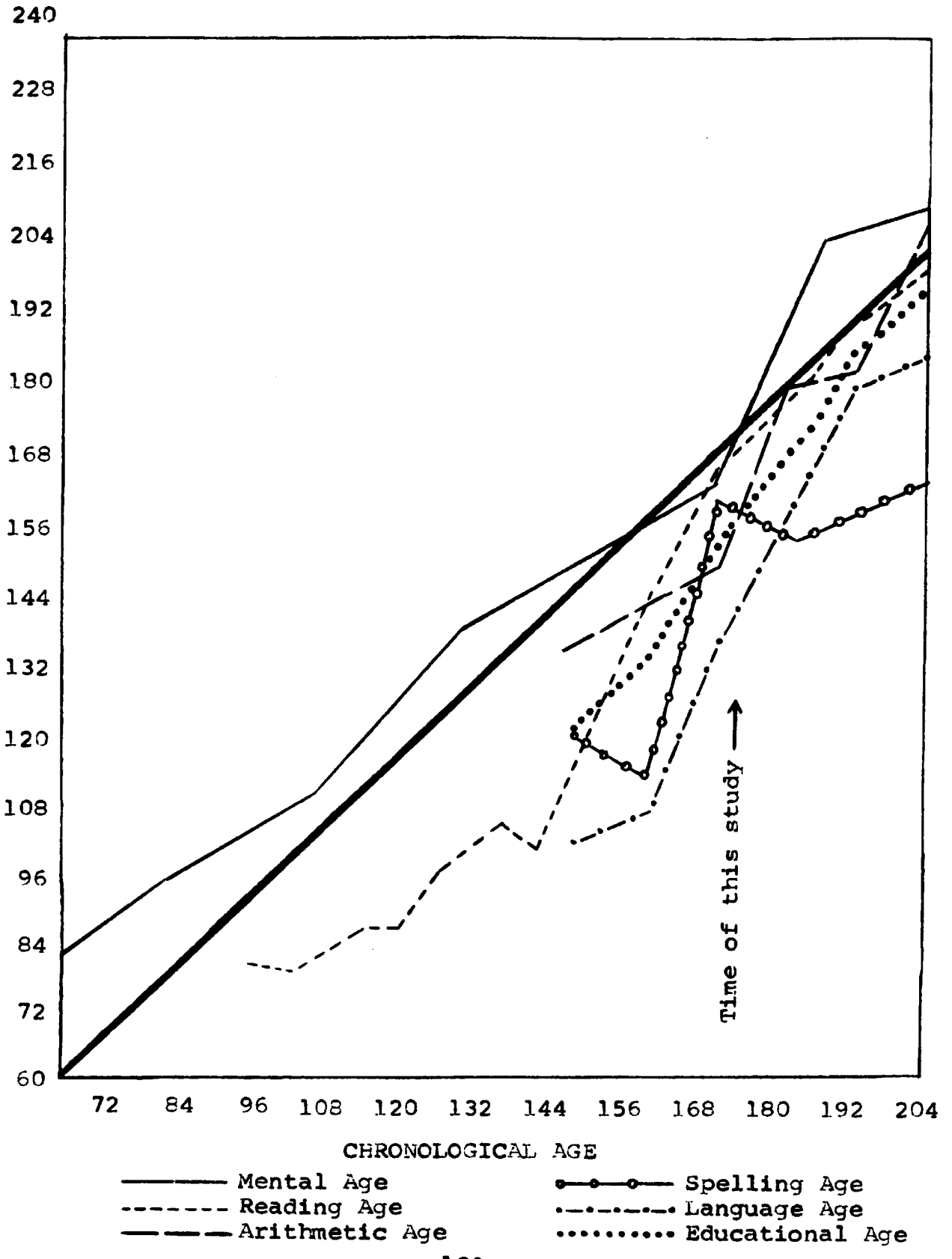
next year the teacher said, "He is willing to work and wants badly to make the academic grade."

Although his marks in the later school years were average or often below, his teachers' comments were generally favorable and often noted improvement. In a typical statement his math teacher said, "I admire this boy very much. In the face of a lot of discouragement he continues to plow forward trying to learn all he can."

The longitudinal achievement record of Child B (Table 76) indicates that general achievement testing was not begun until he was 144 months old. This was undoubtably due to his late reading growth. However, once Child B started achieving, the slope of his achievement was very steep. On the average, two or more years of academic growth were achieved for each year of chronological age. This great spurt occurred during about the same age period (156 months to 192 months) that Child A's achievement was slacking off.

TABLE 76

CHILD B, LONGITUDINAL RECORD



Summary

Members from two cells of particular interest have been examined. No generalizations are implied by the following statements, but comparisons are too interesting to be resisted. Child A's developmental pattern was early, rapid, and experienced a plateau-like period in its later stages. Child B's developmental pattern was late, rapid, and sustained a near-constant rate after its late beginning. The self-esteem scores for these two students were taken in the tenth grade. In other words, for Child A, measurements were taken during a period of slow academic growth which had been preceded by a period of rapid academic growth. For Child B, measurements were taken during a period of rapid academic growth which had been preceded by a late academic start. Although Child A's academic achievement was high in absolute value, it was poor relative to her earlier record. The academic growth for Child B was below that of his peers, but it was good in relationship to his earlier record. These contrasting developmental patterns are not advanced as an "explanation" for A's low self esteem and B's high self esteem. They are submitted as evidence which will gain fuller meaning when combined with other evidence in the following chapter.

CHAPTER V

CONCLUSIONS

This exploratory investigation was intended to be productive of ideas. It is logical, then, that the concluding chapter should be a chapter of ideas.

It is hoped that the speculative thinking recorded in this chapter will be accepted as hypotheses generated by the investigator's interaction with the data. The purpose of these hypotheses is to suggest as many links as possible between the data and the practice of education.

A Limited Hypothesis Regarding the Etiology of Self Esteem

In the following table, two variables are presented which may help the reader gain a "Gestalt" on the intellectual development of the children under study.

In general, the individually-measured IQ (WISC, WAIS, or Binet) is higher than the group-measured IQ (SRA Primary Mental Abilities Test). These arithmetic differences may not, of course, represent actual differences. It is assumed, however, that the paper and pencil test, administered to a group, is very similar to a "school task" and that performance on this test is aided or hindered by the same factors which aid or hinder general school achievement tasks. The

mean Educational Quotient in each cell, is typically a few points (from zero to seven points) lower than the mean PMA IQ. This very stable relationship tends to confirm the similarities in the PMA IQ measure and academic achievement measures.

