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Some factors associated with college plans among high school boys in Bogota, Colombia: a cross-cultural check

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SOME FACTORS ASSOCIATED WITH COLLEGE PLANS AMONG HIGH SCHOOL BOYS IN BOGOTA, COLOMBIA: A CROSS-CULTURAL CHECK

by

Saturnino N. Sepulveda

A Dissertation Submitted to the Graduate Faculty in Partial Fulfillment of The Requirements for the Degree of
DOCTOR OF PHILOSOPHY

Major Subject: Sociology

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Manpower is the most valuable natural resource of any country. But men, as any other natural resource, need to be developed and refined. The level of refinement determines the power. Undeveloped men have lived for centuries and still live in miserable conditions surrounded by gulfs of material wealth.

Highly developed men have changed deserts into productive land; they have controlled and dominated the external world for their own sake in a variety of ways. For men, the refinement process consists of education and training.

The role of education in modern societies is to equip individuals to use the opportunities which will best utilize their abilities and to guide them in making decisions that will serve both the interests of the individual and those of society.

The society thus has become dependent upon the potentialities of those men for whom the society has been organized. Development and allocation of these potentialities of the individual citizen is what is meant by manpower concept. Manpower is a dynamic process. Manpower means action, energy, drive, performance, achievement, construction, development, and social progress (10).

Countries wishing to begin full economic development need to pay particular attention to manpower development.
Lack of development of the potentialities of manpower and the inability to allocate it has been an important factor in retarding socio-economic development in undeveloped countries (1).

One way to develop and distribute the manpower potentialities is through higher education. Colleges and universities are the most common places where future leaders for most spheres of human activity are trained and prepared. What determines the decision of eligible people to go to a college or university is the topic of this dissertation. A high school senior is engaged in a rather complex process of decision making when he is making up his mind about education beyond high school graduation. For any student the decision to obtain higher training may be the consequence of factors already existing in the surroundings in which he lives. Since differences exist between individuals, cultures, and societies, those factors affecting the decision making process are expected to vary from society to society. To identify some of the factors closely affecting the college plans among a selected group of high school seniors in Bogota, Colombia is the topic of the present investigation.

One rationale for conducting such a study is generated from the common assumption that education in general, and specifically higher education, is associated with some factors relevant to the culture, the society, and the individual.
Durkheim (40) considered education to be something social in its character, in its origins, and in its functions, and that as a result the analysis of the educational system of a society can best be studied sociologically.

Raising educational levels does not imply by itself significant economic growth, democracy, or freedom for everybody, but lack of higher levels of education restrains them. In all countries which have achieved substantial and sustained economic growth, formal education was already existing at a high level, or was raised to a high level in short order (1).

It is evident that our societies are rapidly developing more specialized activities, vocations, and professions, each one presupposing that there will be available a supply of personnel of high innate ability and with special training. The aggregate of this demand in Colombia, as seen against the character of the population, seems to make it clear that the country does not possess the requisite number of highly competent personnel to satisfy the demand.

Colombia has a population of more than 19 million with 58 percent under 20 years of age. Only 27,000 high school seniors were graduated in 1965, and of those, 16,000 registered at a university for post high school training.
Using the last census (July 4, 1964) figures, 6.7 percent of the people of the same age are graduating from high school and approximately 4% are able to enter into higher education.

Another rationale for the study of college plans among high school seniors in Colombia is that no previous study on this topic exists to the writer's knowledge, and educational planners and counselors do not have any scientific information on which to base their decisions.

A final rationale for this study is to seek findings upon which more thorough investigations can be made.

The general objective of this dissertation is to study, observe, and analyze the phenomenon of college plan decisions among a selected group of high school seniors in Bogota, Colombia.

The following specific objectives have been generated from: 1) theoretical writings related to vocational choice, 2) numerous empirical studies related to decision making process in college plans in the United States, and 3) the author's involvement, as a high school teacher, in discussions with high school seniors in Bogota about education beyond high school graduation.

The specific objectives of the present study are: 1) to identify some factors affecting high school seniors' decisions in college plans, and 2) to identify the degree and direction of the existing relationships, if any,
between those relevant factors and the decision on college plans after high school graduation.

There are three minor objectives which are also of concern. The first is basic to the accomplishment of the above objectives. The second follows from the findings from the first three objectives. The third one comes from the exploratory nature of this investigation. They are as follows: 1) to explore the validity of the various methodological techniques employed in the field study, 2) to identify the relative degree of responsibility among all the factors analyzed here in determining college plans among high school seniors in Bogota, and 3) to present some scientific findings regarding factors associated with the decision to enter college in Colombia which, in turn, will suggest future areas of investigation with broader scope.

The general method of this study involved the self-administered schedule technique using fixed alternative and scale items. Following the selection of the area from which the group of high school seniors was available for investigation, four separate stages for gathering the data were carried out.

First, the structured questions, totaling 82, were discussed and elaborated in the English language. Second, the translation into Spanish was made and discussed with experts in both languages. Third, the questionnaire was pretested using 12 high school students from different high
schools located in Bogota. Finally, 152 self-administered schedules were administered in four different high schools, two located downtown and two in different suburbs of Bogota, Colombia (Figure 1).

Additional sources of information, mainly for the purpose of checking the validity of the answers, were the Ministry of Education in Bogota, the information offices of the universities named by the students, and the corresponding high school files. All the data for this research were collected during April and May of 1967 when the high schools were approaching the end of the first semester of the academic year.

The group of high school seniors used as respondents in this study were selected for the following reasons:

1. In general, a prior knowledge of the entire social system was available because of the author's role as teacher and chaplain in different high schools in Bogota for several years.

2. Traditionally in Colombia the majority of the high schools have been located in big cities, of which Bogota is the largest one.

3. Colombia is far from being a homogeneous society. Due to geographic, ethnological, climatic, and cultural factors, the existing differences from region to region and from group to group could
Figure 1. Map of Bogota. Zones used to divide the city for the census of population in 1964. These geographic zones to some extent divide the city by socio-economic characteristics of the population.
yield misleading results unless a larger-scale project was undertaken.

4. A shortage of financial resources existed to conduct research with a bigger population, either in terms of number of samples or in terms of geographic areas.

5. Communication was less difficult between Ames and Bogota than any other place in Colombia.
REVIEW OF LITERATURE

The review of literature as far as this investigation is concerned has five major functions:

1. To become acquainted with the existing body of theory and empirical work that has been done before.

2. To help in the delineation of the research problem.

3. To aid in stating the theoretical framework for analysis of data and interpretation of findings.

4. To show the rationale behind each of the factors analyzed in the investigation.

5. To provide insight into the methods, measures, and approaches used in analyzing the concepts.

It is the belief of the author that these functions can be better fulfilled by citing the literature in the appropriate sections of the dissertation rather than by presenting a review of the literature in a separate chapter.
THEORY AND HYPOTHESES

Introduction

The primary purposes of this section are to discuss the process of college plans decisions and to relate this process to a theoretical framework of vocational choice for the purposes of deriving hypotheses concerning expected relationships between various psychological, social, and environmental factors and differences in decisions on college plans. An attempt will also be made to develop a logically interrelated conceptual framework which will seek to interrelate the derived hypotheses into a systematic relationship of independent variables to the dependent variable of differential decision on college plans among high school seniors. College plans seem to have been investigated and interpreted by educators and counselors as part of diverse theories, such as: vocational choice (64, 69), vocational development (56, 93, 112), occupational level (136), vocational career (22), career plans (32), etc.

On the other hand, sociologists have attempted to study aspiration and attainment of higher education in terms of social structure variables: socio-economic status and college attainment (109), social status and educational aspiration (130, 131), scholastic achievement (50), occupational aspiration (23), value orientation toward education (127),
rural-urban differences in aspiration (104), and educational attainment (153).

In recent years, efforts have been made to distinguish between several seemingly related concepts used in studies of educational and occupational aspiration. Dole (36) called attention to the need to differentiate between educational choice and vocational choice. Educational choice, as Dole discusses it, is related to and to some extent dependent upon the educational opportunities available to the individual. Vocational choice is more related to decisions concerning life's work based on the personality traits of the individual. Such distinctions have been more deeply discussed by Kuvlesky and Bealer (85, 86), who discuss the confusion in the use of terms and concepts in theory and research as well. They offer explanations about minimal distinctions between and among the concepts: educational aspiration, educational expectations, and educational attainment.

Educational aspiration we define as occupational choice meaning only the psychological preferences or desires that the individual has regarding work statuses. It is thus generally equatable to the term (aspiration) and it should be clear that this phenomenon is but a part of the total process of occupational attainment. (86, p. 267)

Educational expectations can be differentiated from aspirations, which refer to what a person wants to get or achieve. Expectations refer to what a person thinks, or
expects, will happen; expectations should thus be more closely related to existing opportunities than are aspirations. Expectations frequently deal with plans regarding the short-run or not too distant future, while aspirations seem often to refer to the long-run. Educational attainment is different from both educational aspiration and expectation. Attainment refers to what, in fact, is happening or has happened -- how much of what was wanted or expected the individual has been able to attain or to perform.

It should be noted that the present investigation is dealing with educational expectations only. It is concerned with the plans that the high school seniors have regarding enrollment in a college, with what they expect will happen to them, in the few months ahead, with regard to beginning or not beginning a college education.

An attempt will be made to develop a model or theoretical structure suitable for explaining college plans behavior among high school seniors in Bogota, Colombia. As was pointed out previously, this investigation is limited only to the identification of some of the factors related to college plans. While the present study is exploratory, a theoretical model will facilitate the suggestions for future investigations.

The theory developed for the present study will have the following functions:
1. To integrate seemingly disparate theoretical and empirical concepts utilized in different studies related to college plans.

2. To provide a theoretical framework from which a set of testable hypotheses can be derived.

3. To provide a theoretical framework rationale for interpretation of findings.

Theoretical Background

The lack of theory in studies of educational preferences and college plans, despite the extensiveness of the body of literature, may be due to the semantic discrepancies and individualistic approaches reflected in the studies. The use of different terminology, without precise definition of terms, makes it difficult to determine whether two writers agree in content, but disagree in the way terms are used for their explanations, or whether different researchers are actually studying and reporting on different phenomena.

Among psychologists there seems to be a controversy over whether to concentrate studies on vocational choice or vocational development. Super (138), O'Hara (116), Ginzelberg (49) and their followers emphasize vocational development. Roe (123, 124) and Holland (64, 65) emphasize vocational choice or the occupational role that an individual plays at a particular point in time. The differences are a matter of
emphasis. Various researchers seem to view vocational choice as a specific subgoal in a continuous process; they seem to agree that a particular occupational choice is not synonymous with the end of the process.

Another source of difficulties is the difference in approaches. Psychologists, educators, and economists tend to analyze vocational choices from the point of view of their specialization. The literature on vocational choices can be classified according to the following theoretical approaches:

The trait-and-factor theory The assumption here is that individuals differ in their traits, and occupations differ in their requirements. If the traits of the people and the requirements of the occupations are known, the matching of people to occupations becomes a mechanical process. Under such a supposition, the individual makes an inventory of his personal attributes; then he identifies the attributes required to make a successful adjustment in each of some set of occupations; finally, he selects the occupation which has requirements best matching his attributes (140).

Needs theory Roe (123) and Maslow (99) pointed out that needs, conscious or unconscious, play an extraordinary role in vocational choice. Further research has demonstrated the importance of personality needs in vocational choice.
Profit theory  This theory has been supported by socio-economists who emphasize the concept of economic values involved in an individual's actions. According to them, an individual makes a choice in terms of the input-output ratio. The profit is not necessarily economic. The individual faces some alternatives, each of which has certain outcomes which have a certain value to the individual and certain probability of occurrence. The individual selects that alternative that maximizes his gain (6).

Self-concept theory  The assumption of O'Hara and Tiedeman (116) is that vocational choices are expressions of the individual's attempt to find self-expression or self-identification. Self is part of the total personality and corresponds to the awareness one has of one's being. The dynamic aspect of the self-concept theory is the striving for self-actualization. It is believed that the individual obtains a degree of satisfaction from the decision making behavior.

Different in scope from the previous partial theories, educational psychology has suggested two general theories or as Zetterberg might call them -- taxonomies -- concerning the logic of the investigation.

Super (138) synthesized in a dozen statements his theory of vocational development. He included such concepts as: personal differences in ability, interests, personalities, availability of occupations, careers, differences in
social situations, family socio-economic tenets, etc. Ginzberg (49), theorizing on occupational choice, gave strong emphasis to the psychology of individual differences and psychology of personality. To him, occupational choice is a process which takes place over a minimum of ten years or more, emphasizing a series of successive stages. Vocational choice involves the balancing of a series of subjective elements with the opportunities and limitations of reality. In summary, his theory is so broad that he himself called it a group of implicit theories rather than an explicit one.

From the previous discussed approaches, some conclusions can be reached in relation to the theory of educational choice or, more specifically, related to college plans choice.

1. The first four specialized approaches are too narrow in scope; consequently, none is able to provide a suitable theoretical framework to explain the process of college plans behavior. Nevertheless, these approaches provide information which should be taken into consideration in any theory about college plans behavior.

2. The last two theories, those of Super and Ginzberg, seem to be too broad and diffuse, so that it becomes difficult to use them in explaining college plans choices.
3. Though different in approach and in scope, the various specialized and general theories have a certain number of elements and processes in common.

Theoretical Setting

The study of college education choice, despite its complexity and interdisciplinary phases, is the study of only one class of phenomena. When a high school senior is facing the choice of whether or not to go to college immediately after his graduation, essentially what he is doing is seeking to arrive at an educational choice through a rational decision process. But the key idea is that such a rational decision process for educational choice is developed within the framework of a social situation or intercorrelated set of factors which definitely bound and/or determine the final outcome of the individual student as far as college plans are concerned.

No attempt is made to minimize the importance of those factors and theories of the previous section of this chapter. On the contrary, it is believed that those factors play an important role in education selection and specifically in college plans decision, the idea being that not only these factors, but perhaps a constellation of factors, affect the individual student in college plans behavior. It is believed that the existing factors do not work
independently, but rather that they are interdependent. Under these circumstances, it is believed that a sociological structural-functional model will better serve to explain the college plans decisions among Colombian seniors.

The role of sociology is the study of those factors affecting a social situation in so far as they are associated directly or indirectly with the phenomenon under study. Sociologists are concerned with the relationships, and the type and degree of such relationships, between independent variables and the so-called dependent variables and among the independent variables themselves. The sociological approach to the prediction of individual behavior utilizes a system of relationships associated with the social situation in question.

Thus, a sociological approach to the explanation of college plans behavior will be more suitable than other approaches because it takes those psychological, educational, economic, and social factors which have been suggested by specialized disciplines and builds them into a systematized context in an attempt to identify the kind and the extent of their relationship in regard to college plans behavior.

To describe better the sociological theory used in the present study, the following topics will be discussed:

1. What is meant by social system and its functions.
2. How a social system bounds individual behavior.

3. The specific consequences of the social system on college plans decisions behavior.

What is meant by social system and its functions

The concept of system can be conceptualized from the most general to the most specific level. In a general sense, system has been defined by Hall and Fagen as:

a set of objects together with their relationships between objects and between their attributes. (55, p. 4)

A basic principle of this abstract concept is that in a system all variables are interrelated. As Henderson has pointed out,

The interdependence of the variables in a system is one of the widest inductions from experience that we possess; or we may alternatively regard it as the definition of systems. (59, p. 86)

In this sense the concept of system may be applied to both the physical and behavioral sciences.

In the field of social sciences, the concept of system has been discussed by Loomis. He stated:

It is composed of the patterned interaction of members. It is constituted of the interaction of a plurality of individual actors whose relations to each other are mutually oriented through the definition and mediation of a pattern of structured and shared symbols and expectations. (97, p. 2)

Loomis sees any social system as made up of elements and processes. The elements are simply the constituent parts
of the whole, which he presents as follows:

1. belief (knowledge), 2. sentiments, 3. end goal or objective, 4. norm, 5. status-role (position), 6. rank, 7. power, 8. sanction, and 9. facility. The processes mesh, stabilize, and alter the relations between the elements through time; they are the tools through which the social system may be understood as a dynamic functioning continuity -- a "going concern". (97, p. 3)

Loomis distinguishes between elementary processes -- those functions of the above-cited elements -- and another set of comprehensive master processes for the system as a whole. Elements and processes are integrated by a web of interactions or interrelations so as to form a structural-functional unity. The concept of the social system as perceived by Loomis has been used to explain individual behavior within sociological frame of references.

Parsons (118) defines system as including: plurality of actors (objects of persons), structured set of interactions between and among those actors, motivation toward optimization of gratification, and the concept of functional systems, which he emphasizes when discussing the pattern-variables concept. Although he discusses some types of systems -- such as personality, social, and cultural systems -- his conceptual scheme of the theory of action is especially relevant to the college plans action.

To Parsons, a theory of action includes:

1. An individual actor or actors belonging to the system in question.
2. An orientation toward those actions the actors perform as members of the system.
3. Motivation toward action in the sense that the actor attaches some social meaning to his action.

4. Some objectives of the social action and the possible alternatives. (118, p. 4)

Furthermore, the orientation to action is on the basis of cognitive, cathetic, and evaluative processes. The structured-function of all these phenomena make up a system under which human action is explained.

Three different definitions of systems have been discussed. From them, the Parsons system of action seems to be the most appropriate to explain college plans behavior, since college education decision is part of the most general theory of action. Before that explanation is attempted, more information should be provided concerning the characteristics of the concept of system.

From the foregoing discussion it can be concluded that the concept of system implies the existence at a time and over time of a plurality of elements involved. Those elements may vary for the individual as well as for the group. A second feature is the concept of "structure", "patterns", or "going concern" that implies more or less standardized relationships at a time and over time. This provides for explanation and/or prediction of individual behavior. A third characteristic of system in the Parsonian sense is the concept of function.

The concepts of function and functionalism have been
discussed by anthropologists, sociologists, and economists.

For the purposes of this investigation, the definition of function is stated in the Mertonian context,

Functions are those observed consequences which make for adaptation or adjustment of a given system, and dysfunctions are those observed consequences which lessen the adaptation or adjustment of the system. There is also the empirical possibility of non-functional consequences which are simply irrelevant to the system under consideration .... Manifest functions are those objective consequences contributing to the adjustment or adaptation of the system; latent functions, correlativey, are those which are neither intended nor recognized.

(103, p. 51)

The concept of function plays a decisive role in explaining college plans behavior.

In summary, the idea of system includes plurality of objects, structurally interrelated through their specific functions and toward a specific goal.

**How a social system bounds individual behavior**

Human beings are supposed to be born completely blank. They become social beings as they are socialized or acculturated through relations with the group in which they are born or in which they are living. The newborn is not only socialized or enculturated by his fellow group members, but the socialization process is shaped by the group characteristics as well as by the ecological factors affecting the newborn. Fichter points out,

It is obvious that there is a vast difference between a person at the age of thirty days and
a person at the age of thirty years. Quite aside from the physical, moral, and intellectual change, the older person is sociologically different. He knows his way around in groups and societies. He knows how to behave in relation with other persons. The baby is certainly born with abilities to respond to external influences. (but) the most reliable scientific conclusion appears to be that both nature and all external influences affecting the individual person contribute to the socialization of the individual person. It is true that persons are in many ways the product, the creature of their culture and society. Most individuals appear to be more influenced by their social and cultural environment than they influence upon it. We are not only socialized; we are socialized in particular ways. (48, p. 20)

A characteristic of the process of socialization and acculturation is that those concepts of beliefs, status, roles, and norms have become standardized and patterned and that the individual internalizes them. In this way, "from the inside", they continue to influence his conduct. Fichter states,

The social frame of reference has as its content the social experiences of the individual. These are the vantage points from which he looks out on the world. (48, p. 23)

Thus, the institutionalized ways existing in the culture may be thought of as a system of standard behavior events, together with their associated beliefs, values, and norms which represent the ways that individuals or societies provide solutions to their everyday problems.

Nevertheless, not all individuals are expected to behave in the same standardized way, because not all social experiences are equal in importance and intensity. Fichter observes,
The social frame of reference can be analyzed in three levels. Social experience is (a) common to all human beings, (b) unique to each person, and (c) specific in a particular culture and society. The basic concepts of sociology deal with elements which are found everywhere .... each person, however, experiences these things through his own personality in a way that no other person can share and in a social setting that is different from all others. (48, p. 24)

In brief, it is generally accepted among behavioral scientists that through socialization and acculturation processes, the socio-ecological setting bounds the individual behavior in such a way that if the characteristics of the environment are known, some prediction can be made of individual behavior despite the expected individual differences due to the personal traits and unique interpretations of the world.

**Consequences of the social system on college plans behavior**

So far the concept of social system and its characteristics and functions have been discussed. How the social system affects the individual behavior has also been discussed. From these two principles, it can be determined that men learn to behave in ways that are appropriate to the society in which they live, and that principles can be developed concerning social behavior.

Thus, the next step is an attempt to explain how individual behavior (college plans) can be explained in a social system frame of reference. As to how the social structure affects the individual behavior, Merton (103)
provides insight as he analyzes the impact of the social structure on deviant behavior.

Our primary aim is to discover how some social structures exert a definite pressure upon certain persons in the society to engage in non-conforming rather than in conforming conduct. If we can locate groups peculiarly subject to such pressures, we should expect to find fairly high rates of deviant behavior in these groups, not because the human beings composing them are compounded of distinctive biological tendencies, but because they are responding normally to the social situation in which they find themselves. (103, p. 132)

In this context, college plans which are the external manifestation of individual behavior are expected to be portrayed by the structure of the existing social system.

For the purposes of explaining college plans behavior in this investigation, Figure 2 presents an adaptation of the models of educational choice and career decision making suggested by Holland (64) and Katz (77) respectively. Although there is no claim about a one-to-one relationship between the empirical model and theoretical structure, this model seems to take into account those factors which theoretically are believed to affect college education behavior. Those factors seem to be interrelated as they are structured into a system, such interrelation bounding both the factors and individual students during the process of college plans eliciting behavior.

Some features of the model depicted in Figure 2 should be described:
1. Individual high school senior.
2. Area of possible choices, by major field and level of education needed.
3, 4, and 5. Three groups of all possible factors affecting individual decision of college plans.
Broken-line arrows represent the interaction between the factors and the actor.
Black-double arrows represent the interaction between sets of factors. One-way arrow represents the final choice or decision.

Figure 2. Suggested systematic model for explanation of college plans behavior
1. An individual senior is the center of the system.

