THE RELATIONSHIP BETWEEN STUDENTS' SOCIO - ECONOMIC BACKGROUND AND THEIR ACADEMIC ACHIEVEMENT AT SIXTH GRADE IN TURKEY

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ABSTRACT

THE RELATIONSHIP BETWEEN STUDENTS' SOCIO-ECONOMIC BACKGROUND AND THEIR ACADEMIC ACHIEVEMENT AT SIXTH GRADE IN TURKEY

By

Ali Dogan Arseven

The Purpose

The purpose of this study is to investigate some of the nonintellectual factors, namely socio-economic (SES) and socio-psychological factors (SPS), and their relationships with the academic achievement of sixth grade children in Ankara, Turkey, during the 1971-1972 school year. This study also attempts to compare students from a primarily low socio-economic population with students from a primarily high socio-economic population with respect to the relationships specified above. The major research questions explored in the study are as follows:

1. What is the magnitude of the relationship, if any, between a student's academic achievement and his socio-economic status?
2. What is the magnitude of the relationship, if any, between student's academic achievement and socio-psychological variables?

3. Is SES or SPS more significant in establishing these relationships?
4. To what extent, if any, do SES and SPS variables differ, between the two student populations, in predicting students' achievement in selected subjects?

The Methodology

The population under investigation consisted of two stratified student populations (primarily low SES and primarily high SES) attending sixth grade of seven public middle schools in Anakra, Turkey, in the 1971-1972 school year. A majority of the students of low SES live in Gecekondu dwellings (slum area) and the students in high SES live mostly in well-to-do neighborhoods (non-Gecekondu) in the metropolitan area. The sample included 364 students from the low SES population and 378 students from the high SES population. Both samples were randomly and proportionally selected from their respective entire populations in this study.

Two main sources were used to collect data for the study. Students' grades on reading, mathematics, and G.P.A. of five subjects (dependent variables) were obtained from school records. Information about students' socio-economic status and socio-psychological factors was obtained by means of a "Student Questionnaire," which was supplemented with a "Parent Questionnaire." Parents' responses to the items in the Parents' Questionnaire were used only to check

whether there was a consistency between students' answers to the answers to similar items in the Student Questionnaire.

Student's educational background, father's occupation, father's income, father's education, and student's residence condition were used as indicators of his socio-economic status. School aspiration, self-concept of ability, perception of the expectations of significant others (parents, teacher, and friend) concerning student's potentialities with respect to academic achievement were used as indicators of his SPS.

The data obtained for the study were analyzed through the use of descriptive summaries of item responses, in terms of frequency counts and percentages. Selected further analyses of data were conducted using statistical techniques of correlational analysis, factor analysis, multiple regression analysis, and stepwise regression analysis.

Major Findings of the Study

The following major findings emerged:

1. For the combined population, there is significant relationship between students' socio-economic status and their academic achievement. The highest relevant SES factors to achievement are father's occupation and father's education.

2. In comparing the two sub-populations, the relationships between SES and achievement are substantial for non-Gecekondu students, whereas those relationships

for Gecekondu students are either negligible or nonsignificant.

3. The relationships between SPS variables and academic achievement based on the combined population are significant. However, the magnitude of relationships is higher in the non-Gecekondu population than in the Gecekondu population. Students' perceived evaluation by parents and students' self-concept of ability are the socio-psychological factors contributing most to the variance in academic achievement of students in both populations.

4. SPS variables were found to be more significant than SES variables in establishing the relationships between achievement and the above nonintellectual variables (SPS and SES).

5. For the Gecekondu population, a negative relationship was found between SES and SPS, while it was positive for non-Gecekondu. There was no correlation between SES and student's grade for the Gecekondu population.

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CHAPTER I

INTRODUCTION

Statement of the Problem

The trend in recent research studies on academic achievement appears to be toward investigating nonintellectual variables as important factors in explaining differences in academic achievement. Significant findings have indicated that intellectual measures account for only 35 to 45 per cent of the variation in academic performance.[1]

In recent education literature, there seems to be a growing concern, not only about sociological variables influencing learning and teaching, but also about the interaction among all of these variables.[2]

Mitchell pointed out that the determinants of learning behavior need to be sought more often in the characteristics of the environmental context and the interaction of these characteristics with individual traits and abilities.[3]

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[1]Mary Elizabeth McClelland, "An Investigation of Selected Non-Intellectual Variables and Their Relationship to College Academic Achievement" (unpublished Doctoral dissertation, Michigan State University, 1969).

[2]J. R. Campbell and C. W. Barness, "Interaction Analysis--A Breakthrough?" Phi Delta Kappan, L, 10 (June, 1909), 587-590.

[3]James V. Mitchell, Jr., "Education's Challenge to Psychology: The Prediction of Behavior From Person-Environment Interactions," Review of Educational Research, XXXIX, 5 (1969), 696.

In certain instances, it seems that social forces and environmental contexts may be prepotent over individual traits, or they may have such immense implications and impact on individual behavior that they can not be ignored.

Quite often, researchers who have focused on the individual learner appear unable to account for the variations in learning that may be due to the social environment. Therefore, it is necessary to come to a fresh understanding of the individual's environment and the relationship between his performance and his environment.

In education and social science, researchers have recognized cultural and subcultural influences on the process of learning and social change, and are now trying to develop adequate research designs to study the differences in learning that seem to result from the differences in environment.

An individual is born into a family that is part of a socially ranked group, and the family's social participation generally is limited to that group. The individual's opportunities for social mobility are limited by the pressure he receives from groups above him. It has been found that social classes operate essentially to maintain barriers against intimate social participation with other social classes. For example, people of the slums are barred from intimate social participation with people from the middle and upper middle classes.

A child cannot learn his mores, social drives, and values solely from books. He learns a particular culture and

moral system from those people who exhibit this behavior, and who exhibit it in frequent relationships with him. If a child associates intimately with no one but slum children and slum adults, then he will learn primarily slum culture. Thus, the pivotal meaning of social class to the student of behavioral science is that social class limits and patterns the learning environment of the child. Davis pointed out that social classes form the structure of the social "maze" in which the child learns his habits and meanings.[4]

The child's social learning first takes place in the environment of his family and of his own play-group. The demands of a family upon the child differ significantly between the lower and the upper class. Usually, the child learns the values and beliefs that his parents hold. When the child starts going to school, his surroundings are broadened. He meets new people, and learns new values and habits through interaction with others in and out of school. Next to the family, the school is the most important institution in which a child's socialization takes place. However, elementary schooling does not have as much impact on the child's socialization as secondary schooling. The first adult community with which a student establishes close relationships and in which he becomes an active participant is the secondary school. The secondary school classroom can be described as a living experiment for understanding the

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[4]Allison Davis, Social-Class Influences Upon Learning (Cambridge, Mass.: Harvard University Press, 1960).

problem of human relations in the larger and more diversified social structure of a society. Classroom experiences provide the basis for a real conceptualization of a social system.

The following theoretical concepts, which are widely accepted by social psychologists, provide a common basis for further analysis of the child's socialization. Brookover and his associates pointed out that typically human behavior emerges only from an individual's interaction with other persons who are significant to him within his environment.[5] To understand the educational process and academic achievement of students in any kind of society, the social environment in which learning occurs must be known. The social environment of any student somehow influences the knowledge, values, and behaviors which he acquires.

The research of social scientists has brought us to the stage at which the concept of fixed intelligence is no longer functional. It can be said that heredity probably does set a fixed upper limit on intelligence. However, most students do not operate near their maximum potential because of the limitations existing in their environment. Therefore, environment determines the extent to which an individual approaches his maximum potential. Brookover and his associates pointed out that:

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[5]Wilbur B. Brookover and David Gottlieb, A Sociology of Education (New York: Van Nostrand Reinhold Company, 1964), p. 16.

> Intelligence and other related aptitude measures are sample measures of what the individual has learned and do not measure directly any fixed or inherited capacity or ability.[6]

The assumption of fixed ability still continues to dominate the practice and organization of education in many countries. Jensen[7] hypothesized that there are inherited differences among individuals, and that variations in ability cannot be explained through social class or environmental differences. Rather, the variations in intelligence must be attributed partially to genetic differences.

Since the debate on the issue has not been concluded, the facts and evidences that have been found on either side are not reviewed here. Rather, the present study is primarily concerned with the environmental factors which have been assumed to have an impact on students' academic achievement, with special reference to sixth grade students in Turkey.

The Purpose of the Study

The purpose of the study is to investigate some of the nonintellectual factors, namely socio-economic and socio-psychological factors, and their effect on academic achievement of sixth grade children in Ankara, Turkey, during the 1971-1972 school year.

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[6]Wilbur B. Brookover and Edsel L. Erickson, Society, Schools and Learning (Boston: Allyn and Bacon, Inc., 1969), p. 5.

[7]Arthur R. Jensen, "Environment, Heredity and Intelligence," Harvard Educational Review, Reprint Series No. 2, 1969.

The study also attempts to compare two types of student populations, defined as low socio-economic and high socio-economic groups, by means of two sets of nonintellectual variables and their relationship to students' academic achievement. The first set is categorized as socio-economic (SES) variables, which include father's occupation, father's income, father's education, student's residence, and his previous educational background. The second set is composed of socio-psychological (SPS) variables, which include school aspiration, self-concept of ability, and a student's perception of how significant others evaluate his academic ability.

The data sought pertain to the following questions:

A. Questions for combined populations

1. What is the magnitude of the relationship, if any, between a student's academic achievement and his socio-economic status?
2. What is the magnitude of the relationship, if any, between a student's academic achievement and socio-psychological variables?
3. Is SES or SPS more significant in establishing these relationships?

B. Questions for comparing two sub-populations

4. To what extent, if any, do SES and SPS variables differ, between the two student populations, in predicting students' achievement?
   a. in reading
   b. in mathematics

c. in G.P.A. of five subjects--reading, mathematics, social science, natural science, and foreign language?

The Significance of the Study

Turkey is in the initial stage of its economic, industrial, and social development, and along with this developmental process have come numerous problems. One such problem is that since 1950, Turkey has been faced with rapid urbanization. In the last two decades, many poor villagers from less developed parts of the country have moved into big cities, and these metropolitan areas have been surrounded with a kind of mushroom housing called "Gecekondu." According to Tutengil, there were 240,000 Gecekondu in Turkey by 1960.[8] The percentages of Gecekondu dwellers with respect to the total population of Istanbul and Ankara were 21 and 45, respectively.[9] Since 1962, approximately 170,000 peasants have been moving to the city annually.[10]

The construction of Gecekondu houses is very primitive. Research carried out in Istanbul in 1966 reported that each Gecekondu house has either one or two rooms, and on the average 4.8 people live in it. The head of the household is

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[8]Cavit O. Tutengil, Az Gelismis Ulkelerin Toplumsal Yapisi (Istanbul, 1966), p. 101.

[9]Ibid., p. 102.

[10]Ibid.

generally an unskilled factory worker who earns a wage of between two and four dollars per week.[11]

Urbanization is not a simple agglomeration of people in cities. Rather, it can be viewed as a complex process of social change. When one looks at the social aspect of Gecekondu life, it seems that the people in Gecekondu dwellings, especially the older generations, still keep their rural culture within the larger metropolitan culture.[12]

What does one find concerning the schooling of children who were born and raised in that "Gecekondu culture"? One need not be a fortune teller to predict the emotional as well as psychological repercussions in the hearts and minds of the young generation born and raised in Gecekondu society. When they reach their adolescent age, which is the self-realization age, they will see and understand that their way of living is far inferior to that of the city surrounding them. These children, unlike their parents, will not consider their shacks adequate and their values no longer will be acceptable ones.[13]

The crucial problem is that the social behavior of this younger generation neither reflects the older traditional culture nor has it adopted the modern metropolitan culture.

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[11]E. T. Gursan, "Gecekondu Cocuk Sagligi," Milliyet Gazetesi, Istanbul, October 1, 1966.

[12]Tutengil, op. cit., p. 93.

[13]Celal Uzer, "Gecekondu Problemimiz," Milliyet Gazetesi, Istanbul, August 5, 1964.

One may term it an "emerging culture," somewhat between the old and new or a mixture of the two. If the child's background culture fits into the school environment, most probably he can easily adjust to the expectation of school culture. Otherwise, he will fail to cope with the school requirements and he may perceive himself as incompetent in his academic achievement as well as in his socialization.

So far, there has been no comprehensive research study of the academic achievement of these Gecekondu children and their socio-psychological behavior within the context of their academic success, and a cross-cultural comparison with other students who are known to be from well-to-do neighborhoods in the same city in Turkey. Therefore, exactly what combinations of social, economic, and socio-psychological factors influence their academic performance is unknown. However, it is known that the students who successfully complete each year's schooling vary considerably among the middle schools in Turkey; those middle schools in Ankara that were investigated in this study are no exception. Thus, it is believed that the investigation of some selected socio-economic and socio-psychological factors and their influence on students' academic achievement can shed light on the variation in school outcomes (number of students who pass from one grade to the next) among the schools.

Currently, investment in education is considered not only for personal satisfaction but also for the preparation of a socially and economically productive individual.

Low productivity of the educational system as a whole results in economic wastage and slows down the rate of national development. In general, the schools in Ankara located in the area of Gecekondu dwellings have a lower rate of completion of grades than those located in the affluent neighborhoods. Despite the seriousness of the problem, there has been no systematic comparative study of the academic achievement of Gecekondu children and children from middle and upper middle class families at the middle school level. Scientific research findings on the issue are badly needed by educational planners and decision makers. It is to this need that the present study is directed.

Limitations of the Study

The study is based on a sample of sixth grade students attending middle school in Ankara, Turkey, during the 1971-1972 school year. The sample includes only those schools in Ankara designated as representing Gecekondu schools and well-to-do neighborhood schools. Hence, while implications for the larger student body throughout Turkey may exist, one must understand that this study is focused only upon those schools selected within the geographical limits of Ankara. Therefore, the transfer of generalizations to other geographical regions or to other grade levels within the same region should be made only if the reader is willing to take responsibility for the validity of such extended generalizations.

Assumptions Upon Which the Study Is Based

The following assumptions are made as the limiting factors for the purposes of this study:

1. A satisfactory survey instrument was devised for the purpose of determining the attitudes of sixth grade students regarding their school aspiration, self-concept of ability, and their perception of significant others' evaluations of their academic ability. The instrument was also constructed in such a way that it elicited as much accurate information about student socio-economic background as could be obtained.

2. The sixth grade students responding to the survey instrument (Student Questionnaire) were able to understand the intent of the instrument and its contents, and responded in a manner truly representing their socio-psychological behavior and reflecting their socio-economic background.

3. The sixth grade students responding to the survey instrument were representative of the student subcultures--namely Gecekondu culture and middle and upper middle class culture--within Ankara.

4. It was further assumed that students' grades in reading, mathematics, social science, natural science, and foreign language given by their teachers were objective indicators of the students' performance in those subjects.

5. The differences, if any, in academic achievement between the two student populations were due to the differences in the students' socio-economic status and

socio-psychological factors. Therefore, no other factors, such as teacher quality, teacher expectation, or physical facilities existing in the schools, were assumed to have any impact upon students' academic success.

Definition of Terms

For clarity of understanding, the following terms are defined either because of their specialized meaning or because of the operational definition which is used in this particular study.

Socio-economic Variables (SES)--This term takes into account father's occupation, father's income, father's education, educational background of the student, and the residence of the student. SES index is the summated scores which each subject gets from the items in the questionnaire.

Father's Education--The level of formal schooling which each student's father has achieved.

Father's Occupation--The occupation in which the student's father is currently employed, which he acquired either through formal schooling or on-the-job training; it is the main source of family income.

Father's Income--The monthly wage in Turkish currency earned by the father or the head of the household who was substituted for the father.

Residence--This index is a sum of the scores obtained from the items referring to facilities that exist at the student's home.

Educational Background--This indicates whether the student has graduated from the village elementary school, the town elementary school, or the city elementary school.

Socio-psychological Variables (SPS)--This index shows the summated scores from the child's school aspiration, self-concept of ability, and perceived evaluation by others--namely parents, teacher, and friends.

School Aspiration--This indicates how far a child wants or plans to go in his schooling.

Self-Concept of Ability--The perception the student has of himself concerning how far he can succeed in a particular performance compared with others.

Perceived Evaluation by Others--One's interpretation and internalization of the expectations of significant others concerning his potentialities.

Academic Achievement--The grades of each student for a term (four months) in reading (Turkish) and mathematics, and the G.P.A. in five subjects--social science, natural science, foreign language, reading, and mathematics.

Father--The legal father or legal guardian with whom the student lives permanently. If the father is dead, the mother is considered to fill this role.

Elementary School--A public school which provides five years of education for children between the ages of six and 14. This formal schooling is compulsory for all children.

Middle School--A three-year public school which accepts those who have an elementary school graduation diploma.

Overview

In Chapter I were presented the statement of the problem, the purpose of the study, the significance of the study, delimitations and assumptions, and definition of terms used in the thesis.

Chapter II contains a review of the literature concerning the relation of students' achievement to their socio-economic background and socio-psychological factors, with some attention given to the debate concerning the effects of environment and heredity on achievement.

Included in Chapter III is the design of the study, including a definition of the population, a description of the sample, and a discussion of the data collection procedures used in the study.

The analysis of the data and a discussion of the research findings are presented in Chapter IV.

Included in Chapter V are the summary, findings, and recommendations for further research.

CHAPTER II

REVIEW OF LITERATURE

Introduction

This review presents the findings of selected studies focusing on the relationship between students' socio-economic backgrounds and their academic achievement. Because no studies relating Turkish students' socio-economic backgrounds and socio-psychological factors to their achievement were found, this review is limited to the literature and research findings in American publications.

The relationship between students' socio-economic backgrounds and their academic achievement has been studied extensively in American literature. Instead of exhaustively reviewing the whole literature pertinent to this study, only a sample of selected studies and literature has been reviewed in this chapter.

An Overview of the Debate on the Issue of Environment Versus Heredity Within the Context of Human Learning

The capacity of a child to learn has involved a seemingly unending debate between those psychologists and educators who stress genetic endowments and those who stress environment as the primary determining factor. Although it is beyond the scope of this study to exhaustively analyze

the literature of this debate about environment versus heredity, the reader should be aware of some highlights on the issue. Geneticists tend to emphasize that individual variations in learning or variations in the ability to perform certain tasks is attributable to differences in intelligence, which has been assumed to be the inborn capacity of the human being to learn.[1] Jensen, a leading contemporary spokesman of this school of thought, accounts for the total variance in the population in terms of the proportions of the variance attributable to genetic and environmental components. Jensen believes that social scientists underestimate the genetic basis of intelligence.[2]

> The brain mechanisms which are involved in learning are genetically conditioned just as are other structures and functions of the organism. What the organism is capable of learning from the environment and its rate of learning thus have a biological basis.[3]

On the basis of his own and his supporters' studies about intelligence versus environment, Jensen recommends the following educational policy:

> If diversity of mental abilities, as of most other human characteristics, is a basic fact of nature, as the evidence indicates, and if the ideal of universal education is to be successfully pursued, it seems a reasonable conclusion that schools and society must provide a range and diversity of educational methods, programs, and goals, and occupational opportunities. Diversity rather than uniformity of approaches and aims would seem to be the

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[1] Jensen, op. cit., p. 17.

[2] Ibid., p. 29.

[3] Ibid., p. 45.

> key to making education rewarding for children of different patterns of ability.[4]

The other school of thought, to which many other psychologists belong, believes that the performance (intellectual, physical, or social) of any individual is not developed from a genotype, inherited base. Cronbach points out that what the person does with an experience, and what it does to him, depends significantly on his previous experience.[5] He further adds that "human development is a cumulative, active process of utilizing environmental inputs, not an unfolding of genetically given structures."[6] Cronbach also disagrees with Jensen on the question of whether intelligence tests really measure inherited factors, defined by Jensen as "g" factors. Cronbach points out that the verbal intelligence test scores of an individual can only reflect the achievement of that individual. Finally, contrary to Jensen, Cronbach states his educational policy as follows:

> The educator's job is to work on the environment. . . . Heritability of individual differences is not our concern. Even if ranking in ability were to correlate perfectly with some measure on pupils' ancestors, the educator ought to be providing the best possible instruction he can for every pupil he faces.[7]

On the last point, of course, Jensen would no doubt be in agreement.