TABLE 77

TWO INTELLECTUAL MEASURES: INDIVIDUAL IQ AND PMA IQ

	Self Esteem		
Achievement	LOW	AVERAGE	HIGH
high	1 Ind = 126 PMA = 126	2 Ind = 134 PMA = 130	3 Ind = 142 PMA = 137
average	4 Ind = 121 PMA = 115	5 Ind = 120 PMA = 108	6 Ind = 117 PMA = 116
low	7 Ind = 119 PMA = 99	8 Ind = 112 PMA = 99	9 Ind = 114 PMA = 99

The individually-administered test, on the other hand, measures a wide range of performances, some of which may seldom come into play in school achievement tasks. In addition, this test employs a variety of modes of communication and is less subject to the scholar-culture biases. The difference in scores on the two types of measured IQs (one limited by school performance patterns and one more widely ranging) is considered one of the significant clues for understanding the individuals under investigation.

It is assumed that in the usual state of affairs the Individual IQ score can be expected to be somewhat higher than the PMA IQ score. This may reflect the fact that there is often considerable intellectual effort which is being channeled into types of achievement which are not recognized or measured in school. This achievement may be too advanced for the measuring instruments used, it may be antisocial in nature, or it may simply involve content which is not recognized as a part of school curricula. It is possible for students (such as those to be described in the following paragraphs) to direct a larger than usual proportion of their total intellectual effort into their school achievement. In this way they maximize their PMA scores and out-achieve peers with comparable potential.

While the basic pattern is for the more inclusive test to register a higher score, students in Cell 1 (the hL group) and in Cell 6 (the aH group) produce equal or near equal means on the two IQ tests. Here are two groups of students whom, we suspect, have optimized or maximized their school performance. (This condition is sometimes given the misnomer "over-achievement.") It is likely that these students have either consciously or unconsciously exploited all the factors which go into the traditional types of school performance.

The interesting result is that Cell 1 students, with only slightly better than average Individual IQ (Cell 1, M = 126; Total Group, M = 122) are high achievers, while Cell 6 members with slightly lower than average Individual IQ (Cell 6,

M = 117) are average achievers. Both groups maximize their achievement relative to expectation, but Cell 1 exhibits low self esteem and Cell 6 exhibits high self esteem. There is little to suggest reasons for this difference in self esteem until other variables are examined.

Table 51, p. 74 shows that Cell 1 (the hL group) has affiliation as a dominant need, whereas achievement is the dominant need for Cell 6 (the aH group). Cell 6 is striving to satisfy an achievement need, is securing satisfying results, and self esteem is high. Cell 1, on the other hand, has a high affiliation need but is investing great amounts of energy in attaining maximal achievement from only slightly better than average resources. In this case, self esteem is low.

It is interesting to note that both groups give moderate acceptance to their peers and receive high acceptance in return. In terms of peer acceptance, these two are "successful" groups. Clues to the behavior of students in Cell 1 are found in several sources. These students see themselves in an environment where there are few choices (Flexibility = 90). They report low norms (Self Norms = 88). They are most often older girls. In summary, the following sequence is postulated as one cause for the low self esteem of students in Cell 1:

1. Early in the school career, cultural pressures to achieve are applied.
2. The child achieves up to maximum in strict conformity to adult expectations; self esteem is probably average or high during this period; affiliation and approval from adults is satisfying.

3. During adolescence the source of satisfaction for the affiliation need is shifted to peers.
4. Self-deprecation is employed by the individual in order to maintain an established pattern of successful achievement, and to also gain peer acceptance. (Peer acceptance is withheld from high achievers with high self esteem, Cell 3.)

In other words, it is suggested that low self esteem in Cell 1 is mainly the result of conflicting cultural pressures (toward achievement) and internal pressures (toward affiliation) in the presence of moderate resources. Low self esteem is a device used (probably unconsciously) in order to play both sides of the fence.

Referring briefly again to Cell 6, it can be seen that these students do not hold a positive regard for adults. (Teacher as Learning Facilitator = 110; this is the lowest of the cell means.) These students perceive average Flexibility in their environment and have average Self Norms. We postulate that members of Cell 6 are independent, self-actualizing and gain self esteem through self-chosen school achievement.

The limited hypothesis presented here is concerned with two of the several patterns of self esteem which may develop. This hypothesis takes an evolutionary point of view and does not specify any of the minor contingencies which may operate in specific cases.

Limited Hypothesis

In the middle range of intellectual ability, optimum

school performance produces varying levels of self esteem.

The child who optimizes school performance as a result of cultural pressure will exhibit low self esteem as he grows older if his need for affiliation is dominant. This is predominantly a female sequence of development. This low self esteem is characterized as protective self-deprecation.

The child who optimizes school performance as a result of an internalized need for achievement will exhibit high self esteem. This is predominantly a male pattern. This high self esteem is characterized as self-satisfaction.

Referring again to Table 77, the difference in each column between the highest and lowest means for the two IQs are pointed out. In column three a difference of 28 points on the Individual IQ is accompanied by a difference of 38 points on the PMA IQ. In column two a difference of 22 points on the Individual IQ is accompanied by a difference of 31 PMA IQ points.

In striking contrast, column one shows a difference of only 7 points in the Individual IQ accompanied by a 27-point difference on the PMA IQ. In other words, in the Low Self-Esteem Group (column one) some very slight differences in total potential are accompanied by substantial differences in actual school performance.

This very slight difference in Individual IQ scores in column one will be used in the following section to suggest that Cells 1, 4, and 7 (the three cells making up the Low Self-Esteem Group) actually represent three groups which are potential average achievers, but which perform in distinctly different ways.

A Broad Hypothesis Regarding the Etiology of Self Esteem

With the hypothesis related to Cells 1 and 6 as a starting point, a much more inclusive hypothesis will now be developed. In the following pages it will be suggested that levels of self esteem are the result of a developmental process of differentiation. It will be suggested also that variables must be looked at in groups or constellations in order to gain insights into this process of differentiation.

The following figures employ the nine cells used throughout this investigation. Again, Table 15, p. 47, may be a useful reference. The shaded areas in the following figures suggest the population distribution as it changes through time.

It is assumed that self esteem (at least as it relates to academic achievement) is largely in the middle and high range (Figure 2) at the start of school experience. The optimistic, hopeful nature of beginners at school is well known. It is believed that the children with the very highest potential for early and rapid achievement distinguish themselves almost immediately by exhibiting high self esteem. Cell 3 (the hH group) has been shown earlier to be the youngest group; a fact which suggests that the high self esteem / high achievement pattern is exhibited early but tends to be abandoned later on.

In Figure 2, the level of actual achievement which a student exhibits corresponds roughly to his level of achievement potential. An exception to this pattern of correspondence

would be found among those students who are achieving at a low level, Cell 8. Included in this group are students with a pattern of late development who will distinguish themselves later on.