2. A constellation of factors are interrelated and integrated in a well-structured system and surround the individual and affect him by a web of mutual relationships.

3. This set of relations tie together social, psychological, and environmental factors among themselves and between individual factors and the actor. For example, the availability of choices is limited by social and environmental factors. A psychological or personal trait may be affected by the social factors and by the environmental factors as well.

4. This set of mutual relations, when they move from factors to individual actor or from factor to factors, correspond to the concept of function as stated in the concept of system. Those relations in this investigation are those positive, negative, or neutral contributions each factor (social, psychological, and environmental) gives to the system, and by this their contribution to the college plans behavior.

5. Finally, the outcome or individual behavior, in this case college plans, is indicated by the black one-direction arrow starting from the individual and pointing to "X", a career in the
field of social sciences requiring five or more years of college.

Thus, the model corresponds to the concept of the social system idea affecting individual behavior as it has been conceptualized in the foregoing discussion. In addition, the model provides room for an analysis of college plans process in terms of the Parsons social action model as it was delineated previously. Let us examine the model upon the theory previously set forth.

First of all, the individual senior who is the center of the social system is expected to express his own behavior in terms of college plans. To arrive at such a decision, he is expected to react in a patterned or standardized way as a member of the group, society, and culture corresponding to a Colombian situation. However, since each student has his own personality characteristics and differences in environment, differences in behavior, such as differences in college plans behavior, are expected. College plans can be seen as social action. Parsons framed social action as a complex process including cognitive, cathetic, and evaluative processes. These processes take place in the individual's mind. They are represented in the model in part by the dotted arrows joining the individual with the spheres of factors identified with the numbers 2, 3, 4, and 5 in Figure 2. Cognitive process refers to the knowledge about discriminations, location, and
characterization of the objects to be chosen. Such knowledge can be simultaneously or successively experienced.

The area number 2 in the model contains the availability of educational choices as they are determined by the Colombian culture. The vertical divisions represent the five main major fields or areas in which the existing possible fields of knowledge are divided in public reports -- mathematics, biological sciences, social sciences, languages, and others. The horizontal divisions represent the level of education needed to be qualified for any occupation. From the bottom to the top, the first belt represents those occupations requiring only high school; the second represents those occupations requiring four or fewer years of college education, usually called intermediate careers; the last, on top, represents those occupations requiring five to eight years of college, usually called careers. It can be seen that each level of education crosses every major field. In this way, the senior can make his educational choice in two directions: horizontally, selecting one from those occupations grouped in the five major fields and, vertically, in terms of the educational level -- high

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1 The term "career" has a restricted meaning in Colombia. The term is used to refer to those people who have college education, whether the college graduate works in the field he was graduated in or not. It is not uncommon to find physicians, lawyers, and engineers, for example, making a living from agriculture or business, but they are identified by the career in which they were graduated.
school education only, four years of college, or five years or more of college. Parsons (118) refers to this area of availability of choices as objects of orientation which are basic in the process of selection but need implementation by a rational process. A second process of the system of action is what Parsons (118) called the evaluative process.

The assumption here is that college plans behavior develops in a rational way. To sociologists, rationality means to relate appropriate means to ends (143, 34, 150). To Dewey (34) rational action involves a mean-ends continuum. Weber (150) discusses the concept of rationality, distinguishing four types of orientation of individuals to action. Weber describes rational action as follows:

When the ends, the means, and the secondary results are all rationally taken into account and weighed, this involves rational consideration of alternative means to end, of the relations of the end to other prospective results of employment of any given means, and finally of the relative importance of different possible ends. (150, p. 117)

The implication of the concept of rationality for the present study is that a student decides to go to college on the basis of predetermined ends or goals; the assumption is that he is in possession of the most qualified means at his disposal to accomplish his goals.

Finally, if the individual actor feels in possession of sufficient information both about the alternatives available to him and the relevant factors affecting his choice, and if he has weighed the possible outcomes in terms of
goals-means, he is expected to make a decision as part of the rational process. Hilgard points out,

Man is capable of rational problem-solving; that is, he can face a problem squarely, weigh the alternatives according to their possible consequences, and take action guided by the results of deliberation. (62, p. 518)

Psychologists and educators have been concerned about high school decision making ability (35). The question arises as to whether the high school senior is mature enough to make one of the major decisions in his life -- should he or should he not pursue a college education?

To plan education beyond high school is in Colombian society a most crucial decision for high school seniors. A number of subdecisions must be made pertaining to each possible alternative of choice and pertaining to each of the factors affecting the process of choice. The results of these subdecisions are combined to arrive at a major decision -- the college plans. These minor decisions and the processes through which they develop have been considered as a process of vocational maturation (139). Psychologists have used scales on acceptance of responsibility, concern with choice, and extent of planning as indices of decision making ability among high school seniors (146).

Ginzberg (49), using samples of ten to eighteen year old boys, set forth the theory that occupational choice progresses through three periods: fantasy choice, tentative choice, and realistic choice. The tentative period
is subdivided into four stages: interest, capacity, value, and transition. In each period, the element used to designate the stage seems to be predominant. The period of fantasy appears some time during the late years of primary school and, through successive stages and due to combined effects, the individual passes into the realistic period, probably in early adulthood. In 1962, Burchinal (23) studied rural youth and, acknowledging the influence of Ginzberg (49), also utilized three main stages of career choice maturation: choices based on fantasy, tentative choices, and the final trial period of selection. Both Ginzberg (49) and Burchinal (23) recognize that the periods of development follow one another chronologically, but they overlap considerably.

It might be supposed that high school students are not capable of making sound decisions and that their statements of intentions to study beyond high school would not be too meaningful.

Dilley, on the other hand, reports,

Administration of the DMI (Decision-Making-Ability Test) to 174 high school seniors revealed that a great percentage of students made good decisions (as defined by DMI), more than is predicted by chance. (35, p. 426)

On the basis of this final statement, the assumption is that high school senior boys in Bogota, Colombia, consider carefully their college plans decisions due to the scarcity
of places in the colleges, the difficulty of the admission
test required, the great number of high school seniors and
the small number of available places in colleges.

The foregoing discussion concerning the characteristics of the individual process of decision making concern­ing college education selection was stated for two purposes:

1. To show the expected rationality that individual
students use during the process of planning whether or not to go to college.
2. To provide some rationality for the expected
variation in college plans behavior since each individual is expected to react differently according to his own personality traits and his own social and ecological environment. No empirical tests are intended on the decision making processes themselves, rather they are stated as assumptions for the purposes of this investigation.

The final analysis of the model (Figure 2) refers to the role of the existing factors in the process of college plans behavior. In the concept of the system the following phenomena were included: objects, functions, and relations. These are discussed in the following section.

The objects are called factors in this investigation and they have been arbitrarily labeled social, psychological,
and environmental factors identified with the numbers 3, 4, and 5 in the model. It is theorized that the social system of the individual high school senior is a part characterized by a certain number of factors existing in the culture, in the ecological world, and in the individual personalities.

As a consequence of the concept of system, it is theorized that such presumably existing factors are affecting the individual behavior of the seniors in such a way that the final educational choice of the individual senior is believed to be a function of those factors working in an interrelated manner. The set of dotted double arrows in the model (Figure 2) represents such relations.

There is evidence that social, psychological, and environmental factors restrict the individual behavior. Holland, as other educators, is very explicit:

Essentially, the present theory assumes that at the time of vocational choice (college plans) the person is the product of the interaction of his particular heredity with a variety of cultural, personal forces .... and physical environment. Out of this experience the person develops a hierarchy of habitual or preferred methods for dealing with environmental tasks .... The person making a vocational choice in a sense 'searches' for a situation which satisfies his hierarchy of adjustive orientation. (64, p. 35)

Kenneth (80), investigating educational plans of high school graduates in Wisconsin, concluded that factors such as lack of money and lack of knowledge about educational means, prevent high ability youngsters from attaining a
college education. Lindstrom's study on differences in academic capabilities between rural youth planning and not planning to go to college among high school students in Illinois suggests that factors such as family environment, place of residence, and the father's occupation may affect educational selection:

The fact that approximately 60 percent of the rural youths who were juniors and seniors in these 24 high schools (which were probably representative of the rural high schools in the state) did not plan to go to college presented a serious problem to parents, educators, and policy makers. (90, p. 2)

Lindstrom's study refers to Sullivan's study as follows:

Most rural youth wanted to live in the country or a small town; 76 percent of the boys and 75 percent of the girls planning to go to college, and 72 percent of the boys and 83 percent of the girls not planning to go to college wanted to live in the rural area. (90, p. 2)

Similar findings can be observed in Blossom (18) and Lindstrom (91, 92) investigations.

There is good evidence that personality characteristics, intellectual abilities, attitudes, feelings, values, sentiments, and other personality traits play an important and sometimes a decisive role in individual behavior. Educational psychologists, social psychologists, and counseling scientists have strong evidence of this (64, 65, 66, 116, 138, 139, 140, 141, 142). Sperry and Kevett (135), studying educational and vocational goals of rural youths in North Carolina, found socio-economic background related to college plans. Haller and Sewell (58), investigating occupational choices of Wisconsin farm boys, reported the following findings:
Planning to farm or planning to choose other blue-collar or lower white-collar occupations tend to depress levels of career with the educational means for higher occupational development.

The more perceptive he is to new information, the less likely a farm boy is to plan to farm or to choose a blue-collar or white-collar occupation, and the more likely he is to choose a professional or executive occupation.

The greater the degree to which significant others expect high achievement for him, the less likely the farm youth is to plan to farm ..... and the more likely he is to choose a professional or executive occupation.

The greater the degree to which the general environment is saturated with information relevant to success in non-farm occupational world, the less likely the farm boy is to plan to farm. (58, p. 53)

Much empirical evidence could be presented here in support of the theory that college plans among Colombian seniors is a function of social, psychological, and environmental factors surrounding individual students. The final part of the theory related with the systemic interrelation between and among factors is more difficult to prove. Theoretically, behavioral social scientists agree that the degree of association, causation, or interrelation of one factor with another could vary depending upon the time, position, and number of factors working at a time upon one dependent variable. The concept of direct or indirect causation or association and the concept of intervening variables are related to this phenomenon (16).

Statistical techniques, such as multiple regression and partial regression coefficient, are used for the
purposes of analysis of effects of several factors working at a time (17).

An example of how such techniques are used for this purpose is provided by Sewell and Shah (132). Analyzing the association between socio-economic status and intelligence as related to attainment of higher education, each independent variable was analyzed in different positions with other variables to measure their importance over time. They conclude,

The study of a randomly selected group of Wisconsin high school seniors over a seven-year period (1957-1964) shows that both socio-economic status and intelligence are related to planning on college, college attendance, and college graduation for both sexes. Both socio-economic status and intelligence when controlled by each other are positively, monolithically, and significantly related to planning on college, college attendance, and college graduation. (132, p. 22)

The following points summarize the foregoing section:

1. Due to the processes of socialization and acculturation, each individual despite individual differences shows patterned ways of behavior.
2. Individual behavior is the function of different factors, as opposed to a single factor.
3. Factors influencing behavior exist in the individuals themselves (psychological), in the social system (social), or in the culture as a whole (ecological, physical).
4. Given factors could affect separately the individual behavior but, in the behavioral world,
they seem to be interrelated and integrated in systems and subsystems and, in such a way, operate on individuals in terms of stimulus, response, response-stimulus relationship.

5. For the purpose of this investigation, all factors assumed to affect college plans among Colombian high school seniors are classified in three main categories:
   a. Social factors -- factors associated with primary and secondary groups of which the student is a member, such as socio-economic status of family, family size, and influence of teachers or peers.
   b. Psychological factors -- factors associated with personality characteristics, such as personal traits, self-perception, intelligence, attitudes, achievement, etc.
   c. Environmental factors -- factors existing within the broader society, such as facilities for higher education, opportunities to borrow money for college expenses, and opportunities for part-time work while going to college.

6. Thus, college plans (individual behavior) become a rational process elaborated by individual high
school seniors upon the influence of those existing and related factors over which the student has little or no control.

7. If the influencing factors are identified, as well as their type and degree of influence on individual behavior, such behavior could be predicted and/or explained upon them.

The Theory

Theory has been defined by Zetterberg as:

systematically organized lawlike propositions about society (social phenomena)\(^2\) that can be supported by evidence. (154, p. 22)

The goal of the previous section was to identify and integrate those main concepts which have been tested empirically and/or which have been considered as relevant to college plans by the authors of the theories discussed above. In this sense, Zetterberg's (154) requirements for a theory have been fulfilled and will be reinforced below.

The theory to be stated here is the theory of college plans choice. The statement of the theory must begin with the definition of the phenomenon under study. Thus, college plans are defined as the stated intention of a high school senior boy to go to college immediately after high school graduation. College plan choice becomes, therefore, the

\(^2\)The words in parenthesis are added by the author.
result of individual student choice. To arrive at this major decision, the student engulfed in a choices-factors system must weigh rationally the pros and cons of those factors affecting the final decision or choice. Those factors are supposedly working independently and/or in a structural system, sharing influence on individual behavior. Thus, the theory of college plans choice guiding this study can be mathematically stated as follows:

\[ C.P. = f(P + S + E) \]

where

- **C.P.** = college plans as it is stated by the individual high school senior boy.
- **P** = the set of psychological factors affecting individual choice behavior.
- **S** = the set of social factors affecting individual choice behavior.
- **E** = the set of environmental factors affecting individual choice behavior.

The predicted relationship between these concepts will be stated in terms of general hypotheses generated from theoretical and empirical research on college plans.

**General Hypotheses**

In scientific work, to state a theory is the first step. A second step is its verification. Zetterberg refers to this as testing a theory as follows:

To 'test' a theory we check how well each of its propositions conforms to data, and how well
several propositions in conjunction with each other account for the outcome of a given situation. If such a 'derivation' (or prediction) is successful, we call the outcome 'explained'; that is, we claim that observed events conformed to the propositions. (154, p. 28)

Due to the exploratory nature of this investigation the concern here, as it has been stated before, is to identify some factors affecting college plans among high school seniors in Colombian culture, and the type of such relationship. Therefore, the majority of the hypotheses are a cross-cultural verification of propositions pertaining to relationships between factors and college educational preferences in American culture. Other hypotheses are propositions stating the relationships between some factors and the college education preferences expected to exist specifically in the Colombian social setting. Those factors expected to affect college plans were classified before in three categories as psychological, social, and environmental factors.

**Ability and performance**

Intellectual ability and school performance have been found to be related positively to college plans. With regard to performance, Berdie reports,

> For each sex and for each area, the group planning on going to college was the group with the highest average high school percentile rank, and the groups with the lowest average high school percentile rank were the groups planning on jobs and military service. (10, p. 107)

High ability has been found to be positively associated with
plans for college education. One study reported that 81 percent of high ability students planned to attend college in 1961 (12). Berdie and Hood (11) in a recent study found a .42 zero-order correlation coefficient between ability and college plans among Minnesota high school seniors.

The general hypothesis regarding the existence and degree of relationship between scholastic ability and college plans is as follows:

G.H. 1. Among Colombian high school senior boys, the higher the scholastic ability, the more certain they will be that they will attend college.

Self-concept

It has been said that students make choices in terms of the kind of person they believe themselves to be (64). The ideas of self-perception, self-evaluation, and self-image affect scholastic performance of the students (21, 69). The person who thinks of himself as a superior being may be strongly attracted to occupations which permit him to become the center of attention. Persons with high self-evaluation may engage in activities demanding higher input of intellectual effort. McCandless refers to self-concept as follows:

The self-concept may be thought of as a set of expectancies, plus evaluations of the areas or behaviors with reference to which this expectation is held. (100, p. 174)
In the present study, self-perception refers to the student's judgment of his ability to pursue university training. If the student perceives himself as a high performer, and if he considers relatively easy the fields toward which his performance is directed, he will probably do better. College success is today a matter of great competition requiring self-confidence and psychological security.

Empirical studies with adolescents (28, 148) show that the self-concept does appear to be related to personal adjustment. Substantial evidence indicates that children and adults with poor self-concept are less well-adjusted and less effective. Finally, Anderson (1) quotes Feder as stating that his study indicated that a high correlation between a person's appraisal of self is concomitant with school adjustment. Though findings such as these do not lead directly to any hypothesized relationship between college plans and self-perception, nevertheless, from the general context they suggest that there may exist a positive relation between high self-perception and aspiration for higher education.

The hypothesis to be tested is phrased as follows:

**G.H. 2.** Among Colombian high school senior boys, the higher the self-perception of intellectual ability, the more certain they will be that they will attend college.
Attitudes toward college

In addition to self-perception, there are other personality characteristics that have been taken into account to explain and predict individual behavior in college plans. Barber (7) reported that of 111 high ability high school pupils not in college (students in Pennsylvania) 20 percent were not in college because they lacked academic interest, 12 percent because they lacked a serious purpose, and 13 percent because they preferred to work. The Fortune Survey is quoted by Berdie (10) as revealing that 10 percent of able high school graduates would not go to college under any circumstances, even though money were available. These studies are referred to at this point to show the importance of attitudes, values, and beliefs in predicting behavior. Attitude has been defined as certain regularities of an individual's feelings, thoughts, and predispositions to act toward some aspect of his environment (129). Since the position is taken that attitudes, as stored dispositions, are central to individual psychological organization, this necessarily implies that attitudes affect not only the overt behavior but the full internal psychological processes (perception, learnings, etc.) as well. Nevertheless, here the interest is in the behavior as an end. As far as the college plans behavior, the expectation is that positive or negative attitudes towards education and higher education decisions are closely related. Berdie and Hood (11) found that 43 percent of high ability children of skilled
tradesmen and factory workers, who were not going to college, said they would change their plans and attend college if they had more money. Presumably, then, these students had a favorable attitude toward college and would have attended college if it had been financially possible. More than favorable attitudes are needed, but it appears that such attitudes facilitate making the decision to attend college.

A more direct study of the relationship between attitudes and career aspirations was reported by Mierzwa (105). Using Kuder Preference Record Vocational Form to measure interest and attitudes toward career choices, Mierzwa found a correlation of .53 among 12th grade students. This close relationship between attitudes and vocational plans suggests a similarly strong relationship between attitudes and college plans.

The hypothesis to be tested is:

G.H. 3. Among Colombian high school senior boys, the more favorable are the attitudes toward college education, the more certain they will be that they will attend college.

Educational aspiration

Aspiration or level of aspiration has been a matter of frequent research among social scientists (101). A crucial consideration in regard to self-actualizing behavior lies in what might be called the level of aspiration phenomenon.
Peak (120) defines the notion of motivation as push or drive and suggests that persistence of behavior to a goal and the direction of behavior (discrimination and choice) are the chief properties of the function of motivation. Most people have observed that some individuals are ambitious, perceive themselves as qualified for higher goals, and seek to achieve them.

It is reasoned that a student who has precise higher educational goals or who has aspirations for a college education will exhibit different behavior than a student who does not have such aspirations. Level of aspiration, therefore, might be used for predicting behavior.

The expected relationship between educational aspirations and college plans becomes:

**G.H. 4.** Among Colombian high school senior boys, the higher the educational aspirations, the more certain they will be that they will attend college.

**Selection of college and college major**

In a relatively free society, such as Colombia, the actions of young people follow upon decisions made in response to certain pressures but under conditions of freedom of choice. These choices occur at irregular intervals and for different persons there are varying numbers of such choice points.

One of the choice points occurs at the conclusion of
high school and refers to college plans. Then, if the student has decided to go for a degree beyond high school, he must decide in which college, in which major field, and in which specialty he will apply. Due to the structure of the higher education system in Colombia, this final decision of college plans becomes extremely significant. First of all, there are great differences in fees from university to university. Secondly, not all the universities offer the same number of majors or specializations. Some specialized universities are at a great distance from Bogota. A no less important feature is the fact that the universities work on an academic year basis, not a semester or quarter system. Therefore, it is not possible to transfer from one institution to another before the year is over. In addition, the curriculum for each major field and specialty is fixed and shifting from specialization to specialization within some major field and within the same university is only permissible in the first two weeks of each academic year and involves extra financial costs.

The difficulties in transferring from one college to another and in changing one's field of specialization suggest that a student who knows which college he wishes to attend and the field in which he wishes to specialize is further along in the decision making process concerning college attendance than the student who merely indicates he wants a college education. The student who is very sure
that he wants to go to a certain college and to study in a specific field can only achieve these objectives by actually enrolling in the college and field of his choice. The student, on the other hand, who is less sure which college he wants to attend and in which field he wishes to study is still presumably at the stage of deliberating alternatives. Whether or not one of the alternatives being considered is not to go to college at all, such a student still at the stage of weighing alternatives would seem to be less committed to college enrollment.

Accordingly, the general hypothesis is stated as follows:

G.H. 5. Among Colombian high school senior boys, the more certainty registered with regard to the choice of college and major field, the more certain they will be that they will attend college.

Achievement

A phenomenon worthy of consideration is the observed behavior between two groups of students in their performance during high school -- those who have failed either academic years or courses and those who have not. For simplification, those who have failed are called scholastic underachievers and the others are termed scholastic achiever students.

It should be pointed out that both groups have more
than average intellectual abilities, since the grading system in Colombia goes from one to five, and no one is allowed to go into the next academic year unless he has at least a grade of three in each one of the courses in the curriculum. The high school academic regulations in Colombia are rigid ones, perhaps due to the gap between demand and supply in educational facilities. The curriculum is fixed for every academic year. A student fails a course if he has less than a grade of three, and fails an academic year if he has less than three in three different courses. In the second case, he is allowed to repeat once the academic year if he failed for reasons other than intellectual abilities. In the first case, when the student has failed one or two courses, he is allowed to take an additional examination before the beginning of the next academic year under the conditions that he has to take additional training and pay special fees. The option of taking a make-up examination is not encouraged unless the school officials feel the student has the ability to do satisfactory high school work. Under these circumstances, "underachievement" is the consequence of reasons other than academic ability. The fact is that the student who is completing high school has already demonstrated capabilities better than average. The assumption is that achievement and underachievement represent difference in personality or social characteristics rather than intellectual ability.
The relevance of the phenomenon to the present study is that since the achievers and underachievers show different patterns in academic performance during high school as a consequence of factors other than ability, the two groups should exhibit some differences in behavior concerning college plans decisions. Some of the studies in this area (38, 133, 134) seem to indicate that underachievement in school is associated with unstable and hostile personalities.

While the findings regarding students in the United States may not be applicable to Colombian students, it nevertheless seems reasonable that there is some relationship between underachievement and achievement in high school and college plans. The hypothesis is:

G.H. 6. Among Colombian high school senior boys, the less evidence of underachievement in high school, the more certain they will be that they will attend college.