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[4]Ibid., p. 117.

[5]Lee J. Cronbach, "Heredity, Environment and Educational Policy," Harvard Educational Review, XXXIX (Winter, 1969), 338-347.

[6]Ibid., p. 338.

[7]Ibid., p. 345.

Brembeck discusses the problem within the context of the school curriculum as follows:

> Although educators are aware of the importance of social factors in learning, frequently educational programs are based on the assumption that each child has a fixed capacity and that this capacity can be identified and measured. Related to this assumption is the idea that students with low intelligence can not learn at a high level. Often programs are organized to provide the low IQ child with a less difficult curriculum. Such programs constitute a self-fulfilling prophecy in that the students in these special programs will not learn more advanced subjects.[8]

If, however, schools were oriented to the theory and findings of research on the issue of how to enlarge the child's learning horizons, then programs would be developed to enhance the abilities of all students to the maximum rather than to limit learning opportunity on the basis of an assumed level of fixed capacity.[9]

Kerckhoff points out that the ability to perform school tasks is heavily influenced by the child's preschool experience.[10] It is therefore a highly controversial matter whether differences in learning ability should be viewed as "given" in the sense that they are inborn, or whether they should be viewed as the result of the child's previous experience, or both.

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[8]Cole S. Brembeck, Social Foundation of Education (New York: John Wiley and Sons, Inc., 1967), p. 83.

[9]Ibid.

[10]Alan C. Kerckhoff, Socialization and Social Class (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1972), p. 129.

For present purposes, it is the hypothesis of this study that, from the perspective of the school at least, achievement levels vary by differences in environmental factors and that from the beginning, variations in pupil performance at school are significantly related to school influences.

Introduction to Related Studies

Considerable recent research in the United States has focused on the problem of differences in academic achievement of students and the relation of those differences to their socio-economic or family background and to the behavior they learned within the different subcultures.

The purposes and the nature of such studies are varied, but the concern here is only with those studies investigating factors such as parental educational attainment, family income, and parental occupation and the effects of these factors on the child's school achievement. Some research findings about differences in students' behavior resulting from their different socio-economic backgrounds and the effects of such behavior on the student's academic achievement will also be reviewed.

The evidence obtained from research has indicated that the student's family background and student composition of the schools have played a very important role in students' academic achievement as well as in the development of behavior. For example, Hollingshead points out that

lower-class youngsters have limited their horizons to the class horizon, and in the process they have unconsciously placed themselves in such a position that they will occupy the same levels as their parents.[11] Children with different home backgrounds bring to school differently developed attitudes and skills. The child's behavior pattern is learned through his interaction with his environment--through the process of "socialization." Blumer explains the process of interaction among people by "symbolic interaction." Symbolic interaction is a social product and it is formed in and through the defining activities of people as they interact.[12]

Blumer gives a brief sketch of Mead's analysis of social interaction:

> Mead's concern was predominately with symbolic interaction. Symbolic interaction involves interpretation, or ascertaining the meaning of the actions or remarks of the other person, and definition, or conveying indications to another person as to how he is to act. Human association consists of a process of such interpretation and definition. Through this process the participants fit their own acts to the ongoing acts of one another and guide others in doing so.[13]

Therefore, it is quite common to see different forms of the socialization process across the subcultures within a society. The effect of interaction of family members on

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[11] A. B. Hollingshead, Elmtown's Youth (New York: John Wiley and Sons, Inc., 1949), pp. 282-287.

[12] Herbert Blumer, Symbolic Interaction (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1969), p. 5.

[13] Ibid., p. 66.

a child's socialization, particularly in early years, is greater than other factors in the social environment in which the child grows up. As Rosen points out, socialization ordinarily begins with a matrix of relationships which can be specified by reference to the roles of individual family members.[14] Parents transmit values to their children through constant relationships. Thus, the family is primary in shaping the child's personality. Family influence is greatest in the early years, more formative than any other "twig bender."[15] In later childhood and youth, a number of forces--peer groups, the school, mass media, etc.--compete with and sometimes displace the home as the dominant socializing influence on the child.

Review of Related Research Findings

Studies relevant to the problem at interest have been extensively carried out, particularly in the United States. But there has been no comprehensive study which deals with this question in Turkey, and no study of socio-economically deprived students in Turkey as related to their academic performance.

The research findings have been presented in this study under the heading of each socio-economic (SES) and

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[14]Bernard C. Rosen, "Family Structure and Value Transmission," in Society and Education, ed. by Havighurst, Neugarten and Falk (Boston: Allyn and Bacon, 1967), p. 86.

[15]Lloyd A. Cook and E. F. Cook, A Sociological Approach to Education (New York: McGraw-Hill, 1960), p. 175.

socio-psychological (SPS) factors, rather than by summarizing each study. Therefore, the same research may be referred to more than once under the heading of each factor in this review.

Socio-Economic Factors (SES)[16]

Although one can enumerate a number of factors which may contribute to the socio-economic status of a child, there seems to be common agreement to use parents' educational attainment (mostly father's), parents' occupation, and family income as the main SES factors which contribute to the child's academic performance at school.

From the point of view of preceding explanation about SES factors, we can say that the student's family background differences are prior to school influences, and shape the child before he reaches school. It is useful, then, to examine the relation of student's socio-economic status and his academic achievement before looking at the other factors.

Parents' Educational Level and Student Achievement

Parental education frequently is chosen as the sole indicator of the social and economic status of a child. McClelland studied some nonintellectual variables and their relationship to college academic achievement in a sample of

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[16]SES and family background of students are used synonymously in this study.

233 United States-born freshmen male subjects attending Tri-State College, Angola, Indiana.[17] In this study, cumulative GPA was used as the predicted variable, and the data were analyzed by applying multiple correlation. The findings indicated that the attained educational level of parents and student's performance at college were correlated significantly.

Mayeske has developed some indices of students' family background by grouping variables used in the "Equality of Educational Opportunity" survey.[18] He found that a student with a high score on his SES index has parents who come from the higher educational strata, and his father is typically engaged in a professional, managerial, or skilled job.

Hood investigated the educational and personality factors associated with parental education.[19] The study was designed to investigate the general nature of the relationship between parental educational level and certain educational characteristics of children. His findings showed that parental educational status is more related to plans for

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[17] McClelland, op. cit., p. 44.

[18] G. W. Mayeske, "On the Explanation of Racial Ethnic Group Differences in Achievement Test Scores" (Washington, D.C.: U.S. Office of Education, n.d.), p. 23. (Mimeographed.)

[19] A. B. Hood, "Educational and Personality Factors Associated With Unusual Patterns of Parental Education," Journal of Educational Research, LXI (1968), 32.

children to attend college than is family economic status among high school students.

Lowe has investigated some selected socio-economic factors and their relation to seventh grade students' reading performance in Virginia.[20] He concluded that reading scores were higher for students whose parents had obtained high levels of education than others whose parents had not. The correlation was .30 with mother's education and .33 with father's education.

The report of "Equality of Educational Opportunity" is one of the most comprehensive studies about the relationship of socio-economic factors to students' academic achievement.[21] Analysis of data, obtained through a student questionnaire, indicated that in the sixth grade the parents' educational level had made a higher contribution to student's achievement for white pupils than for any other groups. But, in later years, parent's education comes to have the highest relation to achievement for nearly all groups of students.

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[20]Walter E. Lowe, "A Study of Relationship Between the Socioeconomic Status and Reading Performance of Negro Students Enrolled in the Public Schools of Caroline County Virginia," The George Washington University Bulletin, Abstracts of Doctoral Dissertations, LXIX, 1 (September, 1968), 36.

[21]J. S. Coleman, Equality of Educational Opportunity (Washington, D.C.: U.S. Government Printing Office, 1966), pp. 298-302.

Parents' Occupation and
Student's Academic Achievement

It is difficult to factor out the unique contribution of parents' occupational status independent from other SES factors related to the child's academic achievement, since parents' occupational level (mostly father's occupation) and family income and parents' educational level are highly correlated with each other. For example, with a higher educational attainment a man is more likely to have a professional or managerial job. Most children are trained by home and neighborhood to occupy the social position of their parents. The schools in the lower-class environment offer some conflict to home and neighborhood training, but the consequence is usually a losing battle on the school side. On the other hand, the school program supports and supplements the home and neighborhood training of middle-class children.[22]

Knieff and Stroud studied the intercorrelation among various intelligence, achievement, and social class scores of 344 fourth grade pupils in a Midwestern city in the United States.[23] They used father's occupation as a social class index, and a significant relationship was found

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[22]W. L. Warner, Robert J. Havighurst, and M. B. Loeb, Who Shall Be Educated (New York: Harper and Brothers, 1944), p. 56.

[23]L. M. Knieff and James B. Stroud, "Intercorrelations Among Various Intelligence, Achievement and Social Class Scores," Journal of Educational Psychology, L, 3 (1959), 117-120.

between father's occupation and pupil's academic achievement.

A study conducted by Wilson in Richmond, California, assessed the relationship between a student's social class and his school achievement.[24] In this study, parents' occupational level was used as the social class index of the student. The research findings indicated that parents' occupation was the single factor most related to the academic achievement of children.

Mayeske found that the lower the level of fathers' occupations, the lesser the mean achievement scores of their children.[25] High occupational level usually goes with high income and vice versa. Since parents' income and parents' occupational level are highly correlated with each other, the variation in pupils' achievement accounted for by parents' income independent from other SES factors mentioned before is not great. However, it is worthwhile to look at some studies which deal with the relationship between pupils' achievement and family income.

Family Income and Students' Academic Achievement

There are some general characteristics associated with the relative poverty or affluence of the family which

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[24]Alan B. Wilson, The Consequences of Segregation: Academic Achievement in a Northern Community (Berkeley: University of California Press, 1969).

[25]G. W. Mayeske, A Study of Our Nation's Schools (Washington, D.C.: U.S. Government Printing Office, 1969), p. 29.

are related to success or failure of students in school. Coster has investigated some characteristics of 878 high school pupils from different income groups in nine Indiana high schools.[26] The study was concerned primarily with pupils' participation in social activities and secondarily with grades according to their family income. In this study, students were divided into three income groups for the analysis of data. From the research findings, it was concluded that pupils from high-income families were more likely than middle- and low-income pupils to participate in school activities and to get higher grades on academic performance.

Davres did a comparative study of the performance of pupils from low, high, and economically diversified socio-economic areas in Kansas City, Kansas.[27] The purpose of the investigation was to find out how well students representative of low-income families achieve in comparison to students representative of higher income families when achievement is measured from test items. The study was limited to the ninth grade students of Kansas City. Findings indicated that children from low-income families did not achieve as well as the other pupils representative of high-income families on a standardized achievement test of social studies. The scores

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[26] J. K. Coster, "Some Characteristics of High School Pupils From Three Income Groups," Journal of Educational Psychology, L, 2 (1959), 55-62.

[27] W. L. Davres, "A Comparative Study of the Performance of Pupils From Low, High and Economically Diversified Socio-Economic Areas on Test Items From a Social Studies Achievement Battery" (unpublished Ph.D. dissertation, University of Kansas, 1967).

of children representative of low-income areas were significantly lower than scores of children representative of a high-income area.

General SES Factors and Achievement

There are a number of factors which may constitute the socio-economic background of a child within a particular culture. Each factor can influence the child's behavior and indirectly those factors affect his academic achievement.

The Coleman report examined cross-culturally the influence of students' socio-economic backgrounds on their achievement. The variance in achievement accounted for by students' background was between 30 and 50 per cent of the total variance for all groups.[28]

Mayeske did a communality analysis with the data used for "Equality of Educational Opportunity" to find out how much variation in students' achievement can be accounted for by combined SES factors.[29] The statistical analysis revealed that 51 per cent of the total variation in academic achievement was due to the differences of students' socio-economic background.

Jencks and his associates reassess the findings of some of the most recent research about the influence of economic background on students' achievement. He concludes

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[28]Coleman, op. cit., p. 299.

[29]Mayeske, "On the Explanation of Racial Ethnic Group Differences in Achievement Test Scores," op. cit., p. 17.

that:

> On almost any reasonable set of assumptions, family background explains nearly half the variation in educational attainment. A family's economic status is, of course, a major determinant of its overall impact on its children. But noneconomic factors also account for a significant fraction of a family's overall effect on its children's attainment.[30]

Thus, the overall review of literature indicates that a student's family background has a substantial effect on his academic performance at school, and, in fact, that school factors themselves do not have as much effect as do the student's socio-economic background factors.

Socio-Psychological Factors (SPS)

Differences in human behavior, including school performance, are much more related to differences in the social environment than to differences in the physical environment. In the early shaping of a child's life, home has a significant effect on personality formation. The family's impact on the child has its greatest effect in the earliest years.[31]

In the second phase of a child's life, school becomes an agency for the development of self, particularly of his perception about himself and evaluation of others with respect to his education and learning.

In general, the impact of the family is greatest and most completely unchallenged in the preschool years,

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[30]Christopher Jencks, Inequality: A Reassessment of the Effect of Family and Schooling in America (Boston: Basic Books, 1972), p. 143.

[31]Coleman, op. cit., p. 300.

lessening as the child gets older. The social development of the child at the age of five or six is such that the school tends to be a more significant influence than other environmental factors, next to the home. Differences in motivation, values, social environments, and characteristics patterns of children have a significant relation to school achievement as well as to the desire for further education. Therefore, the following social-psychological factors in relation to a child's academic achievement have been reviewed.

School Aspiration and Achievement

"Aspiration for education" indicates how far a child wants or plans to go on with his schooling. Brembeck points out that aspirations for further education are nurtured within a social context.[32] There are a variety of social experiences which stimulate educational aspirations. These stimulating factors are very closely associated with the socio-economic status of a child.

What children reflect in classroom behavior are the norms which they have learned in their culture. Children bring to school with them a predisposition to behave as they do in out-of-school groups.[33]

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[32]Cole S. Brembeck, "Raising Educational Aspirations and School Learning," in Social Foundations of Education, ed. by Brembeck and associate (New York: John Wiley and Sons, 1969), pp. 263-288.

[33]Brembeck, Social Foundation of Education, op. cit., p. 87.

Many studies in the United States give considerable weight to the influence of social class in the determination of educational aspirations. In his study "Academic Achievement in a Northern Community," Wilson found a strong relationship between students' school aspirations and their social class status.[34]

In the study "Equality of Educational Opportunity," it was found that the pupil's attitude toward education has a stronger relationship to achievement than all the other school factors combined.[35] Students' school aspirations toward further education are primarily a result of home and school influences. It is obvious that if the home and school environment do not motivate the pupil toward learning, it can hardly be expected that a child will achieve at school.

Coleman found that a smaller proportion of black than white students reported wanting to go further than high school. Also, fewer blacks have definite plans for college and less consistency regarding school aspirations than whites.[36]

In a study of social aspects of aspirations in the public schools of Berkeley, California, Wilson found that children of higher social status showed higher aspirations and achieved more than did children of lower status.

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[34]Wilson, op. cit.

[35]Coleman, op. cit., p. 23.

[36]Ibid., p. 279.

School aspiration, in fact, was found to be closely related to student's family background. However, the "significant others" (see below) play the major role in the process of inspiring him to value and attain education.[37]

Significant Others

Significant others refers to the influence of family members, playmates of the child, classmates, friends, and teachers. A child's original images of himself are formed in the family circle. As he grows up his friends, his classmates, and his teacher join this circle. The individual forms and aligns his own actions based upon his interpretation of the expectations, acts, and opinions of others.

The foregoing are the essential features, as Blumer sees them, in Mead's analysis of the bases of symbolic interaction.[38] Human beings respond to one another on the basis of the intentions or meanings of gestures. As Meltzer interpreted it from the point of view of "Mead's Social Psychology," this gesture becomes a symbol to be interpreted in the imagination of the participants.[39]

Through symbolic interaction and communication with others significant to him, the child develops his self. A

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[37]Alan B. Wilson, "The Effect of Residential Segregation Upon Educational Achievement and Aspiration (unpublished Ph.D. dissertation, University of California, Berkeley, 1960).

[38]Blumer, op. cit., p. 82.

[39]Bernard N. Meltzer, The Social Psychology of George Herbert Mead (Kalamazoo, Michigan: Division of Field Services, Western Michigan University, 1959), pp. 11-15.

child's self-concept of ability, which has been found as a significant factor correlated with achievement, is acquired during his interaction with significant others who hold expectations of the child as a learner.

The impact of others' expectations and evaluations on the student's behavior have been investigated extensively in the literature. Brookover and his associates investigated some selected socio-psychological behavior of secondary school students in Michigan and the relationship of that behavior to school achievement.[40] The findings indicate that parental evaluations of their child's academic ability were more related to his self-conceptions of academic ability than were friends' evaluations of his academic ability in grades seven, eight, nine, and ten. From grades seven through twelve, the impact of parental evaluations on self-concept of ability was greater than that of teacher evaluations. Brookover points out that if there is a general and homogeneous set of high expectations held by all significant others (parents, friends, and teachers) for a child, then a relatively high level of academic achievement could be expected.[41]

Sidawi investigated socio-psychological variables and their relations to the academic achievement of Lebanese

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[40]W. B. Brookover, Edsel Erickson, and Lee M. Joiner, Self-Concept of Ability and School Achievement, III. U.S. Office of Education Cooperative Research Project No. 2831 (East Lansing: Educational Publication Services, Michigan State University, 1967), pp. 107-109.

[41]Brookover and Erickson, op. cit., p. 93.

children during junior high school.[42] He found that perceived evaluation of parents, friends, and teachers is strongly related to a child's self-concept of academic ability. School aspirations, child's perceptions about the expectation of significant others, and self-concept of ability seemed to be highly intercorrelated with each other. Therefore, it is believed that reviewing the literature on self-concept of ability may shed light on why one student is a better achiever than another.

Self-Concept of Ability and Achievement

The increasing recognition of the importance of "how a child views himself" has been followed by a variety of theoretical descriptions of the nature and influence of the child's self-concept on other aspects of his development. As McCandless points out, the self-concept may be thought of as a set of expectancies, plus evaluations of the areas of behavior with reference to which these expectancies are held.[43]

Perkins describes self-concept as those perceptions, beliefs, feelings, attitudes, and values which the individual views as describing himself.[44]

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[42]Ahmad Sidawi, "Self-Concept of Ability and School Achievement in Lebanon" (unpublished Ph.D. dissertation, Michigan State University, 1970).

[43]B. R. McCandless, Children and Adolescents (New York: Holt, Rinehart and Winston, 1961).

[44]H. V. Perkins, "Factors Influencing Change in Children's Self-Concepts," Child Development, XXIX (1958), 221-230.

The conception that a person forms of himself usually has a social reference; generally, it takes the form of the "self" system a person acquires in the course of socialization and depends largely on the kinds of personalities with which the person is associated.

Self-concept is developed in part through social interaction. Thus individuals who have different experiences in interacting socially will have different self-concepts.

Klausner found in his study of "Social Class and Self-Concept" that there are modal differences in self-concepts between members of different socio-economic groupings, and that members of the same socio-economic grouping tend to have a relatively homogeneous self-concept.[45]

Self-concept of ability is just one of many concepts of self. In this study, the concern is focused on areas of behavior relating to school achievement. Thus, for our purposes, self-concept of ability refers to what one expects to achieve in academic tasks as compared with others engaged in the same task. There is ample research evidence that the student's academic achievement is closely related to his self-concept of ability.[46]

Brookover and his associates have carried out a series of researches on the problem of self-concept of ability and school achievement. Brookover's 1967 report has the

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[45]S. Z. Klausner, "Social Class and Self-Concept," Journal of Social Psychology, XXXVIII (1953), 201-205.