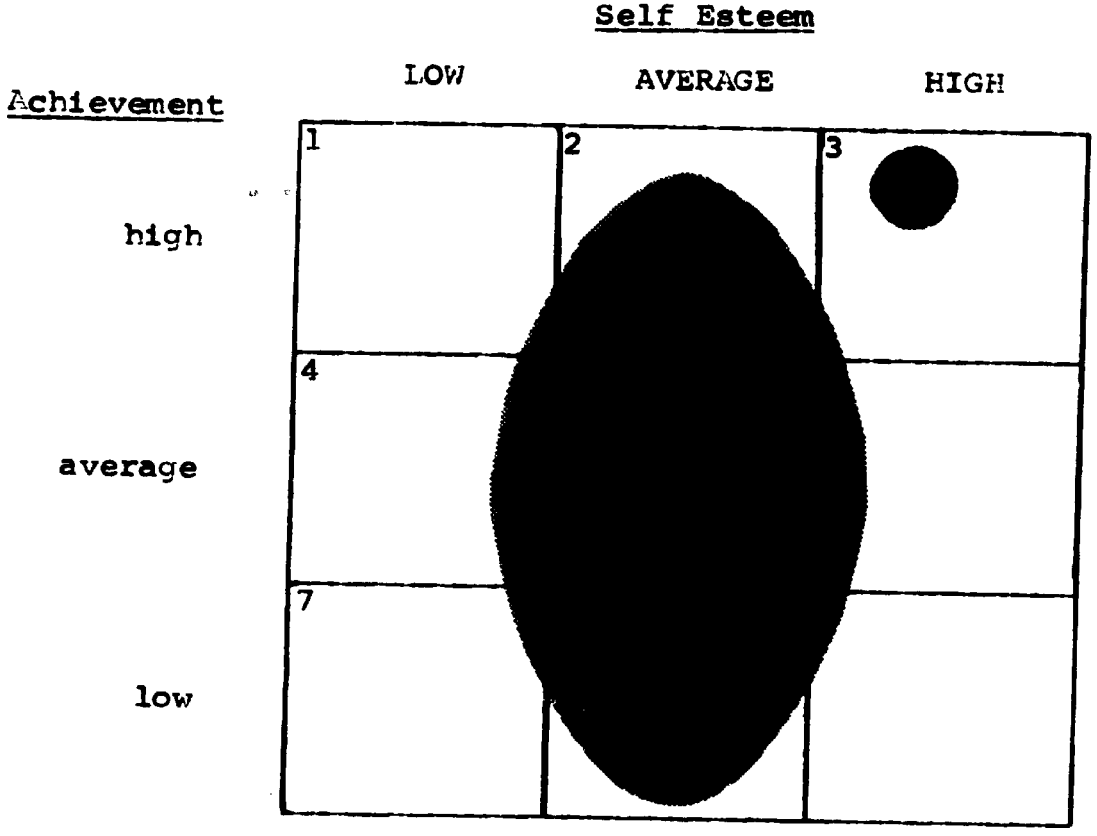


Fig. 2. Stage One, self esteem and academic achievement at the beginning of school.

As stated under the limited hypothesis, it is believed that all children have some degree of potential intellectual power which is not channeled into school achievement. In the early elementary grades, students who make an unusually large investment in traditional types of school achievement can probably slightly alter their academic achievement position relative to their peers. These movements are shown by arrows

in Figure 3. The changes in achievement are actually slight, but they are intrinsically satisfying for those students with a high need for achievement (represented by Arrow B) who end up in Cell 6 as described earlier. Arrow A shows students who respond mainly to cultural pressure exerted through adult expectations and not internalized by the child. Their improved achievement is not intrinsically satisfying, and their self esteem is not affected.

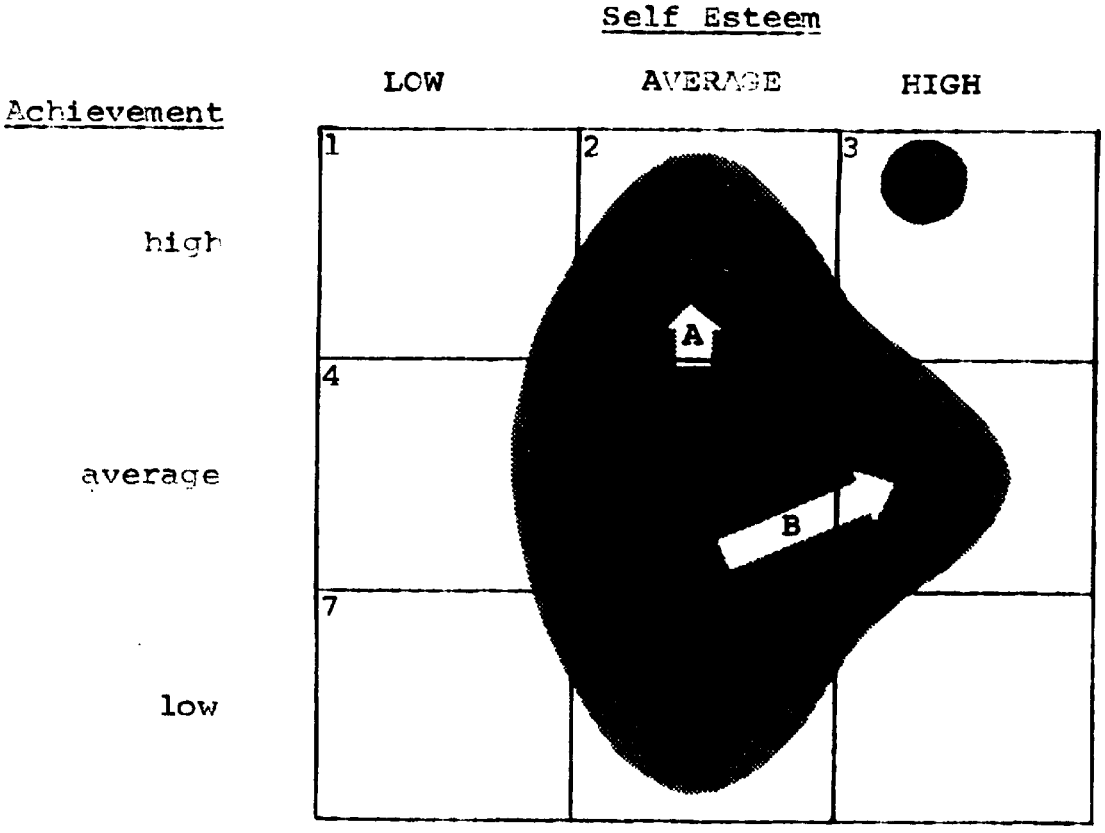


Fig. 3. Stage Two, self esteem and academic achievement in the early elementary years.