Family characteristics

The foregoing discussion was directed to establish the hypothesis predicting relationships between a set of psychological variables and college plans behavior. This section deals with some variables existing in the social structure and supposedly affecting college plans among the students in this investigation.

Merton (103) pointed out that social structures exert
a definite pressure upon certain persons in the society to engage in different types of behavior. This happens due to a discrepancy between culturally defined goals, purposes, and interests, and definition of structurally acceptable modes of reaching out for these goals. Cultural goals and institutionalized norms prescribing means operate jointly on individuals in groups to gain different behavior according to the perception of the social realm.

Plans for education beyond high school graduation have been investigated in American culture as related to a set of social variables. Some of these factors are located in the family structure and some in the society at large. Family structure has been found to have some effects on educational attainment (111). Many of the personal qualities and skills that enable children to meet standards of excellence -- self-reliance, competent judgment, problem-solving ability, and a questioning mind -- are acquired in parent-child relations that provide guidance and yet allow the child freedom to develop independent mastery and responsible decision making (43).

Family structure in this investigation refers to a combination of socio-economic variables, such as: economic status, parent's occupation, level of education, size of the family, place of residence, and birth place of the father, mother, and student. These have been found to be related to the educational achievement of children. Family structure
variables as related to educational attainment in general, and related to education beyond high school, have been frequently investigated in the United States (8, 10, 11, 24, 42, 43, 58, 76). Berdie (11), for example, reported a correlation in the vicinity of .50 between family socioeconomic status and college plans. In Colombia, economic factors should be particularly relevant to college plans. The cost of college education can be a strong determinant of whether or not to attend college. More than 70 percent of the colleges and universities are private, and their tuition is prohibitive for the common student. The programs of scholarships, student loans, and work-study systems are in the development stage. Parents' education has been found relevant to college plans in the United States (8), and it is predicted that among Colombian students educational level of household members will be related to college plans.

Family size is thought to be a factor affecting the college attendance of the children. The larger the family size, the more financial obligations are incurred. It is, therefore, reasoned that parents of smaller families would be better able to pay for the college education of their children than would be parents of larger families.

Place of residence is expected to differentiate college plans also. Any observant visitor touring the city can easily realize by the type of houses, buildings, and streets, which social class lives in each of the suburbs or as they
are usually called "barrios". There are barrios for high class, for middle, and for low classes.

A significant relationship has been found between parents' occupation and educational attainment of their children (8). Berdie reports,

The American College Education Study on Getting into College found that 73% of the children of professional men and executives applied for admission to college, 55% of the children of professional men were in college a year after high school graduation, and 22% were at work. Of the children of semi-professional men, 37% were in college and 29% at work. Of the children of clerical workers, 20% were in college and 38% were at work. Of the children of semi-skilled laborers, 9% were in college and 43% at work. (10, p. 18)

Later studies by Berdie and Hood (11) reported similar results. In 1961, differences were also observed by Beezer and Hjelm (8) between white-collar occupations, blue-collar occupations, and their children's college education plans. It can be concluded that parents' occupations and college plans are associated (e.g., the higher the father's occupation, the higher the education the children are willing to have), though the degree of association is declining in the American setting. Thus, among the Colombian high school senior boys, association is expected between the father's occupation and college plans.

In view of the foregoing discussion on family characteristics and the college plans of students, the following general hypothesis is stated:
G.H. 7. Among Colombian high school senior boys, various social and economic characteristics of the boys' families will affect the certainty of the boys' plans to attend college.

**Knowledge about requirements**

One of the main concerns of American educational counselors has been to provide enough occupational and career information for the students. The theory behind this is that the information and the evaluation of the information is related to vocational and educational planning choices (69, 115). Such information concerns occupational, educational, and social environment. Occupational information includes data about jobs, positions, occupations, and related educational information refers to valid and usual data on present and future educational facilities such as colleges, major fields, specializations, procedures to apply to the colleges, etc.

This investigation does not concern itself directly with information as such. The relevance here is information as knowledge, in the belief that knowledge is the function of information. Knowledge is an equivalent for learned information.

The concept of knowledge here refers to the understanding each high school senior has about some vital facts closely related with college and university facilities, university structures, regarding the procedure for applying to a
college, and the number of resources used by the student to get information.

Educators and psychologists agree on the importance the role of information and knowledge holds in the decision making processes (20, 26). The role of knowledge in the process of choice is to develop a broad and more realistic view of the educational situation beyond high school. It creates an awareness capability, provides an understanding of the wide scope of education, promotes attitudes and desires, and assists in making more satisfactory choices.

Therefore, high school seniors who have used more means of information and who are able to answer some specific questions about existing educational situations and about the procedures to apply to college are expected to report greater certainty on college plans.

The hypothesis to be tested is:

G.H. 8. Among Colombian high school senior boys, the greater the knowledge on requirement procedures for admission to college, the more certain they will be that they will attend college.

Perception of educational and occupational facilities

Related to the above factor would seem to be the perception the student has concerning the facilities for further educational opportunities and opportunities for occupation. Since the individual reacts, not to what really exists, but
to the image or perception of reality, his perception of the educational system should affect his educational planning behavior. Students perceiving the system as available to them and as satisfactory to their values, attitudes, and expectations should be more likely to make plans for education after high school.

The prediction is that there is a difference in college plans depending upon the student's perception of the educational system. The hypothesis to be tested here is:

G.H. 9. Among Colombian high school senior boys, the more favorable the students' perceptions of the educational and occupational opportunities available to them, the more certain they will be that they will attend college.

**Parental influence**

In this dissertation it has been pointed out that vocational expectation and the related college plans are a developmental process which ends with a final decision or choice. Many factors are involved in the process of decision maturation among which the influence of groups is supposed to be very important.

The theory of reference groups has been developed by psychologists (62, 84) but has been utilized by sociologists as well. As Merton points out,

The socio-psychological and sociological theory of reference groups is not, of course, sharply separable. (103, p. 281)
Reference group theory seeks to explain the influence of groups on individual attitudes and behavior. Two main functions of reference groups with regard to individual behavior have been labeled normative and comparative.

Hadley states,

It has been posited that reference groups serve two quite different types of functions. Groups which are in a position to set and enforce standards serve 'normative' functions. Groups that individuals use as a standard or as a comparison point for self-evaluation serve as 'comparison' function. (54, p. 110)

Individuals may have different reference groups depending upon the issues or topics to which they want to refer.

Three types of groups are thought to be especially influential on high school seniors, given the frequency and intensity of interaction: parents, teachers, and peers. Parents and teachers are considered normative reference groups and peers are considered a comparison reference group.

First of all, Merton observes,

It is the family, of course, which is a major transmission belt for the diffusion of cultural standards to the oncoming generation. The family largely transmits that portion of the culture accessible to the social stratum and groups in which the parents find themselves. It is, therefore, a mechanism for disciplining the child in terms of the cultural goals and mores. (103, p. 158)

Whether parental influences extend beyond the cultural socialization process and affect specifically the major decision on college plans is a matter of discussion. Empirically, contradictory findings leave the question
unanswered. In general, it is true that children have more education than their parents. A study in 1959 of a probability sample of United States parents revealed that 49% had plans for their children to attend college, these plans being related to economic and cultural levels of the homes of the students (87).

Kinnane (83) found that perceived parental influence is somewhat related to work-value orientation of children. Elder analyzed family structure and educational attainment in five different nations and stated that:

The relation between family structure and educational attainment depends heavily on educational opportunity and values. Among rural-born Mexicans and Italians, for instance, educational achievement is extremely low and conjugal and parent-youth relationships have very little effect on achievement. (43, p. 94)

The contradiction in findings on the importance of parental influence may be due to differential educational opportunities in different countries and perhaps to the socio-economic status of the family. Nevertheless, due to the patriarchal father-son relationship still predominant in Colombia, senior boys are expected to be affected by the parents' influences in most of their major decisions, such as college plans.

The hypothesis to be tested is:

G.H. 10. Among Colombian high school senior boys, the more positive the parental influence toward college attendance and toward the selection
of a college major, the more certain they will be that they will attend college.

Teacher influence

Whether the teachers influence the students or not is a question of major discussion. Psychologically and by nature of student-teacher subordination, the student is predisposed to accept some kind of influence from his teachers. This seems reasonable when it is noted that the student spends almost one-third of his time under the supervision of teachers.

It is possible that teacher-student influence is strong in Colombia due to the social distance between teachers and students, and the prestige that the teachers enjoy. Teachers enjoy an almost charismatic leadership and have considerable authority.

The existence of teacher-student influence concerning college plans has been identified in research. Among Wisconsin high school seniors in 1957, 47 percent reported a great influence of teachers on their college plans; 45 percent reported some influence (8). Berdie (11) reported some influence of teachers on students as far as college education is concerned. From the foregoing discussion and considering the social psychological teacher-student relations, a positive relationship is theorized between the influence of teachers and the certainty of students' college plans.

Accordingly, the general hypothesis is stated as:
Among Colombian high school senior boys, the greater the encouragement of teachers regarding college attendance, the more certain they will be that they will attend college.

**Peers influence**

That associates and peers influence educational plans has been theoretically and empirically stated. Psychologists (31), in trying to explain the group influence in terms of the theory of needs, have concluded that each child learns early that getting along with others of his own age is pleasurable and that their disapproval is unpleasant. This experience generates in him a need for peer approval, a desire to be liked and included in activities, to have his accomplishments praised, and his ideas listened to. Getting along without friction is not enough. For full pleasure in group activities and comfort in dealing with others, one must feel that he "belongs" and that his group positively welcomes him.

Whether the real reason to seek group approval is the need for satisfaction or not is not clear. The fact is that empirically the relation between the peers' approval and the higher education decision has been found to exist. In spite of the difficulties in getting reliable information on the matter, Beezer (8) reported that, of those planning to pursue their education at the college level, 75 percent indicated that their friends had the same plans. In Colombia, one fact
seems to confirm this trend. In the 1940's, the highest percentage of high school seniors who went to college went into law and medicine. Among the high school seniors in the present investigation, more than 50 percent declared plans to major in engineering. While this does not demonstrate conclusively that a given student is influenced by his peers, it suggests that there is a certain fashion or fad in education which large numbers of students follow.

The relationship to be tested is as follows:

G.H. 12. Among Colombian high school senior boys, the greater the encouragement of their peers regarding college attendance, the more certain they will be that they will attend college.

Perception of economic means

The foregoing discussion in this section dealt with the hypothetical relationships between psychological and sociological factors and college plans. Now the discussion moves toward the financial situation or the economic means as related to college education.

Higher education is expensive here in the United States and in Colombia too. While there is a great difference between universities, there is also a great difference between major careers. Some careers require more than five years of college to be graduated in Colombia and cost about $750 in fees for an academic year. This is extraordinarily expensive for the common people. Financial means refers to the
student's perception about the economic resources at his disposal, which would affect his decision about entering a university. Those resources could come from family, self-support, or institutional sources.

The cost of higher education is a strong determinant as to whether or not a student will attend college. If the student's perception indicates a lack of material resources, he probably would not consider attending a university. There is a great difference between Colombia and the United States as far as the means for financing education are concerned. Education in Colombia has been a family responsibility rather than a public, individual, or society responsibility. The consequences are that the higher education has been a privilege of rich classes and institutions lack resources for the education of the common people. The system of work and study is in an embryonic stage, limited to those very courageous young people. Under these circumstances, a student's perception that his family cannot afford to send him to college may well prevent him from aspiring for a college education.

The hypothesis for testing is as follows:

G.H. 13. Among Colombian high school senior boys, the more favorable the students' perceptions of the availability of financial resources for attending college, the more certain they will be that they will attend college.
METHODOLOGY

Introduction

The purpose of this chapter is to describe, explain, and justify the methods used to gather the valid and reliable data needed for the present investigation. To fulfill this goal the following topics are discussed:

1. A description of the social setting where the study was carried out.
2. Determination of the unit of analysis.
3. An outline of the field procedures.
4. A justification of the epistemic correlations or internal validity.
5. Derivation of the operational definitions.
6. A statement of the empirical hypotheses.
7. Delineation of the statistical techniques to be used for analysis.

Social Setting

One of the purposes of this investigation is to test in Colombia some relationships already found in the United States. The most likely place in Colombia is Bogota. The city has nearly two million population and is the capital of the nation, state, and county. It is located on a permanent spring plateau 8,260 feet above sea level with an average annual temperature of 57° F. Most of the heavy, medium, and small industries are located there. The city is connected
with the country and the world by almost all kinds of trans-
portation but sea.

There are five daily newspapers with nationwide circula-
tion, at least ten commercial radio stations, and television. In 1965, there were 625 public primary schools with 151,569 students and 720 private primary schools with 84,879 students, 25 public secondary schools with 10,752 students, and 284 private secondary schools with 49,106 students (5).

There are 18 institutions for higher education. The most reliable statistics so far available concerning college applications and admissions in all the universities of Colombia were reported in 1965 when 32,271 new applications were submitted and 15,737 were accepted in the colleges (44). The total number of students enrolled in college programs amounted to 37,848 for the same academic year.

Unit of Analysis

The original design of this field study included the use of random sampling in both the selection of high schools and the selection of high school senior boys. Due to bureaucratic difficulties and the lack of understanding of the purpose of the investigation among the school officials, the scope of the study was reduced to include the high school senior boys of four private high schools. These high schools, by virtue of their location within the city and the type of students attending, seem to be representative of the lower-upper, the upper-middle, the middle-middle, and the lower-middle
classes respectively. These high schools are, from the higher to the lower: Calegio San Carlos, Colegio Jose Celestino Mutis, El Gran Colombiano, and Gimnasio Academico de Fontibon. The total number of senior boys (152) enrolled in the four high schools were included in the study. It should be pointed out that coeducational high schools in Colombia are almost non-existent.

Field Procedure

The data for the investigation were gathered mainly by a self-administrated questionnaire administered to high school senior boys during April and May of 1967. The high school grades were obtained from the records made available by the high school superintendents. Additional information was obtained from those colleges and universities which the students reported they would be going to after high school graduation.

The questionnaire, consisting of 82 questions, was first written in English to facilitate the assurance of epistemic correlation through discussion with the major professor and statistical advisor. To assure this corresponding relationship between the body of theory and those factors related with it, the selection of the factors was on the basis of previous studies in the United States and the knowledge of the Colombian culture with which the author is familiar. The questions were then translated into Spanish and discussed with experts in both languages.
Before the final distribution, one pretest of the questionnaire was made using 12 high school seniors from each of the different schools. After getting the permission of the respective high school superintendents, the questionnaires were given to the students at a supervised time. The data were coded, checked, placed on 80-column code sheets, and punched on IBM cards from which the data were processed and analyzed. As far as the validity of the self-applied questionnaire system is concerned, it should be mentioned that this technique has been used before for the same purposes with reportedly good results (4, 10, 152). A follow-up study is planned by the researcher in a year in order to determine the number of students who have and have not enrolled in college, and to discover the factors preventing college education among those who reported they planned to attend college but failed to do so.

Epistemic Correlation

The confirmation of theories in behavioral sciences poses two problems which are extremely important to assure valid results. Social scientists have named them epistemic correlation and operational definition. Epistemic correlation refers to logical relationship between the body of theory and those observable concepts claimed to be essential parts of the theory and submitted to empirical test. Northrup points out,
Epistemic correlation joins the concepts by postulation of the theorems to their corresponding concepts by inspection referring to directly inspectable items. (114, p. 145)

It is noted that upon this basis a theory is shown to be false when the epistemic, inspectable correlates of its deduced consequences differ from what is naturally or experimentally observed, and the theory is to be confirmed when the inspected correlates of the deduced theorems are naturally or experimentally observed. Northrup also states,

It is important to note that the epistemic correlations themselves are not directly observed. All that one observes is the immediately apprehended end term in the relation of epistemic correlation. Neither the relation itself nor the unobserved, theoretically designed term at the other end of the relation is inspected. (114, p. 121)

Thus, epistemic correlation seems to refer to the assumed equality between the theoretical concepts and the observed or inspected concepts. In other words, between the theoretical concepts and empirical definitions. Zetterberg (154) and Kerlinger (82) seem to refer to the same concept when they talk about internal validity in confirmation of theories and about the construct validity in theory testing.

The question of internal validity thus goes to the core of the relation between theory and data, according to Zetterberg (154), and it differs from external validity because it exhibits a "logical" relationship, and can be appreciated without empirical studies. Perfect internal validity means that the indicator (empirical definition) has the same scope of content as the definitions. Lack of
internal validity may account for some of the contradictory results found in similar studies conducted on the same topic.

Kerlinger, on the other hand, states,

The significant point about construct validity, that which sets it apart from other types of validity, is its preoccupation with theory, theoretical construct, and scientific empirical inquiry involving the testing of hypothesized relations. (82, p. 449)

This explanation has been brought up as a justification of the relationship between the stated theory and those factors already selected for testing the theoretical construct; the equivalence between those theoretical factors (concepts) and their empirical definitions is a matter of later discussion.

It is the opinion of the author that such epistemic correlation has been assured due to the fact that most of the concepts utilized in this investigation, as affecting decisions on college education, have been identified previously and their nominal definitions have been based upon previous empirical research.

Operational Definitions

Another sensitive topic in empirical testing of relationships and theoretical validations deals with operational definitions of the system of empirical measurements or "external validity" in Zetterberg's (154) words. The difficulties arise because many behavioral science concepts are mental
constructs, not simple concepts with physical existence. Since scientific knowledge is not possible unless the phenomena are placed in observable, manipulative, and controllable forms, social scientists have developed techniques to reduce the conceptual phenomena to empirical existence. This is the role of operational definitions. Kerlinger states,

An operational definition is a definition that assigns meaning to a construct or variable by specifying the activities or 'operations' necessary to measure the construct of variables. Alternatively, an operational definition is a specification of the activities of the researcher in measuring a variable or in manipulating it. An operational definition is a sort of manual of instructions to the investigator. (82, p. 34)

In a sense, through operational definition the researcher neither measures nor controls the concept as such, but some characteristics and operations of it.

The derivations of valid operational definitions relevant to the measure of relationships of college plans in this investigation are based on the experience of previous researchers who have used similar techniques. Nevertheless, due to the cross-cultural nature of this field of study, some of the techniques have been adapted to the mentality of the people studied. The operational definitions developed for this dissertation should be viewed as exploratory pending further validation.

The next step is to construct the operational definitions for those concepts included in the theory. Once the operational definitions have been stated, a series of
empirical hypotheses will be stated as a means of indicating the expected relationships.

Concepts

**College plans**

The concept of college plans at a theoretical level was discussed in the preceding chapter. In this section, the discussion is concerned with the empirical level of the concept. College plans, the dependent variable in this investigation, have been measured in different ways.

Goetsch (51) found that in a group of 1,023 high ability Milwaukee high school children in school between 1937 and 1940, 35 percent of the high school graduates attended college. Such information was gathered from the parents one year after high school graduation. Anderson and Berning (2), using reports from high school principals, found that one year after graduation 35 percent were employed full-time, 7 percent employed part-time, 12 percent unemployed, 23 percent were in colleges or universities, 12 percent were in other types of schools, and 11 percent were unidentified among 22,306 high school graduates in Minnesota in 1938.

In 1945, a similar technique was used to check college plans among Minnesota high school graduates (78). At that time, 50 percent of high school graduates were at work, 25 percent were in colleges or universities, and the remainder were in other pursuits.
A study of 1949 high school graduates in Arkansas (108), based on information obtained from high school superintendents, indicated 39 percent of these students were employed one year after graduating, 35 percent were attending some school, $31\frac{1}{2}$ percent were in college or other technical schools.

The aforementioned techniques are used when the interest is on who, in fact, goes to college rather than on who plans to go to college. When the interest is on the decision making process regarding college plans, a different technique is needed. In such a case, social scientists ask direct questions of students, frequently through a self-administered questionnaire. This questioning method provides information on what high school seniors say they plan to do after high school graduation, rather than what seniors did after graduation. Berdie (10) used this technique to identify the interests to go to college among high school seniors in Minnesota in 1950 and in 1966. Davis (32) used the same technique to identify students' intentions to go on for further education either immediately after high school graduation or at some later time. This method helps to identify college education plans and the factors affecting such decisions.

Finally, those social scientists interested in both college education intentions and the fulfillment of these intentions have used a combination of research techniques. During the last year of high school, schedules have been distributed among the students asking specific questions related
to college plans. One year later a follow-up study has been used to discover what has happened to those high school seniors who indicated their college plans in the first interview. Complementary information has been obtained from such sources as the high school superintendents and college or university records. This type of study has been made of Arkansas (137), Indiana (152), and Wisconsin (80) students.

The present study is concerned with the decision on whether or not to go to college immediately after high school graduation. It seems, therefore, that the most appropriate techniques to operationalize college plans is through the student responses to the specific questions asked directly of them. Thus, college plans have been operationalized here by the selection of one statement made by high school seniors from a set of five as follows (see Appendix B, Question 20):

1. I feel sure that I will enroll in a college.
2. I probably will enroll in a college, but I am not completely certain.
3. As of now I am completely undecided about entering college.
4. I probably will not enroll in a college, but I am not completely sure.
5. I feel sure that I will not enroll in a college.

In order to facilitate the statistical analysis, these five possible alternative answers were ranked from "I feel sure that I will not enroll in a college", to which was assigned the lowest score of 1, to "I feel sure that I will
enroll in a college", to which was assigned the maximum score of 5.

Thus, the operational definition of college plans, the dependent variable, becomes:

The selection of one of the five statements by individual students is used as an empirical measure of his certainty regarding his plans to attend college.

**Scholastic ability**

The intellectual ability of the student is the first independent variable. Distinction has been made between scholastic abilities and mental abilities. Two different tools have been used to measure both concepts.

Berdie (10), Berdie and Hood (12), Beezer and Hjelm (8), and Andrew and Stroup (4) have made a similar distinction between mental and scholastic ability. Mental ability seems to have a more psychological meaning. It has been operationalized by the American Council on Educational Examination Test (ACE) and the Minnesota Scholastic Aptitude Test (MSAT) by the above authors. School achievement or performance, on the other hand, has been operationalized by the same researchers using the class grades during the high school period or taking part of them, such as the grades during the junior and senior academic years. While the distinction between school achievement and mental ability may be meaningful, it is felt that achievement is a function of ability.
The present investigation focuses on achievement or performance which is operationalized by the average score each high school senior has received during the high school period. This average was computed by adding all the class grades each high school senior had received in all the classes of his second, third, fourth, fifth, and first semester of the sixth high school year and divided by the number of grades. The grades were obtained from the high school records of the students, not from the students themselves.