[46]Brookover, Erickson, and Joiner, op. cit.

following findings:

1. The correlation between socio-economic status and self-concept of ability was .26 for eighth grade and .23 for ninth grade.
2. The correlation between self-concept of ability and G.P.A. was .55 and .56 for grades eight and nine, respectively.
3. Improvement in students' socio-economic status over a five-year period yielded slight increases in the self-concept of ability and G.P.A. at each grade level.
4. Using partial correlation, controlling for variation in self-concept of ability, the relationship between socio-economic status and G.P.A. was reduced to near zero at each grade level.
5. The correlation between self-concept of ability and G.P.A. ranged from .48 to .63 over the five years (between 1962 and 1967).
6. A high correlation between perceived evaluations and self-concepts was found. It was concluded that perceived evaluations (parents, friends, and teachers) are a necessary and sufficient condition for self-concept of ability, but self-concept of ability is only a necessary but not sufficient condition for achievement.[47]

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[47] Ibid.

Summary

In this chapter, pertinent research literature on student's socio-economic background (family background) and his socio-psychological behavior with relation to his academic achievement was reviewed. The amount of literature dealing with a student's background and its effects on his achievement is considerable.

Most of the writings focus on the central theme that the student's socio-economic background has an indirect effect on his academic achievement; and the key to the main factors which have impact upon academic achievement is the student's developed socio-psychological concepts about himself as well as his attitudes toward learning.

Socio-psychological factors seem to be the most influential on the student's academic achievement. Economic factors seem to be less important than the attitudinal ones. However, it is difficult to specify precisely the ways in which the student's physical and social environment affect his attitudes and his academic performance. There are complicated relationships among socio-economic and socio-psychological factors and academic achievement. From the reviewed literature, one thing is very clear--that children who grow up in socio-economically deprived areas frequently develop a negative attitude toward schooling, and consequently they become lower achievers in an academic task than others who come from high SES families with positive attitudes toward education. The attitudes of children toward

their school work are deeply affected by the degree of encouragement from the significant others (parents, teachers, friends) and by their self-conception of ability. The present study attempts to determine if these relationships hold for the Turkish culture.

The methodology used in this study is presented in Chapter III.

CHAPTER III

RESEARCH METHODOLOGY

The primary purpose of this study was to determine the influence of selected socio-economic and socio-psychological factors on academic achievement of sixth grade children in Turkey during the 1971-1972 school year. Secondarily, the purpose also was to compare two types of student populations with respect to differences, if any, in relationships of those above-mentioned nonintellectual variables with achievement. This chapter describes the population of interest, sampling procedure, instrumentation, and the techniques for analysis of data.

Definition of the Population

The population in this study consisted of two stratified student populations attending sixth grade in Ankara, Turkey, in the 1971-1972 school year. One of the strata includes four schools (Akdere, Safaktepe, Gulveren, and Aktepe) known to be attended by students from Gecekondu[1] (low SES) areas. The second stratum consists of three schools (Namikkemal, Mimarkemal, and Bahcelievler) located in well-to-do neighborhoods (high SES) where most of the

[1]Gecekondu refers to a typical housing which is poorly constructed and poorly furnished, and usually it consists of one or two rooms.

students come from middle- and upper-class families. The sixth grade population in these seven public middle schools ranges in size from 500 to 1,250. Almost 34 per cent of this student population is between eleven and thirteen years old. All seven schools are coeducational, and all students are exposed to the same curriculum prepared by the Ministry of Education. There is no grouping within the classes of these seven schools with respect to any kind of individual ability.

The Sample

In this study, the sample is a stratified cluster sample in which the class and not the student is the primary sampling unit. By the application of the cluster sampling technique, two classes from each of six schools and four classes from one school were selected randomly and proportionally with respect to sixth grade populations in each school.

The sample consists of 378 students, 219 male and 159 female, from non-Gecekondu schools and 364 students, 245 male and 119 female, from Gecekondu schools. Thus, the total sample size is 742 students, of which 62.5 per cent are male and 37.5 per cent are female. The total number of sixth grade students enrolled in these seven middle schools was approximately 5,000 students in the 1971-1972 school year.

Sources of the Data

Data for the study were obtained from two sources: the school record for each student, and a "Student Questionnaire." Grades of each student in reading and mathematics and a combined G.P.A. on five subjects--reading, mathematics, social science, natural science, and foreign language--were obtained from students' files at school.

The information about the student's socio-economic background and his perceptions about himself with respect to his academic future and his educational aspirations were obtained by means of a student questionnaire which was supplemented by a parent questionnaire.[2]

Description of the Instrument

A measurement device, entitled "Ogrenci Anketi"[3] (Okul-Cevre Arastirmasi) translated "Student Questionnaire" (School Social Environment Study) was prepared by the researcher. Some of the items in the questionnaire related to the student's self-concept of academic ability, his school aspirations, and the perceived evaluations of the student's ability by parents, friends, and teachers. These items were translated into Turkish and adapted with minor changes from

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[2]"Parents Questionnaire" is a supplementary device to the Student's Questionnaire. It consists of six open-ended items which were filled in by parents at home and then students brought it back to school and used the information in it when responding to the same types of items in the Student Questionnaire.

[3]See Appendix A.

the items of the "Student Questionnaire" which was used for the School Social Environment Study by Brookover at Michigan State University.[4]

Other items concerning a student's socio-economic background, including his educational background, father's education, father's occupation, father's income, and his residence conditions, were prepared by the researcher. These items were discussed with Turkish students attending Michigan State University in the 1971-1972 academic year. The suggestions of these students were incorporated into the first revised draft of the instrument. It was then reviewed by Michigan State University professors in the areas of educational research. Based on their comments and suggestions, the instrument went through further revision.

The completed survey instrument (Student Questionnaire) was pilot tested by administration to seven fifth and sixth grade Turkish students in East Lansing, Michigan, in January, 1972, to determine the clarity of meaning and style of wording. As a result of the pilot testing, further minor revisions were made to improve the clarity and simplicity of several questionnaire items.

The final draft of the instrument was sent to PAKD (Planlama--Arastirma ve Koordinasyon Dairesi) in Turkey. After minor changes were made on some items by the experts of PAKD, the Student Questionnaire was printed. The printed

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[4]Student Questionnaire (revised draft), School Social Environment Study, sponsored by Michigan Department of Education and Michigan State University.

instrument consisted of 52 items, of which the first 17 items were designed for getting information about the student's identification and his socio-economic background. The next nine items pertained to the student's school aspirations and his self-concept of ability. The 18 succeeding items were about the student's perceived evaluation of his ability by parents, teacher, and friend. The final six items dealt with the academic climate among students and teachers, and some miscellaneous matters.

The supplementary questionnaire (Parent Questionnaire), which consists of six open-ended questions concerning basically parent's education, occupation, income, and the type of residence, was also constructed by the author of this study.[5]

Since the questionnaires were to be administered by someone in Turkey in the author's absence, detailed instructions were prepared for administering the questionnaires and for getting the academic achievement grades of those subject areas specified for each student from his file at the school. All of the data collection devices and instructions for administration of those devices were mailed to PAKD in March, 1972.

Collection of the Data

Both questionnaires described above were administered by members of the PAKD staff in May, 1972, in a two-step

[5]See Appendix A.

administration. In the first step, each student whose class was included in the sample was given a "Parent Questionnaire," which is self-explanatory. The items in the parent questionnaire were to be answered by their parents and the questionnaire was to be brought back to school by the student on the day that the Student Questionnaires were planned to be administered.

The student questionnaires were group-administered in their classrooms by PAKD staff members with the cooperation of school directors and teachers. The students were told that they could use the information provided by the Parent Questionnaire while they were answering the similar types of items in the Student Questionnaire.

The completed questionnaires and the grade reports of the students included in the sample were mailed to Michigan State University in May, 1972, and data were received by the author without loss.

A summary distribution of students, by schools participating in this study, in presented in Table 1.

After a "Coding Sheet"[6] was prepared by the author with the advice of professors of his academic committee, each item in the student questionnaire was scored and coded by the researcher in such a way that the magnitude of the student's response to each questionnaire item would be consistent with the prospective statistical treatment of the

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[6]See Appendix B.

data. Because of misprinting, the items numbered 31 and 46 on the questionnaire were dropped. Frequency of nonresponse to the items with respect to total response was negligible. As a measure of accuracy, each child's response with the corresponding response of his parents was checked. After coding was completed the double checked, the information was transferred onto IBM cards, one card for each student, containing his school identification.

Table 1.--Distribution of subjects by school in the survey.

Name of School	Number of Cluster	Number of Students	SES Category of School
Namik Kemal	2	90	non-Gecekondu
Mimar Kemal	4	215	non-Gecekondu
Bahcelievler	2	73	non-Gecekondu
Subtotal	8	378	
Akdere	2	92	Gecekondu
Safaktepe	2	95	Gecekondu
Gulveren	2	76	Gecekondu
Aktepe	2	101	Gecekondu
Subtotal	8	364	
Grand Total	16	742	

Statistical Treatment of the Data

The study was essentially concerned with obtaining data that would be used in answering the following research questions:

A. Questions for combined populations

1. What is the magnitude of the relationship, if any, between a student's academic achievement and his socio-economic status?

2. What is the magnitude of the relationship, if any, between a student's academic achievement and socio-psychological variables?
3. Is SES or SPS more significant in establishing these relationships?

B. Questions for comparing the two sub-populations

4. To what extent, if any, do SES and SPS variables differ, between the two student populations, in predicting students' achievement:
   a. in reading
   b. in mathematics
   c. in G.P.A. of five subjects--reading, mathematics, social science, natural science, and foreign language?

The survey instrument was designed so that the responses of the sixth grade students on different parts of the instrument could be compiled and used as a basis for answering the research questions specified above.

The statistical treatment of the data may be summarized as follows:

1. After the information was transferred onto IBM punch cards, frequency counts, percentages, arithmetic means and standard deviations, where appropriate, were computed for each item on the questionnaire by using the CDC 6500 CISSR Percount Program available at Michigan State University.[7]

[7]Larry Thiel and Linda Patrick, Percount, Technical Report No. 18 (East Lansing: Michigan State University Computer Institute for Social Science Research(CISSR), 1968).

2. Groups of items from the Student Questionnaire were combined to develop indices such as self-concept of ability and student's perceived evaluation of his academic ability by significant others (parents, teacher, and friend). Before these Likert-type indices[8] (summated scores procedure) were analyzed, Hoyt's[9] reliability was computed for the items of each index to see whether those items were internally consistent with each other by using CDC 6500, the FORTAP, program available at Michigan State University.[10]

3. In step three of the analysis of data, the intercorrelation of 63 items (included five indexes) was computed by using CDC 6500, the BASTAT, program available at Michigan State University.[11]

4. In the fourth step, factor analysis was applied to the data in order to identify groups of variables that not

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[8]Rensis Likert, "The Method of Constructing an Attitude Scale," in Readings in Attitude Theory and Measurement, ed. by M. Fishbein (New York: John Wiley and Sons, 1967), pp. 90-95; F. N. Kerlinger, Foundations of Behavioral Research (New York: Holt, Rinehart and Winston, Inc., 1964), pp. 484-488.

[9]C. J. Hoyt, "Test Reliability Estimated by Analysis of Variance," in Principles of Educational and Psychological Measurement, ed. by W. A. Mehrens and R. L. Ebel (Chicago: Rand McNally Co., 1967), pp. 108-115. (See Appendix A for further information on Hoyt's reliability.)

[10]F. B. Baker and T. J. Martin, FORTAP, A Fortran Test Analysis Package, Occasional Paper No. 10 (East Lansing: Office of Research Consultation, College of Education, Michigan State University, 1970).

[11]Tom Carroll, Marylyn Donaldson, and Leighton Price, BASTAT in STAT Program CDC 6500 (East Lansing: Michigan State University, Agricultural Experiment Station, 1970).

only correlated substantially with one another but were also psychologically or sociologically meaningful. By using the CDC 6500 CISSR FACTORA program,[12] similar kinds of correlated variables were grouped into SES and SPS indices.

5. In order to explain the differences in achievement of specified academic areas due to the differences of students' socio-economic background and to socio-psychological factors or combination effects of both on achievement, the techniques of regression and stepwise regression analysis were employed by using the CDC 6500 LS program and the CDC 3600 LSADD program in STAT program available at Michigan State University.[13]

The purpose in using regression and stepwise regression analysis was to provide more refined measures for exploration of differences in academic achievement by utilizing more than one variable at the same time, and to identify the factors or combination of the factors which best explained the variance.

Summary

The procedures, instrumentation, and methodology employed in gathering and analyzing data for the study were described in this chapter. There were two primary sources

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[12]Leighton A. Price and Gary R. Ingvaldson, FACTORA, Technical Report for CDC 6500, Principal Components Factor Analysis (With Orthagonal Rotations) (East Lansing: Michigan State University, 1970).

[13]Carroll, Donaldson, and Price, op. cit.

of the data for the study: school records for student's academic achievement and the Student Questionnaire administered by the staff of PAKD in Turkey.

The survey instruments (Student Questionnaire and Parent Questionnaire as a supplementary device to the first one) were constructed by the researcher and pilot tested.

Parametric statistical techniques were used in analyzing the data obtained for the study. These procedures included the use of descriptive summaries of item responses, in terms of frequency counts and percentages, and selected further analysis of data through the use of such statistical techniques as correlation matrix, factor analysis, and multiple-regression analysis. The analyses were carried out on the CDC 6500 and the CDC 3600 computers at Michigan State University. The results of the various data analysis techniques are presented in Chapter IV.

CHAPTER IV

ANALYSIS OF THE DATA

The purpose of this study was to determine the magnitude of influence of some selected socio-economic and socio-psychological factors on students' academic achievement at the sixth grade in Turkey. In order to do so, specific research questions were posed and relevant data were sought.

Chapter IV is divided into the following six main sections:

1. Characteristics of the respondents to the survey
2. Developing indices on selected item and reliability analysis
3. Correlation analysis
4. Factor analysis for developing SES and SPS indices
5. Multiple regression analysis
6. Stepwise regression analysis

Characteristics of Respondents

The data presented in this section were obtained from the analysis of sixth grade students' responses to items included in the "Student Questionnaire," the survey instrument used in the study.[1]

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[1] See Appendix A.

The 742 sixth grade students responding to the survey were attending public middle schools within the metropolitan area of Ankara, Turkey, during the school year 1971-1972. The distribution of respondents, by sex and by school category, is presented in Table 2.

Table 2.--Distribution of subjects by sex and by school category.

Sex	Non-Gecekondu		Gecekondu	
	Number of Subjects	Per Cent	Number of Subjects	Per Cent
Male	219	58	245	67
Female	159	42	119	33
Total	378	100	364	100

The ratios in the table indicate that the difference of male and female student population in Gecekondu schools is greater than in non-Gecekondu schools. Female students represent one-third of the total Gecekondu sixth grade population, while the sex ratio in the non-Gecekondu population is almost 50 per cent.

The sixth graders responding to this survey represented a considerable range in ages. As indicated in Table 3, one student in each sub-population was less than ten years of age and 40 per cent of non-Gecekondu students and 61 per cent of Gecekondu students were over twelve years of age. Eleven and twelve years of age are known to be normal age for sixth grade in Turkey. Thus, in Gecekondu schools

there are more overaged sixth graders than in non-Gecekondu schools.

Table 3.--Distribution of subjects by age and by school category.

	Non-Gecekondu			Gecekondu		
Age	Number of Subjects	Per Cent	Cum. Per Cent	Number of Subjects	Per Cent	Cum. Per Cent
14+	41	11	11	99	27	27
13	108	29	40	123	34	61
12	195	51	91	131	36	91
11	33	9	100	10	3	100
10	1	..	..	1	..	..
Total	378	100		364	100	

The differences in the age category between the two student populations appear to be due to the different number of students who repeat sixth grade. Table 4 is presented for the better explanation of whether students are attending sixth grade as a first year or second year.

Table 4.--Distribution of subject as first year attender or repeater in sixth grade, by school category.

	Non-Gecekondu	Gecekondu
	Per Cent	Per Cent
First year attender	85.45	70.05
Repeater	14.55	29.95
Total Subjects	N=378	N=364

As shown in Table 4, there are more repeaters in Gecekondu schools than in non-Gecekondu schools.

As was stated in Chapter I, one of the objectives of this study was to compare the academic achievement of two types of student populations, defined as low socio-economic and high socio-economic groups. By giving the description of Gecekondu dwellings and well-to-do neighborhoods in Ankara, Turkey, it was assumed that students attending the schools in Gecekondu areas represent low socio-economic population and students attending the schools in well-to-do neighborhoods represent high socio-economic populations in this study. Although stratification of student population was based on two types of residential areas, the information about the student's socio-economic background was sought by means of items in the "Student Questionnaire" which relate his father's occupation, father's income, father's education, residence, and his school background. Tables 5, 6, and 7 give the student distribution by their father's occupation, income and education, respectively.

As indicated in Table 5, the two student populations differ in their fathers' occupations. The students in the non-Gecekondu population have fathers in more professional and semi-professional occupations than the Gecekondu student population.

Table 5.--Distribution of subjects by their father's occupation and school category.

	Non-Gecekondu	Gecekondu
	Per Cent	Per Cent
Nonprofessional and low prestige occupation	45	82
Semi-professional and moderate prestige occupation	34	17
Professional and high prestige occupation	21	1
Total Subjects	N=378	N=364

The distribution of students by their father's income, as presented in Table 6, indicates that 21 per cent of non-Gecekondu students have fathers who earn more than 2500 T.L. per month, while only 2 per cent of Gecekondu students have fathers whose monthly wage is at this level.

Table 6.--Distribution of subjects by their father's income and school category.

Income Interval (Turkish Currency)	Non-Gecekondu	Gecekondu
	Per Cent	Per Cent
0 - 1000 T.L.	45	65
1001 - 2500 T.L.	34	33
2501 and up	21	2
Total Subjects	N=378	N=364

Table 7 gives the percentage distribution of students by their fathers' educational level. This table reveals that

there are considerable differences between the two populations of students with respect to their fathers' educational level. Cumulative percentages show that in the Gecekondu population only 15 per cent of students' fathers have an education above elementary school and 85 per cent have either an elementary school certificate, or some elementary education, or none. In the non-Gecekondu population the situation is different, as 56 per cent of students have fathers who have education above elementary school level and 38 per cent of the students' fathers either graduated from high school or have some higher education, while only 5 per cent of Gecekondu students' fathers have achieved this level of education.

If we look at the figures representing the level of some secondary school education--first and second cycle--31 per cent of non-Gecekondu students' fathers have had some secondary education, but only 14 per cent of the Gecekondu population has achieved this level of education. The significant difference between the populations with respect to their fathers' attained educational level appears at the university or higher educational level as well. Thus 22 per cent of the non-Gecekondu population have fathers who graduated from a higher educational institute, while only one-half of one per cent of the Gecekondu population attained that level of education.

Table 7.--Distribution of subjects by their father's highest educational level and by school category.

Highest Educational Level of Father	Non-Gecekondu Per Cent	Non-Gecekondu Cumul. Per Cent	Gecekondu Per Cent	Gecekondu Cumul. Per Cent
None	9	9	15	15
Some elementary education	6	15	20	35
Graduated from elementary school	29	44	50	85
Some first cycle of secondary education[a]	7	51	5	90
Graduated from first cycle of secondary education	7	58	4	94
Some second cycle of secondary education[b]	4	62	1	95
Graduated from second cycle of secondary education	13	75	4	99
Some higher education	3	78	.5	99.5
Graduated from a university or a school of higher education	22	100	.5	100
Total Subjects	N=378		N=364	

[a]First cycle of secondary education indicates three years of education above elementary education.

[b]Second cycle of secondary education indicates three years of education after first cycle.

Table 8 reveals the information about home facilities reported by students in this study.

Table 8.--Distribution of subjects by existing home facilities and school category.

Home Facility	Non-Gecekondu Per Cent	Gecekondu Per Cent
Telephone	21	2
Central heating	46	2
Gas	67	7
Electricity	100	95
Running water	98	88
Total Subjects	N=378	N=364

According to data obtained by the Student Questionnaire, the main difference, with respect to home facilities, between the two populations appears on telephone, central heating, and gas. As for electricity and running water at home, the two populations do not differ appreciably.