Ketcham and Morse found Coopersmith Self Esteem to be higher in the third grade than in any of the proceeding grades. It is suggested that Stage Two represents the self esteem and achievement picture in about grades one through

three. As can be seen, not much has happened in the low self esteem area, or column one. Of course, some low self esteem does exist at this time, but it is felt that the major feelings of low self esteem require a few years of accumulated school experience.

By third grade or later, events may take their toll on certain students who were originally in the comfortable middle ground of both self esteem and academic achievement. This period of change is called Stage Three. Social failures finally accumulate for one group. Their Coopersmith Self Esteem (M = 75) becomes the most negative of any group. This movement into Cell 4 (the 1A group) is shown by Arrow C. There is no evidence in the data as to the nature or cause of this group's social failure, but the fact of this failure can be seen in low peer acceptance (M = 82). This group also has a Mental Health Index (M = 83) which is the second lowest of the cells. It is suspected that this low mental health is a result and not a cause of low self esteem and social rejection. It is well worth noting that Cell 4 continues to achieve on the average level of which it is capable. Self esteem in this important instance has no observable link with school achievement.

Another group of children from the middle ground of both self esteem and achievement becomes differentiated (see Arrow D) as Cell 7 (the 1L group). This group has average intellectual potential (Individual IQ Cell M = 119, Total Group M = 122), yet in addition to the social problems of Cell 4, this group experiences severe learning problems. Again, the available

data do not reveal the nature of the problem, but an average PMA IQ which is 20 points lower than the average Individual IQ dramatically demonstrates its presence. However, this group has average needs for achievement and affiliation. Again, mental health is poor with particularly strong feelings of anxiety indicated by a low mean of 78.

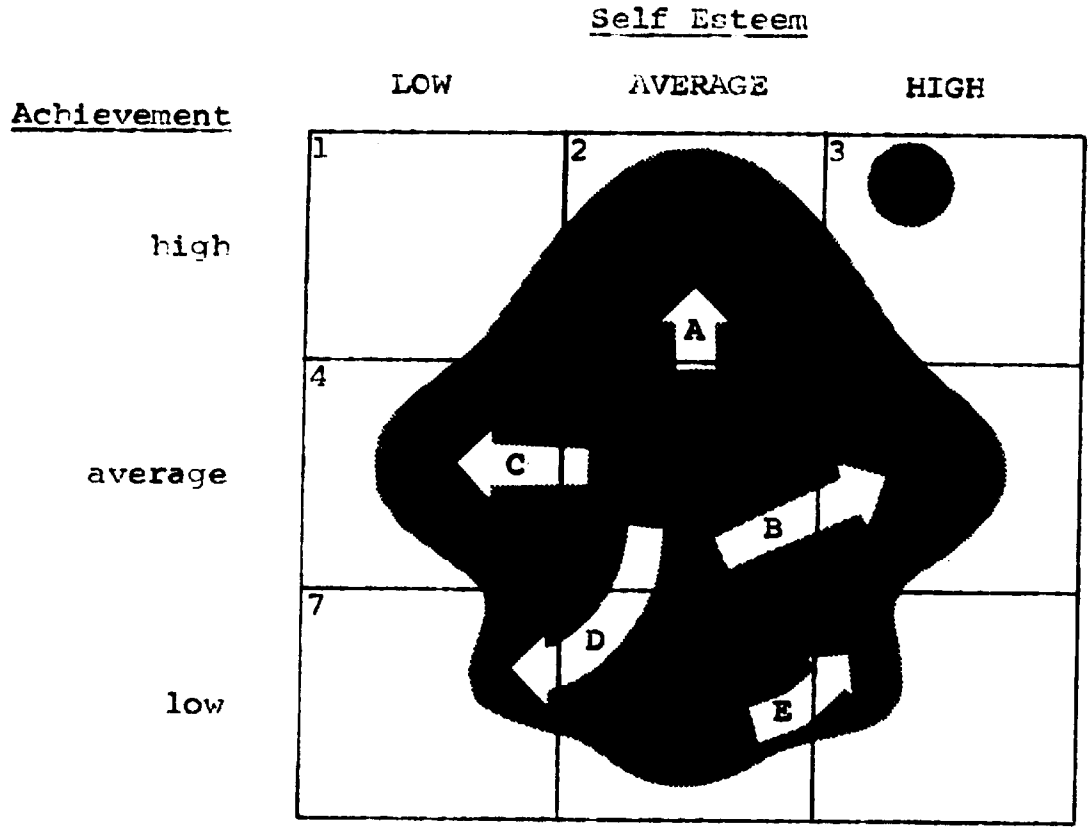


Fig. 4. Stage Three, self esteem and academic achievement in the later elementary years.

There is reason to believe that these students have experienced various problems in learning after an average start in school. Because of an unusual combination of traits (good ability, average needs for achievement and affiliation, social rejection, and poor achievement), it is inferred that these students must experience cognitive dissonance. Thinking poorly

of themselves may be their method of resolving this dissonance. Anxiety and poor mental health may result since the individual's needs for achievement and affiliation are not being met. One of the "pre-conditions for learning" often listed is "the emotional freedom to learn." Emotional freedom does not seem to be present for members of Cell 7. It is believed that students in Cell 7 are on a psychological treadmill (with one condition feeding another) which may require expert intervention. It is also suspected that the learning problems of these students may, unlike many, respond to remediation.

Finally, in Stage Three, Arrow E indicates the emergence of another group. This new group emerges out of Cell 8, and becomes Cell 9 (the 1H group). As mentioned earlier, included in the initial group of low achievers are some children who are simply late achievers. By the middle elementary grades some of these begin their achievement climb, and since this climb is usually rather rapid after a period of slow growth, we suspect that self esteem improves also. The longitudinal research suggests that various alternative bases of self esteem (such as achievement in sports) may be employed by this group. The high need for affiliation and the high acceptance received in this cell tends to coincide with this pattern of achievement substitutes.

It will be noted that the very high achievers with high self esteem (Cell 3) have found their position comfortable throughout the elementary school years. This will not be so in the final stage.

In Stage Four, which covers the adolescent period of the child's school history, peer influences come strongly into play. Cell 3 (the hH group) is not given as much acceptance as the other two high-achieving cells. Probably some of the members of Cell 3 "cool it" and join the high achievers with average self esteem (movement shown by Arrow F). Cell 3 is the youngest in chronological age which strongly suggests that it loses members as age increases.