Colombia has a standardized system of grading from 0, the lowest, to 5, the highest. Each student must have a minimum grade of 3.00 in all the subjects at the end of the academic year in order to be allowed to go into the next academic year. Thus, a high school senior must have acquired through his six high school years an average between 3.00 and 5.00. After a careful computation of all the marks for each individual of the 152 high school seniors, a distribution of average scores was observed ranking from 3.2, the lowest, to 4.4, the highest.\(^3\)

A second average was computed for each high school senior to determine whether it would be a better predictor of college plans. All the grades for the last one and one-half years were added and divided by the number of added

\(^3\) The decimals were rounded off to the nearest tenth to facilitate the coding.
grades. The distribution of those 152 individual means fell between 3.1, the lowest score, and 4.4, the highest score.

O.D. 1. The average of high school grades obtained from four and one-half years of high school measures the scholastic ability of individual high school seniors.

Self-evaluation of intellectual abilities

In the previous chapter, the concept of self-evaluation was discussed from the theoretical point of view. In this chapter, it is operationalized for the purpose of statistical analysis.

The concepts of self-perception, self-evaluation, and self-definition have been widely used by social behaviorists who have been interested in the analysis of personality characteristics. When the concept of self is involved, by definition, there is only one way to operationalize the concept and that is by individual self-report. Simple interrogative statements or more sophisticated inventories have been used to operationalize self-perception.

Holland and Nichols (66) used widely differing personality inventories for self-rating in a longitudinal study of change in a major field of study among high school senior boys. Anderson and Olsen (3) used a paper-and-pencil-sort

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4 The independent variables are enumerated in order to facilitate identification with empirical hypotheses.
of technique to operationalize the self, and ideal-self, in a study of occupational choices among 96 seniors in Washington, D. C. in 1962. Such a technique contained positively or negatively toned self-referent items. The concept of self was operationalized in a similar manner by Engel (46) in a study of adolescent personality. Some psychologists and educators seem skeptical about the use of this concept due to difficulties in its operationalization. Despite these critics, social scientists, most of them psychologists, frequently use the concept of self, operationalized in the way described above. Cronbach states,

Most personality measurement employs the 'self-report' principle, asking the student about himself. He may not judge himself accurately, but even so his statement is important, for his self-concept has great influence in his actions. (31, p. 181)

O'Hara points out,

They do (psychologists), however, express some doubts about the merit of using the term self-concept because of the difficulties encountered in making the term operational. Despite their doubts, they formulate the general principle ..... of self. In an attempt to give an empirical formulation to self-concept ..... we have defined self-concept as an individual's evaluation of self. (116, p. 293)

Based on the aforementioned studies, the concept of self-judgment of capabilities was operationalized by asking the high school senior to rank himself on a scale from 1 to 5 on his intellectual abilities regarding five subject matters: biological sciences, mathematics, modern languages, social sciences, and ranking himself among all the students
in his class. These five scores were added for each individual student. Theoretically the rank for such scores could be from 5.00 to 25.00. The individual total score was divided by 5.

O.D. 2. Self-evaluation of intellectual ability is measured by the score of the individual student in judging himself in his abilities in five selected fields.

Attitudes

The theoretical concept of attitudes and attitudes toward college education was discussed in the previous chapter. Here the concern is with the empirical definition of the concept.

Berdie and Hood (11) used the true-false question technique to identify high school seniors' attitudes toward higher education. Beezer and Hjelm (8) reported a similar way to empirize the concept of attitudes toward college education among high school seniors in Arkansas.

There are at least five methods to measure attitudes: paired comparison, equal-appearing intervals, successive intervals, cumulative (or Guttman), and summated ratings scale (41).

In this investigation, attitudes toward college education were operationalized by the rank assigned to each individual student through a summated ratings scale using the Likert (89) technique. This technique was chosen because it is easy to apply and provides the same degree of validity
as other types of attitudes scaling (41). A Likert-type 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 degree of agreement or disagreement. The scores of the items are added and averaged. The average represents both the position of the individual on the scale continuum and the intensity of attitude expression (82). The advantages of this method are that it is easy to construct and easy to apply.

To each statement five categories are usually assigned: strongly agree, agree, uncertain, disagree, and strongly disagree. For favorable statements, the strongly agree response will be given a weight of 5, the agree response a weight of 4, the uncertain response a weight of 3, the disagree response a weight of 2, and the strongly disagree a weight of 1. For unfavorable statements the scoring system is reversed, with the strongly disagree response being given the 5 weight and the strongly agree response the 1 weight.

The method is easy to apply. No sophisticated discriminating process is required such as in paired-comparison technique, and only one judgment for each statement is required. The general assumption is that such a method would provide a reliable indication of the individual's generalized attitudes toward a common object -- in this case, higher education.
Selection of Items

The general method used in the construction of this summated-rating scale has been suggested by Edwards (41). His suggestions as far as the selection of items are:

1. Avoid statements that are factual or capable of being interpreted as factual.
2. Avoid statements that may be interpreted in more than one way.
3. Avoid statements that are likely to be endorsed by almost everyone or by almost no one.
4. Select statements that are believed to cover the entire range of the affective scale of interest.
5. Keep the language of the statements simple, clear, and direct.
6. Statements should be short.
7. Avoid the use of words such as all, always, none, and never. (41, p. 13)

At this particular point, the author was aware of the difficulties in cross-cultural use of attitude batteries developed for use in American culture. The author was aware of Newcomb's warning:

This kind of problem (attitude measurement) is most severe, of course, for investigators wishing to employ attitude scales on populations that are culturally somewhat distinct from those in which scale accuracy was originally evaluated. ..... That an attitude scale may vary by the population studied has to do with the differential meanings attributable to attitude statements. (113, p. 516)

Thus, the author followed the instruction for item selection given by Edwards (41) as follows:
1. About thirty statements believed to be appropriate to measure attitudes toward higher education among Colombian high school seniors were written.

2. From those statements, the thirteen believed to be the most appropriate were selected. Four were favorable and nine unfavorable.

3. After the application of the scale, items analysis technique was used as indicated by Edwards (41) to test the appropriateness or validity of each of the thirteen statements used. To do so forty questionnaires were taken at random. The distribution of the forty scores for each item was obtained. The scores were divided in three groups: low-score group, middle-score group, and high-score group, assigning thirteen frequencies to the lowest and highest respectively. The two groups for each item were tested using the formula:

\[ t = \frac{\bar{X}_H - \bar{X}_L}{\sqrt{\frac{S_H^2}{n_H} + \frac{S_L^2}{n_L}}} \]

where

- \( \bar{X}_H \) = the mean score on a given statement for the high group.
- \( \bar{X}_L \) = the mean score on the same statement for the low group.
\[ S_H^2 = \text{the variance of the distribution of responses of the high group to the statement.} \]
\[ S_L^2 = \text{the variance of the distribution of responses of the low group to the statement.} \]
\[ N_H = \text{the number of subjects in the high group.} \]
\[ N_L = \text{the number of subjects in the low group.} \]
The t scores for the thirteen items ranked from 1.87, the lowest, to 16.00, the highest (Table 7, Appendix A). The assumption is that the comparison between the two groups provides good criterion for selection of items. The purpose is to take out of the scale those items which could be ambiguously interpreted. The value of t is a measure of the extent to which a given statement differentiates between high and low group. Any t value equal to or greater than 1.75 is indicative that the average responses of the high and low groups to a statement differs significantly. Thus, the thirteen items of the scale are appropriate for measuring attitudes toward higher education in the Colombian social setting.

**Interpretation of the scores**

In summated-rating scale the interpretation of a score is tied to distribution of the scores for the whole group. An individual whose mean score is 1 is assumed to have unfavorable attitudes toward higher education. In order to obtain this score, the subject would have had to have given
a strongly agree response to every unfavorable statement and strongly disagree response to every favorable statement in the scale. Similarly, individuals having a mean score of 5 are assumed to have the most favorable attitudes toward higher education since this score could be obtained only if the subject gave a strongly agree response to every favorable statement and a strongly disagree response to every unfavorable statement on the scale.

Individuals ranking 3 in their mean scores are theoretically assumed to have neither favorable nor unfavorable attitudes toward higher education. An individual ranking either 2 or 4 in their mean score is assumed to rank in the average of unfavorable and/or favorable attitudes respectively toward higher education. The observed mean scores distribution ranked from 3.1 to 4.8, which means that no student had unfavorable attitudes or was completely undecided, but rather that all of them have different degrees of favorable attitudes toward higher education.

The operational definition is stated as follows:

O.D. 3. The position of an individual's score on the summated-rating scale is the measure of the degree of favorableness (or unfavorableness) toward higher education.

Educational aspiration

The hypothetical relationship between level of aspiration and college plans was discussed in the previous chapter. It was stated that aspiration is a push or drive expressed
in terms of goals or aims in individual life. Goal-setting has been studied in experiments on the level of aspiration. Those experiments help to construct an empirical measure for level of aspiration or wishes for education. The experiment consists of referring the level of aspiration to a fairly immediate goal -- that is, something almost within reach, a possible success near at hand.

Hoppe (68) revealed that the experiencing persons' feelings of success or failure depend on the difficulty of the task or goal. Hilgard, Sait, and Margaret (63) investigated the level of aspiration as affected by group standards. The operationalized aspiration was the goal of solving a specific number of arithmetic problems in a specific time. It was found that private expectations were modified by group performance.

In another experiment with college students by Festinger (47), shifts in aspiration level were studied. A high prestige group of students was identified. When some of the students realized their scores were below the reference group average score, they raised their aspiration by raising their goal in class marks.

These experiments demonstrate the validity of operationalization of the concept of level of aspiration by goal-setting techniques. This technique has been used in the present investigation to identify the level of aspiration in educational wishes for a special degree:
If you plan to go to the university, which of these will you follow?

1. Career.
2. Intermediate career.
3. I am sure, or fairly sure, that I will not apply for admission to a university. (Question 41, Appendix B)

The distinction between career and intermediate career is on the basis of subject matter and years of study. Thus, the level of aspiration is measured by the student's stated selection among these three possible alternatives of choice. The number of careers specifically defined by the Ministry of Education and by the University Academic Boards refers to those major fields, such as medicine, law, engineering, architecture, agronomy, etc. None of such careers require fewer than five years of study. Some require eight years, such as medicine. Intermediate careers are those fields requiring less training, such as bacteriology, accounting, statistics, topography, teaching high school, etc. for which four years of college are required. Comparing the Colombian system with the American, it could be said that careers are equivalent to the M. S. and Ph. D. level and intermediate careers to the B. S. level.

Consequently, when high school seniors state their goal of education as careers, intermediate careers, or neither one, they are stating their level of aspirations or wishes for higher education.

O.D. 4. The individual selection among careers, intermediate careers, or neither one is the measurement of
the individual student's level of aspiration for education.

Certainty about college

In the preceding chapter, the definition of the concept of certainty about college and its importance in stimulating or reinforcing behavior was discussed. To operationalize the concept "certainty", psychologists have used two techniques at the experimental level. One is the choices the subjects will make between stimuli. The other is the amount and direction of fixation on one, rather than another, stimulus. Both techniques express the degree of ego-involvement in choices or decision making as a function of the degree of individual certainty (14).

The first technique has been selected in this investigation as a means to detect the degree of certainty about college and major field. Berlyne (15) has provided evidence of the validity of such a tool. The orienting response refers to a process that will focus, direct, or sensitize the receptor (certainty) and this has an unmistakable exploratory function. In this investigation, two questions were asked of the seniors. First, they were asked to choose the statement which best described how certain they were about the selection of a major field of study. A second question was stated following the same pattern and concerned with the student's degree of certainty about which college or university he would attend. In both
questions, the four alternatives were:

1. I feel sure about the major field (college or university) I will pursue (or I will attend).

2. I have been thinking about it, but I do not feel sure.

3. I have not thought about that.

4. I am sure, or fairly sure, that I will not apply for admission to a university. (Questions 38, 39, Appendix B)

Thus, the operational definitions are:

O.D. 5. The student's response to the question of how certain he was about the selection of a college is a measure of "certainty".

O.D. 6. The student's response to the question of how certain he was about the major field he would pursue is a measure of "certainty".

Achievement and underachievement

The trend of high school performance and its relationship to college plans were theoretically discussed previously. Those students who have had a regular trend in their grades during high school were named achievers; those students who had an irregular pattern, e.g., one marked by failing courses or grades, were named underachievers.

Shaw (133), investigating the scholasticity of college students, measured the underachievement and achievement concept using the high school class marks and drop outs. Drasgow (38), analyzing interrelations between college graduation, personality characteristics, and academic achievement,
provided an empirical measure for the last-named concept by using the characteristics of school records of the students. The author believes in the validity of such an empirical measure and has used the same tool to measure the concept of achievement and underachievement student.

Four categories have been stated, corresponding to different levels of achievement among the high school seniors:

1. The most underachievers: This category includes the high school seniors who have failed during the high school period, both in academic years and courses in several years.

2. The second category includes those seniors who have not failed academic years, but have failed courses in three or more years.

3. A third category, more favorable than number two, includes those seniors who have failed courses only in one or two years.

4. The achievers: This category includes all those seniors who have not failed either courses or academic years during the past five high school years.

O.D. The trend of accomplishment of the individual student during the high school period is a measure of individual student achievement-underachievement.

Socio-economic status

Theoretical consideration of this concept was stated in
the previous chapter. The concern here is the establishment of an empirical measure for the purpose of testing hypotheses. Many attempts have been made to operationalize this rather complex theoretical concept.

Among those who have analyzed the socio-economic status as a determinant factor in student educational behavior are Mulligan (110), Sewell (130, 131), Reissman (122), Empey (45), Tumin (145), Willie (151), Warner (149), and Hetzler (61). All these authors have used indexes, scales, inventories, or some other combination of variables to measure socio-economic characteristics. The number and type of the variables used largely depends upon the investigator's judgment. However, some basic factors have been conventionally taken into account such as race, income, general education, place of residence, home characteristics, family size, and the like in scaling socio-economic status. Some socio-economic scales have a broad scope and some become quite specific.

From Warner's (149) socio-economic status scale, some items seem to be relevant to the Colombian situation. The principle was to measure social position by an index of status characteristics. The index is composed of four status characteristics: occupation, source of income, house type, and dwelling area. Each of these is rated on a seven-point scale. This rating is then weighted according to its separate contributions to the total index. The weighted ratings are totaled to yield the scores that are
appropriate to the various classes. The scores on the Index of Status Characteristics range from 12 to 84. The range is calculated by validating preliminary scores using the Evaluated Participation method of determining social class position. Occupation is the single measure most highly correlated with class position.

As far as content validity is concerned, Warner (149) reported correlation coefficient: occupation .91, source of income .85, house type .85, and dwelling area .82. A comparative study of five indexes of social stratification by Haer (53), including besides the Warner variables, class identification and education, confirmed the Warner report.

Hetzler (61) reported the following coefficients between seven rating scales and rating of social class: family background .53, family wealth .45, and personal income .34.

From the above discussion, the author believed it would be more convenient, due to the exploratory character of this investigation, to select key variables from those used by American scientists in measuring family socio-economic status and test them separately as sub-hypotheses under the more general hypothesis of family socio-economic characteristics.

Ten separate variables are considered as part of the general concept "socio-economic characteristics of the student's family": 1) father's birth place, 2) mother's birth place, 3) student's birth place, 4) parents' ownership,
5) family size, 6) family mean age, 7) family education, 8) family income, 9) family place of residence, and 10) occupation. All these variables have been to a greater or lesser degree investigated in relation to college plans and tested separately by educators and social scientists in general. The discussion of Berdie (10, 11, 12), Davis (32), Mierzwa (105), Henry (60), Beezer (8), and Haller (58) about how these concepts have been operationalized seems to be relevant. Since almost all the above authors have used for that purpose the answers given by the investigated students to the specific questions in structured self-administrated interviews, the same technique was used in this investigation.

Thus, the operational definitions for the above-mentioned concepts of socio-economic status of the family are stated as follows:

**O.D. 8.** The student's birth place is measured by the answer to whether he was born in a place with 19,999 population or less; in a place having between 20,000 and 99,999 population; or if he was born in a place with 100,000 population or more.

**O.D. 9.** The father's birth place is measured by the student's answer as to whether his father was born in a place with 19,999 population or less; in a place having between 20,000 and 99,999 population; or if his father was born in a place with 100,000 population or more.
O.D. 10. The mother's birth place is measured by the student's answer as to whether his mother was born in a place with 19,999 population or less; in a place having between 20,000 and 99,999 population; or if his mother was born in a place with 100,000 population or more.

O.D. 11. The family residence is measured by the type of suburb in which students reported their families were living at the time of the investigation.

For O.D. 11, three arbitrary categories were stated: not residential, semi-residential, and residential areas. Two criteria were used: the location of the high school and the family address given by the individual student. There are in Bogota nearly fifty "barrios". Each barrio has its own geographic, economic, and social characteristics. By identifying the "barrio" in which a family lives, one has a fairly good indication of the socio-economic status of the family. Due to the lack of an accurate map of Bogota with the geographic delineation of the barrios, an idea can be gained by the map (Figure 1), in which Bogota is seen divided in zones. In general it may be said that zone 8 is associated with upper class people, zones 7 and 9 with upper and middle high classes, zone 5 with middle class, zones 3 and 6 with middle and lower middle class, and zones 1, 2, and 4, located in the south, with lower class people.

O.D. 12. The parents' home ownership is measured by the student's answer to the question asking whether or
not his parents own the house in which the family is living.

O.D. 13. The family's total ownership is measured by the student's selection of one of the seven categories on the question: "What is the approximate value of the parents' total ownership?"

O.D. 14. The average number of persons reported by the students as actually living in the household is a measure for the family size.

O.D. 15. The average age of the reported sons and daughters is a measure of family age.

O.D. 16. The family education is measured by classifying all family members reported by the students in one of the following categories:

A. People with some high school, if the report shows one or more people besides the interviewee as having some years of high school but not completed.

B. People who had completed high school, if the report shows one or more family members who had completed high school.

C. People with some college, if the report shows one or more persons with some college education.

D. People holding a college degree, if the report shows one or more persons with a college degree.

O.D. 17. Type of family income is measured by the student's responses to the question as to whether their parents have primary and secondary sources of income.
O.D. 18. Family income is measured by the student's selection of one of the five categories corresponding to the question asking the approximate annual family income.

Father's occupation Father's occupation has been used frequently as one of the most important factors related to educational behavior. Berdie (11) analyzed college plans as related to parents' occupations among Minnesota high school seniors in 1950 and 1961 respectively. He operationalized the concept by asking the high school seniors about their parents' occupations. Beezer (8) reported that in three separate studies of college plans among high school seniors in Wisconsin, Arkansas, and Kansas, the parents' occupations were used and operationalized by assigning all the occupations reported in categories more or less similar in the three studies: professionals, owners or managers of businesses, office workers, salesmen, owners or managers of farms, skilled tradesmen, factory workers, and others.

Unfortunately, this classification is not possible in Colombia due to the social concept given to those categories. An ad hoc classification was used in the belief that it describes better the Colombian situation in this investigation. Four categories were stated:

1. Skilled, semi-skilled, small industrial, and small businessmen. To allocate an individual in this category, the reported occupation was checked with the income per year and the place of residence.
This was done due to the concept of industry, as industrial was reported for those who own heavy industries or big factories as well as the small handicrafts men, which makes a difference in terms of predicting college plans.

2. White-collar workers, supervisors, teachers, accountants, and even some skilled people. People in this category presumably have better economic opportunities than those in the previous category.

3. Farm owners. This category includes only those called "haciendados". These are large land owners usually, highly technical farmers, monocroppers, or highly technical workers in the livestock business. From this category were excluded those reported as farmers but whose farms represent a subsistence agriculture type, multi-production small farm acreages, etc. Obviously, these farmers are in worse socio-economic situation than the first type of farmers and even than the first category of the entire occupational classification.

4. Professional and general business men. These business men are different socio-economically from the business men reported in the first category.

Thus, the operational definition is:

O.D. 19. The category assigned from above to each student's father is the measure of the father's occupation.
Knowledge about requirements for going to college

The students were asked to report their feelings about their knowledge on the requirements to be met when applying for admission. Two questions were stated as follows:

Which of these statements best describes:

1. Your knowledge about the requirements needed to be admitted in college?
2. Your knowledge about the information you need to fill our your application sheet?

The following possible check list was written down for each of the previous questions: 1) I have hardly any information at all, 2) I have some information, and 3) I am very well informed.

O.D. 20. The student's answer on the check list about his knowledge on the requirements to be met to be accepted in college is the measurement of degree of knowledge.

O.D. 21. The student's answer on the check list about his knowledge of the material needed to fill our his application sheet is a measurement of knowledge on college structure.

Perception of educational system

The theoretical importance of this concept was discussed in the previous chapter. The empirical measure of it is the concern of this section. To the author's knowledge, no previous attempts have been made to operationalize the theoretical idea, perhaps due to the fact that college
education is more available to the American high school seniors who want to go to college.

To measure in some way the perception each Colombian high school senior has about the availability of higher education facilities to the high school seniors, two questions were stated in the schedule. The first is intended to detect the student's perception of the opportunities to select careers or major fields. The second question is intended to get empirical knowledge of the student's perceptions of opportunities for occupations in the major field he previously had selected. In both questions, three alternative answers were stated from the most pessimistic feelings to the most optimistic feelings the student could have about opportunity for careers and occupations.

O.D. 22. The student's response to the questions asking for his knowledge about the availability of careers is a measurement of the perception of educational opportunities.

O.D. 23. The student's response to the question asking for his knowledge about the opportunities of occupations in the major field he had previously selected is a measure of his perception of educational opportunities.

Parental influence

The parental influence on college plans has been operationalized before by Berdie (10), who asked the students this question:

How does your family feel about your going to college?
Possible answers were: 1) They are insistent, 2) They want me to go, 3) They are indifferent, 4) They do not want me to go, and 5) They won't allow me to go.

Similar to these, two specific questions were asked of the students in the present study, one related to the university and a second regarding career or major field:

1. Which of the following best describes what your parents have done and said about going to the university?

Possible answers: 1) My parents have encouraged me to go to the university, 2) My parents have discouraged me from going to the university, and 3) My parents never have talked to me about whether or not I should go to the university.

2. If you have selected your university career, which of the following best describes the behavior of your parents regarding your career selection?