For comparing the two sub-populations with respect to students' given responses to socio-psychological variables, Tables 9 and 10 are presented. Table 9 gives the percentage distribution of students by their school aspiration by school category. This table reveals that the two populations differ according to the level of education that students want to finish, particularly at university level. More students in non-Gecekondu desire to finish university than do Gecekondu students.

Table 10 describes the two populations with respect to SPS variables--school aspiration, self-concept of ability,

Table 9.--Distribution of students by their school aspiration and by school category.

Highest Level of Education Aspired to	Non-Gecekondu Per Cent	Gecekondu Per Cent
Middle school	6	14
Vocational high school	4	14
High school (college prep.)	10	14
University or school of higher education	80	58
Total subjects	N=378	N=364

perceived evaluation by others (parents, teacher, and friend)--in terms of means and standard deviations. As indicated in Table 10, non-Gecekondu students have a higher mean than Gecekondu students on school aspiration, but Gecekondu students show a higher variation than non-Gecekondu students. For self-concept of ability the mean difference between the two populations is small and the variations within each population are almost the same.

Except with respect to school aspiration, the data indicate, therefore, that students in low SES group consider themselves as able to do the same as those in high SES groups. The mean of perceived evaluations by parents differs across the two student populations but again the difference is not significant. The mean of non-Gecekondu students on this variable is higher than Gecekondu. The differences between means for perceived evaluation by others (teacher and friend) were found to be negligible across the two populations.

Table 10.--Means and standard deviations of socio-psychological (SPS) variables by school category.[a]

SPS Variables	Non-Gecekondu Mean	Non-Gecekondu S.D.	Gecekondu Mean	Gecekondu S.D.
School aspiration	3.64	.82	3.17	1.11
Self-concept of ability	21.98	3.18	22.20	3.44
Perceived evaluation by parents	15.18	2.75	14.89	2.77
Perceived evaluation by teacher	16.17	2.96	16.22	2.87
Perceived evaluation by friend	12.56	2.45	12.48	2.51
Total Subjects	N=378		N=364	

[a]Means and standard deviations of self-concept of ability, perceived evaluations by others (parents, teacher, and friend) are based on student's summated scores obtained from more than one item for each SPS variable. Summation procedures are explained elsewhere in the text.

Summary of the Section

The preceding section of this chapter shows the characteristics of two sub-population groups--Gecekondu and non-Gecekondu students--by means of descriptive analyses of data obtained from the Student Questionnaire in this study. The over-all picture of the two student populations shows that there are more female students in non-Gecekondu schools than Gecekondu schools. Second, in Gecekondu schools there are more over-aged--13 or above--students than in non-Gecekondu population. This appears to be due to the high percentage of grade repeaters in those schools.

In terms of basic socio-economic variables--father's occupation, father's income, and father's attained educational level--the two student populations differ considerably from each other. Thus the non-Gecekondu student population has fathers who are engaged in more professional jobs, get higher incomes, and have attained a higher educational level than the Gecekondu student population.

According to findings on SPS variables, the two student populations differ significantly with respect to school aspiration. Although there are observed differences between means for other SPS variables across the two student populations, none of them appeared to be significant.

In the next section of this chapter is presented the procedure for developing indices on selected items and assessing the reliability of the data.

Developing Indices on Selected Items and Reliability Analysis

In this section, the procedures for developing some indices and reliability analyses of those indices are explained. Some SES and SPS variables, used in the data analysis, were developed on the basis of combining or grouping of subjects' responses to certain items in the Student Questionnaire by means of either simple summation or applying the summated rating scales (also called Likert-type scale).[2] Combining the student's response to selected

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[2]F. N. Kerlinger, Foundation of Behavioral Research (New York: Holt, Rinehart and Winston, 1964), pp. 483-491.

items for getting a single score (index) was not done on an arbitrary but on a logical basis, that those selected items were assumed to be measuring the same thing by asking students in different ways in order to eliminate the chance of error. After the scores on selected items for each index for each student were summed, then internal consistency reliability estimates were obtained by Hoyt's analysis of variance method for all indices in this study.[3] The main procedure for each index is explained in succeeding pages.

Index of Residence

This index represents the sums of scores each subject gets from items 10 to 17 included in the Student Questionnaire. The items indicate whether the student's home does or does not have certain facilities, each of which is assumed to contribute to a higher standard of living. Therefore, it was assumed that the higher the score a student gets on those items the better living condition exists at his home. It was further assumed that it was not necessary to estimate the internal consistency of those items, because of the fact that the existence of any one of these facilities at home indicates better living conditions. So, sums of scores on this group of items give us an "index of residence" for each student.

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[3]Hoyt, op. cit., p. 108.

Index of Self-Concept of Ability

This index was also obtained by summing the scores that students get on items 20 to 26 inclusive, under the assumption that those items meet the requirement of applying summated rating scale procedures. A summated rating scale is a set of attitude items, all of which are considered of approximately equal "attitude value" and to each of which subjects respond with degrees of agreement with the options given under each item in the survey instrument in this study. So, the scores of the items of such a scale are summed to yield an individual's attitude score.[4]

Thus, the obtained self-concept of ability index was tested against zero correlation among the items used for this particular attitude by means of Hoyt's reliability estimate for internal consistency. According to Hoyt's analysis of variance method for estimating the reliability of such an index based on more than one item, the variation in the response of an individual from item to item is not considered to be error at all. Rather, it is a sum of individual differences and residual.[5] So, internal consistency--reliability--can be defined as the ratio of difference between individual variance and error variance to variance of individual. By applying Hoyt's method for internal

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[4]The words "attitude" and "perception" are used as synonyms in this study.

[5]G. C. Helmstadter, Principles of Psychological Measurement (New York: Appleton-Century-Crofts, 1964), p. 73.

consistency the reliability estimate of self-concept of ability index was found to be .79.

Indices of Perceived Evaluation by Others

These indices were based on the items which indicate how a child perceives his academic ability with respect to significant others, namely parents, teacher, and friend. Perceived evaluation indices based on groups of items 28-33 (excluding item 31), 35-39, and 41-44 inclusive indicate how a child interprets (perceives) the expectations of his parents, best teacher, and best friend concerning his academic potentialities.

For developing these three indices, the summated rating scale procedure and Hoyt's analysis of variance method for internal consistency reliability estimation were applied by adopting the same assumptions and logic as we had for self-concept of ability.

As indicated in Table 11, the obtained Hoyt's reliability seemed to be satisfactory for further treatment by using indices.

Correlational analysis is presented in the next section of this chapter.

Correlation Analysis

The purpose of the correlational analysis was to determine the relation of the academic achievement to (1) socio-economic background of students, and

Table 11.--Internal consistency of indices based on selected items.

Indices	Number of Items	Number of Subjects[a]	Hoyt's Reliability	Standard Error
Self-concept of ability	7	742	.79	1.3979
Perceived evaluation by parents	5	735	.80	1.0991
Perceived evaluation by teacher	5	733	.84	1.0380
Perceived evaluation by friend	4	738	.82	.9039

[a]Subjects who responded to items 28, 35, and 45 as "They do not care about my education," were dropped from the analysis.

(2) socio-psychological factors. More precisely, the purpose of the analysis was to provide meaningful answers to the research questions "one" and "two" stated in Chapter I. The data pertaining to questions one and two are analyzed and discussed under each of these two questions.

> What is the magnitude of the relationship, if any, between a student's academic achievement and his socio-economic status?

In order to provide data for answering this question, the students in the sample were asked to answer the items in the "Student Questionnaire" related to their educational background, father's occupation, father's income, father's education, and home conditions. The data for students' academic achievement were obtained from each student's file at the school.

The definitions of socio-economic status variables and academic achievement variables were given in Chapter I. The magnitude of a student's score on SES variables indicates the level of his socio-economic status in the population of interest in this study.

In order to test significance of relationships between SES and achievement variables, the above question has been translated into a research hypothesis as follows:

Hypothesis 1: There is a positive relationship between the academic achievement of a student and his socio-economic status.

The pertinent data were analyzed by using the CDC 6500 BASTAT program available at Michigan State University.[6] The correlation matrix based on combined sample (non-Gecekondu and Gecekondu) is presented in Table 12.

Each coefficient of correlation was tested against zero correlation at the .01 level of significance.[7] All correlations greater than .094 are significant at the .01 level. Therefore, for the combined sample, all correlations are significant, indicating support of the research hypothesis except for the correlation of educational background with mathematics.

The correlation of achievement variables with socio-economic variables ranges from .03 for correlation of

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[6]Carroll, Donaldson, and Price, op. cit.

[7]Quin McNemar, Psychological Statistics (New York: John Wiley and Sons, Inc., 1963), pp. 136-168.

Table 12.--Intercorrelation among SES and achievement variables of combined sample.[a]

Variables	1	2	3	4	5	6	7	8
1. Educational background								
2. Father's occupation	19*[b]							
3. Father's income	21*	71*						
4. Father's education	19*	85*	68*				N=742	
5. Residence	17*	63*	65*	63*				
6. Reading	18*	33*	27*	33*	26*			
7. Mathematics	03	30*	24*	30*	26*	60*		
8. G.P.A. of five subjects	14*	33*	28*	34*	28*	83*	80*	

[a]The correlations are based upon 742 sixth grade--consisting of both non-Gecekondu and Gecekondu--students.

[b]All coefficients have been rounded to two decimal places and decimal points omitted.

*Significant at .01.

educational background with mathematics to .34, correlation of father's education with G.P.A. of five subjects, respectively.

As indicated in Table 12, father's educational level has correlated with student's academic achievement most and father's occupation is the next. After two SES variables, the correlation of achievement with residence and father's income came as correlated SES factors with school achievement. It seems that educational background of a student is the least correlated SES variable with his academic achievement.

Further correlation analysis was carried out on the data of the same variables by separate sample (non-Gecekondu vs. Gecekondu students). A summary of intercorrelation is presented in Table 13.

The purpose of this analysis was to determine the significance of association between achievement and SES variables when the total sample has been split into two sub-categories--non-Gecekondu vs. Gecekondu.

Table 13 shows that the correlation of coefficients of academic achievement with SES based on the data of the non-Gecekondu sample still holds significant and supports the research hypothesis (positive relationship) except educational background. On the other hand, the analysis based on the data of the Gecekondu sample indicates that only father's income correlated with reading and G.P.A. of five subjects, and educational background correlated with reading

Table 13.--Intercorrelation among SES and achievement variables of non-Gecekondu vs. Gecekondu sample.[a]

Variables	1	2	3	4	5	6	7	8
1. Educational background	100	09[b]	16*	14*	08	10*	-07	04
2. Father's occupation	25*	100	54*	60*	27*	04	09	07
3. Father's income	24*	70*	100	48*	36*	10*	08	11*
4. Father's education	23*	87*	67*	100	24*	05	06	06
5. Residence	23*	59*	64*	58*	100	01	03	05
6. Reading	25*	43*	33*	42*	33*	100	49*	75*
7. Mathematics	12*	38*	30*	38*	34*	66*	100	75*
8. G.P.A. of five subjects	22*	44*	35*	46*	38*	87*	82*	100

N=364

N=378

[a]The correlations for non-Gecekondu students are given below the main diagonal, running from upper left to lower right with entries of one, and the correlations for Gecekondu students are given above the main diagonal.

[b]All coefficients have been rounded to two decimal places and decimal points omitted.

*Significant at .01 level.

significantly at .01 level. Although, with the exception of the correlation of student's educational background with mathematics, which is negative, all other correlations between SES and achievement were positive, none of them was found to be significant at .01 level.

The lower correlations or no correlation at all between SES variables and achievement in Gecekondu population comparing them with correlations in non-Gecekondu population indicate that poor students in Gecekondu sample may have as high achievement as those who were a little higher in their socio-economic status and that SES and achievement do not go together in Gecekondu population as well as they do in non-Gecekondu population. One possible explanation of this difference between the findings for Gecekondu and non-Gecekondu populations may be that students in Gecekondu population may represent more homogeneity with respect to SES variables than do non-Gecekondu population even though Gecekondu students vary in their achievement. Further explanation will be given in the section entitled "Multiple Regression Analysis." The correlation of academic achievement with combined SES variable is presented in the section entitled "Factor Analysis" in this chapter.

The correlational analyses, based on the data provided by the items measuring student's responses to socio-psychological factors in the "Student Questionnaire," reveal the relationship between student's academic achievement

and socio-psychological factors. The analysis was carried out once on the data of combined sample (non-Gecekondu and Gecekondu students together) and once on the separate sample.

The research question pertaining to this analysis was stated in Chapter I as follows:

> What is the magnitude of the relationship, if any, between a student's academic achievement and socio-psychological variables?

The data presented for this analysis were obtained from the student's responses to the items relevant to socio-psychological factors in the "Student Questionnaire" and achievement scores from his file at the school. The definitions of each SPS variable were given in Chapter I. Except for the school aspiration scale score, the other scale scores are based on more than one item response of student. Therefore, the reader should keep in mind that student's score on self-concept of ability, and score on his perceived evaluation by significant others--parents, teacher, and friend--indicate combined scores or an index based on more than one item. Development of those indices has been explained in the preceding section. The research question above was translated into a research hypothesis as follows:

Hypothesis 2: There is a positive correlation between a student's academic achievement and socio-psychological factors.

The computed coefficients of correlation among the variables based on combined data of non-Gecekondu and Gecekondu sample are presented in Table 14.

Coefficients in Table 14 were tested against zero correlation. For all cases, the computed coefficients of correlation were found to be significant at the .01 level.

The correlations between achievement variables and SPS variables range from 18 to 52. It seems that student's perception of the evaluation of his academic ability by parents has the highest relationship with student's academic achievement. The next SPS variables which have positive association with academic achievement are self-concept of ability and perceived evaluation by teacher. The least association was found between achievement variables and school aspiration. The analysis also showed that self-concept of ability and perceived evaluation by parents, teacher, and friend have a close relationship with each other. So, this may indicate that those variables are complementary to each other rather than discrete variables.

The summary analysis based on the data by school category is presented in Table 15. As indicated in Table 15, all computed coefficients of correlation were found to be significant at the specified level (.01).

Although the magnitude of coefficients of correlation between achievement and SPS variables by school category are not the same, the research hypothesis was supported by the findings. The correlations between achievement and

Table 14.--Intercorrelation among SPS and achievement variables of combined sample.[a]

Variables	1	2	3	4	5	6	7	8
1. School aspiration (self)	100							
2. Self-concept of ability	36*[b]	100						
3. Perceived evaluation by parents	36*	80*	100					
4. Perceived evaluation by teacher	31*	73*	83*	100				
5. Perceived evaluation by friend	36*	70*	77*	81*	100			
6. Reading	26*	43*	45*	40*	32*	100		
7. Mathematics	18*	38*	41*	39*	30*	60*	100	
8. G.P.A. of five subjects	23*	48*	52*	48*	37*	83*	80*	100

N=742

[a]The correlations are based upon 742 sixth grade--combined non-Gecekondu and Gecekondu--students.

[b]All coefficients have been rounded to two decimal places and decimal points omitted.

*Significant at .01 level.

Table 15.--Intercorrelation among SPS and achievement variables of non-Gecekondu vs. Gecekondu sample.[a]

Variables	1	2	3	4	5	6	7	8
1. School aspiration	100	41*[b]	40*	38*	41*	19*	13*	16*
2. Self-concept of ability	35*	100	78*	74*	72*	34*	33*	40*
3. Perceived evaluation by parents	31*	82*	100	84*	79*	36*	29*	38*
4. Perceived evaluation by teacher	26*	71*	82*	100	84*	32*	30*	37*
5. Perceived evaluation by friend	31*	68*	75*	77*	100	29*	30*	32*
6. Reading	31*	52*	51*	47*	35*	100	49*	75*
7. Mathematics	21*	43*	50*	47*	31*	66*	100	75*
8. G.P.A. of five subjects	28*	57*	62*	57*	42*	87*	82*	100

N=364 (Gecekondu)

N=378 (non-Gecekondu)

[a]The correlations for non-Gecekondu students are given below the main diagonal, running from upper left to lower right with entries of one, and the correlations for Gecekondu students are given above the main diagonal.

[b]All coefficients have been rounded to two decimal places and decimal points omitted.

*Significant at .01 level.

SPS variables, based on Gecekondu sample, range from .13 to .40 while they are between .21 and .57 for the data of non-Gecekondu. Self-concept of ability and perceived evaluation by parents and by teacher seemed to have more association with academic achievement of student than the association of achievement with school aspiration and perceived evaluation by friend in both sub-samples. Generally, the relationship between achievement and SPS variables is higher for the non-Gecekondu sample than the Gecekondu sample. Why is this so? Probably, the students who have lower grades on reading, mathematics, and G.P.A. of five subjects think they can do as well as others who have had better grades on the same academic area in Gecekondu population. Therefore, their responses to the items which were assumed to be socio-psychological variables were almost as high as the responses of students who were more successful at school work. They may feel that they have not done as well in their actual school achievement as measured by grades as they think they can do in comparison with other students. Most of the students in Gecekondu population might be told by their parents and others that they could do school work as well as others, although many of those parents may not be as sophisticated about school tasks. This suggests that the variance in academic achievement of non-Gecekondu pupil can be more accurately explained than of Gecekondu pupil by means of socio-psychological variables. In fact, in both samples SPS variables seem to explain more variation in academic

achievement than do SES variables. The relationships among some selected variables, including those above, in the combined sample as well as in samples of non-Gecekondu and Gecekondu students are given in Appendix C.

Further correlation analysis will be carried out in the next section to see the relation of composite measures of SES with achievement and of composite measure of SPS with achievement on the data of non-Gecekondu vs. Gecekondu students and on the data of the combined sample.

Factor Analysis for Developing SES and SPS Indices

The purpose of factor analysis in this study is to search for variables--items or indices--that correlate substantially with one another so that they can be grouped as new indices which can not only serve for further analysis but are also psychologically and sociologically meaningful.

In the development of the "Student Questionnaire," some of the items were so constructed that one group of items (#4, #7-17) was expected to provide information about student's socio-economic status (SES) and the other group of items (#18, #20-26, #28-33, #35-39, #41-44) was related to the student's school aspiration, his perception of himself and evaluation by significant others with respect to his schooling.

The procedure for developing indices of residence, self-concept of ability, perceived evaluation by parents,

perceived evaluation by teacher, and perceived evaluation by friend has been explained in section two of this chapter. Now, by applying factor analysis to data on those selected variables it was intended to identify each variable whether belonging to the SES group or to the SPS group as they were constructed. Therefore, the intercorrelations of those selected variables were subjected to a two-step factor analysis known as principal components (or principal axes) analysis and varimax rotation analysis in the literature.[8] These techniques are part of a broad family of techniques generally known as factor analysis.

The principal components method is used quite often as the first step in a step-wise analysis. This method is the ideal method of condensing (grouping) variables during the first step of a two-step analysis. In principal components analysis, the first principal axis is defined as that linear combination of variables which explains the most variance. That is, weights (or factor loadings) for the first factor[9] (component) are selected so that the average squared factor loading is maximum. Then the first residual matrix is obtained.[10] A linear combination is then formed of the partialed variables in the residual matrix,

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[8] P. Horst, Factor Analysis of Data Matrices (New York: Holt, Rinehart and Winston, 1965).

[9] "Factor" and "component" are used synonymously in this study.

[10] J. D. Nunnally, Psychometric Theory (New York: McGraw-Hill, 1967), pp. 288-347.

so that the average squared loading on the second factor is as large as possible. This procedure is repeated until the desired number of factors is extracted.

In the second step of factor analysis, applied to data in this study, the varimax rotation technique has been used in order to get simple structure; that is, to identify variables having high factor loading on one factor (being important to that factor) and of negligible importance to all other factors. In short, this technique attempts to maximize the high and low weights for a factor so that the variables that have high weights (factor loadings) on a factor can be thought of as belonging together. In this way, an interpretative label can be applied to what they have in common.

The following part of this section describes the application of principal components and varimax rotation techniques to data of this study for developing SES and SPS indices. One of the important objectives in this study was to see in what manner responses to different items in the Questionnaire related to one another. In this way it was hoped to see linear relationships of variables among themselves which could be explainable by student's socio-economic status or by socio-psychological factors. Each of them can also be used as an independent single composite measure for further analysis to predict student academic achievement on selected subject areas.