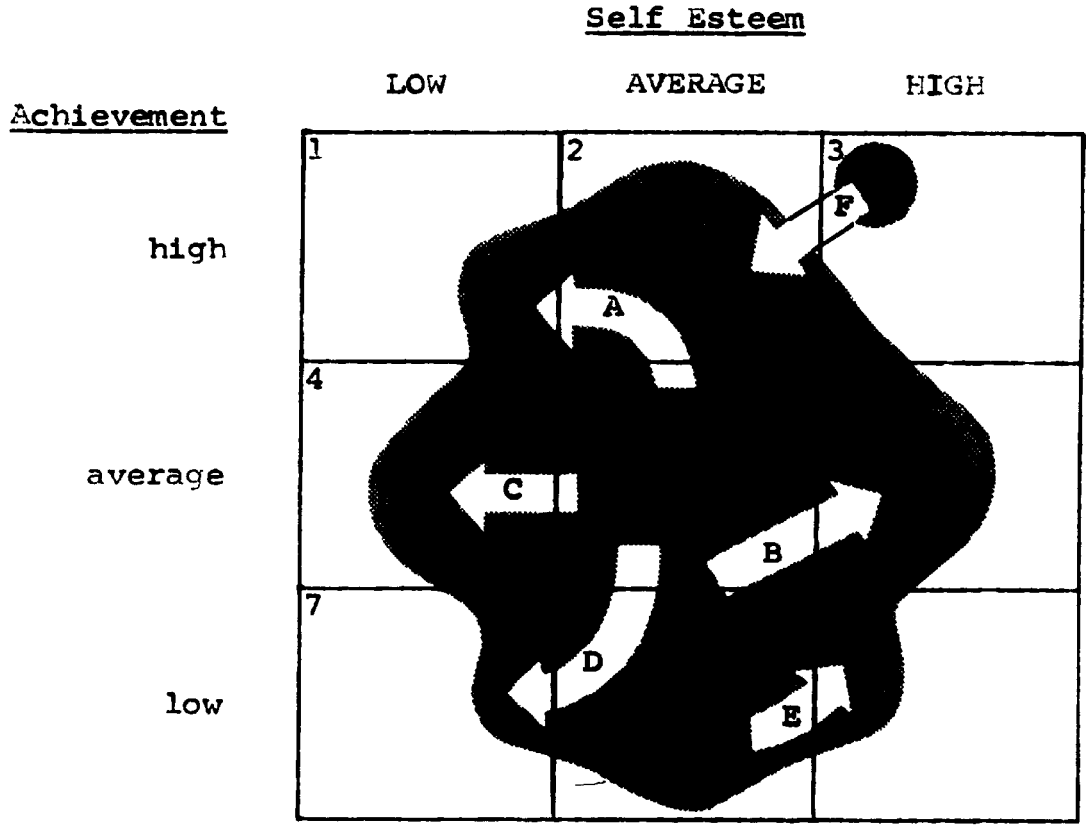


Fig. 5. Stage Four, self esteem and academic achievement in the junior high and senior high years.

Also as the result of peer influence, some members of Cell 2 (probably those who originally moved up by maximizing their achievement) create a new cell, Cell 1. These are students with a history of high academic achievement, but who

have a strong need for affiliation. As was mentioned in the limited hypothesis, self-deprecation is the means these adolescents use to gain peer acceptance. Cell 1 (the hL group) has the highest mean chronological age which suggests the late formation of this cell.

By this stage some students in Cell 9 (the lH group) have probably "caught up" in achievement and have joined Cell 6 or Cell 5. In addition, some very slow starters are probably moving out of Cell 8 (the lA group) into Cell 9 or possibly into Cell 5.

Cell 8 (the lA group) is a significant cell in that it appears to have had a stable core of members who did not move during their school history. It is suggested that this is the true low-ability group (Individual IQ Cell Mean = 112, Total Group Mean = 122). It is further suggested that low ability and low achievement produce average self esteem, not low self esteem as is often supposed. The needs structure of this group is very flat, and cell means on almost all the Personal-Social variables are average. It would seem that these students have diversified their interests and that consequently their academic shortcomings are not particularly damaging in the area of self esteem.

Similarly, it is postulated that Cell 2 (the hA group) represents a steady group of high achievers. This group is unique in its relatively high need for influence. It is suggested that most of the group leaders come from this group.

Figure 5, which summarizes the various changes described

above, provides another important insight. It can be noted that the vertical component of each arrow represents a change in achievement and that the horizontal component represents a change in self esteem. Looking at the horizontal components only, four arrows (A, C, D, and F) lead to the left or toward lowered self esteem. In contrast, only two arrows (B and E) lead to the right or toward raised self esteem. The evidence of this study, as interpreted in Figure 5, strongly suggests that there are more avenues in school for lowering than for raising self esteem. This conclusion is in agreement with the earlier study where it was found, "...the trend is clearly high for grade three, a severe drop and then gradual recovering in total self esteem by grade eleven, but never back to that reported by three" (Ketcham & Morse, 1965, p. 87). One contribution of the present study is in suggesting specific avenues through which the trend toward lowered self esteem observed by Ketcham and Morse is accomplished. It is important to note that the avenues through which self esteem becomes more negative may (Arrows D and F) or may not (Arrows A and C) involve low or dropping academic achievement. Figure 5 further indicates that the only avenues through which self esteem is typically improved in school (Arrows B and E) involve improved academic achievement. It will be suggested later that schools must broaden their sphere of serious concern to include social and personal achievement if they are to create avenues through which certain types of low self esteem (such as that in the aL group, Cell 6) can be raised.

The broad hypothesis presented here extends the scope of the limited hypothesis presented earlier. Again, the hypothesis is concerned with the most basic forces which determine long-term, evolutionary trends in the etiology of self esteem. Contingencies which may operate in specific cases are not specified.

Broad Hypothesis

> Levels of self esteem are the result of the interaction of many factors in the child's life at school. Some of these key factors are need structure, social climate, developmental pattern, age, sex, actual and potential achievement. These factors interact through time to progressively produce more and more patterns of self esteem and achievement.
>
> The following differentiations are postulated in the etiology of self esteem:

	Type	Probable Cause	Time of First Appearance
Low Self Esteem	self-deprecated (Cell 1)	conflict between pressure to achieve and need for affiliation	late
	rejected (Cell 4)	social failure	middle
	dissonant (Cell 7)	learning failure and social failure in presence of average ability	middle
Average Self Esteem	cool (Cell 2)	academic success and political bent; compromise	early
	average (Cell 5)	average experience	early
	detached (Cell 8)	low achievement and substituted interests	early

	Type	Probable Cause	Time of First Appearance
High Self Esteem	self-satisfied A (Cell 3)	outstanding ability and outstanding school success	early
	self-satisfied B (Cell 6)	internally motivated maximal achievement	middle
	hopeful (Cell 9)	improvement in achievement after a late start, plus substitutes for academic achievement	middle

This broad hypothesis provides some obvious suggestions to the educator. First it suggests that there are several types of self esteem coming from several complex sources. It predicts results which may or may not be expected to accompany changes in these various types of self esteem.