Possible answers: 1) They are in favor of the career I have chosen, 2) I have not been counseled by my parents (or one of them), and 3) They are not in favor (or one of them) of the career I have chosen.

O.D. 24. The student's response to the check list indicates the parents' encouragement to the student going to the university is a measure of parental influence.

O.D. 25. The student's response to the check list indicating the parental behavior in relation to the selection of a career is a measurement of parental influence.

Teacher influence

This concept has been operationalized by Berdie (10) by presenting to the high school seniors a check list of
possible sources of influence on the student's selection of curriculum, including college plans.

A similar technique is used in the present investigation. The first question refers to the attitude of the teachers in regard to the student going to college. The check list was: 1) They have encouraged me to go to the university, 2) They have discouraged me from going to the university, 3) They never discussed this matter with me. A second question was asked regarding the selection of a career. Three possible alternative answers were stated: 1) They have counseled me positively, 2) They have not counseled me, 3) They have counseled me negatively.

Thus, there are two operational definitions as follows:

O.D. 26. The student's answers to the check list indicating the behavior of the teacher in encouraging the student about going or not going to the university is a measure of teachers' influences on high school seniors.

O.D. 27. The student's responses to the check list indicating the teachers' behavior relative to student career selection is a measure of teachers' influences on high school seniors.

Peers influence

This concept has been operationalized by other researchers. McDill (102), studying family and peers influences on college plans of high school seniors in Illinois, measured the concept by asking:
If a boy (girl) came here to school and wanted to get in with the leading crowd, what boys (girls) should he (she) get to be friends with? Students receiving mention two or more times were arbitrarily classified as having high status; those with no mention or one mention were classified as having low status. (102, p. 114)

The question was stated in a self-administrated classroom questionnaire.

A similar technique is used in the present investigation. Two questions were placed to the students:

1. Which of these statements best describes the behavior of your friends and peers concerning the decision to go to a university?

Possible answers: 1) They have encouraged me to go, 2) They have discouraged me from going, 3) They have never discussed this matter with me. (Question 76, Appendix B)

2. If you have selected your career, which of the following best describes the behavior of your friends and peers?

Possible answers: 1) They have counseled me positively, 2) They have not counseled me, 3) They have counseled me negatively. (Question 80, Appendix B)

The operational definitions are stated as follows:

O.D. 28. The student's responses to the check list indicating the influence of peers in the decision to go or not to go to college is a measure of peers' influence in student college plans.

O.D. 29. The student's responses to the check list indicating the influence of peers on career selection is a measurement of peers' influence in student college plans.
Student perception of economic means

Almost all those who have investigated college plans among high school seniors point to the significance of the perception of economic means for attending college. Berdie (10, 11), Beezer (8), Haller (58), and Davis (32) are among these. Berdie's study is especially relevant. He measured perception of economic means by asking the high school seniors in Minnesota the following question:

If you are going to college next year (1950-1951), to what extent do your parents plan to help you pay expenses? Possible answers: 1) Pay all the expenses, 2) Pay most of the expenses, 3) Pay some of the expenses, and 4) Pay none of the expenses. (10, p. 53)

Since the concern in the present investigation is the perception the student has about the main possible sources of economic support for his college education, four questions concerning the possibilities of having family or institution (scholarship) economic support, as well as the opportunities for borrowing money and/or work-study facilities were asked. To each of these questions was added a three-point check list providing for responses expressing from the most favorable to the least favorable perception of economic opportunities.

Thus, the general concept of student perception of economic means to pursue higher education will have four operational definitions as follows:

O.D. 30. The student's answer to the check list
question indicating family support is a measure of perception of existing economic means for higher education.

\textbf{O.D. 31}. The student's answer to the check list question indicating the possibilities of getting a scholarship is a measure of perception of existing economic means.

\textbf{O.D. 32}. The student's answer to the check list question indicating the possibility to borrow money for college education is a measure of perception of economic means.

\textbf{O.D. 33}. The student's answer to the check list question indicating the possibility of work-and-study is a measure of perception of economic means for college education.

\textbf{Empirical Hypotheses}

In the previous sections, the theoretical concepts and hypotheses have been discussed. Empirical measurements have been given for those theoretical concepts which are going to be used in this investigation. This section is concerned with the empirical hypotheses. Thirteen main hypotheses will be stated corresponding to the thirteen general factors which have been theorized as affecting the dependent variables in college planning of high school senior boys. For these thirteen general hypotheses, 33 empirical hypotheses will be stated, corresponding to the 33 operational definitions used as empirical measurements for the general hypotheses. All the hypotheses are stated in terms of direct relationships because the responses to all the
variables have been ranked from the supposedly less favorable relationship to the most favorable relationship. Values were assigned in rank order from 0 or 1 to the less favorable and 3, 4, and 5 to the more favorable answer depending on the number of choices in each question.

E.H. 1: Scores on certainty of attending college scale will vary directly with average high school grades of senior boys.

E.H. 2: Scores on certainty of attending college scale will vary directly with the average scores on the student's self-ranking scale.

E.H. 3: Scores on certainty of attending college scale will vary directly with the student rank on the attitudes score.

E.H. 4: Scores on certainty of attending college scale will vary directly with the scores on student educational aspiration.

E.H. 5: Scores on certainty of attending college scale will vary directly with the scores on student's certainty on selection of major field.

E.H. 6: Scores on certainty of attending college scale will vary directly with the scores on student's certainty of selection of college.

E.H. 7: Scores on certainty of attending college scale will vary directly with the scores of the student's trend of high school accomplishment.
E.H. 8: Scores on certainty of attending college scale will vary directly with the scores on size of student's birth place.

E.H. 9: Scores on certainty of attending college scale will vary directly with the scores on size of birth place of student's father.

E.H. 10: Scores on certainty of attending college scale will vary directly with the scores on size of birth place of student's mother.

E.H. 11: Scores on certainty of attending college scale will vary directly with the scores on family's residence.

E.H. 12: Scores on certainty of attending college scale will vary directly with the scores on the parent's home ownership.

E.H. 13: Scores on certainty of attending college scale will vary directly with the scores on the family's total ownership.

E.H. 14: Scores on certainty of attending college scale will vary directly with the scores on family size.

E.H. 15: Scores on certainty of attending college scale will vary directly with the scores on family average age.

E.H. 16: Scores on certainty of attending college scale will vary directly with the scores on education of the family.
E.H. 17: Scores on certainty of attending college scale will vary directly with the scores of the kind of family income.

E.H. 18: Scores on certainty of attending college scale will vary directly with the scores on the family income.

E.H. 19: Scores on certainty of attending college scale will vary directly with the scores of the father's occupation.

E.H. 20: Scores on certainty of attending college scale will vary directly with the scores of the student's knowledge about the requirements to be met by the student before being admitted to college.

E.H. 21: Scores on certainty of attending college scale will vary directly with the scores corresponding to the degree of knowledge of the material needed to complete his college application.

E.H. 22: Scores on certainty of attending college scale will vary directly with the scores corresponding to the knowledge about availability of careers.

E.H. 23: Scores on certainty of attending college scale will vary directly with the scores corresponding to the knowledge of opportunities of occupations in the student's major field.
E.H. 24: Scores on certainty of attending college scale will vary directly with the scores corresponding to the parents' influence on the student's decision to go to college.

E.H. 25: Scores on certainty of attending college scale will vary directly with the scores corresponding to the parents' influence on the student's selection of major field.

E.H. 26: Scores on certainty of attending college scale will vary directly with the scores corresponding to the teachers' influence on the student's decision to go to college.

E.H. 27: Scores on certainty of attending college scale will vary directly with the scores corresponding to the teachers' influence on the student's selection of career.

E.H. 28: Scores on certainty of attending college scale will vary directly with the scores corresponding to the peers' influence on the student's decision to go to college.

E.H. 29: Scores on certainty of attending college scale will vary directly with the scores corresponding to the peers' influence on the student's career selection.

E.H. 30: Scores on certainty of attending college scale will vary directly with the scores corresponding to the student perception of the parents'
ability to provide economic support by paying college expenses.

E.H. 31: Scores on certainty of attending college scale will vary directly with the scores corresponding to student perception of possibilities of getting a scholarship.

E.H. 32: Scores on certainty of attending college scale will vary directly with the scores corresponding to student perception of opportunities to borrow money for college expenses.

E.H. 33: Scores on certainty of attending college scale will vary directly with the scores corresponding to student perception of opportunities to work and study in college.

Statistical Technique Used for Analysis

The statistical techniques used to test the empirical hypotheses are zero-order pearsonian correlation coefficient and multiple regression. The level of probability which will be considered as an acceptable indicator of a statistically significant relationship for the correlation analysis is at the .025 level of probability for a one tailed test.

The level of probability which will be considered as statistically significant for multiple regression is the .025 level of probability.

Associated with every statistical test is a model and a measurement requirement. The test is valid under certain
conditions, and the model and the measurement requirement specify those conditions. Those conditions can be tested but more often it has to be assumed that they are met. They are called assumptions of the test. On the presence or absence of those assumptions depends the validity of the test.

Thus, the assumptions for the parametric test used to test the empirical hypotheses in this investigation are:
1) independence of the observations, 2) normality of distribution of the population, 3) equal variance, 4) linear combination of effects or additive effects, and 5) appropriate measurement. In the behavioral sciences the conditions are not always fully met; however, an attempt is made to fulfill them.
ANALYSIS OF DATA

The purpose of this chapter is to state briefly:

1. The general hypotheses.
2. The empirical hypotheses.
3. The corresponding null hypotheses.
4. The computed zero-order correlations between the variables.

On the basis of the computed correlations, it will be determined whether to reject or not reject the null hypotheses.

Thirteen general hypotheses will be stated corresponding to the thirteen theoretical hypotheses stated in the theoretical part of this investigation. Each general hypothesis will be followed by its corresponding empirical hypothesis, corresponding to the number of operational definitions stated for each general hypothesis in the methodological chapter.

Thus, there will be stated a total of thirty-three zero-order intercorrelations between the dependent variable and thirty-three independent variables which will be used to test thirteen general hypotheses among Colombian high school senior boys.

G.H. 1: The higher the scholastic ability, the more certain they will be that they will attend college.
E.H. 1: The scores on scholastic ability will vary directly with the scores on certainty of college plans.

N.H.: There is no positive relationship between the scores on scholastic ability and certainty of college plans.

The computed coefficient of correlation was .09 which is not statistically significant at the .025 level of probability for a one tailed test. The null hypothesis is not refuted. The data do not support the original hypothesis. The general hypothesis is statistically untenable.

G.H. 2: The higher the self-perception of intellectual ability, the more certain they will be that they will attend college.

E.H. 2: The scores on self-evaluation will vary directly with the scores on certainty of college plans.

N.H.: There is no positive correlation between self-evaluation and certainty on college plans.

The computed coefficient of correlation was .08 which is not significant at the .025 level of probability for a one tailed test. The null hypothesis is not refuted. The data do not support the original hypothesis. The general hypothesis is statistically untenable.

G.H. 3: The more favorable are the attitudes toward college education, the more certain they will be that they will attend college.
E.H. 3: The scores on the attitude scale will vary directly with the scores on certainty of college plans.

N.H.: There is no positive relationship between attitudes toward higher education and certainty of college plans.

The computed coefficient of correlation was .19 which is significant at the .025 level of probability for a one tailed test. The null hypothesis is refuted. The data support the original hypothesis. The general hypothesis is tenable.

G.H. 4: The higher the educational aspirations, the more certain they will be that they will attend college.

E.H. 4: The scores on educational aspirations will vary directly with the scores on certainty of college plans.

N.H.: There is no positive relationship between educational aspirations and certainty in college plans.

The computed coefficient of correlation was .06 which is not significant at the .025 level of probability for a one tailed test. The null hypothesis is not rejected. The data do not support the original proposition. The general hypothesis is not statistically tenable.

G.H. 5: The more certainty registered with regard to the choice of college and major field, the
more certain they will be that they will attend college.

E.H. 5: The scores on degree of certainty on college selection will vary directly with scores on certainty of college plans.

N.H.: There is no positive relationship between certainty on college selection and college plans.

The computed coefficient of correlation was .19 which is statistically significant at the .025 level of probability for a one tailed test. The null hypothesis is rejected. The data support the original hypothesis. The general hypothesis is tenable.

E.H. 6: The scores on degree of certainty of major field selection will vary directly with the scores on certainty of college plans.

N.H.: There is no positive relationship between the certainty on major field selection and college plans.

The computed coefficient of correlation was .30 which is statistically significant at the .025 level or probability for a one tailed test. The null hypothesis is rejected; the data support the original hypothesis. On the basis of E.H. 5 and E.H. 6, the general hypothesis is supported.

G.H. 6: The less evidence of underachievement in high school, the more certain they will be that they will attend college.
E.H. 7: The scores on achievement trend will vary directly with the scores on certainty of college plans.

N.H.: There is no positive relationship between achievement and certainty of college plans.

The computed coefficient of correlation was .20 which is statistically significant at the .025 level of probability for a one tailed test. The null hypothesis is rejected. The empirical hypothesis is supported. The general hypothesis is supported.

G.H. 7: Various social and economic characteristics of the boys' families will affect the certainty of the boys' plans to attend college.

E.H. 8: The scores on size of student's birth place will vary directly with the scores on certainty of college plans.

N.H.: There is no direct relationship between size of the student's birth place and college plans.

The computed coefficient of correlation was .14 which is not statistically significant at the .025 level of probability for a one tailed test. The null hypothesis is not rejected. The data do not support the empirical hypothesis.

E.H. 9: The scores on the size of birth place of the student's father will vary directly with the scores on certainty of college plans.
N.H.: There is no direct relationship between the size of the birth place of the student's father and college plans.

The computed coefficient of correlation was .13 which is not significant at the .025 level of probability for a one tailed test. The null hypothesis is not rejected. The data do not support the empirical hypothesis.

E.H. 10: The scores on the size of the birth place of the student's mother will vary directly with the scores on certainty of college plans.

N.H.: There is no direct relationship between the size of the birth place of the student's mother and college plans.

The computed coefficient of correlation was .17 which is significant at the .025 level of probability for a one tailed test. The null hypothesis is rejected. The data support the empirical hypothesis.

E.H. 11: The scores on family residence will vary directly with the scores on certainty of college plans.

N.H.: There is no direct relationship between family place of residence and college plans.

The computed coefficient of correlation was .31 which is significant at the .025 level of probability for a one tailed test. The null hypothesis is rejected. The data support the empirical hypothesis.
E.H. 12: The scores on the parents' home ownership will vary directly with the scores on certainty of college plans.

N.H.: There is no direct relationship between parents' home ownership and college plans.

The computed coefficient of correlation was .128 which is not significant at the level of .025 probability for a one tailed test. The null hypothesis is not rejected. The data do not support the empirical hypothesis.

E.H. 13: The scores on family total ownership will vary directly with the scores on certainty of college plans.

N.H.: There is no direct relationship between family ownership and college plans.

The computed coefficient of correlation was .10 which is not statistically significant at the .025 level of probability for a one tailed test. The null hypothesis is not rejected. The data do not support the empirical hypothesis.

E.H. 14: Small size of the family will vary inversely with certainty of college plans.

N.H.: There is no inverse relationship between the size of the family and college plans.

The computed coefficient of correlation was .06 which is not statistically significant at the .025 level of probability for a one tailed test. The null hypothesis
is not rejected. The data do not support the statistical hypothesis.

E.H. 15: The scores on average age of the family's children will vary inversely with the scores on certainty of college plans.

N.H.: There is no positive relationship between average age of family's children and college plans.

The computed coefficient of correlation was .011 which is not statistically significant at the .025 level of probability for a one tailed test. The null hypothesis is not rejected. The data do not support the empirical hypothesis.

E.H. 16: The scores on family education will vary directly with the scores on certainty of college plans.

N.H.: There is no positive relationship between the family education and college plans.

The computed coefficient of correlation was .23 which is significant at the .025 level of probability for a one tailed test. The null hypothesis is rejected. The data support the statistical hypothesis.

E.H. 17: The scores on family type of income will vary directly with the scores on certainty of college plans.

N.H.: There is no direct relationship between type of family income and college plans.
The computed coefficient of correlation was .002 which is not statistically significant at the .025 level of probability for a one tailed test. The null hypothesis is not rejected. The data do not support the statistical hypothesis.

E.H. 18: The scores on family income will vary directly with the scores on certainty of college plans.

N.H.: There is no direct relationship between family income and college plans.

The computed coefficient of correlation was .20 which is statistically significant at the .025 level of probability for a one tailed test. The null hypothesis is rejected. The data support the statistical hypothesis.

E.H. 19: The scores on father's occupation will vary directly with the scores on certainty of college plans.

N.H.: There is no direct relationship between father's occupation and student's college plans.

The computed coefficient of correlation was .14 which is not significant at the .025 level of probability for a one tailed test. The null hypothesis is not rejected. The data do not support the statistical hypothesis. On the basis of this, the general hypothesis is untenable.
In summary: E.H. 8, 9, 12, 13, 14, 15, 17, and 19 are not supported, whereas 10, 11, 16, and 18 are supported. As a result of these above findings, it is likely that a clear-cut rejection or support of the general hypothesis is untenable at this time. The possibility of restating the hypothesis will be presented in a succeeding chapter.

G.H. 8: The greater the knowledge on requirement procedures for admission to college, the more certain they will be that they will attend college.

E.H. 20: The scores on the knowledge of the requirements to be met before admission in college will vary directly with the scores on certainty of college plans.

N.H.: There is no direct relationship between the degree of knowledge of the requirements to be met before acceptance in college and the college plans.

The computed coefficient of correlation was .32 which is significant at the .025 level of probability for a one tailed test. The null hypothesis is rejected. The data support the statistical hypothesis.

E.H. 21: The scores on the knowledge of the information needed to fill out the application sheet will vary directly with the scores on certainty of college plans.
N.H.: There is no direct relationship between the degree of knowledge of the information needed to fill out the application sheet for college and the college plans.

The computed coefficient of correlation was .29 which is significant at the .025 level of probability for a one tailed test. The null hypothesis is rejected. The data support the statistical hypothesis. The general hypothesis is tenable at this level of knowledge.

G.H. 9: The more favorable the students' perceptions of the educational and occupational opportunities available to them, the more certain they will be that they will attend college.

E.H. 22: The scores on perception of availability of careers will vary directly with scores on certainty of college plans.

N.H.: There is no positive relationship between perception of availability of careers and college plans.

The computed coefficient of correlation was .04 which is not significant at the .025 level of probability for a one tailed test. The null hypothesis is not rejected. The data do not support the statistical hypothesis.

E.H. 23: The scores on perception of availability of occupation and the scores on certainty of college plans will vary directly.
N.H.: There is no positive relationship between perception of availability of occupation and college plans.

The computed coefficient of correlation was .02 which is not significant at the .025 level of probability for a one tailed test. The null hypothesis is not rejected. The data do not support the statistical hypothesis. The general hypothesis is not tenable at this stage of knowledge.

G.H. 10: The more positive the parental influence toward college attendance and toward the selection of a college major, the more certain they will be that they will attend college.

E.H. 24: The scores on parents' influence on going or not going to college will vary directly with the scores on certainty of college plans.

N.H.: There is no positive relationship between parents' influence on going to college and college plans.

The computed coefficient of correlation was .03 which is not significant at the .025 level of probability for a one tailed test. The null hypothesis is not rejected. The data do not support the statistical hypothesis.

E.H. 25: The scores on parental influence on career selection will vary directly with the scores on certainty of college plans.
N.H.: There is no direct relationship between parents' influence on career selection and scores on certainty of college plans.

The computed coefficient of correlation was .22 which is significant at the .025 level of probability for a one tailed test. The null hypothesis is rejected. The data support the statistical hypothesis. E.H. 24 does not support the general hypothesis, whereas E.H. 25 does. A possibility for restating the hypothesis will be discussed in the Discussion of Findings chapter.

G.H. 11: The greater the encouragement of teachers regarding college attendance, the more certain they will be that they will attend college.

E.H. 26: The scores on teachers' influence on going to college will vary directly with the scores on certainty of college plans.

N.H.: There is no direct relationship between teachers' influence on selection of university and college plans.

The computed coefficient of correlation was .12 which is not significant at the .025 level of probability for a one tailed test. The null hypothesis is not rejected. The data do not support the statistical hypothesis.

E.H. 27: The scores on teachers' influence on career selection will vary directly with the scores on certainty of college plans.
N.H.: There is no direct relationship between teachers' influence in career selection and college plans.

The computed coefficient of correlation was .004 which is not significant at the .025 level of probability for a one tailed test. The null hypothesis is not rejected. The data do not support the statistical hypothesis. The general hypothesis is not statistically tenable.

G.H. 12: The greater the encouragement of their peers regarding college attendance, the more certain they will be that they will attend college.

E.H. 28: The scores on peers' influence on selection of university will vary directly with the scores on certainty of college plans.

N.H.: There is no direct relationship between the peers' influence on going to college and college plans.

The computed coefficient of correlation was .12 which is not significant at the .025 level of probability for a one tailed test. The null hypothesis is not rejected. The data do not support the statistical hypothesis.

E.H. 29: The scores on peers' influence on career selection will vary directly with the scores on certainty of college plans.

N.H.: There is no direct relationship between the
peers' influence on career selection and college plans.

The computed coefficient of correlation was .05 which is not significant at the .025 level of probability for a one tailed test. The null hypothesis is not rejected. The data do not support the statistical hypothesis. The general hypothesis is not tenable at this time.

G.H. 13: The more favorable the students' perceptions of the availability of financial resources for attending college, the more certain they will be that they will attend college.

E.H. 30: The scores on perception of family economic support will vary directly with scores on certainty of college plans.

N.H.: There is no direct relationship between perception of family possibility of economic support and college plans.

The computed coefficient of correlation was .29 which is significant at the .025 level of probability for a one tailed test. The null hypothesis is rejected. The data support the statistical hypothesis.

E.H. 31: The scores on student perception of getting a scholarship will vary directly with the scores on certainty of college plans.

N.H.: There is no direct relationship between the
student perception of possibilities of getting a scholarship and college plans.

The computed coefficient of correlation was .25 which is significant at the .025 level of probability for a one tailed test. The null hypothesis is rejected. The data support the statistical hypothesis.

E.H. 32: The scores on student perception of possibilities for borrowing money will vary directly with scores on certainty of college plans.

N.H.: There is no direct relationship between the perception of possibilities to borrow money and college plans.