Intercorrelations of ten variables, subjected to two-step factor analysis, for combined population (non-Gecekondu and Gecekondu) are given in Table 16. As indicated in Table 16, the coefficients of the first five variables, which are measures of items which were constructed for getting information about student's socio-economic background, range from 17 to 85. The correlation of student's educational background with the other four SES variables is not as high as the correlations of four variables among themselves. However, the correlations of educational background with SPS variables are far lower than their relationship with SES variables. Therefore, not only because of the magnitude of the coefficient of correlations, but also by definition, student's educational background variable can be treated as one of the SES variables rather than one of the SPS variables. Father's occupation, father's income, father's education, and residence correlate with each other high enough that, to a large extent, they may be assumed to be measuring a common attribute. The same interpretation can be applicable to the variables based on items which were constructed so that they measure the level of student's responses to socio-psychological factors. The range of coefficients of correlation based on SPS variables--school aspiration, self-concept of ability, perceived evaluation by others (parents, teacher, and friend)--range from .31 to .83. The school aspiration variable correlation with other SPS variables is not as high as that of the other four SPS

Table 16.--Intercorrelation matrix of selected SES and SPS variables.[a]

Variables	1	2	3	4	5	6	7	8	9	10
1. Educational background	100	19	21	20	17	03	05	03	03	03
2. Father's occupation	09	100	71	85	63	26	20	26	19	16
3. Father's income	21	71	100	68	65	28	18	22	15	17
4. Father's education	20	85	68	100	63	30	23	28	21	21
5. Residence	17	63	65	63	100	31	17	22	17	15
6. School aspiration	03	26	28	30	31	100	36	36	31	36
7. Self-concept of ability	05	20	18	23	17	36	100	80	73	70
8. Perceived evaluation by parents	03	26	22	28	22	36	80	100	83	77
9. Perceived evaluation by teacher	03	19	15	21	17	31	73	83	100	81
10. Perceived evaluation by friend	03	16	17	21	15	36	70	77	81	100

[a]Correlations are based upon 742 students. All values have been rounded to two decimal places and decimal points omitted.

variables with each other. Nevertheless, by definition it refers to student's attitude rather than to his socio-economic background. Following the interpretation of those coefficients of correlation in Table 16, they were then subjected to two-stepwise factor analysis, as described previously, by using the CDC 6500 CISSR FACTORA program[11] for condensing (grouping) the variables as single indices of SES and SPS.

The figures in Table 17 indicate the factor loadings[12] (correlations of the variables with factor scores) of each variable on a particular factor. For example, the factor loadings of educational background variable are .19 with the first factor, .26 with the second, and .92 with the third factor, and so on. Father's occupation variable has factor loading .68 with the first factor, .60 with the second, and -.07 with the third factor.

As indicated in Table 17, almost all of the variables have highest factor loading on the first factor. That means the first factor explains the most variation, 43 per cent, in achievement. Regardless of the sign of factor loading, next to the first factor, the second factor seems to explain a considerable amount of variation, 24 per cent, in student achievement. The signs of the factor loadings on the second factor indicate that the first five and

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[11]Price and Ingvaldson, op. cit.

[12]Nunnally, op. cit., p. 292.

Table 17.--Factor loading matrix of unrotated factors with SES and SPS variables.[a]

Variables	FACTORS									
	1	2	3	4	5	6	7	8	9	10
1. Educational background	19[b]	26	92	22	01	-02	01	01	00	01
2. Father's occupation	68	60	-07	-17	26	-07	05	06	-16	22
3. Father's income	64	58	-04	-06	-13	45	-15	04	00	-04
4. Father's education	70	56	-06	-13	29	-13	07	-09	14	-21
5. Residence	61	54	-10	79	10	01	03	04	-01	-00
6. School aspiration	55	-03	-26	03	-50	-25	04	-03	01	02
7. Self-concept of ability	73	-50	05	-03	03	-11	-41	-16	-11	-02
8. Perceived evaluation by parents	79	-49	03	-11	00	-04	-08	21	25	11
9. Perceived evaluation by teacher	74	-55	07	-13	-06	-00	18	21	-18	-16
10. Perceived evaluation by friend	72	-54	04	-05	-04	15	28	-28	03	09
Per cent of variance accounted for by each factor (component)	43	24	10	08	04	03	03	02	02	01
Cumulative per cent of variance	43	67	77	85	89	92	95	97	99	100

[a]Analysis is based upon 742 students. All values have been rounded to two decimal places and decimal points omitted.

[b]Each figure represents factor loading on each variable.

the next five variables clustered in different domains of factor space.

Since the purpose of the factor analysis was to find out simple structure, i.e., that SES variables have high factor loadings on one factor and SPS variables have high factor loadings on the other factor, varimax rotation technique was applied to principal components matrix. The results of rotated factor loadings are presented in Table 18.

The results of rotated factor loadings for the first two factors are presented in Table 18. The remaining factors were not included because theory had suggested explanation of performance in terms of two factors and because the factor loading matrix of Table 17 gives empirical evidence in support of two major factors explaining the majority of the variance (67 per cent) in student achievement.

As indicated in Table 18, SPS variables--school aspiration, self-concept of ability, perceived evaluation by others (parents, teacher, and friend)--have high factor loading (weight) on the first factor and SES variables--educational background, father's occupation, father's income, father's education, and residence--have high factor loading on the second factor. School aspiration has almost equal weight on both factors; by its definition it was assumed to be an SPS variable. However, its contributions to the magnitudes of condensed SPS or SES variables do not differ very much and its inclusion for computing student's score on SPS and on

SES do not affect further analysis. The same reasoning can be made about educational background factor.

Table 18.--Rotated factor loadings on two orthogonal factors.[a]

Variables	Factor Loadings		
	Factor 1	Factor 2	Communality (h^2)
1. Educational background	-02	32	10
2. Father's occupation	14	89	81
3. Father's income	12	86	75
4. Father's education	18	88	80
5. Residence	13	81	67
6. School aspiration	44	32	30
7. Self-concept of ability	88	08	78
8. Perceived evaluation by parents	92	13	86
9. Perceived evaluation by teacher	91	05	84
10. Perceived evaluation by friend	90	05	80
Per cent of variance accounted for by each factor	35	32	
Cumulative per cent of variance	35	67	

[a]Analysis is based upon 742 students. All values have been rounded to two decimal places and decimal points omitted.

Figures in the third column of Table 18 show the "communality of the variables," which is the sum of the

squares of the common-factor coefficients.[13] Communality indicates the extent to which the common factors account for the total variance of the variable and the remainder is called uniqueness.

The main purpose of this two-step factor analysis was to develop a single index for SES and a single index for SPS for each student. In order to get student's SES index, each student's scores on ten variables were multiplied by their factor loadings on second factor and then summed as follows:

SES = 32(ed. back.) + 89(f. occup.) + 86(f. income) + 88(f.ed.)
+ 81(residence) + 32(school asp.) + 08(self-concept)
+ 13(sig. par.) + 05(sig. teach.) + 05(sig. friend)

In order to get student's SPS index, the same computation was carried out by substituting factor loadings on the first factor in the formula above. In this way, two indices, as standard scores, for each student were created and punched on an IBM card with the student's identification by using CDC 6500 FACTORA-PUNCH program available at the Computer Center of Michigan State University.

The next section deals with the application of regression analysis on the data--SES and SPS indices in standard score form--in order to provide answers to questions 4a, 4b, and 4c proposed in Chapter I of this study.

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[13]Harry H. Harman, Modern Factor Analysis (Chicago: The University of Chicago Press, 1960), pp. 14-16.

Multiple Regression Analysis

This entire study is based on the assumption that at least some of the differences in academic achievement of sixth grade students in Ankara can be explained by the differences in social-psychological factors and by the differences in their socio-economic status. The objective, then, is to find out the extent to which each characteristic correlates with the student's academic achievement on reading, mathematics, and G.P.A. of five subjects, inclusive of reading and mathematics. Therefore, the student's score on his socio-economic status measure and his score on his attitude measure (independent variables), and his grades on subject areas (dependent variables) specified above were subjected to multiple regression analysis by using the CDC 6500 LS program.[14]

Stated broadly, the purpose of the multiple regression technique (sometimes called multiple prediction) is the estimation of a variable y (dependent), from a linear combination of m independent variables which may be identified as $x_1, x_2, \ldots, x_m$.[15] When the predictor variables are statistically independent, multiple regression provides information about the relative importance of the predictor variables for the explanation of variance in a dependent (predicted) variable. In summary, it can be said that the basic

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[14] Carroll, Donaldson, and Price, op. cit.

[15] G. V. Glass and J. C. Stanley, Statistical Methods in Education and Psychology (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1970), pp. 186-191.

objective of application of multiple regression analysis to data is to obtain the optimum weighting (optimum contribution) to be assigned to each independent variable in predicting a dependent variable.[16]

This section indicates by means of regression analysis how much variation in the academic achievement of a sixth grade student included in this study can be accounted for by his measured socio-economic status and by his measured perception of himself and others' evaluation for achievement. The section also includes the results of regression analysis based on the data of non-Gecekondu and Gecekondu schools separately, in order to see whether the student's socio-economic background and socio-psychological factors function differently in the two groups in predicting the student's academic achievement or in explaining the variance in academic achievement.

It may be recalled that the procedure for developing an index--called SPS--based on variables representing the student's school aspiration, his self-concept of ability, and perceived evaluation by others (parents, teacher, and friend), and an index--called SES--based on variables representing the student's educational background, his father's occupation, his father's income, his father's education, and his residence condition, has been explained in a preceding section. SES and SPS indices are in standard score

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[16]McNemar, op. cit., Chapter 11.

form and punched on an IBM card for each student with his scores on specified subject areas representing his academic achievement. Each card has also a code indicating whether a student belongs to non-Gecekondu schools or to Gecekondu schools.

Before evaluating the results of regression analysis based on the data of combined sample (students of non-Gecekondu and Gecekondu schools together), it may be instructive to look at the correlations of SES and SPS indices (also called independent variables or regressors or predictors) with each of the academic measures called dependent variables (or criterion variables or predicted variables) of interest in this study. The intercorrelations are given in Table 19.

Table 19.--Intercorrelations of the predictors and dependent variables based on combined sample.[a]

Variables	1	2	3	4	5
1. SPS index	100				
2. SES index	00	100			
3. Reading	41	29	100		
4. Mathematics	38	25	60	100	
5. G.P.A. of five subjects	48	28	83	80	100

[a]Correlations are based upon 742 students. All values have been rounded to two decimal places and decimal points omitted. All correlation coefficients were found to be significant at .01 level.

As may be seen by inspection of Table 19, the correlation between SPS and SES indices is zero. In fact, this

is not an accidental outcome. It may be recalled that each of those indices represents a composite measure on a factor. In other words, SPS index is the composite measure based on the first factor and SES index is the composite measure based on the second factor, as was explained in the preceding section. Since the first and second factors are orthogonal (independent from each other) the correlation between SPS index and SES index has to be zero. Further inspection of Table 19 reveals that the correlation of SPS index with dependent variables--reading, mathematics, and G.P.A. of five subjects--is always higher than the correlation of SES index with the same dependent variables. This indicates that the differences of academic achievement of the students can be explained better by the differences of socio-psychological factors than by the differences of their socio-economic status.

In order to provide a statistically meaningful answer to the question of which index is more closely related to the observed differences in academic achievement, SPS and SES indices with dependent variables (achievement variable) were subjected to multiple regression analysis. The beta weights (relative contribution of each index) and multiple correlations for estimation of each achievement score of the student are summarized in Table 20.

Inspection of Table 20 indicates that SPS has beta weights which are always higher than the beta weights on SES. The difference between two beta weights for each dependent

Table 20.--Beta weights and multiple correlation for the SPS and SES indices in estimation of academic achievement.[a]

Achievement Variables (Predicted)	N	Beta Weights		Multiple Correlation		Zero Order SPS & Achievement	
		SPS	SES	$R_{1.23}$	$R^2_{1.23}$	r	r^2
Reading	742	67	47	50	25	41	17
Mathematics	742	75	49	46	21	38	14
G.P.A. of five subjects	742	76	45	56	31	48	23

[a]All values have been rounded to two decimal places and decimal points omitted. All multiple and zero order correlations are significant at .01 level.

variable is so large that SPS alone seems to be a simple predictor to estimate the student's grade on those subjects. But in spite of the lesser weights on SES which were found for each achievement variable (dependent or predicted variable) as compared with SPS, the contribution of SES to prediction of dependent variable is still substantial. When the square of multiple correlation and of zero order correlation was computed it was found that the addition of SES variable to SPS variable in regression equation increased the explanatory function of SPS on each criterion (dependent variable) some 32 per cent on reading, 33 per cent on mathematics, and 26 per cent on G.P.A. of five subjects. This means that for prediction of student's score on those subject areas with addition of his SES score to his SPS score the predictability function of the regression equation is increased. Thus SES

variables as a composite index can be used as an additional independent variable for the prediction of student achievement instead of using SPS alone.

As stated in Chapter I, one of the objectives of this study was to investigate socio-economic and socio-psychological factors (represented as SES and SPS indices, respectively) across the population in order to see whether those factors have a different pattern of relationship with student's academic achievement or not. Table 21 shows the simple correlation among selected variables of interest for Gecekondu and non-Gecekondu students.

Table 21.--Intercorrelation among selected variables (non-Gecekondu vs. Gecekondu).[a]

Variables	1	2	3	4	5
1. SPS	100[b]	-25	36	33	39
2. SES	17[c]	100	00	-03	01
3. Reading	48	39	100	49	75
4. Mathematics	45	35	66	100	75
5. G.P.A. of five subjects	58	40	87	82	100

[a]Correlations below the diagonal are based on non-Gecekondu data (N=378), and those above are based on Gecekondu data (N=364).

[b]All correlations of coefficients above 094 are significant at .01 level against zero correlation.

[c]All correlations have been rounded to two decimal places and decimal points omitted.

Table 21 shows the intercorrelations among variables based on two separate samples as compared with Table 19 based on the combined sample. In Table 21, the correlations below the diagonal are for non-Gecekondu and those above for Gecekondu sample.

Investigation of Table 21 indicates that the two populations differ not only by observed differences in magnitude of correlations of coefficients of SPS with achievement and SES with achievement but also by patterns of coefficients. Plausible explanations for these observed differences between the two populations are as follows:

The correlations of coefficients based on non-Gecekondu for SPS with achievement were found to be higher than the correlations of coefficients based on Gecekondu sample. The low achievers in Gecekondu might be motivated by parents or others with whom they interact in such a way that education is exceptionally important for them compared with other things in their life. The low achievers may see education as the only means for having a better life or stepping up the social ladder in a broader society. So, they may have an unrealistically high self-concept, high perception about evaluation of their ability by others, and probably high school aspiration, as much as those who seem to be successful in the same academic area.

The most interesting thing that Table 21 reveals is that SES did not correlate with any of the achievement variables for Gecekondu data, while correlation is substantial

for non-Gecekondu. Before giving an explanation for this finding, it may be interesting to explain why SPS and SES correlated negatively for Gecekondu population, whereas the correlations in Table 21 were based on separate sample data. In other words, the analysis procedure also reflects the trancation on SES which has occurred by separation of combined group into a Gecekondu (assumed to be primarily low SES) and non-Gecekondu (assumed to be primarily high SES) sub-samples. Splitting the combined group into two sub-samples decreased the heterogeneity which generally goes with the magnitude of correlation of coefficient. Further analysis was then carried out to see whether observed differences in the two populations are significant or not.

The analysis of the data based on sub-samples (non-Gecekondu vs. Gecekondu) was carried out by means of regression analysis to see whether the SPS and SES indices (independent variables) are functioning in the same manner in the equation for predicting student's achievement score on each of the selected academic subjects.

Thus, the regression analysis was conducted on data of each sub-sample separately in order to provide answers to questions 4a, 4b, and 4c posed in Chapter I of this study. The questions concern whether student's socio-economic background factors (composite SES index) and socio-psychological factors (composite SPS index) play different roles in predicting student's achievement score on specified subjects across the two samples. The difference between regression

equations across the samples was tested for significance at .01 level.

In this line, each question (4a, 4b, and 4c) has been translated into a testable research hypothesis and tested as follows.

Question 4a: To what extent, if any, do SES and SPS variables differ, between the two student populations, in predicting students' achievement in reading?

Research Hypothesis 3: Beta weights (relative contribution) of SPS and SES indices in predicting of student's achievement on READING differ by student populations.

Regression analysis was conducted once on non-Gecekondu data and once on Gecekondu data with the dependent variable of reading. Then the differences between the beta weights of the two equations were tested at .01 level of significance. The summary of analysis is given in Table 22.

Table 22.--ANOVA table for testing the equality of regression equation with SPS and SES indices (independent variables) for predicting READING on two samples at .01 level.

Source of Variance	d.f.	Sums of Square	F
Deviation from hypothesis (null hypothesis)	2	71.353	18.437 Sig.
Separate regressions (residual)	736	1420.615	
Common regression	738	1491.968	

Inspection of Table 22 reveals that computed F was found to be significant and suggests that the relative weights

of SPS and SES for predicting student's grade on reading differ by student's population. Therefore, the research hypothesis is supported with findings.

After having found the F value significant, post hoc techniques will be used to test the pair of beta weights in the regression equation to see which independent variables produced the differences between the two populations in predicting student's grade on reading. It may be useful to mention that the use of post hoc technique to test the difference of beta weights is a different process from testing the difference between two regression equations based on two separate samples. It will be remembered from the explanations given at the beginning of this section that the regression technique is the estimation of a variable Y (dependent) from a linear combination of m independent variables X_1, X_2, . . . , X_m. The expression of regression equation based on Gecekondu sample and non-Gecekondu sample in this study can be presented in formula as follows:

$$Y_G = \alpha + \beta_{SPS} X_{SPS} + \beta_{SES} X_{SES}$$

$$Y_{NG} = \alpha^1 + \beta^1_{SPS} X^1_{SPS} + \beta^1_{SES} X^1_{SES}$$

Where G stands for Gecekondu and GN for non-Gecekondu, and α is the constant or intercept. The tests by using post hoc were only for: $\beta_{SPS} = \beta^1_{SPS}$ and $\beta_{SES} = \beta^1_{SES}$ simultaneously for the two sub-samples. The summary analysis is presented in Table 23.

Table 23.--Testing the differences of beta weights across the sample for each independent variable (SPS and SES) with READING at .01 level.

Variables (Indices)	Beta Weights			Confidence Interval
	Non-Gecekondu	Gecekondu	dif.	<Ψ<
SPS	.81	.50	.31	.06--.56 sig.
SES	.55	.21	.34	.01--.67 sig.

The results of the analysis indicate that relative weights of each independent variable (SPS and SES) differ between non-Gecekondu and Gecekondu population in predicting student's grade on reading. Thus the research hypothesis has been further supported. This suggests that student's socio-economic background factors and socio-psychological factors play different roles for predicting the student's grade on reading across the population of interest in this study.

The same analysis procedure above has been followed to provide the answers to questions 4b and 4c posed in Chapter I.

Question 4b: To what extent, if any, do SES and SPS variables differ, between the two student populations, in predicting student's achievement in mathematics?

Research Hypothesis 4: Beta weights (relative contribution) of SPS and SES indices in predicting of student's achievement on MATHEMATICS differ by student population.

Analysis was carried out on two sample data to test the above hypothesis at .01 level of significance. Summary analysis is presented in Table 24.

Table 24.--Testing the equality of regression equation with SPS and SES indices (independent variable) for predicting MATHEMATICS on two samples at .01 level.

Source of Variance	d.f.	Sums of Square	F
Deviation from hypothesis (null hypothesis)	2	39.311	6.463 sig.
Separate regressions (residual)	736	2232.099	
Common regression	738	2271.410	

Summary analysis of testing difference between beta weights across the population (non-Gecekondu vs. Gecekondu) is presented in Table 25 as a subsequent analysis to the preceding analysis.

Table 25.--Testing the differences of beta weights across the samples for each independent variable (SPS and SES) with MATHEMATICS at .01 level.