Since interest in improving low self esteem is often expressed, the implications regarding children exhibiting low self esteem will be spelled out. First, the three types of low self esteem do not represent equal proportions of the total population. Theoretically, the distribution is as follows:

self-deprecated type (Cell 1) = 3%
rejected type (Cell 4) = 11%
dissonant type (Cell 7) = 3%

Second, the results expected from changes in each type of low self esteem are quite distinct. The rejected type (Cell 4) has low self esteem based on social failure. The teacher should plan improvements through social means. If these efforts to improve self esteem are successful, accompanying

improvements in the mental health area might be expected. But, since this 11 per cent of the population represents children with average ability who are already achieving on an average level, no improvement in academic achievement should be expected. In other words, for the largest low self-esteem group, the educator's goals must be other than improved academic achievement. The improvements in mental health and social adjustment mentioned above are goals which cannot be justified on the basis of expectations for academic improvements.

In contrast to the rejected type, the small group of children experiencing the dissonant type of low self esteem (Cell 7) may respond to academic remediation. Both social failure and learning failure are experienced by this group, so the efforts of the educator should be two-fold. In addition to the efforts of the type mentioned earlier, efforts should be exerted to improve the learning experiences of these children. Since ability exceeds performance for this 3 per cent of the population, there should be some expectation of academic improvement. There is no information provided in this hypothesis regarding the nature of the learning problems which may exist. This is a matter which would have to be individually determined for each child. This small group is of particular interest to the educator since its members may respond to academic remediation. It is therefore important to be able to individually distinguish these under-achieving students from those who are simply low-achieving and/or late-achieving. The present study indicates that this group of

underachievers, at an average age of 160 months, exhibits the following characteristics:

1. A positive attitude toward learning
2. Average acceptance perceived
3. Low acceptance given and received
4. Poor mental health (high anxiety; feeling of unsupportive classroom)
5. Norms imputed to the group higher than self norms
6. Low self esteem
7. Average need for achievement and affiliation
8. Average individually-measured IQ and low group-measured IQ

In order to identify a particular child as belonging or not belonging to the under-achieving group, some combination of criteria would probably be needed. The list presented could be employed by researchers using a computer search technique. Earlier work by Ruckhaber (1966) may provide additional guidance.

The last low self-esteem type (Cell 1) the self-deprecated child, might find it impossible to abandon his low self esteem since it makes his particular type of adjustment possible. The educator might find himself faced with the question, "Am I willing to encourage more modest academic achievement for these students in order to facilitate a higher level of self esteem?" This is a question well worth asking.

In this final chapter, hypotheses have been generated which provide explanations for observed differences in self esteem. A major theme has been the wide variety of types of self esteem which can be observed. Closely associated with this variety of types of self esteem, have been questions regarding the narrowness of the school's goals. The time is surely ripe for the school to broaden its sphere of <u>serious</u>

concern to include personal and social achievement. When these types of achievement are admitted as legitimate school values, educational research and practice will gain a new clarity, and spurious cause and effect relationships will no longer be sought or defended. Hopefully, in the near future the school will stop attempting to justify every program on the basis of academic achievement gains. It seems almost inevitable that the school will increase its ability to distinguish the many complex links of cause and effect within its field of interest and to judge each on its own merits. It is hoped that this exploration into the etiology of self esteem suggests a number of links which future researchers will find worth testing.

APPENDIX

TABLE 78

TOTAL GROUP, SUMMARY STATISTICS

Variable Name	Mean	Std Dev
Motivation	103	28
Teacher as Facilitator	119	29
Conventional Learning	96	21
Complementary Learning	94	24
Learning Index	102	29
Flexibility	98	18
Gen Accept Social Climate	104	24
Acceptance Given	96	23
Acceptance Received	96	25
Social Climate Index	96	26
Abs of School Anxiety	93	25
Emo Suppor Classroom	94	20
Mental Health Index	93	20
Self Norms	97	23
Group Norms	98	21
Osgood: Self Esteem	93	25
Coopersmith: Self Esteem	104	23
Need for Achievement	101	23
Need for Affiliation	102	19
Need for Influence	96	20
CA	160	26
Individual IQ	122	16
PMA IQ	114	21
EdQ	110	16
OQ	107	11

N = 111

TABLE 79

LOW SELF-ESTEEM GROUP

SUMMARY STATISTICS

Variable Name	Mean	Std Dev
Motivation	100	26
Teacher as Facilitator	119	29
Conventional Learning	97	20
Complementary Learning	90	21
Learning Index	99	23
Flexibility	94	15
Gen Accept Social Clmt	102	25
Acceptance Given	91	22
Acceptance Received	88	26
Social Climate Index	86	26
Abs of School Anxiety	84	22
Emo Support Classroom	90	21
Mental Health Index	84	19
Self Norms	93	25
Group Norms	98	20
Osgood: Self Esteem	75	23
Coopersmith: Self Esteem	78	13
Need for Achievement	97	21
Need for Affiliation	104	19
Need for Influence	95	16
CA	167	23
Individual IQ	122	14
PMA IQ	112	18
EdQ	108	15
OQ	106	10

N = 38

TABLE 80

AVERAGE SELF-ESTEEM GROUP

SUMMARY STATISTICS

Variable Name	Mean	Std Dev
Motivation	102	34
Teacher as Facilitator	117	28
Conventional Learning	97	23
Complementary Learning	96	27
Learning Index	102	34
Flexibility	99	19
Gen Accept Social Clmt	106	21
Acceptance Given	97	23
Acceptance Received	98	27
Social Climate Index	98	26
Abs of School Anxiety	106	25
Emo Support Classroom	94	19
Mental Health Index	97	20
Self Norms	100	18
Group Norms	100	18
Osgood: Self Esteem	98	21
Coopersmith: Self Esteem	107	7
Need for Achievement	99	24
Need for Affiliation	101	18
Need for Influence	99	24
CA	162	25
Individual IQ	121	17
PMA IQ	111	22
EdQ	110	15
OQ	108	10

N = 37

TABLE 81

HIGH SELF-ESTEEM GROUP

SUMMARY STATISTICS

Variable Name	Mean	Std Dev
Motivation	109	21
Teacher as Facilitator	119	28
Conventional Learning	95	20
Complementary Learning	95	22
Learning Index	105	29
Flexibility	103	18
Gen Accept Social Clmt	106	24
Acceptance Given	98	22
Acceptance Received	104	20
Social Climate Index	103	24
Abs of School Anxiety	105	22
Emo Support Classroom	98	18
Mental Health Index	100	19
Self Norms	98	24
Group Norms	95	25
Osgood: Self Esteem	107	20
Coopersmith: Self Esteem	128	5
Need for Achievement	106	22
Need for Affiliation	101	18
Need for Influence	96	18
CA	150	28
Individual IQ	124	16
PMA IQ	117	22
EdQ	111	18
OQ	108	12