The computed coefficient of correlation was .13 which is not significant at the .025 level of probability for a one tailed test. The null hypothesis is not rejected. The data do not support the empirical hypothesis.

E.H. 33: The scores on possibilities of work-and-study will vary directly with the scores on certainty of college plans.

N.H.: There is no direct relationship between possibilities to work-and-study and college plans.

The computed coefficient of correlation was .13 which is not significant at the .025 level of probability for a one tailed test. The null hypothesis is not rejected. The data do not support the statistical hypothesis.
The E.H. 30 and 31 support the general hypothesis, whereas the E.H. 32 and 33 do not support the general hypothesis. The possibility for a restatement of the general hypothesis will be presented in the Discussion of Findings chapter.

A summary of the above general hypotheses shows that general hypotheses 3, 5, 6, and 8 were statistically supported, whereas 1, 2, 4, 9, 11, and 12 were not statistically supported at all, and 7, 10, and 13 were partially supported. Tables 1 and 2 synthesize the findings. The correlation matrix for the 33 independent variables can be seen in Table 9 in Appendix A.
Table 1. Thirteen general hypotheses, 33 empirical hypotheses, description of the variables and the zero-order coefficients of correlation for the 33 empirical hypotheses used to test the 13 general hypotheses.

<table>
<thead>
<tr>
<th>G.H.</th>
<th>E.H.</th>
<th>Description of the variable</th>
<th>C. correlations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>Scholastic ability (av. h. s. grades)</td>
<td>0.09</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>Self-ranking in five subject matters</td>
<td>0.08</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>Attitudes toward higher education</td>
<td>0.19</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>Aspiration toward career and int. career</td>
<td>0.06</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>Certainty about college selection</td>
<td>0.31</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td>Certainty about major field selection</td>
<td>0.31</td>
</tr>
<tr>
<td>7</td>
<td>7</td>
<td>Achievers vs. underachievers students</td>
<td>0.20</td>
</tr>
<tr>
<td>8</td>
<td>8</td>
<td>Student's birth place</td>
<td>0.14</td>
</tr>
<tr>
<td>9</td>
<td>9</td>
<td>Birth place of student's father</td>
<td>0.13</td>
</tr>
<tr>
<td>10</td>
<td>10</td>
<td>Birth place of student's mother</td>
<td>0.17</td>
</tr>
<tr>
<td>11</td>
<td>11</td>
<td>Family place of residence in the city</td>
<td>0.31</td>
</tr>
<tr>
<td>12</td>
<td>12</td>
<td>Parents' home ownership</td>
<td>0.13</td>
</tr>
<tr>
<td>13</td>
<td>13</td>
<td>Parents' total ownership</td>
<td>0.10</td>
</tr>
<tr>
<td>14</td>
<td>14</td>
<td>Family size: no. of people living at home</td>
<td>0.06</td>
</tr>
<tr>
<td>15</td>
<td>15</td>
<td>Av. age of children living at home</td>
<td>0.01</td>
</tr>
<tr>
<td>16</td>
<td>16</td>
<td>Family level of education</td>
<td>0.23</td>
</tr>
<tr>
<td>17</td>
<td>17</td>
<td>One or two sources of income in family</td>
<td>0.02</td>
</tr>
<tr>
<td>18</td>
<td>18</td>
<td>Family annual average income</td>
<td>0.21</td>
</tr>
<tr>
<td>19</td>
<td>19</td>
<td>Father's occupation</td>
<td>0.14</td>
</tr>
<tr>
<td>8</td>
<td>20</td>
<td>Knowledge about requirements for college</td>
<td>0.32</td>
</tr>
<tr>
<td>9</td>
<td>21</td>
<td>Knowledge of info. needed to fill in app.</td>
<td>0.30</td>
</tr>
<tr>
<td>10</td>
<td>22</td>
<td>Student perception of avail. of career</td>
<td>0.04</td>
</tr>
<tr>
<td>11</td>
<td>23</td>
<td>Student perception of oppor. of occup.</td>
<td>0.02</td>
</tr>
<tr>
<td>12</td>
<td>24</td>
<td>Parents' influence on going to college</td>
<td>0.04</td>
</tr>
<tr>
<td>13</td>
<td>25</td>
<td>Parents' influence on career selection</td>
<td>0.22</td>
</tr>
<tr>
<td>26</td>
<td>26</td>
<td>Teachers' influence on going to college</td>
<td>0.12</td>
</tr>
<tr>
<td>27</td>
<td>27</td>
<td>Teachers' influence on career selection</td>
<td>0.01</td>
</tr>
<tr>
<td>12</td>
<td>28</td>
<td>Peers' influence on going to college</td>
<td>0.12</td>
</tr>
<tr>
<td>13</td>
<td>29</td>
<td>Peers' influence on career selection</td>
<td>0.05</td>
</tr>
<tr>
<td>30</td>
<td>30</td>
<td>Perception of family economic support</td>
<td>0.29</td>
</tr>
<tr>
<td>31</td>
<td>31</td>
<td>Possibilities of getting scholarship</td>
<td>0.25</td>
</tr>
<tr>
<td>32</td>
<td>32</td>
<td>Possibilities to borrow money for coll.</td>
<td>0.13</td>
</tr>
<tr>
<td>33</td>
<td>33</td>
<td>Possibilities to work-and-study</td>
<td>0.13</td>
</tr>
</tbody>
</table>

*Significant at the .025 level of probability for a one tailed test.
Table 2. Thirteen general hypotheses, 33 empirical hypotheses, description of the variables and the zero-order coefficients of correlation for the 33 empirical hypotheses by order of magnitude.

<table>
<thead>
<tr>
<th>Description of the variable</th>
<th>Correlation by order of magnitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Knowledge about requirements for college</td>
<td>.32&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>2. Certainty about college selection</td>
<td>.31&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>3. Certainty about major field selection</td>
<td>.31&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>4. Family place of residence in the city</td>
<td>.31&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>5. Knowledge about info. needed to fill in app.</td>
<td>.30&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>6. Perception of family economic support</td>
<td>.29&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>7. Possibilities of getting scholarship</td>
<td>.25&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>8. Family level of education</td>
<td>.23&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>9. Parents' influence on career selection</td>
<td>.22&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>10. Family annual average income</td>
<td>.21&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>11. Achievers vs. underachievers students</td>
<td>.20&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>12. Attitudes toward higher education</td>
<td>.19&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>13. Birth place of the student's mother</td>
<td>.17&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>14. Father's occupation</td>
<td>.14</td>
</tr>
<tr>
<td>15. Student's birth place</td>
<td>.14</td>
</tr>
<tr>
<td>16. Birth place of the student's father</td>
<td>.13</td>
</tr>
<tr>
<td>17. Parents' home ownership</td>
<td>.13</td>
</tr>
<tr>
<td>18. Possibilities to borrow money for college</td>
<td>.13</td>
</tr>
<tr>
<td>19. Possibilities to work-and-study</td>
<td>.13</td>
</tr>
<tr>
<td>20. Teachers' influence on going to college</td>
<td>.12</td>
</tr>
<tr>
<td>22. Parents' total ownership</td>
<td>.10</td>
</tr>
<tr>
<td>23. Scholastic ability (av. high school grades)</td>
<td>.09</td>
</tr>
<tr>
<td>24. Self-ranking in five subject matters</td>
<td>.08</td>
</tr>
<tr>
<td>25. Aspiration toward career and int. career</td>
<td>.06</td>
</tr>
<tr>
<td>26. Family size: no. of people living at home</td>
<td>.06</td>
</tr>
<tr>
<td>27. Peers' influence on career selection</td>
<td>.05</td>
</tr>
<tr>
<td>28. Parents' influence on going to college</td>
<td>.04</td>
</tr>
<tr>
<td>29. Student perception of availability of career</td>
<td>.04</td>
</tr>
<tr>
<td>30. One or two sources of income in family</td>
<td>.02</td>
</tr>
<tr>
<td>31. Student perception of opport. of occupation</td>
<td>.02</td>
</tr>
<tr>
<td>32. Average age of children living at home</td>
<td>.01</td>
</tr>
<tr>
<td>33. Teachers' influence on career selection</td>
<td>.01</td>
</tr>
</tbody>
</table>

<sup>a</sup>Significant at the .025 level of probability for a one-tailed test.
ADDITIONAL ANALYSIS

So far the analysis has concentrated on the zero-order correlation between each independent variable and the dependent variable. However, in a behavioral model the elements are not completely independent, rather they interrelate with each other and have reciprocal effects. Thus, college plans behavior may not be influenced solely by any of these elements (though each was hypothesized to have an independent effect), but by some of them or by all as a part of an interdependent system. With this premise in mind, the additional analysis has the following purposes:

1. To determine the extent to which the variation of college plans behavior can be predicted or explained by the combined effects of the thirty-three independent variables analyzed in the previous chapter.

2. To isolate the fewest number of variables from the thirty-three variables which best fit the regression equation to be used in the explanation and/or prediction of college plans behavior.

3. To determine in either case if the percentage of explained variation (if any) of college plans is statistically significant.

To carry out these objectives, multiple regression method is used implementing different statistical procedures.
First of all, let us identify the variables and the symbols used in the regression equation.

Table 3. Variables and symbols to be used in the regression equation. The numbers correspond to the order in which they were coded on the original IBM cards.

Dependent: \[ Y = \text{college plans} \]

Independent:
- \[ X_1 = \text{student's birth place} \]
- \[ X_2 = \text{family place of residence in the city} \]
- \[ X_3 = \text{father's birth place} \]
- \[ X_4 = \text{father's occupation} \]
- \[ X_5 = \text{mother's birth place} \]
- \[ X_6 = \text{parents' home ownership} \]
- \[ X_7 = \text{parents' total ownership} \]
- \[ X_8 = \text{family size} \]
- \[ X_9 = \text{family average age} \]
- \[ X_{10} = \text{family level of education} \]
- \[ X_{11} = \text{one vs. secondary sources of income} \]
- \[ X_{12} = \text{family annual average income} \]
- \[ X_{13} = \text{achievers vs. non-achievers} \]
- \[ X_{14} = \text{knowledge about requirements for college} \]
- \[ X_{15} = \text{knowledge about how to fill out application} \]
- \[ X_{16} = \text{certainty about major field} \]
- \[ X_{17} = \text{certainty about college selection} \]
- \[ X_{18} = \text{perception of availability of careers} \]
- \[ X_{19} = \text{educational aspiration} \]
- \[ X_{20} = \text{knowledge about occupation} \]
- \[ X_{21} = \text{scholastic abilities (av. high school grades)} \]
- \[ X_{22} = \text{perception of family economic support} \]
- \[ X_{23} = \text{possibilities to work-and-study} \]
- \[ X_{24} = \text{possibilities of obtaining scholarship} \]
- \[ X_{25} = \text{possibilities to borrow money for college} \]
- \[ X_{26} = \text{self-evaluation} \]
- \[ X_{27} = \text{attitudes toward higher education} \]
- \[ X_{28} = \text{parents' influence on going to college} \]
- \[ X_{29} = \text{teachers' influence on going to college} \]
- \[ X_{30} = \text{peers' influence on going to college} \]
- \[ X_{31} = \text{parents' influence on career selection} \]
- \[ X_{32} = \text{teachers' influence on career selection} \]
- \[ X_{33} = \text{peers' influence on career selection} \]
The statistical model used for computation and estimate of college plans behavior is as follows:

\[ Y = b_0 + b_1X_1 + b_2X_2 + \ldots + b_{33}X_{33} + E. \]

The statistical model assumes:

1. That the multiple regression is of a linear type.
2. That the X's are fixed and may be represented by the parameters.
3. That for each set of X's the Y's associated with them are normally and independently distributed, with mean 0 and standard deviation \( \sigma_B \).
4. That the variances of Y for each set of X's has additive characteristics.

The Overall Regression

The regression equation of college plans on the thirty-three independent variables was computed. The multiple correlation coefficient squared \( (R^2) \) is .41 which represents the percent of variance of Y explained by or predicted by the combined effect of the thirty-three independent variables.

One of the objectives of the use of statistical methods in research is to equip the investigator with a set of techniques able to identify the fewest number of variables with the highest predictive value in the analytical model. In an attempt to do so, a new regression equation was computed including nine independent variables from those thirteen
which were found significant in the zero-order correlation (Table 1). Four of the thirteen were excluded because they correlated highly with another already included in the model.

The computed multiple correlation coefficient squared \( (R^2) \) was .31. Thus, twenty-four independent variables have been excluded from the model, with only ten percent loss in explanation of variation of \( Y \), the dependent variable.

A new effort was made to select the most significant variables. At this time a more methodological procedure was used. From the five different procedures suggested by Draper (37), the step-wise procedure seems to best suit this purpose. As its name suggests, the procedure develops in steps. Essentially the process is:

A re-examination is made at every stage of the regression of the variables incorporated into the model in previous stages. A variable which may have been the best single variable to enter at an earlier stage may, at the later stage, be superfluous because of the relationship between it and other variables now in regression. To check on this, the partial F criterion for each variable in the regression at any stage of calculation is evaluated and compared with a preselected percentage point of the appropriate F distribution. Any variable which provides no significant contribution is removed from the model. This process is continued until no more variables will be admitted to the equation and no more are rejected. (37, p. 174)

The steps followed in this investigation were:

**Step 1:** Using zero-order correlation matrix, the regression starts with the independent variable
X which correlated the highest with the dependent variable Y -- in this case $X_{14}$ (Table 3).

Step 2: Next $X$ which correlated the highest with $Y$ is selected to be put into the regression -- in this case $X_{22}$.

Step 3: Given the regression equation $Y = f(X_{14}, X_{22})$, the method now examines the contribution of $X_{14}$ that would have been made if $X_{22}$ had been entered first and $X_{14}$ entered second. If the partial value of $F$ is significant at any specified level of probability, then $X_{14}$ is retained; if not, it is removed from the model. The next variable to be entered is that which shows high zero-order correlation with $Y$ -- in this case $X_{16}$.

Step 4: Thus, the regression equation becomes $Y = f(X_{14}, X_{22}, X_{16})$ and it is determined by the least squares. The $X_{16}$ is kept in or dropped from the model, depending on whether it has the partial value of $F$ significant or not. The process is repeated in the same way as many times as necessary until the partial value of $F$ for the corresponding variable is not significant.

Final Step: At this stage, the step-wise regression
terminates and chooses as its best regression equation those variables which partial F's were found significant using F test, keeping the order in which they have been tested.

Thus, in this investigation the regression equation has become:

\[ Y = f(X_{14}, X_{22}, X_{16}, X_{24}, X_{31}, \text{ and } X_{27}). \]

The symbols used to identify the values of the corresponding coefficients of these six independent variables are listed in Table 4.

Table 4. Number of variables as they were selected from Table 3 by step-wise regression equation, description of those variables, and the corresponding symbols of their coefficients

<table>
<thead>
<tr>
<th>Variable in order of selection</th>
<th>Description</th>
<th>Symbol of their coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td>( X_{14} )</td>
<td>Knowledge on requirements for college</td>
<td>( b_1 )</td>
</tr>
<tr>
<td>( X_{22} )</td>
<td>Perception of family economic support</td>
<td>( b_2 )</td>
</tr>
<tr>
<td>( X_{16} )</td>
<td>Certainty about selection of major field</td>
<td>( b_3 )</td>
</tr>
<tr>
<td>( X_{24} )</td>
<td>Possibilities of scholarship</td>
<td>( b_4 )</td>
</tr>
<tr>
<td>( X_{31} )</td>
<td>Parents' influence on career selection</td>
<td>( b_5 )</td>
</tr>
<tr>
<td>( X_{27} )</td>
<td>Attitudes toward higher education</td>
<td>( b_6 )</td>
</tr>
</tbody>
</table>
For the purpose of analysis of variance, the sum of squares associated with these coefficients is obtained in a definite (sequential) order as suggested by Ostle (117, p. 186). The sum of squares of $b_1$ should be found first. After finding the sum of squares of $b_1$, the sum of squares of $b_2$ is found. Hence the symbolism, $b_2/b_1$, is read $b_2$ given that $b_1$ has been found. The next sum of squares is then associated with $b_3/b_1,b_2$ which implies that $b_3$ was found after $b_1$ and $b_2$ were determined. The remaining symbols in Table 4 are read in a similar way.

Table 5. Analysis of variance associated with the step-wise regression and multiple regression coefficients

<table>
<thead>
<tr>
<th>Source of variation</th>
<th>Degrees of freedom</th>
<th>Sum of squares</th>
<th>Mean squares</th>
<th>F ratio</th>
<th>$R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Due to $b_1$</td>
<td>1</td>
<td>6.756</td>
<td>6.756</td>
<td>19.87*</td>
<td>.100</td>
</tr>
<tr>
<td>Due to $b_2/b_1$</td>
<td>1</td>
<td>5.082</td>
<td>5.082</td>
<td>14.95*</td>
<td>.075</td>
</tr>
<tr>
<td>Due to $b_3/b_1,b_2$</td>
<td>1</td>
<td>3.342</td>
<td>3.342</td>
<td>9.83*</td>
<td>.049</td>
</tr>
<tr>
<td>Due to $b_4/b_1,b_2,b_3$</td>
<td>1</td>
<td>1.792</td>
<td>1.792</td>
<td>5.27*</td>
<td>.026</td>
</tr>
<tr>
<td>Due to $b_5/b_1-4$</td>
<td>1</td>
<td>1.363</td>
<td>1.363</td>
<td>4.00b</td>
<td>.020</td>
</tr>
<tr>
<td>Due to $b_6/b_1-5$</td>
<td>1</td>
<td>1.221</td>
<td>1.221</td>
<td>3.58</td>
<td>$\bar{R}^2$</td>
</tr>
<tr>
<td>Due to $b_7-33/b_1-6$</td>
<td>27</td>
<td>8.386</td>
<td>.31</td>
<td>1.00</td>
<td>.288</td>
</tr>
<tr>
<td>Due to overall regression</td>
<td>33</td>
<td>27.942</td>
<td>.85</td>
<td>2.50a</td>
<td></td>
</tr>
<tr>
<td>Residual</td>
<td>118</td>
<td>39.893</td>
<td>.34</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

$^a$Significant at .025 level of probability.

$^b$Significant at .05 level of probability.
Shrunken values ($R'$) for the multiple correlation coefficients ($R$) of the three multiple regression equations computed for this section were calculated. Shrinkage refers to the maximization of the correlations between a criterion variable and a team of variables capitalized upon random variance as well as true variance. The values of $R'$ provide estimates of what the value of $R$ would be if the effects of correlation errors were eliminated. $R'$ estimates $R$ of the parent population from which the sample has been drawn if a sample has taken place.

To calculate the values of $R'$ the following formula suggested by DuBois (39, p. 39) has been used:

$$R' = \sqrt{1 - (1 - R^2) \left( \frac{N - 1 - n}{N - 1 - n} \right)}$$

where $N$ is the sample size and $n$ the number of predictor variables. The corresponding values are shown in Table 6.

Table 6. Calculated values of the three sets of multiple correlation coefficients computed upon 33, 9, and 6 predictor variables respectively

<table>
<thead>
<tr>
<th>Sample size: $N$</th>
<th>No. of predictors: $n$</th>
<th>$R^2$</th>
<th>$R$</th>
<th>$R'$</th>
</tr>
</thead>
<tbody>
<tr>
<td>First $R$</td>
<td>152</td>
<td>33</td>
<td>.412</td>
<td>.641</td>
</tr>
<tr>
<td>Second $R$</td>
<td>152</td>
<td>9</td>
<td>.310</td>
<td>.544</td>
</tr>
<tr>
<td>Third $R$</td>
<td>152</td>
<td>6</td>
<td>.288</td>
<td>.537</td>
</tr>
</tbody>
</table>
The hypothesis that the addition of a new variable contributes significantly to the explanation of variation in college behavior plans is tested next. The $F$-ratio as defined by Ostle (117, p. 187) will be used for this purpose:

$$F = \frac{\text{mean of squares due to } b_i/b_1, b_2 \ldots b_i}{\text{residual mean squares}}$$

This will assess the significance of the additional reduction in the residual sum of squares achieved by fitting the $b$'s in the particular order adopted by the step-wise regression.

An additional test will be performed to assess the significance of the multiple regression coefficient association with the six independent variables in the step-wise analysis. The individual $R^2$ and its summation are reported in Table 5.

**Hypotheses**

**G.H. 14:** All the 33 variables contribute to the explanation of variance of college plans.

**E.H. 34:** The scores on the 33 variables will explain a significant amount of variance in certainty of college plans behavior.

**N.H.:** The additional sum of squares for regression added by the variables $X_1$ to $X_{33}$ is zero.
The computed F-ratio is 2.50, with 33 and 118 degrees of freedom, and is significant at .025 level of probability. The null hypothesis is refuted. The 33 variables taken compoundly explain and/or predict a significant amount of variance in college plans behavior.

The next step is to test the significance of those variables selected from the 33 by the step-wise regression equation as a whole.

G.H. 15: The 27 variables different from those identified with the symbols $X_{14}, X_{22}, X_{16}, X_{24}, X_{31},$ and $X_{27}$ in Table 3, but included in the general multiple regression equation, contribute to the explanation of college plans behavior.

E.H. 35: The scores of the 27 variables different from those identified with the symbols $X_{14}, X_{22}, X_{16}, X_{24}, X_{31},$ and $X_{27}$ in Table 3, but included in the general multiple regression equation, significantly differentiate from the scores on certainty of college plans behavior.

N.H.: The additional sum of squares for the regression added by the 27 variables different from those identified with the symbols $X_{14}, X_{22}, X_{16}, X_{24}, X_{31},$ and $X_{27}$ of Table 3 but included in the general regression equation is zero.
The computed F-ratio is .31 which is not significant at .025 level of probability with 27 and 118 degrees of freedom. The null hypothesis is not rejected. The data do not support the statistical hypothesis. Thus, the additional sum of squares for the regression added by the 27 variables different from those identified by the symbols $X_{14}$, $X_{22}$, $X_{16}$, $X_{24}$, $X_{31}$, and $X_{27}$ in Table 3, but included in the general regression equation, makes no significant contribution to the explanation and/or prediction of college plans behavior.

A further step is now taken, that is to test the hypothesis corresponding to the significance of additional sum of squares of those 6 variables selected by the step-wise method.

G.H. 16: The knowledge about the requirements to be met before being accepted in college ($X_{14}$) contributes to the explanation of college plans behavior.

E.H. 36: The scores on the knowledge about the requirements to be met before being accepted in college will explain a significant amount of the variance of the scores on certainty of college plans behavior.

N.H.: The sum of squares for regression of variable $X_{14}$ is zero.