Variables (Indices)	Beta Weights		dif.	Confidence Interval <Ψ<
	Non-Gecekondu	Gecekondu		
SPS	.90	.56	.34	.04--.64 sig.
SES	.57	.17	.40	.01--.80 sig.

Two-step analysis presented in Tables 24 and 25 indicates that the findings based on data of this study support the hypothesis constructed within the context of question 4b. This suggests that the relative weight of both student's socio-economic background factors and socio-psychological factors differ by population in predicting student's grade

on mathematics; thus the hypothesis was supported. In this study, the student's G.P.A. of five subjects--social science, natural science, foreign language, and inclusive of reading and mathematics--has also been used as the third criterion for student's academic success. From this point of view the relative data were sought and the following question was posed in Chapter I.

> Question 4c: To what extent, if any, do SES and SPS variables differ, between the two student populations, in predicting G.P.A. of five subjects--reading, mathematics, social science, natural science, and foreign language?

A relevant research hypothesis for question 4c has been constructed as follows:

> Research Hypothesis 5: Beta weights (relative contribution) of SPS and SES indices in prediction of student's G.P.A. of five subjects differ by student's population.

The analysis was carried out on the data and the above hypothesis was tested at .01 level of significance. The summary analysis is presented in Table 26.

Table 26.--Testing the equality of regression equation with SPS and SES indices (independent variables) for predicting G.P.A. on two samples at .01 level.

Source of Variance	d.f.	Sums of Square	F
Deviation from hypothesis (null hypothesis)	2	49.679	14.891 sig.
Separate regression (residual)	736	1224.182	
Common regression	738	1273.861	

Findings supported Hypothesis 5, suggesting that when the student's G.P.A. of five subjects is used as the predicted score of his academic achievement, the two populations differ significantly from each other in the contribution of their socio-economic background and socio-psychological factors to prediction. After finding significant differences between the two populations, further analysis was carried out to test the significance of differences of contribution of each dependent variable across the population (non-Gecekondu vs. Gecekondu) at .01 level. Summary analysis is presented in Table 27.

Table 27.--Test of significance of differences of beta weights across the samples (non-Gecekondu vs. Gecekondu) at .01 level.

Variables (Indices)	Beta Weights			Confidence Interval <Ψ<	
	Non-Gecekondu	Gecekondu	dif.		
SPS	.96	.54	.42	.21--.63	sig.
SES	.53	.21	.32	-.01--.65	not sig.

Inspection of Table 27 indicates that the relative contribution of SPS to the prediction of G.P.A. differs significantly across the two populations, but it was found that there is no significant difference between the two populations with respect to the relative weights assigned to SES variable for prediction of student's G.P.A. of five subjects.

Overall findings in this section can be summarized as follows:

1. SPS index correlates with achievement variables at a higher level than does SES index based on data of combined sample.

2. Therefore, the relative contribution (beta weights) of SPS in the prediction of achievement variables is greater than the contribution of SES.

3. Addition of the SES index to the SPS index as a predictor in the regression equation has provided some additional explanation of variance of predicted score somewhat between 26 per cent and 33 per cent.

4. The functioning of SPS and SES indices in predicting of student's achievement score on specified subject area was found to be significantly different across the populations.

5. Further analysis also showed that the relative weights (relative contribution) of SPS index and of SES index in predicting achievement scores of students have been found to be significantly different across the populations, except the weights of SES in predicting student's G.P.A. of five subjects.

Stepwise Regression Analysis

The findings in the preceding section indicate that the relative contribution of either SPS or SES to prediction of the student's grade on reading, mathematics, and G.P.A. of five subjects differs between non-Gecekondu and Gecekondu population. Having this fact in mind, the stepwise regression analysis was conducted on each sub-sample in order to

find out the order of the original variables of SPS and SES indices in predicting student's grade on each subject specified above. The stepwise regression analysis was utilized by using CDC 3600 LSADD program available at the Computer Center of Michigan State University.[17] The LSADD program utilizes stepwise regression procedure in the following manner:

The method begins with inserting variables in turn until the regression equation is satisfactory. The order of insertion of variables is determined by using the partial correlation coefficient as a measure of importance of variables not yet in the equation.[18] The program selects first the independent variable X_1 most correlated with Y (dependent variable) and then finds the first-order, linear regression equation $Y=f(X_1)$. Next it finds the partial correlation coefficient of X_j and Y (after allowance for X_1). The X_j with the highest partial correlation coefficient with Y is now selected and a second regression equation $\hat{Y}=f(X_1,X_2)$ is fitted. This process continues until the partial F-test value for the variable most recently entered becomes non-significant; then the process is terminated.

As will be recalled, the SPS index was made up by condensing five variables, namely school aspiration,

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[17] Carroll, Donaldson, and Price, op. cit.

[18] N. R. Draper and H. Smith, Applied Regression Analysis (New York: John Wiley and Sons, Inc., 1966), pp. 169-172.

self-concept of ability, perceived evaluation by significant others (parents, teacher, and friend). Also, the SES index was made up by condensing five variables, namely student's educational background, father's occupation, father's income, father's education, and student's residence. The purpose of stepwise regression analysis is to see in what order those SPS variables and SES variables provide explanation for the variance accounted for by each in predicting each achievement variable; secondly, to see whether the order of and magnitude of additional variance by variables differ across the two populations. Analysis was carried out on two samples separately. The intercorrelations among SPS variables and achievement variables based on data of non-Gecekondu and Gecekondu schools were presented in Table 15.

In multiple stepwise regression analysis, the variable (independent) which had the highest correlation with the dependent variable is entered first into regression analysis. Thus, the analysis has been executed for each dependent variable, once on the data of non-Gecekondu and once on the data of Gecekondu. Summary analyses are given in Tables 28-33.

Inspection of Table 28 shows that in the prediction of reading from SPS variables, self-concept of ability accounted for 27 per cent of variance in prediction. This suggests that self-concept of ability may be used as a single predictor for estimating student's grade on reading for non-Gecekondu student population. In addition, 2 per cent of

variance was accounted for by perceived evaluation by parents and the same amount by school aspiration. Perceived evaluation by friend and by teacher contribute 1 per cent each to the explanation of variance in regression, but perceived evaluation by friend was found to be not significant at .01 level.

Table 28.--Stepwise regression analysis for dependent variable of READING (non-Gecekondu sample) N=378.

Steps in analysis	Indep. variable entered in the regression	% additional variance accounted for by the variable entered	Cum. Mult. R^2	F
I	Self-concept of ability	27[a]	.27	136.50*
II	Perceived evaluation by parents	02	.29	12.72*
III	School aspiration	02	.31	9.73*
IV	Perceived evaluation by friend	01	.32	5.11
V	Perceived evaluation by teacher	01	.33	6.76*

[a]All values have been rounded to two decimal points.

*Significant at .01 level.

Table 29 shows the analysis based on Gecekondu sample with the same dependent and independent variables.

Unlike the non-Gecekondu sample, the analysis of the data of Gecekondu sample showed that only the perceived evaluation by parents was found to be an explanatory variable

for the variance. Although 1 per cent of variance is accounted for by self-concept of ability, it was found to be not significant at .01 level. Except for the two above, none of the other SPS variables was found to be contributing anything to variance in prediction of reading for Gecekondu population.

Table 29.--Stepwise regression analysis for dependent variable of READING (Gecekondu sample) N=364.

Steps in analysis	Indep. variable entered in the regression	% additional variance accounted for by the variable entered	Cum. Mult. R^2	F
I	Perceived evaluation by parents	13[a]	.13	54.14*
II	Self-concept of ability	01	.14	3.89

[a]All values have been rounded to two decimal places.

*Significant at .01 level.

Summary analysis for the dependent variable of mathematics on both non-Gecekondu and Gecekondu samples is given in Tables 30 and 31, respectively.

Inspection of Tables 30 and 31 shows that the two populations differ with respect to the order of variables entered into regression for predicting student's score on mathematics. For example, perceived evaluation by parents makes the highest contribution to prediction for non-Gecekondu, while the self-concept of ability factor was accounted most

Table 30.--Stepwise regression analysis for dependent variable of MATHEMATICS (non-Gecekondu sample) N=378.

Steps in analysis	Indep. variable entered in the regression	% additional variance accounted for by the variable entered	Cum. Mult. R^2	F
I	Perceived evaluation by parents	25[a]	.25	124.73*
II	Perceived evaluation by teacher	01	.26	5.19
III	Perceived evaluation by friend	02	.28	10.59*

[a]All values have been rounded to two decimal places.

*Significant at .01 level.

Table 31.--Stepwise regression analysis for dependent variable of MATHEMATICS (Gecekondu sample) N=364.

Steps in analysis	Indep. variable entered in the regression	% additional variance accounted for by the variable entered	Cum. Mult. R^2	F
I	Self-concept of ability	11[a]	.11	44.45*

[a]All values have been rounded to two decimal places.

*Significant at .01 level.

in Gecekondu sample. One per cent additional variance was accounted for by perceived evaluation by teacher, but was found to be not significant at .01 level. After parents and teacher, friend is accounted as 2 per cent in variance for non-Gecekondu. Other SPS variables, except

self-concept of ability, were not found to be contributing to variance in mathematics for Gecekondu population.

The results of analysis for dependent variable of G.P.A. of five subjects with the same SPS variables based on two sub-populations are presented in Tables 32 and 33 as follows.

Table 32.--Stepwise regression analysis for dependent variable of G.P.A. of five subjects (non-Gecekondu sample) N=378.

Steps in analysis	Indep. variable entered in the regression	% additional variance accounted for by the variable entered	Cum. Mult. R^2	F
I	Perceived evaluation by parents	39[a]	.39	237.68*
II	Self-concept of ability	01	.40	8.14*
III	Perceived evaluation by teacher	01	.41	6.02*
IV	Perceived evaluation by friend	02	.43	12.22*
V	School aspiration	01	.44	5.84

[a]All values have been rounded to two decimal places.

*Significant at .01 level.

The regression analysis carried out on two samples for G.P.A. of five subjects as dependent variable with independent variables of SPS is summarized in Table 32 (for non-Gecekondu) and Table 33 (for Gecekondu).

Table 33.--Stepwise regression analysis for dependent variable of G.P.A. of five subjects (Gecekondu sample) N=364.

Steps in analysis	Indep. variable entered in the regression	% additional variance accounted for by the variable entered	Cum. Mult. R^2	F
I	Self-concept of ability	16[a]	.16	69.60*
II	Perceived evaluation by teacher	01	.17	5.52

[a]All values have been rounded to two decimal places.

*Significant at .01 level.

The findings indicate that 39 per cent of variance is accounted for by perceived evaluation by parents variable for non-Gecekondu population. Investigation of the correlation matrix in Table 15 indicates that perceived evaluation by parents had a very close association with the dependent variable. The correlation coefficient for that association was .62, which was the highest among all for the same dependent variable based on non-Gecekondu sample. As an addition to perceived evaluation by parents variable, self-concept of ability, perceived evaluation by teacher, perceived evaluation by friend, and school aspiration together explain the 5 per cent of variation in total variance in prediction of G.P.A. of five subjects for non-Gecekondu population.

On the other hand, self-concept of ability and perceived evaluation by teacher entered into the regression based on the Gecekondu sample for prediction of student's

G.P.A. of five subjects. None of the remaining independent variables entered into the regression for the Gecekondu sample. The correlation coefficient for G.P.A. of five subjects with self-concept of ability based on the Gecekondu sample was .40, which is the highest among others for the same dependent variable. Next to self-concept of ability, which explains 16 per cent of variance, perceived evaluation by teacher adds 1 per cent to the total variance indicated by both independent variables for prediction of the Gecekondu student's G.P.A. of five subjects.

The stepwise regression analysis, based on SES variables (independent) with each of the same dependent variables taken one at a time for non-Gecekondu and Gecekondu sample was carried out and the summary analysis is given in the following tables.

It may be useful to look first at the intercorrelations among dependent and independent variables based on two sub-samples, before the presentation of the results of stepwise regression analysis for each dependent variable across the two populations. Thus, the summary analysis for intercorrelations for both samples was given in Table 13.

Table 13 indicates that correlation coefficients for SES variables with achievement variables are smaller than the correlation coefficients for SPS variables with the same achievement variables that are presented in Table 15. Particularly, those correlation coefficients for SES with achievement variables based on Gecekondu sample are so small

(except correlation of G.P.A. with income and reading with both educational background and income), that they were found to be not significant at .01 level from zero correlation (e.g., all correlations above .094 are significant at .01 level). This suggests that SES variables for Gecekondu sample do not seem to explain the variance in achievement as much as they do for non-Gecekondu sample.

The stepwise regression analysis was carried out on each sample separately to see the order of SES variables as predictors for achievement variables (student's grade on reading, mathematics, and G.P.A. of five subjects) by the same procedure explained in the preceding pages of this section.

Summary analysis for reading with SES based on non-Gecekondu and Gecekondu samples is given in Tables 34 and 35, respectively.

Table 34.--Stepwise regression analysis for dependent variable of READING (non-Gecekondu sample) N=378.

Steps in analysis	Indep. variable entered in the regression	% additional variance accounted for by the variable entered	Cum. Mult. R^2	F
I	Father's occupation	18[a]	.18	84.89*
II	Educ. background	03	.21	10.59*
III	Father's education	01	.22	4.41

[a]All values have been rounded to two decimal places.

*Significant at .01 level.

Table 35.--Stepwise regression analysis for dependent variable of READING (Gecekondu sample) N=364.

Steps in analysis	Indep. variable entered in the regression	% additional variance accounted for by the variable entered	Cum. Mult. R^2	F
I	Educ. background	01[a]	.01	3.93

[a]All values have been rounded to two decimal places.

The findings presented in Tables 34 and 35 indicate that the two populations completely differ from each other with respect to SES variables that are explanatory for the variance in reading. None of the SES variables was found to be functioning as a predictor for reading from the analysis based on Gecekondu sample. Only 1 per cent of variance was accounted for by student's educational background.

On the other hand, father's occupation has the highest association with reading for non-Gecekondu sample (e.g., correlation coefficient for this association was found to be .43). Thus 18 per cent of variance was accounted for by father's occupation. Next to father's occupation, educational background and father's education explain the additional variances--3 per cent and 1 per cent, respectively.

The regression analysis based on SES variables and mathematics (dependent variable) was carried out on two sample data separately. The analysis with the data of the Gecekondu sample showed that none of the SES variables is

contributing to the variance in mathematics. The summary analysis based on non-Gecekondu sample is given in Table 36.

Table 36.--Stepwise regression analysis for dependent variable of MATHEMATICS (non-Gecekondu sample) N=378.

Steps in analysis	Indep. variable entered in the regression	% additional variance accounted for by the variable entered	Cum. Mult. R^2	F
I	Father's educ.	15[a]	.15	63.77*
II	Residence	02	.17	9.89*

[a]All values have been rounded to two decimal places.

*Significant at .01 level.

Contrary to the Gecekondu, the findings from the analysis based on the non-Gecekondu data indicate that father's education and residence variables explain to some extent the variance in mathematics. The correlation coefficient for father's education with mathematics was found to be .38, which is slightly above the correlation between father's occupation and mathematics. Therefore, 15 per cent of variance is accounted for by father's education and 2 per cent by residence. None of the other SES variables was found to be contributing to the variance observed in mathematics.

Similar stepwise regression analyses were conducted on the same separate data of two populations for dependent

variable of G.P.A. of five subjects with the same SES variables.

Summary analysis for two samples is presented in Tables 37 and 38.

Table 37.--Stepwise regression analysis for dependent variable of G.P.A. of five subjects (non-Gecekondu sample) N=378.

Steps in analysis	Indep. variable entered in the regression	% additional variance accounted for by the variable entered	Cum. Mult. R^2	F
I	Father's educ.	21[a]	.21	99.90*
II	Residence	02	.23	9.83*
III	Educ. background	01	.24	5.17

[a]All values have been rounded to two decimal places.

*Significant at .01 level.

Table 38.--Stepwise regression analysis for dependent variable of G.P.A. of five subjects (Gecekondu sample) N=364.

Steps in analysis	Indep. variable entered in the regression	% additional variance accounted for by the variable entered	Cum. Mult. R^2	F
I	Father's income	01[a]	.01	4.26

[a]All values have been rounded to two decimal places.

Investigation of Tables 37 and 38 indicates that the two populations still differ from each other when SES variables are used as predictors for student's G.P.A. of five subjects by means of stepwise regression analysis.

As indicated in Table 37, father's education is the first variable as a predictor in regression and 21 per cent of variance was accounted for by that variable on non-Gecekondu sample. Next to father's education, 2 per cent and 1 per cent of variance were accounted for by residence and educational background, respectively.

On the other hand, none of the SES variables appeared significantly in the stepwise regression as a predictor for student's G.P.A. of five subjects when analysis was carried out on Gecekondu sample. Only father's income was found to be such a weak predictor and 1 per cent of variance in G.P.A. was accounted for by this SES variable.

To summarize the stepwise regression analysis based on two samples, the following points can be brought to the reader's attention.

1. For both groups, SPS variables were found to be good predictors for student's academic achievement on reading, mathematics, and G.P.A. of five subjects.

2. Although most of the variability in the dependent variables (achievement variables) was accounted for by SPS variables for both populations, the two populations differ from each other in both pattern and magnitude.

3. SES variables, compared with SPS variables, were found to have a lesser contribution to prediction of student's achievement on the same dependent variables than SPS for both populations. In addition, SES variables contribute almost nothing to prediction of student's

achievement for Gecekondu sample, while the contribution of some SES variables was found to be substantial in prediction of student's academic achievement on the same subject areas for the Gecekondu population. This is because of the fact that SPS and SES correlated negatively for Gecekondu population.

The summary of the study and the major findings, and recommendations based on the above findings are presented in Chapter V.

CHAPTER V

SUMMARY, FINDINGS, AND RECOMMENDATIONS

Summary

In recent educational literature, a good deal of attention has been given to investigating nonintellectual factors and their relationship with students' academic achievement. Although the assumption of fixed ability (inborn ability) still continues to dominate the explanation of differences in academic achievement in many countries, the research of social scientists has brought us to the stage at which variations in academic achievement are being accounted for increasingly by socio-economic and socio-psychological factors, as against assumed inherited potentials, and also as against such factors as physical facilities and methods of instruction. We can certainly say that, whether or not social forces and the environmental context are preponderant influences over other factors in the educational process, they have such immense implications and impact on individual behavior that they can not be ignored, in educational planning and administration.

The Purpose of the Study

The primary purpose of the study was to determine the extent of relationships of selected socio-economic and

socio-psychological factors with academic achievement of selected sixth grade children in Turkey during the 1971-1972 school year. The second purpose of the study was to compare students from Gecekondu neighborhoods (primarily low SES) with students from non-Gecekondu neighborhoods (primarily high SES) with respect to the relationships mentioned above.

Four major research questions were posed in the study.

A. Questions for combined populations

1. What is the magnitude of the relationship, if any, between a student's academic achievement and his socio-economic status (SES)?
2. What is the magnitude of the relationship, if any, between a student's academic achievement and socio-psychological variables (SPS)?
3. Is SES or SPS more significant in establishing these relationships?

B. Questions for comparing the two sub-populations

4. To what extent, if any, do SES and SPS variables differ, between the two student populations, in relating to students' achievement:

   a) in reading
   b) in mathematics
   c) in G.P.A. of five subjects--reading, mathematics, social science, natural science, and foreign language?

A review of the literature and a sample of selected studies in the United States revealed a great deal of evidence that the relationship of students' socio-economic

background and of socio-psychological factors with their academic achievement at school is substantial. However, the author has not found a comprehensive study dealing with the same issue in a Turkish student population.

Methodology

The total population under investigation consisted of two sixth grade populations, namely Gecekondu (primarily low SES) and non-Gecekondu (primarily high SES) in seven public middle schools for the 1971-1972 academic year in Ankara. The non-Gecekondu and Gecekondu samples included 378 and 364 individuals, respectively, and each represented the entire population from which they were drawn randomly for this study. Relevant data were obtained by means of a student questionnaire and from student school records.