N = 36

TABLE 82

TOTAL GROUP

INTERCORRELATIONS OF PERSONAL-SOCIAL VARIABLES

	Motivation	Teacher	Conv Ln	Compl Ln	Flexibility	Acc Soc Clmt	Accept Gvn	Accept Rec	Abs Anxiety	Suppor Clrm
Teacher as Facilitator	40									
Conventional Learning	-02	05								
Complementary Learning	38	41	07							
Flexibility	25	22	21	34						
Accepting Social Clmt	37	41	07	42	16					
Acceptance Given	06	18	-03	24	05	32				
Acceptance Received	-03	-01	09	17	14	27	41			
Abs of Sch Anxiety	04	-10	-19	-08	04	-05	15	16		
Supportive Classroom	31	29	-01	05	02	01	-03	-08	26	
Self Norms	27	18	-18	02	-01	11	02	-07	06	11
Group Norms	18	16	02	24	23	17	25	16	-08	02
Osgood: Self Esteem	17	16	03	22	14	26	15	16	25	07
Coopersmith: S Esteem	17	04	-08	04	19	18	14	25	38	15
Need - Achievement	22	25	-05	26	14	25	-04	00	-09	17
Need - Affiliation	-06	-23	03	-11	-10	02	22	20	03	-14
Need - Influence	-26	-15	03	-13	-01	-23	-06	-03	13	-13

Key: Decimal point omitted; Underlined = .01 significance; Variables 1 through 4 went into the Learning Index used earlier; Variables 5 through 8 went into the Social Climate Index; and Variables 9 and 10 went into the Mental Health Index.

TABLE 83

LOW SELF-ESTEEM GROUP

INTERCORRELATIONS OF PERSONAL-SOCIAL VARIABLES

	Motivation	Teacher	Conv Ln	Compl Ln	Flexibility	Acc Soc Clmt	Accept Gvn	Accept Rec	Abs Anxiety	Suppor Clrm
Teacher as Facilitator	23									
Conventional Learning	-15	-02								
Complementary Learning	-03	32	10							
Flexibility	19	19	39	29						
Accepting Social Clmt	14	48	-22	21	05					
Acceptance Given	02	15	-02	09	-03	04				
Acceptance Received	09	16	-08	07	-06	40	58			
Abs of Sch Anxiety	28	-08	-14	-13	14	08	18	17		
Supportive Classroom	25	06	-14	03	-16	-18	-10	-04	33	
Self Norms	03	23	-01	-14	-15	18	04	-04	-21	03
Group Norms	03	-06	-11	13	-15	10	26	19	-10	-19
Osgood: Self Esteem	-04	33	-03	02	19	30	-07	03	07	-14
Coopersmith: S Esteem	31	29	-33	-19	-07	50	16	08	15	-07
Need - Achievement	-01	-08	-24	11	-20	19	-04	-07	-19	06
Need - Affiliation	03	-05	13	-27	-10	-02	15	26	19	-11
Need - Influence	-22	-03	15	12	25	-27	06	-07	03	06

Key: Decimal point omitted; Underlined = .01 significance; Variables 1 through 4 went into the Learning Index used earlier; Variables 5 through 8 went into the Social Climate Index; and Variables 9 and 10 went into the Mental Health Index.

TABLE 84

AVERAGE SELF-ESTEEM GROUP

INTERCORRELATIONS OF PERSONAL-SOCIAL VARIABLES

	Motivation	Teacher	Conv Ln	Compl Ln	Flexibility	Acc Soc Clmt	Accept Gvn	Accept Rec	Abs Anxiety	Suppor Clm
Teacher as Facilitator	45									
Conventional Learning	05	07								
Complementary Learning	60	39	06							
Flexibility	17	26	-03	45						
Accepting Social Clmt	50	27	20	48	-07					
Acceptance Given	-03	-07	-15	15	-07	38				
Acceptance Received	-08	-02	25	20	25	31	46			
Abs of Sch Anxiety	-22	-28	-13	-22	00	-28	11	19		
Supportive Classroom	36	54	06	04	18	-03	-20	-11	05	
Self Norms	43	00	-17	23	06	-02	-05	-04	04	30
Group Norms	27	33	05	40	54	12	16	26	09	25
Osgood: Self Esteem	18	-11	23	25	06	22	04	04	-02	-16
Coopersmith: S Esteem	-12	-25	20	00	05	-07	-08	08	-03	-07
Need - Achievement	34	68	09	27	09	28	-09	-14	-28	53
Need - Affiliation	-05	-44	04	15	01	20	49	43	-07	-39
Need - Influence	-36	-38	-10	-42	-07	-37	-16	-15	32	-27

Key: Decimal point omitted; Underlined = .01 significance; Variables 1 through 4 went into the Learning Index used earlier; Variables 5 through 8 went into the Social Climate Index; and Variables 9 and 10 went into the Mental Health Index.

TABLE 85

HIGH SELF-ESTEEM GROUP

INTERCORRELATIONS OF PERSONAL-SOCIAL VARIABLES

	Motivation	Teacher	Conv Ln	Compl Ln	Flexibility	Acc Soc Clmt	Accept Gvn	Accept Rec	Abs Anxiety	Suppor Clrm
Teacher as Facilitator	59									
Conventional Learning	03	10								
Complementary Learning	46	57	07							
Flexibility	39	24	37	22						
Accepting Social Clmt	52	47	27	58	45					
Acceptance Given	22	48	12	50	17	55				
Acceptance Received	-28	-22	11	21	02	02	03			
Abs of Sch Anxiety	09	09	-38	00	-24	-09	04	-23		
Supportive Classroom	29	32	10	05	-09	26	17	-28	32	
Self Norms	44	29	-40	-05	02	10	03	-25	20	04
Group Norms	33	26	11	21	32	29	34	10	-23	10
Osgood: Self Esteem	34	37	-09	35	-19	24	34	-02	12	33
Coopersmith: S Esteem	34	17	-30	-07	-15	09	-06	-34	34	28
Need - Achievement	23	11	-02	36	39	27	-03	14	06	-18
Need - Affiliation	-17	-24	-09	-26	-16	-07	05	-08	09	11
Need - Influence	-10	05	12	09	-15	-07	-07	19	-15	-19

Key: Decimal point omitted; Underlined = .01 significance; Variables 1 through 4 went into the Learning Index used earlier; Variables 5 through 8 went into the Social Climate Index; and Variables 9 and 10 went into the Mental Health Index.