The computed F-ratio is 14.95 which is significant at .025 level of probability with 1 and 118 degrees of freedom.
The null hypothesis is rejected. The data support the original hypothesis.

G.H. 18: The variable $X_{16}$, certainty about the selection of major field, contributes significantly to the explanation of variance in college plans behavior.

E.H. 38: The scores on the variable $X_{16}$, certainty about the selection of major field, will explain a significant amount of the variance of the scores on certainty of college plans.

N.H.: The additional sum of the squares for regression provided by the variable $X_{16}$ after variables $X_{14}$ and $X_{22}$ is zero.

The computed F-ratio is 9.83 which is significant at .025 level of probability with 1 and 118 degrees of freedom. The null hypothesis is rejected. The data support the statistical hypothesis.

G.H. 19: The variable $X_{24}$, perception of possibilities for scholarship, contributes to the explanation of the variance of college plans behavior.

E.H. 39: The scores on the variable $X_{24}$, perception of possibilities of obtaining a scholarship, will explain a significant amount of variance in scores on certainty of college plans behavior.
N.H.: The additional sum of squares for regression added by the variable $X_{24}$ after the variables $X_{14}, X_{22}$, and $X_{16}$ is zero.

The computed F-ratio is 5.27 which is significant at .025 level of probability with 1 and 118 degrees of freedom. The null hypothesis is rejected. The data support the statistical hypothesis.

G.H. 20: The variable number $X_{31}$, parents' influence on students' career selection, contributes to the explanation of variance of college plans behavior.

E.H. 40: The scores on the variable $X_{31}$, parents' influence in career selection, will explain a significant amount of variance in scores on certainty of college plans behavior.

N.H.: The additional sum of squares for regression added by the variable $X_{31}$ after the variables $X_{14}, X_{22}, X_{16}$, and $X_{24}$ is zero.

The computed F-ratio is 4.00 which is significant at .05 level of probability with 1 and 118 degrees of freedom. The null hypothesis is rejected. The data support the statistical hypothesis.

G.H. 21: The variable number $X_{27}$, attitudes toward higher education, will explain a significant amount of variance on scores on certainty of college plans behavior.
E.H. 41: The scores on the variable $X_{27}$, attitudes toward higher education, will explain a significant amount of variance of scores on certainty of college plans behavior.

N.H.: The additional sum of squares for regression added by the variable $X_{27}$, after the variables $X_{14}$, $X_{22}$, $X_{16}$, $X_{24}$, and $X_{31}$ is zero.

The F-ratio computed is 3.58 which is not significant at .05 level of significance with 1 and 118 degrees of freedom. The null hypothesis is not rejected. The data do not support the original hypothesis.  

Having tested the hypotheses of significance of those variables included in the step-wise regression equation, the interest is now in testing the significance of the multiple correlation coefficient squared ($R^2$) associated with the step-wise regression equation. The $R^2$ represents the amount of variation of the criterion variable (certainty of college plans) accounted for by the six variables $X_{14}$, $X_{22}$, $X_{16}$, $X_{24}$, $X_{31}$, and $X_{27}$ in combination in the regression equation and $1-R^2$, the amount of residual or unexplained variation. When taken in combination, these six variables account for slightly less than 30 percent of the variance of the criterion variable.

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5 This hypothesis was almost on the edge of becoming significant by this reason and due to the fact that some of the items of that scale of attitudes showed higher correlation with $Y$, this variable "attitudes" was kept in the equation as having high predictive value.
The technique used to test the significance of $R^2$ is the F test given by Walker and Lev (147, p. 324):

$$F = \frac{R^2}{1-R^2} \cdot \frac{n-(k-1)}{k}$$

where $k =$ the number of independent variables, $R^2 = .288$ from Table 5.

G.H. 22: When taken in combination and in specific order, the variables $X_{14}$, $X_{22}$, $X_{16}$, $X_{24}$, $X_{31}$ and $X_{27}$ contribute to percentage significantly on the variance of college plans behavior.

E.H. 42: The added individual $R^2$'s of the six variables $X_{14}$, $X_{22}$, $X_{16}$, $X_{24}$, $X_{31}$ and $X_{27}$ will explain a significant percentage of variation of certainty of college plans.

N.H.: The summation of individual weights ($R^2$'s) corresponding to the variables $X_{14}$, $X_{22}$, $X_{16}$, $X_{24}$, $X_{31}$ and $X_{27}$ of step-wise is zero.

The calculated F-ratio was found to be 9.9 which is significant at .025 level of probability with 6 and 146 degrees of freedom. The null hypothesis is refuted. The data support the statistical hypothesis of significance.

The Prediction Equation

To estimate the college plans behavior, the equation suggested by Ostle (117, p. 229) is used:
\[ Y = b_0 + b_1X_1 + b_2X_2 + \ldots + b_nX_n. \]

Substituting this equation by the variables of step-wise regression equation, the equation becomes:

\[ Y = b_0 + b_1X_{14} + b_2X_{22} + b_3X_{16} + b_4X_{24} + b_5X_{31} + b_6X_{27} \]

where \( b_0 \) = constant and \( b_1-6 \) are the coefficients of corresponding regression of \( X_{14}, X_{22}, X_{16}, X_{24}, X_{31} \) and \( X_{27} \). The values of regression coefficient are taken from the correlation matrix as follows: \( b_1 = .32, b_2 = .29, b_3 = .31, b_4 = .25, b_5 = .22, \) and \( b_6 = .19 \). After solving for "\( b_0 \) value", "Y-intercept", the prediction equation is obtained:

\[ Y = 4.47 + .32X_{14} + .29X_{22} + .31X_{16} + .25X_{24} + .22X_{31} + .19X_{27}. \]

Substituting the X's with the individual student's scores on the six variables, his college plans behavior may be estimated. Table 8 in Appendix A provides the estimations for the 152 students.
DISCUSSION AND SUGGESTIONS

Introduction

A general objective of this investigation has been the identification of some relevant factors in the formation of college plans. In order to fulfill that objective, for those factors which were believed to be related with college plans, theoretical discussions have been set up, as well as empirical hypotheses.

Empirical measurements were provided and justified. The statistical tests using zero-order correlation technique were performed, and the findings reported for the thirteen general hypotheses and thirty-three sub-hypotheses stating interrelationships between the college plans and the thirty-three factors.

Finally, in an additional analysis chapter, an attempt was made to isolate the fewest number of variables which fit the multiple regression equation.

The purpose of this chapter is:
1. To discuss the findings of the previous two chapters.
2. To make suggestions for future areas of research relative to college plans.
3. To derive some implications of the findings for change agents.

Another function of this chapter is to provide an opportunity for presenting additional information pertaining to the tested hypotheses.
College plans behavior

It was assumed at the beginning of this investigation that high school seniors in Bogota, Colombia exhibit college plans behavior. They were asked to manifest such behavior in terms of the degree of certainty they have about going to college immediately after high school graduation. Question 20 in the self-administered questionnaire recorded the following percentages:

1. I feel sure that I will not enroll in college -- zero percent.
2. I probably will not enroll in college, but I am not completely sure -- 2 percent.
3. As of now I am completely undecided about entering college -- 3.9 percent.
4. I probably will enroll in college but I am not completely certain -- 39.5 percent.
5. I feel sure that I will enroll in college -- 54.6 percent.

This information not only supports the original assumption that Colombian students exhibit college plans behavior, but it also shows that the number of students from this particular investigated group planning to go to any college is extraordinarily high. Almost 95 percent reported probability and certainty of going to college. This lack of variation in the dependent variable may have prevented the obtaining of
higher correlations with the independent variables. Studies using a more stratified group would be desirable.

**Scholastic ability**

It was theorized that there would exist a positive relationship between scholastic ability and college plans. A zero-order correlation of .09 was reported. The expected relationship was not supported. Scholastic ability was measured by the average high school grades for each individual. Three different arrangements were used in an attempt to identify the best predictor of scholastic ability:

1. The class grades of the second, third, fourth, fifth, and half of the sixth year of high school were added and averaged for each individual student. Those averages ranked from 3.2 to 4.4, with a mean of 3.65 and a standard deviation of 2.2. The zero-order correlation with college plans was .088.

2. A second average was computed using the grades of the fifth year and the first half of the sixth year of high school. The averages ranked from 3.1 to 4.4, with a mean of 3.6 and a standard deviation of 2.3. The zero-order correlation was .075.

3. The first method of averaging grades was also coded in intervals of 3 points and the zero-order correlation was .079.

From the above information, it can be stated that the
best measurement of scholastic ability is the averaging of all the grades for the six years of high school of individual students; however, no significant correlation was found.

Thus, in future research it is suggested to retest the hypothesis with a more heterogeneous population in Colombia.

**Intellectual self-evaluation**

The measurement used to test the corresponding hypothesis was by asking the students to rank themselves on a five-point scale in five different subject matters. Questions 51 to 55 in the questionnaire (Appendix B) related to this.

The scores were averaged and put into a 1 to 5 point scale. The scores ranked from 3.0 to 4.6, with a mean of 3.6 and a standard deviation of .37. The zero-order correlation with college plans was .08. The same information was computed in three intervals. The standard deviation in this case was .6 and the zero-order correlation was .05.

The first computation seems to be the best measurement for student self-evaluation. Nevertheless, the predicted direct relationship between the student's self-evaluation and college plans was not supported.

In general, the students tended to see themselves as having high capabilities in the main subject matter of high school curriculum which corresponded to the grades received by the students. The findings do not seem to suggest that in further research this variable should be used in an attempt
Attitudes toward higher education

There is empirical evidence to demonstrate the direct relationship between the student's attitude toward higher education and college plans.

The general technique used in this investigation to measure attitudes was by presenting the students with a set of thirteen positive-negative statements relating to higher education. All thirteen statements were tested for validity using "t" technique. All showed different degrees of significance. The respective scores were arranged through summated-rating technique in three different arrangements in an attempt to find the best predictor:

1. Using a 25 to 65 hypothetical points scale, the observed mean was 51.5, the standard deviation was 4.9, and the zero-order correlation was .18.
2. Using a 1 to 5 points scale, the observed mean was 4.0, the student deviation was .38, and the correlation with college plans was .19.
3. Using three point intervals for individual's total scores, the correlation with college plans was .19.

Three conclusions can be drawn from the above evidence:

1. The Colombian high school seniors showed high positive attitudes toward higher education.
2. There is positive relationship between educational attitudes and college plans.

3. The observed correlation is significant but relatively low.

One suggested explanation for the low correlation is that it might be due to the low t values or significances of some statements observed through item analysis (Table 7). Thus, the suggestion for further research, if such a scale and such items are going to be used, is to delete from the Likert-type scale those items showing the lowest significances of "t" item analysis technique, and replace them with more significant ones. This is suggested because some of the individual items of the scale correlated higher with college plans than the complete scale. For example, the item in question 65 (Appendix B) correlated .35 by itself, whereas the highest correlation with scale was .19 as it was reported before.

In conclusion, the summated rating scale elaborated for the purposes of measuring attitudes toward higher education is predictive but it can be improved.

**Educational aspiration**

This concept was found statistically untenable as a direct relationship to college plans. Theoretically and empirically it was hypothesized to be related to college plans, based on previous studies (71, 88, 128). One of the methods which has been used to operationalize educational
aspiration is direct questioning of the high school students (31).

Thus, when the students were asked to state their educational goals by selecting a career vs. intermediate career, 88.8 percent of the answers indicated career selection, 9.9 percent indicated intermediate career, and 1.3 percent that they probably would not attend college. If the responses are accepted as a measure of educational aspiration, the high school students exhibited the highest of educational aspiration; but since the expected relationship was not supported, either the theory or the measurement of the concept has failed to explain.

In further research, the author favors a reshaping of the empirical measurement of the concept to adapt it more to the social setting, rather than a remodeling of the theory. The rationality for this suggestion is that the distinction of career and intermediate career is very new, and the intermediate career seems to be highly associated with women at present.

Certainty of major field and college

Both theoretical and empirical hypotheses were stated expressing direct relationship between college plans and the certainty expressed by students with regard to the college they would like to attend and the field in which they would like to major. Two statistical tests provided evidence supporting the existence of that relationship.
The frequency percentages for the alternatives in each question were as follows: 53.9 percent of the students reported to be sure about the major field they will pursue; 45.4 percent felt not completely sure; on the other hand, 44.7 percent felt sure about the college they had selected; 52.6 percent reported not to be completely sure about the college. Based on this evidence, it seems that college planning is in part a function of the state of certainty each individual has relative to the field of his academic concentration and the college which he is planning to attend.

**Achievers vs. unachievers**

The empirical data supported the hypotheses that not failing either in academic years or in courses within academic years is positively associated with college plans. For the 152 students, 12.5 percent had failed one year and some courses, 29.6 percent had failed courses in different years, 38.2 percent had failed courses in one or two years, and finally 19.7 percent had no failures in their school career. The zero-order correlation was .20. Both the zero-order and the percentages support the hypothesis of a direct relationship between achievement and college plans. A retest of this hypothesis could be advisable using high school students with more heterogeneous characteristics of using a larger sample.

**Socio-economic characteristics of the family**

Twelve empirical sub-hypotheses, tested independently, were used to test this general hypothesis; of the twelve,
four supported the general hypothesis and eight did not. Thus, the clear-cut rejection or non-rejection of the general hypothesis was not possible.

A re-examination of the supporting and non-supporting variables indicates that the best predictors of socio-economic status are those variables showing statistical significance with college plans, such as: place of family residence, size of the birth place, level of education, and family income. In effect these variables have been used frequently by social scientists in measuring socio-economic status. The other eight seem to have little to do with college plans -- at least in the Colombian situation.

Two alternatives are suggested in relation to future research. Both are related with method of measurement rather than theory.

The first suggestion is to operationalize socio-economic status in terms of those four variables which have been found significant; second is to retest in a more heterogeneous sample those propositions found not significant in this investigation.

From the theoretical point of view, the four variables can validly measure the concept of socio-economic status of the families in the Colombian setting. Previous research showed these variables have been used to measure social status and have been found related to college plans. Now, cross-culturally both have been validated.
From the pragmatical point of view, using four rather than twelve different variables to measure socio-economic status will be a considerable saving of time, effort, and resources while maintaining equal validity of the measurement.

There is still another suggestion: to delete "family residence" as an empirical measurement of family socio-economic status. The reason is that "family residence" was found to be highly correlated with "family annual average income" (c.c. .51) and with "family level of education" (c.c. .50) as can be seen in the correlation matrix in Table 9, Appendix A. It seems that family residence in the city is a function of the last two variables. This is one of the advantages of the statistical analysis — to simplify measurements without losing validity.

As far as education is concerned, no family was reported which had other people with only a primary education; instead 52 percent reported having some people with complete high school or some high school, and 48 percent reported having people with college degree or some college education. On the other hand, the average annual income for the 152 students' families was 34,000 Colombian pesos, with only 14.5 percent of the families under 10,000 Colombian pesos. The average is high if it is considered that an average white-collar employee is making around 15,000 pesos per year.

The information obtained relative to these two variables provides scientific grounds to state that the students' families are not typical families of the country.
They seem to belong to the middle middle class and the low high class. This may be the reason why 94.1 percent of the investigated students declared college plans.

Finally, as regards father's occupation, the coefficient of correlation, .14, was not significant at .025 level but it is at .05 for a one tailed test. On the basis of these grounds, it is not accepted as significant for the purposes of this investigation. Relationship between it and college plans has been found to exist as it was reported above. It is the belief of the author that its failure to be significant was due to the difficulties in properly classifying the data. Thus, the suggestion is for rearrangement of a more accurate classification device. A check occupational list is suggested instead of the open question which was used here.

Knowledge about college application procedure

The theory and the method used to test the hypothesis of relationship between knowledge of requirements to go to college and college plans seems to be valid. The expected relationship was supported with coefficient of correlation around .27. In both empirical measures less than 25 percent reported to be very well informed; less than 66 percent had some information; 10 percent had no information either about the college entrance requirements or the procedures for making application to a college.
Student perception on availability of careers and occupations

The computed coefficient of correlation for both variables were very low, .04 and .02 respectively. In general, the students' perception of opportunities for study in their major fields is optimistic; 56.6 percent reported good academic opportunities and 41.6 percent perceived the opportunities as not too good. The report on perception of occupational opportunities showed that 13.8 percent were pessimistic while the remaining 86.2 percent reported a perception of fair or good opportunities. Despite these facts, this variable seems not to be a good predictor of college plans.

Parents' influence

The influence of parents on college plans behavior is significant when the reference is on career selection. The correlation of .22 was significant but low. This factor and the insignificance of the correlation between college plans and parents' influence on going to college suggest that students are getting away from parental influence, at least where the college education decision is concerned. The seniors reported parental encouragement at a 95.4 percentage. One possible explanation for the lack of relationship between these last two variables is the fact that most of the students (52 percent) reported that they relied upon themselves rather than upon other influences when deciding on college plans.
Teachers' and peers' influence

These two general concepts are discussed jointly due to the fact that theory and empirical measurement were framed in a similar way. The coefficients of correlation show similar relationships. All were not significant; nevertheless, about 66 percent of the students reported they had been encouraged in college plans by their teachers, and 60.5 percent reported encouragement from peers.

A brief analysis of hypotheses 10, 11, and 12 seems to suggest that teachers and peers do not play any role in affecting seniors' college plans. The students seem to depend to a certain extent upon parental advice, but most of the time upon themselves. This is true at least for the investigated group.

Perception of economic means

Four different measures, corresponding to an equal number of sub-hypotheses, were used. The perception of family economic support and possibilities for obtaining a scholarship were found to be related to college plans, exhibiting coefficients of correlation of .26 and .26 respectively. Full family support was reported by 48 percent of the students, partial family support was reported by 33.6 percent, and 18.4 percent expected very little family economic support. In general, the students perceived a fair possibility for a scholarship. The variables of borrowing money and work-study system do not play any role in college
plans. This may be due to the fact that these two systems are just starting to be known and socially accepted in Colombia. The suggestion is for further tests of these hypotheses in a more differentiated social situation.

Prediction of College Plans

Using the thirty-three independent variables, attempts were made to select the best regression equation for the purposes of predicting college plans. Three independent multiple equations were performed and their multiple regression coefficients computed -- the dependent variable in all cases being college plans.

The first equation included all thirty-three variables analyzed in the main body of this investigation in the order of their coding. It was found that all thirty-three explained 41 percent of variation in college plans.

A second multiple regression was computed with the nine most significant variables on the basis of zero-order correlations. It was found that 31 percent of the variation in college plans was explained and/or predicted by those nine variables.

A third equation was computed using the step-wise method. It was found that 28.8 percent of the variation in college plans behavior can be explained and/or predicted by six variables. Thus, from the original multiple regression equation, twenty-seven variables have been eliminated, losing only 12 percent of predictive value.
A test of significance for $R^2$ was performed and it was found to be highly significant at .025 level of probability.

Implications

The fact that 95 percent of the students reported college plans immediately after high school graduation should impress social planners. As it was reported elsewhere, 27,000 high school seniors were graduated in Colombia in 1965. In 1966, 16,000 of them were reported as registered in college. On the other hand, this investigation has reported that 95 out of 100 high school seniors have college plans. If the same rate of college admissions prevails, then about 60 percent will be able to achieve their plans while 40 percent will not. Assuming that all who state they are planning to attend college are intellectually capable of profiting from a college education, the country is wasting valuable human resources.

To solve part of this problem some suggestions are made:

1. To establish counseling services to accomplish the following objectives:

   A. To pursue investigation to enable the provision of more reliable scientific knowledge about the factors affecting the youth in planning for higher education.

   B. To assist and help the high school seniors in the difficult step of college plans decisions.
2. To promote wider and better information facilities concerning educational services, such as: type of colleges, major fields, possibilities of borrowing money, work-study system, etc.

3. To increase the number of classrooms, teachers, and facilities in the public universities. This suggestion is on the basis that the National University is the largest in the country, with 13,500 students. Sixty percent of the students reported they had applied to it, but the University was able to accept only 3,000 new students in 1967.

4. To create the environment necessary for the "intermediate career" (four years of college) to be accepted by a larger number of college students instead of the higher level one.

5. In general, to promote the expansion of those variables which have been found significant with college plans behavior, but especially of those six variables which were found to be the best predictors of college plans among Colombian high school seniors.
SUMMARY

This investigation was a field study, essentially exploratory. The main objectives were:

1. To identify some factors affecting high school senior boys' decisions on college plans in Bogota, Colombia, South America.
2. To identify the degree and direction of those relationships (if any) between independent factors and the dependent factor, college plans.

The secondary objectives were:

1. To explore the validity of some of the methodological techniques employed.
2. To identify the relative degree of responsibility each of the factors investigated has in predicting college plans behavior.
3. To present some scientific findings, the first available for Colombia, for the purpose of stimulating further research.

To guide the research efforts designed to fulfill these objectives, thirteen general hypotheses, thirty-three operational definitions, and thirty-three empirical hypotheses were stated. The theory used to engender the general hypotheses was rooted in a broader theory -- vocational choice -- which has been the subject of considerable interdisciplinary research.
The correspondence between the theoretical conceptualization of the analyzed factors and the theory or epistemic correlations was justified and the operational definitions (linkages between theoretical concepts and empirical concepts) were developed. Empirical measures were derived from the empirical concepts.

The data necessary for measurements were gathered through:

1. A self-administered questionnaire completed by 152 high school senior boys who were in the middle of their last high school academic year.
2. High school files.
3. Administration offices of those colleges to which the seniors reported intentions to apply.
4. Offices of the Ministry of Education in Bogota.

In general, the findings related to the general hypotheses were as follows:

G.H. 1: The scholastic ability was not found statistically related to college plans.
G.H. 2: Self-evaluation of ability was not found statistically related to college plans.
G.H. 3: Attitudes toward higher education were found statistically associated with college plans.
G.H. 4: Level of educational aspiration was not found statistically related to college plans.
G.H. 5: Certainty about choice of college major
field was found statistically related to college plans.

G.H. 6: Achievement in high school was found statistically associated with college plans.

G.H. 7: Of the twelve concepts used to measure socio-economic status of the family, birth place of the student's mother, family place of residence, level of education, and family annual average income were found statistically associated with college plans. Father's occupation, student's birth place, birth place of the student's father, parents' home ownership, parents' total ownership, family size, family average age, and one vs. two sources of income were not found to be statistically related with college plans.

G.H. 8: Students' knowledge about the requirements to be met for acceptance in college and their knowledge about the procedure for applying to a college were found statistically related to college plans.