Several statistical techniques were employed in analyzing the data obtained from the study. The procedures included frequency counts, reliability analysis, correlation analysis, factor analysis, multiple regression analysis, and stepwise regression analysis.

Findings of the Study and Discussion

In analyzing the data in relationship to the purpose of the study, the following findings emerged:

Characteristics of the Population

The descriptive analysis of data based on students' responses to socio-economic factors (SES) revealed that the

two student populations (Gecekondu versus non-Gecekondu) in fact differ, as hypothesized, with respect to the main socio-economic characteristics as defined in the study. In general, the students in the non-Gecekondu population have fathers who are engaged in more professional jobs, get higher incomes, and attained a higher educational level than the students in the Gecekondu population.

Findings Relating to the Four Principal Questions

1. The findings from correlational analysis, directed toward finding out the magnitude of the relationship between achievement and socio-economic factors based on combined sample data, indicate that all of the SES variables--educational background, father's education, father's occupation, father's income, and student's residence condition--correlated with student's grade on reading, mathematics, and G.P.A. of five subjects positively and substantially, except for the correlation between educational background and grades on mathematics (r=.03, which is not significant at .01 level). All correlations of coefficients exceeding .094 were found to be significant at .01 level. The coefficients of correlations between SES variables and achievement variables range from .03 to .34. The correlation of father's education with G.P.A. of five subjects was found to be highest. In general, correlations of SES variables with the student's grade on reading, mathematics, and G.P.A. of five subjects revealed that father's education and father's occupation were

the factors which correlated most closely with achievement. The basic findings are consistent with research results in the United States which show that the student's achievement is markedly affected by his socio-economic background. However, correlations of coefficients are lower than the findings in the United States.

The findings of correlation analysis with the same variables (achievement and SES) based on non-Gecekondu and Gecekondu samples separately revealed that the associations of SES variables with academic achievement were substantial for the non-Gecekondu population. However, the relationship between the same variables based on Gecekondu were not as large as that found for non-Gecekondu. Observed correlations for the Gecekondu sample revealed only reading correlated with educational background (r=.10) and with father's income (r=.10), and G.P.A. of five subjects correlated with father's income (r=.11) at .01 significance level. The other observed correlations were found to be not significant, although most of the SES variables correlated with achievement positively (except the correlation between educational background and mathematics, which is r= -.07). In general, these findings differ from what has been found from research carried out on low SES groups in the United States. With the limitations of this study, a plausible explanation of these nonsignificant relationships between SES and achievement for the Gecekondu population may be that Gecekondu students in the sample represent a homogeneous group with

respect to SES variables, even though they vary in their academic achievement (Total sample was truncated on SES in the analysis).

2. The analysis of combined data based on student's responses to socio-psychological factors (SPS) revealed that non-Gecekondu students have higher school aspiration than Gecekondu students. However, although the two student populations differ to a small degree with respect to their self-concept of ability and perceived evaluation by others (parents, teacher, and friend), the mean differences were found to be nonsignificant.

The findings from correlational analysis for the relationships of SPS variables with achievement variables based on data of combined sample indicate that all coefficients of correlation are significant, ranging from .18 to .52. The SPS variable represented by the student's perception of the evaluation of his academic ability by significant others (parents) has the highest association with his G.P.A. of five subjects. The next SPS variables which have substantial association with achievement variables are self-concept of ability and perceived evaluation by others (teacher). The findings also revealed that self-concept of ability and perceived evaluation by others (parents, teacher, and friend) have correlated with each other substantially. This suggests that they are a cluster rather than independent from each other. The lowest correlation was found between mathematics and school aspiration.

The analysis based on separate samples with the same SPS and achievement variables reveals that SPS variables correlate with achievement variables for both populations substantially. However, the magnitude of coefficient of correlation on the same SPS and achievement variables differs across the populations. The magnitude of correlations for non-Gecekondu is generally higher than the magnitude of correlations for Gecekondu on the same SPS and achievement variables. For non-Gecekondu population, G.P.A. of five subjects has correlated with evaluation by others (parents) at .62, which is the highest of all. For Gecekondu population, self-concept of ability has the highest association with the same G.P.A. (.40).

The range of correlations between SPS variables and achievement variables based on non-Gecekondu sample is between .21 and .62 (the correlation of mathematics with school aspiration and the correlation of G.P.A. with perceived evaluation by parents, respectively). For Gecekondu sample, the range of correlation is between .13 and .40 (the correlation of mathematics with school aspiration and the correlation of G.P.A. with self-concept of ability, respectively). Thus, there are differences between the two student populations with respect to how much variance in achievement was accounted for by each socio-psychological variable.

The lower correlations between SPS variables and achievement variables based on Gecekondu sample comparing

them with correlations on the same variables based on non-Gecekondu sample indicates that the perception of lower achievers about themselves as well as perceived evaluation by others differs across the two populations.

3. Comparison of SPS variables with SES variables in the combined sample data indicates that all of the SPS variables have a higher correlation with achievement than do the SES variables. That is, students' school aspiration, their self-concept of ability, and their perceived evaluation by others explain more variations in achievement than their father's occupation, father's education, father's income, student's home conditions, and their educational background.

The factor analysis conducted on combined sample data prior to regression analysis revealed that father's occupation, father's income, father's education, and student's residence condition could be considered the main SES variables and self-concept of ability, perceived evaluation by others (parents, teacher, and friend) could be considered the main SPS variables (see page 75). Two factors, on which SES variables were heavily loaded on one and SPS variables on the other, appeared to be explaining the 67 per cent variance in student achievement. Thus student's response to the items representing socio-economic status and socio-psychological factors could be condensed into two single variables as SES and SPS for further analysis.

The findings of intercorrelation analysis prior to regression analysis, which was based on composite weighted variables of SES and SPS (independent) and achievement variables across the two samples, revealed that the student populations differ not only by observed differences in magnitude of correlation coefficients of SPS with SES and SES with achievement, but also by patterns of associations. The relationships between SPS and SES (they are composite weighted score) was positive and significant (r=.17) for non-Gecekondu students, but it was negative and significant r= -.25) for Gecekondu students. This negative correlation between SPS and SES does not correspond with research findings in the United States. The negative correlation between SPS and SES for Gecekondu students indicates that the students who are in the bottom of SES distribution in the Gecekondu population tend to have a higher self-concept, higher perception about their ability as evaluated by others, and higher school aspiration than those who have better socio-economic status in the Gecekondu population. A possible explanation of this may be that students in Gecekondu population have different standards of judging themselves as academically able students than the students in non-Gecekondu population. SPS, as an intervening variable, is counteracting the effect of SES on achievement of Gecekondu students. This suggests that socio-economic background of students in Gecekondu population is not having a negative effect on achievement nor on their perception of themselves

and others' evaluations, whereas it is the reverse in non-Gecekondu population.

The analyses also revealed that there is no relationship between SES (composite variable) and achievement in the Gecekondu student population, whereas there is positive and significant relationship for the non-Gecekondu student population.

4. The findings from regression analysis with SES and SPS variables (each of them represented a composite of five variables and weighted by factor loadings on original variables) as independent and achievement variables (student's grade on reading, mathematics, and G.P.A. of five subjects) as dependent based on combined sample indicated that the contribution of SPS to the variance in achievement is greater than the contribution of SES as predictors. The differences between SPS and SES in terms of their contribution to the variances for each dependent variable are so large that SPS alone was found to be the most important single predictor for each case, although the SES contribution was still substantial. Thus the addition of SES to SPS as independent variable for predicting of student's grade on reading, mathematics, and G.P.A. of five subjects made an additional substantial contribution of 32 per cent, 33 per cent, and 26 per cent, respectively. When total variance in achievement accounted for by both variables (SPS and SES) is assumed to be unity and after the SES contribution is partialed out, the rest of the variation in each of the

achievement variables is accounted for by the SPS variable.

The regression analysis based on two sample data separately for finding whether SPS and SES composite scores of students weigh equally in predicting students' grade on reading, mathematics, and G.P.A. of five subjects across the population revealed that there are significant differences between the two student populations in this respect. For example, regression equations with SPS and SES variables for predicting a non-Gecekondu student's grade on reading is not equal to the regression equation for predicting a Gecekondu student's grade in the same academic area. Findings indicate that more variance in achievement of non-Gecekondu students can be explained by SPS and SES together than variance in achievement of Gecekondu students. Testing each of the relative weights of SES or SPS in the equation for prediction of student's grade on each subject across the two populations revealed that all of the differences, except SES differences for predicting student's G.P.A. of five subjects, were found to be significant. This tells us that the differences in variances in achievement on reading and on mathematics across the population are not only due to the differences of relative contribution of SPS factors alone but also due to the differences of relative contribution of SES factors. Overall findings from regression analysis based on two sample data separately show that student's grade on reading, mathematics, and G.P.A. is

better predicted in non-Gecekondu than Gecekondu student by his combined SPS and SES scores.

Stepwise regression analysis based on data for non-Gecekondu and Gecekondu samples separately for prediction of student's grade on reading, mathematics, and G.P.A. of five subjects from the student's responses to the items representing school aspiration, self-concept of ability, perceived evaluation by others (parents, teacher, and friend) revealed the following findings. It may be useful to remember that the above variables represent socio-psychological variables which were composed as a single SPS variable in previous analysis. Stepwise analysis treated each of those SPS variables as predictors for each achievement variable for each sample.

a. Self-concept of ability was the highest correlated variable with reading for non-Gecekondu population (r=.52); thus 27 per cent of variance in reading was accounted for by student's self-concept of ability. Next to self-concept of ability, perceived evaluation by others (parents), school aspiration, perceived evaluation by others (teacher and friend) explained 6 per cent of a total of 33 per cent variance in reading. Only perceived evaluation by others (friend) was not significant at .01 level.

On the other hand, the analysis on Gecekondu sample showed that only perceived evaluation by others (parents) was a significant contributing factor for prediction of

student's grade on reading at significant level. Its correlation with reading was .36; thus 13 per cent of variance in reading was accounted for by how the student perceived the evaluation of his ability by his parents. One per cent of variance of a total 14 per cent was accounted for by his self-concept of ability, but its contribution to prediction was found to be not significant at .01 level.

b. The correlation between achievement in mathematics and perceived evaluation by others (parents) was the highest, at .50, for non-Gecekondu students. Hence, 25 per cent of variance out of 28 per cent in achievement was accounted for by perceived evaluation by parents. Perceived evaluation by others (teacher and friend) was included in the equation with 3 per cent of variance of total. But perceived evaluation by others (teacher) was found not significant at .01 level. For the Gecekondu sample, only self-concept of ability appeared to be included in the equation as a predictor for student's grade on mathematics. The correlation between mathematics and self-concept of ability was .33, which was the highest correlated SPS factors with mathematics for the Gecekondu sample. So, 11 per cent of variance was accounted for by self-concept of ability, and its contribution to prediction was significant at .01 level. None of the other SPS variables was found to be contributing to variance in achievement for the Gecekondu population.

c. The correlation coefficient between G.P.A. and perceived evaluation by others (parents) for non-Gecekondu

was .62 and entered into the equation as the best predictor variable, accounting for 39 per cent variance in G.P.A. The next best predictors were self-concept of ability, perceived evaluation by others (teacher and friend), and school aspiration. However, the contribution of school aspiration was not significant at .01 level. All others were found to be significant. For Gecekondu students, only self-concept of ability was found to be included in prediction as predictor among other SPS variables at significant level. The correlation between G.P.A. and self-concept based on Gecekondu sample was .40, which is the highest correlated factor. Thus 16 per cent of variance in G.P.A. was accounted for by student's self-concept of ability, out of a total 17 per cent observed variance. Next to self-concept of ability, perceived evaluation by others (teacher) was included in prediction with 1 per cent additional variance to the total, but it was not significant at .01 level.

Overall findings from stepwise regression analysis based on correlations of socio-psychological factors with achievement variables for each sub-sample indicate that most of the observed variance in achievement was accounted for by either student's self-concept of ability or perceived evaluation by parents in both populations. However, it seems that many or sometimes all of the SPS variables were found to be contributing factors in prediction of non-Gecekondu students' grade in regression. On the other hand, only self-concept of ability and, occasionally, perceived

evaluation by others (teacher or parents) were found to be contributing factors in variance of predicting Gecekondu student's grade on reading, mathematics, and G.P.A. of five subjects.

Stepwise regression analysis based on two sub-sample data concerning the contribution of each SES variable (educational background, father's occupation, father's income, father's education, and student's residence conditions) to the observed variance in achievement (reading, mathematics, and G.P.A. of five subjects) revealed the following findings.

a. Father's occupation was the SES variable having the highest correlation with reading for non-Gecekondu students. The correlation coefficient was .43, and its contribution to the observed variance in reading is 18 per cent out of 22 total variance. Next comes educational background, with 3 per cent additional variance. Father's education appeared in regression with 1 per cent of its contribution to variance, but not found to be significant at .01 level. On the other hand, for Gecekondu population, only educational background appeared in regression but its contribution to variance in reading was not significant at .01 level.

b. For predicting of student's grade on mathematics, father's education and student's residence condition appeared to be predictor factors for non-Gecekondu population at significant level. Fifteen per cent of variance in mathematics was accounted for by father's education and

2 per cent additional variance was accounted for by residence.

None of the SES variables appeared in regression for predicting student's grade on mathematics for Gecekondu students.

c. In predicting student's G.P.A. of five subjects from SES variables, findings showed that father's education and residence appeared in regression analysis at significant level for non-Gecekondu students. The correlation between G.P.A. and father's education was .46, and the contribution of father's education to the observed variance in G.P.A. was 18 per cent. Three per cent additional variance in G.P.A. was accounted for by educational background of students. Finally, 1 per cent additional variance in G.P.A. was accounted for by father's education, but it was not significant at .01 level in the non-Gecekondu population. On the other hand, none of the SES variables, except father's income, appeared in stepwise regression equation as a predictor of Gecekondu student's G.P.A. of five subjects. Father's income contributed to the variance in G.P.A. only 1 per cent, and it was not significant at .01 level.

Overall findings from stepwise regression analysis based on correlations of socio-economic factors with achievement variables for each sub-sample indicated that SES variables, particularly father's occupation and father's education, contribute to the explanation of variance in

achievement of non-Gecekondu students, but none of the SES variables was found to be an explanatory factor for the variance in achievement of Gecekondu population.

Recommendations for Planning and Research

Where research results of this study conform to contemporary research findings as reported, there may not be pressing need for additional research. This would seem to be true for the finding that expectations of achievement and actual achievement of students in Turkish schools (within the population studied) vary with and are presumably affected by the SES of their parents. Although this is a limited study of only one grade in certain schools in Ankara, there is no apparent reason for believing that additional research on the same model would change this finding, in view of the substantial body of research pointing to the same conclusion in the United States. It would appear, therefore, that in Turkish educational planning, substantial account should be taken of the total social context in which the child lives and receives his education. Studies of what this actually means in terms of educational planning, carried out by both educational and other social scientists, could profitably be undertaken, although specific projects need not be enumerated here.

Some of the findings of this study, on the other hand, raise questions for which the study does not provide clear answers. There are mostly in the findings where the Gecekondu

population is studied as a separate population. Within this population, it was found that variations in SES correlate only to a low degree with school achievement, especially in comparison with the non-Gecekondu population. What factors are at work within the Gecekondu community to account for this? The relatively small range of SES in the Gecekondu community has been mentioned as a possible factor, but the question is not convincingly answerable from the data of this study.

Furthermore, when socio-psychological factors were related to socio-economic factors in the Gecekondu population alone, different results were found from those within the non-Gecekondu population or in the combined population; that is, a negative correlation was found between SPS and SES. The data do not give a satisfactory explanation of this. It is possible to hypothesize, as has been suggested above, that social factors inherent in the nature of the Gecekondu community account for this: Quite possibly the motivations which are behind the movement of families from the static village to the dynamic city may be stronger among the new arrivers and therefore generally economically poorer immigrants. However, this is speculative, and additional research would be needed to arrive at an understanding of the factors at work. A comparable study of SPS factors among the same students when they reach a higher grade, perhaps the eighth grade, would be very interesting and perhaps significant. The Gecekondu students at sixth grade show certain

patterns of aspirations. Do these aspirations decline with the years in Gecekondu? May they at some point give way to a loss of desire to achieve? Answers to these questions could be very important for educational planning in Turkey.

Other areas identified during the conduct of this study which may be recommended for future investigation include the following:

1. A study similar to the present study on a student population which represents a more mixed student body with respect to their socio-economic status, in order to determine whether they differ in the relationship of SES and SPS with achievement as compared with students from the primarily low and primarily high SES of the groups included in the present study.

2. A study of the influences of school quality, class size, and similar factors as possible influential factors on students' achievement in Turkish education. Recent research in the United States raises substantial questions about such effects, but their influence on achievement needs to be tested in the Turkish educational environment.

3. A study concerning teachers' evaluation of students' academic ability incorporated with the design of the present research. In particular, this study should consider whether there is a relationship between a student's interpretation and internalization of the expectations of his teachers concerning his potentialities, and teachers' actual evaluation of a student's academic ability.

4. A study concerning the differences in achievement, if any, of students who have the same socio-economic status in the two sub-populations. This could be carried out using data assembled in this study.

5. A study concerning the relationship between academic achievement and achievement in adult life in a Turkish population.

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APPENDICES

APPENDIX A

A_1--Student Questionnaire

A_2--Parent Questionnaire

STUDENT QUESTIONNAIRE

School Social Environment Study

Sponsored by Republic of Turkey
Ministry of Education
Planning, Research and Coordination Office
Ankara

Directions: This questionnaire was constructed to learn more about your school work and about your family. You are only asked to do as much as accurate while you are responding to each item in this questionnaire. This is not a test of any sort and will not affect your work in school. Your teacher, your friends and your parents will not see your answers. There are no right or wrong answers, and every answer will be counted as a right one. Therefore you are asked simply to answer each question.

The items numbered (1), (7), (17) and (52) are open-ended items; the others have options for you to respond. Select one, and only one of those options that exactly fits the condition, and circle the number of that option. If you do not understand the questions or the meaning of options please be free to ask the person who is administering the questionnaire.

1. Your name_____

2. Your sex (circle one below)

   1. Boy
   2. Girl

3. What is your age? (Circle one)

   1. 10 years old or below
   2. 11 years old
   3. 12 years old
   4. 13 years old
   5. 14 years or above

4. Where did you finish elementary school?

   1. In village
   2. In town
   3. In city

5. How long have you been in Ankara?

   1. One year or less
   2. More than one and less than two years
   3. Two years or more

6. How long have you been attending 6th grade?

   1. One year or less
   2. More than one year

If you don't live with your father please answer the following two questions for the person in your house who makes the most money.

7. What type of work does you father do? (Give a short description of his job)

8. Approximately how much money do you think your father earns monthly?

   1. 1000 T.L. or less
   2. Between 1000-2500 T.L.
   3. 2500 T.L. or more

9. What level of education did your father have?

   1. None
   2. Some elementary education
   3. Graduated from elementary school
   4. Some middle school education
   5. Graduated from middle school
   6. Some high school or vocational education
   7. Graduated from high school or a vocational school
   8. Some higher education
   9. Graduated from univ. or school of higher education

10. Do you have a telephone in your house?
    1. Yes
    2. No

11. Do you have central heating in your house?
    1. Yes
    2. No

12. Do you have gas in your house?
    1. Yes
    2. No

13. Do you have electricity in your house?
    1. Yes
    2. No

14. Do you have running water in your house?
    1. Yes
    2. No

15. Do you live in your own house?
    1. Yes
    2. No

16. What type of house do you live in?
    1. An apartment house
    2. Gecekondu
    3. We share a house
    4. A private house

17. Please write in given space below the approximate rent for a month if your own house is rented; otherwise write the amount of money your family pays for rent monthly.

    _____

18. If you could go as far as you wanted in school, how far would you like to go?
    1. Finish middle school
    2. Finish vocational high school
    3. Finish high school
    4. Finish university or a school of higher education

19. If most of the students here could go as far as they wanted in school how far do you think they would go?
    1. Finish middle school
    2. Finish a vocational high school
    3. Finish high school
    4. Finish university or a school of higher education

20. Think of your friends. Do you think you can do school work better, the same, or poorer than most of your friends?

    1. Better
    2. The same
    3. Poorer

21. Think of the students in your class. Do you think you can do school work better, the same, or poorer than most of the students in your class?