TABLE 86

TOTAL GROUP

CORRELATIONS INVOLVING GROWTH-INTELLECTUAL VARIABLES VS PERSONAL-SOCIAL VARIABLES

Personal-Social Variables	Growth-Intellectual Variables					
	CA	Ind IQ	PMA IQ	EdQ	GQ	Sex
Motivation	-29	27	23	18	16	29
Teacher as Facilitator	-06	15	02	06	07	11
Conventional Learning	-23	05	-20	-06	-21	-29
Complementary Learning	-22	08	01	08	10	12
Flexibility	-65	19	-07	-02	-06	-12
Accepting Social Clmt	-08	09	03	13	05	21
Acceptance Given	08	05	05	05	-01	01
Acceptance Received	-12	10	12	17	11	-13
Abs of Sch Anxiety	12	09	15	16	21	-21
Supportive Classroom	07	09	05	04	10	05

Key: Decimal point omitted; Underlined = .01 significance; Variables 1 through 4 went into the Learning Index used earlier; Variables 5 through 8 went into the Social Climate Index; and Variables 9 and 10 went into the Mental Health Index.

TABLE 87

LOW SELF-ESTEEM GROUP

CORRELATIONS INVOLVING GROWTH-INTELLECTUAL VARIABLES VS PERSONAL-SOCIAL VARIABLES

Personal-Social Variables	Growth-Intellectual Variables					
	CA	Ind IQ	PMA IQ	EdQ	CQ	Sex
Motivation	-33	44	31	16	18	26
Teacher as Facilitator	-10	17	14	07	10	-12
Conventional Learning	-27	-13	-40	-28	-27	-41
Complementary Learning	-32	00	-04	07	-16	-10
Flexibility	-68	25	-18	-07	-06	-14
Accepting Social Clmt	-04	17	07	14	28	02
Acceptance Given	05	33	23	20	-06	-26
Acceptance Received	-05	13	18	27	13	08
Abs of Sch Anxiety	-02	15	22	22	23	-07
Supportive Classroom	13	11	30	13	08	02

Key: Decimal point omitted; Underlined = .01 significance; Variables 1 through 4 went into the Learning Index used earlier; Variables 5 through 8 went into the Social Climate Index; and Variables 9 and 10 went into the Mental Health Index.

TABLE 88

AVERAGE SELF-ESTEEM GROUP

CORRELATIONS INVOLVING GROWTH-INTELLECTUAL VARIABLES VS PERSONAL-SOCIAL VARIABLES

	Growth-Intellectual Variables					
Personal-Social Variables	CA	Ind IQ	PMA IQ	EdQ	OQ	Sex
Motivation	-31	21	20	10	10	32
Teacher as Facilitator	-30	14	01	02	01	29
Conventional Learning	-18	19	-12	12	-05	-32
Complementary Learning	-42	17	01	01	10	29
Flexibility	-65	14	-09	-11	-05	-08
Accepting Social Clmt	-12	15	07	26	-02	54
Acceptance Given	06	-05	12	07	03	27
Acceptance Received	-18	29	17	29	29	-15
Abs of Sch Anxiety	37	20	19	36	25	-23
Supportive Classroom	-13	17	05	-08	13	02

Key: Decimal point omitted; Underlined = .01 significance; Variables 1 through 4 went into the Learning Index used earlier; Variables 5 through 8 went into the Social Climate Index; and Variables 9 and 10 went into the Mental Health Index.

TABLE 89

HIGH SELF-ESTEEM GROUP

CORRELATIONS INVOLVING GROWTH-INTELLECTUAL VARIABLES VS PERSONAL-SOCIAL VARIABLES

Personal-Social Variables	Growth-Intellectual Variables: CA	Ind IQ	PMA IQ	EdQ	OQ	Sex
Motivation	-13	17	15	31	23	41
Teacher as Facilitator	20	13	-09	09	08	17
Conventional Learning	-30	06	-11	-04	-31	-16
Complementary Learning	11	02	05	17	30	21
Flexibility	-59	18	-03	05	-12	-03
Accepting Social Clmt	-05	-06	-05	02	-09	17
Acceptance Given	22	-11	-21	-14	-04	11
Acceptance Received	09	-24	-07	-11	-13	-24
Abs of Sch Anxiety	27	-09	-08	-15	13	-13
Supportive Classroom	35	-06	-25	01	07	23

Key: Decimal point omitted; Underlined = .01 significance; Variables 1 through 4 went into the Learning Index used earlier; Variables 5 through 8 went into the Social Climate Index; and Variables 9 and 10 went into the Mental Health Index.

TABLE 90

TOTAL GROUP

PREDICTIVE FORMULA PRODUCED BY FIVE STEPS OF MULTIPLE REGRESSION

Step Number 5

Variable Entering: Motivation
F Level = 4.52
Standard Error of Y = 9.21
Coefficient of Determination = .69
Multiple Correlation Coefficient = .83

Constant Term = 7.09

Variable Name	Coefficient	Std Err of Coeff
Motivation	-.07	.03
Osgood: Self Esteem	.09	.03
Individual IQ	.41	.07
PMA IQ	.35	.06
Sex	7.64	1.94

Y = Educational Quotient

TABLE 91

LOW SELF-ESTEEM GROUP

PREDICTIVE FORMULA PRODUCED BY FIVE STEPS OF MULTIPLE REGRESSION

Step Number 5

Variable Entering: Teacher as Learning Facilitator
F Level = 1.26
Standard Error of Y = 9.54
Coefficient of Determination = .66
Multiple Correlation Coefficient = .81

Constant Term = 61.25

Variable Name	Coefficient	Std Err of Coeff
Teacher as Learning Facilitator	-.07	.06
Generally Accepting Social Climate	.19	.08
Coopersmith: Self Esteem	-.31	.14
Need - Achievement	-.12	.08
PMA IQ	.63	.09

Y = Educational Quotient

TABLE 92

AVERAGE SELF-ESTEEM GROUP

PREDICTIVE FORMULA PRODUCED BY FIVE STEPS OF MULTIPLE REGRESSION

Step Number 5

Variable Entering: Conventional Learning
F Level = 4.92
Standard Error of Y = 9.06
Coefficient of Determination = .71
Multiple Correlation Coefficient = .84

Constant Term = 14.46

Variable Name	Coefficient	Std Err of Coeff
Conventional Learning	.16	.07
Abs of School Anxiety	.17	.06
Individual IQ	.37	.12
PMA IQ	.27	.10
Sex	11.08	3.51

Y = Educational Quotient

TABLE 93

HIGH SELF-ESTEEM GROUP

PREDICTIVE FORMULA PRODUCED BY FIVE STEPS OF MULTIPLE REGRESSION

Step Number 5

Variable Entering: Learning Index
F Level = 3.47
Standard Error of Y = 7.20
Coefficient of Determination = .86
Multiple Correlation Coefficient = .93

Constant Term = 15.52

Variable Name	Coefficient	Std Err of Coeff
Learning Index	.09	.05
Group Norms	- .15	.06
Individual IQ	.41	.10
PMA IQ	.30	.08
Sex	10.21	2.98

Y = Educational Quotient

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