G.H. 9: Neither perception of availability of career opportunities nor perception of availability of occupational opportunities in Colombia were found statistically associated with college plans.
G.H. 10: Parental influence on going to college was not found associated with college plans, but parental influence on career selection was related to college plans.

G.H. 11: Teachers' influence on both going to college and selection of a college major was not found associated with the students' college plans.

G.H. 12: Peers' influence on both going to college and selection of a college major was not associated with college plans.

G.H. 13: Perception of family economic support, and perception of possibilities of getting a scholarship were found associated with college plans, whereas perception of the possibilities of borrowing money and/or possibilities to work-and-study were not found statistically associated with college plans.

In summary, of the thirty-three concepts which theoretically were expected to be associated with college plans, thirteen were found associated and twenty were not. These conclusions were made on the basis of zero-order correlation analysis at .025 level of probability. Attempts were made to find the best regression equation for predictive and/or explanatory purposes of the variation on the dependent variable: college plans.
To accomplish this purpose, three independent regression equations were computed:

1. The first one used the thirty-three dependent variables. The computed $R^2$ was .41.

2. The second one used the nine variables which correlated the highest with the dependent variable. The computed $R^2$ was .31.

3. The third was computed using the step-wise method. The $R^2$ was .29. The $R^2$ of .29 was found significant at the .025 level of probability.

In terms of future research, the following major suggestions were made:

1. A more heterogeneous group should be studied to determine the effects of such factors as rural-urban residence or attendance at public versus private high school.

2. A larger sample, such as seniors from one state, or a random sample from the entire country, would be valuable.

3. More precise questions, especially in regard to family information, should be employed. For example, categories rather than open-end questions could be used to classify parents' occupations.

4. Educational expectations could be measured better by a scale rather than by free response questioning.

5. The number of items to measure educational
attitudes could be increased through selection and item analysis technique.

6. If a more heterogeneous group and a wider sample were used, some hypotheses which have been found to be not significant in this study may be tested again, such as those pertaining to: educational aspiration, student self-evaluation, scholastic ability, father's occupation, perception of possibilities to borrow money, and opportunities for work-study system.

From the research findings several implications are derived. The fact that 95 percent of the high school seniors reported college plans should be of great concern to social scientists and planners, since only about 60 percent will be able to accomplish their plans. To ameliorate the situation, three suggestions are made:

1. To create counseling services with the purposes of promoting scientific investigation in the field and helping the student to make more rational decision on higher education.

2. To improve the means of communication which provide information to the students in regard to higher education.

3. To improve social and physical facilities for education in those public colleges already existing and to develop new ones.


90. Lindstrom, D. E. Differences in academic capability between rural youth planning and not planning to go to college. Urbana, Illinois, Department of Agricultural Economics, University of Illinois Agricultural Experiment Station. 1964.

91. Realistic educational and job choices of rural youth in Illinois. Paper prepared for Illinois Association of Collegiate Registrars and Admissions officers,

Factors related to education and job plans of rural youth. Urbana, Illinois, Department of Agricultural Economics, University of Illinois. 1967.


ACKNOWLEDGMENTS

It is with immeasurable thanks that the author would like to specifically acknowledge the contribution of Dr. William Kenkel who has unselfishly given of his time, knowledge, and encouragement in the development of this dissertation.

The author wants to express his appreciation to Dr. Richard Warren for his invaluable help and to Dr. Dean Yoesting for critical contributions to this study. The valuable suggestions for final revision extended by the examining committee -- Dr. Ward W. Bauder, Dr. Ross B. Talbot, and Dr. Ray J. Bryan -- are also acknowledged.

Finally, the cooperation of many individuals who have contributed to the development of the present work is also acknowledged gratefully.
Table 7. The t values obtained through the item analysis, corresponding to the thirteen items of the summated-rating scale used to measure attitudes toward higher education. Values of t equal to or greater than 1.75 are significant.

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<th>Number</th>
<th>Item</th>
<th>t values</th>
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<td>2</td>
<td>To hold a college degree gives a person high status in society</td>
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<td>Life is so difficult today that without high education it is impossible to be happy</td>
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<td>4</td>
<td>We live in an undeveloped country so a high school degree is really enough to make a living</td>
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<td>5</td>
<td>People without a college degree become rich; therefore, the highest education is not really important</td>
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<td>To get a university degree means too much expenditure of money and too great a self-denial of time</td>
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<td>It is much better to work and receive money than to go to college and spend money</td>
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<tr>
<td>8</td>
<td>Many start at the university and fail to finish; therefore, it is better not to go to the university</td>
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<tr>
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<td>Going to college is the important thing; it does not make too much difference whether one goes for three or six years</td>
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<td>The highest technical careers are so new in Colombia that there is no need to prepare for them</td>
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<td>Colombia needs better governments rather than many college graduates</td>
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<td>My father used to say, &quot;When I was young we had less education; nevertheless, our society was much better.&quot;</td>
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Table 8. Observed and predicted scores on college plans behavior for the 152 high school seniors on the basis of six variables selected by step-wise regression

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Table 9. Intercorrelation coefficients of empirical measures\textsuperscript{a}
(in hundredths). The variables are ordered as in Table 2

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2 & 13 & 38 & 33 & 03 & 08 & 07 & 09 & 03 & 17 & 08 & 05 & 01 & 03 & 12 \\
3 & 18 & 17 & 54 & 16 & 49 & 20 & 51 & 17 & 01 & 39 & 39 & 44 & 47 & \\
4 & 28 & 19 & 18 & 10 & 12 & 13 & 16 & 17 & 06 & 16 & 16 & -02 & \\
5 & 06 & 25 & 16 & 12 & 14 & 21 & 03 & 07 & 08 & 09 & 04 & \\
6 & 08 & 40 & 12 & 39 & 03 & 07 & 30 & 28 & 33 & 37 & \\
7 & 08 & 08 & 23 & 06 & 22 & 04 & -04 & 13 & 08 & \\
8 & 14 & 35 & 06 & -08 & 30 & 21 & 48 & 25 & \\
9 & 20 & 18 & -03 & 17 & 10 & 16 & 12 & \\
10 & -09 & -18 & 31 & 23 & 32 & 33 & \\
11 & 20 & 03 & 04 & 10 & 15 & \\
12 & 05 & -02 & -05 & 01 & \\
13 & 50 & 15 & 61 & \\
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\textsuperscript{a}Correlation coefficients of .159 or greater required for significance at .025 level.
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The table above shows the time intervals in minutes, with each row representing a different time period. The columns represent different minutes within each period.
APPENDIX B

Questionnaire Used to Gather the
Data Among High School Senior
Boys in Bogota, Colombia
Dear Student,

We are interested in determining some factors which might affect the decision of whether to go to college or not. The following questions refer to that topic.

We would appreciate it if you would notice the following:

1. All the information is entirely confidential.
2. The sincerity of your answers will contribute to the understanding of a problem which many Colombian students face every year.
3. Before answering any question, be sure you read the whole question and the possible answers.
4. Be sure you answer all the questions.

1. Name of high school_______________________________
2. Name of student_______________________________
3. Where were you born? Town_______ State___________
4. Marital status: Single______ Married______ Engaged____
5. Family address: Town__________ State______________
6. Where was your father born? Town_______ State_______
7. What is your father's main occupation? ______________
8. Has your father changed occupation during the last ten years? If yes, how many times?
   A. No_______
   B. Yes, 1-3 times_______
   C. Yes, 4-6 times_______
   D. Yes, 7 or more_______
9. Where was your mother born? Town_______ State_______

10. Is your mother employed outside the home? If yes, how many hours a day?
   A. No_________________________
   B. Yes, less than 4 hours________
   C. Yes, 5-8 hours______________

11. Do your parents own the house where they live?
   A. No _________________________
   B. Yes _________________________

12. Do your parents own any other real estate? If yes, what is the approximate value?
   A. No _________________________
   B. Yes, less than $50,000________
   C. Yes, $50,001-$100,000_______
   D. Yes, $100,001-$150,000_______
   E. Yes, $150,001-$200,000_______
   F. Yes, $200,001-$250,000_______
   G. Yes, $250,001-$300,000_______
   H. Yes, $300,001 or more_______

13. Family background (people living at home):

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<th>First name</th>
<th>Family name</th>
<th>Age</th>
<th>Sex</th>
<th>Marital status</th>
<th>Years of schooling</th>
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</table>

14. Main sources of income of the family_____________________

15. Secondary sources of income of the family________________

16. Approximate family income per year:
   A. $00,001-$10,000________
   B. $10,001-$20,000________
   C. $20,001-$30,000________
   D. $30,001-$40,000________
   E. $40,001-$50,000________
17. Is the head of the household
A. Self-employed
B. Working for private agency
C. Working for the government

18. How many times have you changed high schools?

19. During your five years of high school have you failed?
   If yes, check the years and the courses:
   A. No
   B. 1st yr. flunked courses 1 2 3
   C. 2nd yr. flunked courses 1 2 3
   D. 3rd yr. flunked courses 1 2 3
   E. 4th yr. flunked courses 1 2 3
   F. 5th yr. flunked courses 1 2 3

20. Which of the following best describes your plan regarding entering a college or university after you graduate from high school?
   A. I feel sure that I will enroll in a college
   B. I probably will enroll in a college, but I am not completely certain
   C. As of now I am completely undecided about entering college
   D. I probably will not enroll in a college, but I am not completely sure
   E. I feel sure that I will not enroll in a college

Section A

The following questions are concerned with the information you have about colleges and college education. Please answer all the questions whether or not you intend to go to college.

21. Which of these questions best describes your knowledge about requirements for going to the university?
   A. I feel I am very well informed
   B. I have some information
   C. I do not have any information

22. If you could go to any university in Colombia that you wanted to, which one would you like to attend?
   A. Name of the university
   B. I would not want to attend any university
23. All things considered, which university in Colombia do you think is most possible for you to attend?
   A. Name of the university
   B. It is not possible for me to attend any university
   C. I do not want to attend any university

24. Name the basic requirements that you need to be registered in the university that it is most possible for you to attend. (Answer whether or not you intend to go to college.)
   A. 
   B. 
   C. 
   D. 
   E. 

25. Which of these categories describes most accurately the possible total cost of one year at the university (including books, tuition, board, and room)?
   A. $0,001-$ 5,000
   B. $ 5,001-$10,000
   C. $10,001-$15,000

26. Which of the following best describes your knowledge about differences among the universities regarding the total expenses for one academic year?
   A. There are great differences from one university to another
   B. There are a few differences among the universities
   C. There are practically no differences in cost

27. Which of the following best describes your knowledge about the differences regarding the expenses in a year for each specific college major?
   A. There are great differences from one college major to another
   B. There are a few differences among the majors
   C. There are practically no differences among the majors

28. Which of the following categories comes the closest to the number of high school seniors graduated in 1966?
   A. 15,000-20,000
   B. 20,001-25,000
   C. I do not know
29. Which of the following categories best describes the number of new students who were accepted in all of the universities in Colombia this year?

A. Less than 6,000
B. 6,001-8,000
C. 8,001-10,000
D. 10,001-12,000
E. 12,001-14,000
F. 14,001-16,000
G. 16,001 or more

30. If you are sure, or fairly sure, that you will apply for admission to a certain university, do you know how many new students were accepted in that university this year? (Fill in blank.)

A. About _____ students were accepted.
B. _____ I will apply for admission to a university, but I do not know how many new students were accepted this year.
C. _____ I am sure, or fairly sure, that I will not apply for admission to a university.

31. Which, if any, of the following means have you used to get information in how to get into a university? (Check as many as you have used.)

A. Newspapers, magazines, pamphlets, T. V., radio
B. Parents and relatives
C. High school teachers
D. Govt. and Univ. agencies
E. Others (please name)
F. I have not used any of these sources

32. Which of the above sources of information on how to get into a university do you feel you learned the most from? In the list that follows, place a "1" before the name of the source of information on how to get into a university that you feel you learned the most from. Place a "2" before the name of the second most important source of information.

A. Newspapers, magazines, pamphlets, T. V., radio
B. Parents and relatives
C. High school teachers
D. Govt. and Univ. agencies
33. Which of these statements best describes the time when the application to the university should be made?
A. Between January and April
B. Between May and August
C. Between September and December

34. Which of these statements describes the best manner to make application to a university?
A. By personal letter
B. By standardized form provided by your high school
C. By standardized form provided by the university

35. Which of these following best describes your knowledge about the information you need to complete your application?
A. I am very well informed
B. I have some information
C. I have hardly any information at all

36. Which of the following best describes how much you know about the entrance tests required for acceptance in a university?
A. I am very well informed
B. I have some information
C. I have hardly any information at all

37. Which of these categories best describes the total number of universities in Colombia?
A. 1-10
B. 11-20
C. 21-30
D. 31-40
E. (I do not know)

38. Which of these statements best describes how certain you are about your major field of study at the university?
A. I feel sure about the career I will pursue at the university
B. I have been thinking about it, but I don't feel sure
C. I have not thought about that
D. I am sure, or fairly sure, that I will not apply for admission to a university
39. Which of these statements best describes your decision about selection of a university?
   A. I feel sure about the university I will attend
   B. I have been thinking about it, but I don't feel sure
   C. I have not thought about it
   D. I am sure, or fairly sure, that I will not attend any university

40. Which of these statements best describes your knowledge about the availability of careers?
   A. I feel that I can take adequate work in my field of specialization
   B. I feel that the opportunities for study in my field of specialization are not too good in Colombia
   C. I am sure, or fairly sure, that I will not apply for admission to a university

41. If you plan to go to a university, which of these will you follow?
   A. Career
   B. Intermediate career
   C. I am sure, or fairly sure, that I will not apply for admission to a university

42. All things considered, which career do you think it most likely you will pursue?

43. Which of these statements best describes your knowledge about the occupational careers?
   A. There are in Colombia many occupational careers open to the high school seniors
   B. There are a fair number of occupational careers open to the high school graduates
   C. There are not very many occupational careers open to the high school graduates

44. How many years does it ordinarily take to graduate in the major field of study that you think it is possible for you to pursue?
   A. Less than five
   B. Over five
   C. I am sure, or fairly sure, that I will not apply for university admission
Section B

Please answer all of the questions in the following section whether or not you intend to go to college.

45. Which of the following statements best describes the financial support you could expect from your family if you were to go to college?
   A. My family will be able to pay the full expenses
   B. My family would be able to pay part but not all of the expenses
   C. My family would be able to pay very little or none of the expenses

46. In general, whose responsibility do you think it is to pay for the college expenses of a young man who just graduated from high school?
   A. It is his family's responsibility
   B. It is his own responsibility
   C. It is Government responsibility
   D. I have not thought about whose responsibility it is

47. Which of the following statements describes the best how you plan to pay your college expenses?
   A. I will use my own savings
   B. I will work while I am in college
   C. I will get a scholarship
   D. I will borrow the money
   E. My parents will pay all or most of the expenses
   F. I will use a combination of means (for example, I will both work and borrow money). Please specify the source you will use
   G. Does not apply: I am sure, or fairly sure, that I will not apply for admission to a university

48. Which of these statements best describes the possibilities for working while going to college?
   A. It is easy to find a job
   B. It is fairly difficult to find a job, but it can be done
   C. It is almost impossible to find a job
49. Which of these statements best describes your possibilities for getting a scholarship?
   A. Excellent: I am almost certain I could get a scholarship
   B. Fair: I might be able to get a scholarship, but I am not at all sure
   C. Poor: I am almost certain that I could not get a scholarship

50. Which of these statements best describes your possibilities for borrowing enough money to pay your college expenses?
   A. Excellent: It would be easy to borrow money
   B. Fair: It may be possible to borrow money, but I am not at all sure
   C. Poor: It would be almost impossible to borrow money

Section C

In the next five section C questions you are asked to rank yourself with regard to your abilities to do college work. The low end of the scale, number 1, stands for low ability in a particular area; the high end of the scale, number 5, stands for high ability. If you think you have average ability check number 3. If you feel you have better than average ability check number 4. If you feel it is a lot better than average check number 5. If you think your ability is less than average check 2; if a lot less than average check number 1.

51. Which of these points best describes your academic abilities in Biological Sciences?
   Low Abil. 1 2 3 4 5 High Abil.

52. Which of these points best describes your academic abilities in Mathematics?
   1 2 3 4 5

53. Which of these points best describes your academic abilities in Modern Languages?
   1 2 3 4 5

54. Which of these points best describes your academic abilities in Social Science?
   1 2 3 4 5
55. If all of the students in your high school class were ranked from 1 to 5 according to their overall ability to do college work, where do you think you would be ranked?

1 2 3 4 5

56. Which of these statements best describes your capabilities for doing college work in terms of the number of years of different courses of study?

A. I do not really feel I am capable of pursuing a college career
B. I feel I would be able to pursue a career of 4 years of college
C. I feel I would be able to pursue a career of 5 to 8 years of college
D. I feel I would be able to pursue post doctoral studies in some specialization

57. Which of these statements best describes your academic abilities to pursue a career in special fields?

A. I do not really feel I am capable of pursuing a college career in any field
B. I feel most capable of pursuing a career in the Social Sciences
C. I feel most capable of pursuing a career in Mathematics or the Physical Sciences
D. I feel most capable of pursuing a career in Biological Sciences
E. I feel most capable of pursuing a career in the Arts or Humanities

58. Which of the following statements comes the closest to how you would feel your high school grades reflect your actual academic abilities?

A. My school grades make it appear that I have more ability than I really do
B. My school grades are a fairly good indication of my actual academic ability
C. My school grades make it appear that I have less ability than I really do

Section D

The following are a number of statements about a college education. Some people agree with them, others do not. For
each statement indicate whether you strongly agree with it, agree with it, or strongly disagree with it. Check "uncertain" only if you cannot make up your mind whether you agree or disagree with the statement.

59. In the modern world to have a college degree is important.
   A. Strongly agree
   B. Agree
   C. Uncertain
   D. Disagree
   E. Strongly disagree

60. To hold a college degree gives a person high status in society.
   A. Strongly agree
   B. Agree
   C. Uncertain
   D. Disagree
   E. Strongly disagree

61. Life is so difficult today that without high education it is impossible to be happy.
   A. Strongly agree
   B. Agree
   C. Uncertain
   D. Disagree
   E. Strongly disagree

62. We live in an undeveloped country so a high school degree is really enough to make a living.
   A. Strongly agree
   B. Agree
   C. Uncertain
   D. Disagree
   E. Strongly disagree

63. People without college degree become rich; therefore, the highest education is not really important.
   A. Strongly agree
   B. Agree
   C. Uncertain
   D. Disagree
   E. Strongly disagree

64. To get a university degree means too much expenditure of money and too great a self-denial of time.
   A. Strongly agree
   B. Agree
   C. Uncertain
   D. Disagree
   E. Strongly disagree
65. It is much better to work and receive money than to go to college and spend money.
   A. Strongly agree
   B. Agree
   C. Uncertain
   D. Disagree
   E. Strongly disagree

66. Many start at the university and fail to finish; therefore, it is better not to go to the university.
   A. Strongly agree
   B. Agree
   C. Uncertain
   D. Disagree
   E. Strongly disagree

67. Going to college is the important thing; it does not make too much difference whether one goes for 3 or 6 years.
   A. Strongly agree
   B. Agree
   C. Uncertain
   D. Disagree
   E. Strongly disagree

68. To reach a highest university degree can only be done if one is rich.
   A. Strongly agree
   B. Agree
   C. Uncertain
   D. Disagree
   E. Strongly disagree

69. The highly technical careers are so new in Colombia that there is no need to prepare for them.
   A. Strongly agree
   B. Agree
   C. Uncertain
   D. Disagree
   E. Strongly disagree

70. Colombia needs better governments rather than many college graduates.
   A. Strongly agree
   B. Agree
   C. Uncertain
   D. Disagree
   E. Strongly disagree
71. My father used to say, "When I was young we had less education; nevertheless, our society was much better."
   A. Strongly agree
   B. Agree
   C. Uncertain
   D. Disagree
   E. Strongly disagree

Section E

72. Which of the following best describes what your parents have done and said about going to the university?
   A. My parents have encouraged me to go to the university
   B. My parents have discouraged me from going to the university
   C. My parents never have talked with me about whether or not I should go to the university

73. If your parents have encouraged you to go to the university, which of them has encouraged you more?
   A. Father has encouraged more
   B. Mother has encouraged more
   C. My parents never have talked to me about whether or not I should go to the university

74. If your parents have discouraged you from going to the university, which of them has discouraged you more?
   A. Father has discouraged more
   B. Mother has discouraged more
   C. My parents never have talked to me about whether or not I should go to the university

75. Which of these statements best describes the behavior of your teachers regarding going to the university?
   A. They have encouraged me to go to the university
   B. They have discouraged me from going to the university
   C. They never have discussed this matter with me

76. Which of these statements best describes the behavior of your friends and peers, concerning the decision to go to the university?
A. They have encouraged me to go to the university
B. They have discouraged me from going to the university
C. They never have discussed this matter with me

77. All things considered, whose encouragement or discouragement on whether or not you should go to the university do you consider the most important?
A. Parents
B. Teachers
C. Friends or peers

78. If you have selected your university career, which of the following best describes the behavior of your parents regarding your career selection?
A. I have been counseled by my parents (or one of them) and they are in favor of the career I have chosen
B. I have not been counseled by my parents concerning the career I should follow in the university
C. I have been counseled by at least one of my parents and they are not in favor of the career I have chosen

79. If you have selected your career, which of the following best describes the behavior of one or more of your teachers?
A. They have counseled me positively
B. They have not counseled me
C. They have counseled me negatively

80. If you have selected your career, which of the following best describes the behavior of your friends and peers?
A. They have counseled me positively
B. They have not counseled me
C. They have counseled me negatively

81. Which of the following do you feel is the most important in career selection? (Write 1, 2, 3, and 4 according to the degree of importance.)
A. Counsel from parents
B. Counsel from teachers
C. Counsel from friends
D. Student's own evaluation
E. Factual information from books and similar sources about the kind of work one would do if he followed a certain career

F. Factual information from books and similar sources about the job opportunities available for those who follow certain careers

82. Which of the above sources of information on how to select a career do you feel you learned the most from? In the list that follows, place a "1" before the name of the source of information on how to select the career that you feel you learned the most from. Place a "2" before the name of the second most important source of information.

A. Counsel from parents
B. Counsel from teachers
C. Counsel from friends
D. Student's own evaluation
E. Factual information from books and similar sources about the kind of work one would do if he followed a certain career
F. Factual information from books and similar sources about the job opportunities available for those who follow certain careers