    1. Better
    2. The same
    3. Poorer

22. Suppose that your family has no economic problem. Do you think you could finish middle school?

    1. Yes, definitely
    2. Yes, as long as I work hard
    3. I am not sure either way
    4. No, definitely

23. Suppose that your family has no economic problem. Do you think you could finish high school or an equivalent vocational school?

    1. Yes, definitely
    2. Yes, as long as I work hard
    3. I am not sure either way
    4. No, definitely

24. Suppose that your family has no economic problem. Do you think you could finish university or a school of higher education?

    1. Yes, definitely
    2. Yes, as long as I work hard
    3. I am not sure either way
    4. No, definitely

25. Forget how your teacher marks your work. How good do you think your own work is?

    1. Excellent
    2. Good
    3. About the same as most of the students
    4. Below most of the students
    5. Poor

26. What marks do you think you really can get if you try?

    1. Mostly 9 and 10
    2. Mostly 7 and 8
    3. Mostly 5 and 6
    4. Mostly 3 and 4
    5. Mostly 1 and 2

27. How far do you think your parents believe you will go in school?

    1. Finish middle school
    2. Finish a vocational high school
    3. Finish high school
    4. Finish university or a school of higher education

28. How good a student do your parents expect you to be in school?

    1. One of the best
    2. Better than most of the students
    3. Same as most of the students
    4. Not as good as most of the students
    5. They don't really care

29. Think of your mother and father. Do your mother and father say you can do school work better, the same, or poorer than your friends?

    1. Better
    2. Same as most
    3. Poorer

30. Do your mother and father think that you could finish middle school?

    1. Yes, definitely
    2. Yes, as long as I work hard
    3. They are not sure either way
    4. No, definitely

31. Do your mother and father think that you could finish high school or an equivalent vocational school?

    1. Yes, definitely
    2. Yes, as long as I work hard
    3. They are not sure either way
    4. No, definitely

32. Do your mother and father think that you could finish university or a school of higher education?

    1. Yes, definitely
    2. Yes, as long as I work hard
    3. They are not sure either way
    4. No, definitely

33. What grades do your mother and father think you can get?

    1. Mostly 9-10
    2. Mostly 7-8
    3. Mostly 5-6
    4. Mostly 3-4
    5. Mostly 1-2

Now I would like to ask some questions about your teachers in this school. Answer these questions as you answered the other ones by circling the number. Remember, no teacher will see your answers so be as honest as you can.

34. How far do you think the teacher you like the best believes you will go in school?

    1. Finish middle school
    2. Finish vocational high school
    3. Finish high school
    4. Finish university or a school of higher education

35. How good a student does the teacher you like the best expect you to be in school?

    1. One of the best
    2. Better than most of the students
    3. Same as most students
    4. Not as good as most students
    5. She/he doesn't really care

36. Think of your best teacher. Do you think he/she believes you could finish middle school?

    1. Yes, definitely
    2. Yes, as long as I work hard
    3. He/she is not sure either way
    4. No, definitely

37. Think of your best teacher. Do you think he/she believes you could finish high school or an equivalent vocational school?

    1. Yes, definitely
    2. Yes, as long as I work hard
    3. He/she is not sure either way
    4. No, definitely

38. Think of your best teacher. Do you think he/she believes you could finish university or a school of higher education?

    1. Yes, definitely
    2. Yes, as long as I work hard
    3. He/she is not sure either way
    4. No, definitely

39. What grades does your teacher think you can get?

    1. Mostly 9-10
    2. Mostly 7-8
    3. Mostly 5-6
    4. Mostly 3-4
    5. Mostly 1-2

Now, I would like you to answer some questions about your best friend. Think about who your best friend is; then circle the number as you did before (your friend will not see your answers).

40. How far do you think your best friend believes you will go in school?

    1. Finish middle school
    2. Finish a vocational high school
    3. Finish high school
    4. Finish university or a school of higher education

41. How good a student does your best friend expect you to be in school?

    1. One of the best
    2. Better than most of the students
    3. Same as most students
    4. Not as good as most students
    5. He/she doesn't care

42. Think of your best friend. Do you think your best friend believes you could finish middle school?

    1. Yes, definitely
    2. Yes, as long as I work hard
    3. He/she is not sure either way
    4. No, definitely

43. Think of your best friend. Do you think your best friend believes you could finish high school or an equivalent vocational school?

    1. Yes, definitely
    2. Yes, as long as I work hard
    3. He/she is not sure either way
    4. No, definitely

44. Think of your best friend. Do you think your best friend believes you could finish university or a school of higher education?

    1. Yes, definitely
    2. Yes, as long as I work hard
    3. He/she is not sure either way
    4. No, definitely

45. What grades does your best friend think you can get?

    1. Mostly 9-10
    2. Mostly 7-8
    3. Mostly 5-6
    4. Mostly 3-4
    5. Mostly 1-2

46. How many students in your class try hard to get a good grade on their tests?

    1. Almost all of the students
    2. Most of the students
    3. Half of the students
    4. Few of the students
    5. Almost none of the students

47. How many students in your class don't care if they get bad grades?

    1. Almost all of the students
    2. Most of the students
    3. Half of the students
    4. Few of the students
    5. Almost none of the students

48. Whom do you like to know first if you do successful work at school?

    1. My mother
    2. My father
    3. Both my mother and father
    4. My brother/sister
    5. My best teacher
    6. My best friend
    7. Others

49. Who cares most about your school work?

    1. My mother
    2. My father
    3. My sister/brother
    4. My best teacher
    5. My best friend
    6. Others

50. How many teachers in this school tell students to work hard in order to get better grades on tests?

    1. Almost all of them
    2. Most of them
    3. Few of them
    4. None of them

51. Who supports you at school?

    1. My father
    2. My mother
    3. Both my mother and father
    4. My brother/sister
    5. My relatives
    6. Others

52. Please write the name of your school.

_____

Thank you very much.

Ali Arseven

PARENT QUESTIONNAIRE[1]

School Social Environment Study

Sponsored by Republic of Turkey
Ministry of Education
Planning, Research and Coordination Office

Dear Parents,

A Student Questionnaire is being prepared to collect information about socio-economic background of sixth grade children, and their school success for 1971-1972 school year in Ankara. Your responses to the items on this sheet are very important for providing accurate information for your child when he/she is told to respond to the similar items in the Student Questionnaire. Your and your child's answers will be used by the researcher only, and none of your child's teachers or school principal will see the answers in this sheet and answers in the Student Questionnaire. Therefore, I would like to have you give correct information to the questions in this Questionnaire and feel confident.

---

[1]The information in this questionnaire is for the supplementary use when students answer the similar items in the Student Questionnaire.

1. Name of your child _____

   His/her school: _____

   Name of his/her school: _____

   His/her grade level and section: _____

2. What type of work do you do? (the main source of family income)

   Example: My profession is M.D. but now I am a singer on radio broadcast; I am a lawyer and a Congressman in Parliament; or I am a bricklayer but now have no job . . . etc.

   Please give a short description of your job in the space provided below:

   _____

   _____

   _____

3. If you are an employee or if you have your own business, how much do you earn for a month?

   Example: I am a government employee and get 1500 T.L. or I have my own business and I make 1000 T.L. for a month, etc.

   Please write your answer in the space provided below:

   _____

   _____

4. What level of education did you have?

   Example: I left school when I was in fourth grade, or I finished law school, or I did not go to school at all, etc.

   Please write your answer in the space provided below:

   _____

   _____

5. How much do you pay for rent for a month? If you live in your own house, how much do you think that you can get from it if rented to someone?

   Example: I live in a government house which may cost 1000 T.L. for us if we rent it, or I am a tenant and pay 500 T.L. for rent for a month, etc.

   Please write your answer in the space provided below:

   _____

   _____

6. What is your kinship with the child who brought this questionnaire to you?

   1. I am his/her father
   2. I am his/her mother
   3. I am his/her relative

Thank you very much for your cooperation.

Ali Arseven

APPENDIX B

CODING SHEETS

School Social Environment Study

STUDENT QUESTIONNAIRE CODE SHEETS

Item No.	Card Column	Description	Procedure
1	1,2,3,4	Student's ID number by school	First digit indicates school and the other three digits identify pupil in that school.
2	5	Sex	1. Girl 2. Boy
3	6	Age	The options will be reversed as oldest student gets lowest score and the youngest gets highest.
4	7	Educational background	To be coded as in questionnaire.
5	8	Years of living in Ankara	To be coded as in questionnaire
6	9	Years of attending 6th grade	Options will be reversed; if pupil has been attending more than one year he will get score 1; if less than one year he will get score 2.
7	10	Father's occup.	This item is open-ended. It will be coded according to the job classification which has been attached to these coding sheets. If the job indicates high prestige and professional it will be coded as 3, otherwise be coded 2 and 1.
8	11	Father's income	This item will be coded as in the questionnaire.
9	12	Father's education	This item will be coded as in the questionnaire.

HOME FACILITIES

10	13	Telephone	If the response is yes it will be coded "1," otherwise be coded "0."
11	14	Central heating	Be coded as item 10.
12	15	Gas	Same as item 10.
13	16	Electricity	Same as item 10.
14	17	Running water	Same as item 10.
15	18	Owner of the house or tenants	If the answer is yes it will be coded as "1," otherwise be coded "0."
16	19	Type of house	The answer to this item will be checked first with the father's answer which has been obtained with Parent's Questionnaire separately. If the answer is 1 or 4 and if the answer to item 17 indicates monthly payment for rent is over 700T.L. it will be coded as "3"; if the answer to item 16 is 3 and 1 and monthly payment is between 350-700 it will be coded as "2"; otherwise it will be coded as "1."*
17	20	Monthly expense for rent	This will be coded as follows: if monthly payment is between 0-350 it will get score "1"; 351-700 will get score "2"; 700+ will get score "3."

SCHOOL ASPIRATION

18	21	School aspiration of self	This will be coded as in questionnaire.

*Student's response to items 7, 8, 16, and 17 will be checked with parent's answer provided with Parent Questionnaire.

19	22	School aspiration of student body in the class as perceived by self	This will be coded as in questionnaire.

SELF-CONCEPT

20	23	School performance compared with friends	This item will be reversed and be coded so "poorer" will get score "1."
21	24	School performance compared with classmates	This will be coded the same as item 20.
22	25	Finish middle school	Options will be reversed so that 1 indicates "No, definitely" and 4 "Yes, definitely."
23	26	Finish high school	Same as item 22.
24	27	Finish univ.	Same as item 22.
25	28	School performance perceived by self	Options will be reversed.
26	29	Grades	Options will be reversed.

SIGNIFICANT OTHERS (Parents)

How the child perceived his/her schooling with respect to significant:

27	30	School aspiration	This item will be coded as in questionnaire.
28	31	School performance	This item will first be dichotomized so that if the option "5" was marked then it will be coded as "0"; otherwise it will be coded "1." After that,
	32		the five items will be reversed and coded as 0, 1,2,3,4.

29	33	School performance compared with friends	Options will be reversed and coded as item 20.
31	This item will not be coded because of mistake in printing of questionnaire.		
32	35	Finish university	Options will be reversed and coded as item 20.
33	36	Grades	Options will be reversed and be coded.

SIGNIFICANT OTHERS (Student's best teacher)

34	37	School aspiration	This item will be coded as in questionnaire.
35	38 39	School aspiration	This item will be coded the same as item 28.
36	40	Finish middle school	Options will be reversed and coded.
37	41	Finish high school	Will be coded as item 36.
38	42	Finish university	Will be coded as item 36.
39	43	Grades	Options will be reversed and coded.

SIGNIFICANT OTHERS (best friend)

40	44	School aspiration	Options will be coded as in questionnaire.
41	45 46	School performance	This item will be coded the same as item 28.
42	47	Finish middle school	Options will be reversed and coded.
43	48	Finish high school	Will be coded the same as item 42.
44	49	Finish university	Will be coded the same as item 42.

45 46	These two items were mixed while questionnaire was being printed so they will not be coded.		
47	50	Academic climate among students	Options will be coded as in questionnaire.
48	51	Person whom child likes to inform him about his schooling	Will be coded as in questionnaire.
49	52	Person who always takes care of child's schooling	Will be coded as in questionnaire.
50	53	Emphasis on academic study total by teachers at school	Options will be reversed and coded.
51	54	Person who supports child's education	Will be coded as in questionnaire.
52	55	Identification of school	This item will be coded as 1 and 2. 1 indicates school is located in Gecekondu area and 2 indicates non-Gecekondu schools.
	56	Identification of person who filled out parent's questionnaire	1. Father 2. Mother 3. Guardian
	57	This column is coded either 1 or 2. 1 indicates the person in column 56 is a government employee; otherwise 2.	

CRITERION VARIABLES (Grades)

58-59	G.P.A. on Turkish (Reading)
60-61	G.P.A. on mathematics
62	Average of five subjects (Turkish, mathematics, foreign language, social science, and natural science)

63 This column is coded 1 or 2; "1" indicates child's parent is a housekeeper (KAPICI); otherwise 2.

64 This column is coded 1 or 2. "1" indicates child or parent definitely said that they live in a GECEKONDU; otherwise 2.

APPENDIX C

INTERCORRELATION TABLES

INTERCORRELATION OF SELECTED VARIABLES BASED ON THE DATA OF NON-GECEKONDU VS. GECEKONDU SAMPLE.[a]

	1 Educational Background	2 Father's Occupation	3 Father's Income	4 Father's Education	5 Residence	6 Reading	7 Mathematics	8 GPA of Five Subjects (inc. Read. & Math)	9 School Asp. (Self)	10 Self-Concept of Ability	11 Perceived Evaluation (Parents)	12 Perceived Evaluation (Teacher)	13 Perceived Evaluation (Friend)	14 Academic Climate (Among Stu.)	15 Academic Climate (Among Teach.)	16 Sex	17 Age	18 Perceived Sch. Asp. (Among Stu.)	19 Perceived Sch. Asp. (Parents)	20 Perceived Sch. Asp. (Teacher)	21 Perceived Sch. Asp. (Friend)
1. Educational background	100[b]	09	16	14	08	10	07	04	01	-02	-05	04	01	-02	06	-29	02	-05	-05	-04	00
2. Father's occupation	25	100	54	60	27	04	09	07	07	-01	02	03	-01	00	02	-04	17	02	08	07	07
3. Father's income	24	70	100	48	36	10	08	11	15	05	07	03	03	01	06	-10	14	09	13	11	16
4. Father's education	23	87	67	100	24	05	06	06	11	11	06	07	07	-03	05	-11	12	-03	10	09	12
5. Residence	23	59	64	58	100	01	03	05	19	10	08	08	04	-03	04	-11	02	05	10	12	05
6. Reading	25	43	33	42	33	100	49	75	19	34	36	32	29	13	11	-20	04	-04	20	29	30
7. Mathematics	12	38	30	38	34	66	100	75	13	33	29	30	30	06	02	-08	03	-04	27	28	30
8. G.P.A. of five subjects (inc. reading and math.)	22	44	35	46	38	87	82	100	16	40	38	37	32	10	09	-09	01	-08	28	33	37
9. School aspiration (self)	05	29	28	34	28	31	21	28	100	41	40	38	41	08	02	-02	12	42	60	57	59
10. Self-concept of ability	13	38	33	39	34	52	43	57	35	100	78	74	72	01	13	-13	05	10	52	51	52
11. Perceived eval. by parents	12	40	33	43	32	51	50	62	31	82	100	84	79	03	21	-16	10	13	57	58	60
12. Perceived eval. by teacher	02	32	26	34	30	47	47	57	26	71	82	100	84	-04	19	-21	08	08	50	58	56
13. Perceived eval. by friend	05	28	27	32	26	35	31	42	31	68	75	77	100	-08	15	-14	07	13	50	56	61
14. Academic climate (among students)	07	15	13	13	-18	16	12	15	11	10	05	04	-02	100	11	-10	00	11	11	14	10
15. Academic climate (among teacher)	10	20	08	19	06	26	25	27	12	22	25	22	18	02	100	-25	12	02	02	16	10
16. Sex	-19	-17	-18	-18	-13	-28	-13	-23	-06	-07	-08	-03	-03	-14	-10	100	-14	12	-03	-14	-15
17. Age	15	20	20	25	20	20	18	17	21	12	14	13	13	11	17	-14	100	08	16	11	06
18. Perceived school aspiration (among students)	03	19	21	17	15	21	22	22	38	25	21	21	21	06	12	03	08	100	31	27	68
19. Perceived school aspiration (parents)	10	41	37	45	39	40	39	47	58	57	62	56	52	11	15	-02	19	39	100	27	72
20. Perceived school aspiration (teacher)	04	35	33	36	33	40	42	47	47	58	60	61	52	76	10	-02	11	33	73	100	75
21. Perceived school aspiration (friend)	02	31	30	33	27	39	36	43	56	53	53	52	54	08	20	03	14	44	72	76	100

N=742 subjects

[a]The correlations for non-Gecekondu students are given below the main diagonal, running from upper left to lower right with entries of one, and the correlations for Gecekondu students are given above the main diagonal.

[b]Coefficients have been rounded to two decimal places and decimal points omitted.

INTERCORRELATION OF SELECTED VARIABLES BASED ON COMBINED DATA OF NON-GECEKONDU AND GECEKONDU SAMPLE.

	1 Educational Background	2 Father's Occupation	3 Father's Income	4 Father's Education	5 Residence	6 Reading	7 Mathematics	8 GPA of Five Subjects (inc. Read. & Math)	9 School Asp. (Self)	10 Self-Concept of Ability	11 Perceived Evaluation (Parents)	12 Perceived Evaluation (Teacher)	13 Perceived Evaluation (Friend)	14 Academic Climate (Among Stu.)	15 Academic Climate (Among Teach.)	16 Sex	17 Age	18 Perceived Sch. Asp. (Among Stu.)	19 Perceived Sch. Asp. (Parents)	20 Perceived Sch. Asp. (Teacher)	21 Perceived Sch. Asp. (Friend)
1. Educational background	100[a]																				
2. Father's occupation	19	100																			
3. Father's income	21	71	100																		
4. Father's education	19	85	68	100																	
5. Residence	17	63	65	63	100																
6. Reading	18	33	27	33	26	100															
7. Mathematics	03	30	24	30	26	60	100														
8. G.P.A. of five subjects (including reading and math.)	14	33	28	34	28	83	80	100													
9. School aspiration (self)	03	26	28	30	31	26	18	23	100												
10. Self-concept of ability	05	20	18	23	17	43	38	48	36	100											
11. Perceived eval. by parents	03	26	22	28	22	45	41	52	36	80	100										
12. Perceived eval. by teacher	03	19	15	21	17	40	39	48	31	73	83	100									
13. Perceived eval. by friend	03	16	16	21	15	32	30	37	36	70	77	81	100								
14. Academic climate (among students)	02	10	09	08	11	15	10	13	10	06	04	00	-05	100							
15. Academic climate (among teacher)	08	13	07	13	05	19	15	19	07	18	23	20	16	07	100						
16. Sex	-25	-15	-17	-18	-15	-26	-05	-18	-06	-10	-12	-11	-09	-12	-17	100					
17. Age	10	26	25	29	26	15	11	12	21	07	13	10	10	06	14	-16	100				
18. Perceived aspiration (among students)	00	20	23	18	23	11	11	09	44	15	17	13	16	10	05	05	14	100			
19. Perceived aspiration (parents)	03	33	32	37	34	32	35	39	61	52	59	51	50	11	09	-05	21	38	100		
20. Perceived aspiration (teacher)	01	28	28	30	29	36	37	42	53	53	59	58	54	12	18	-09	15	32	71	100	
21. Perceived aspiration (friend)	03	27	30	31	27	36	34	41	60	51	56	52	56	10	15	-07	15	37	73	76	100

N=742 subjects

[a]Coefficients have been rounded to two decimal places and decimal points omitted.