DOCUMENT RESUME

ED 067 095 JC 720 228

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TITLE An Analytical Model for Extending the Concept of Environmental Cause from a Sample Population to a Universe of Community College Students.
PUB DATE Nov 72
NOTE 13p.; Paper presented at the 51st Annual Meeting of the California Educational Research Association, San Jose, California, November 8-9, 1972

EDRS PRICE MF-$0.65 HC-$3.29
DESCRIPTORS *Census Figures; *Computer Oriented Programs; Demography; Dropout Prevention; *Environmental Influences; *Junior Colleges; Models; Prediction; Predictor Variables; *Research Methodology

ABSTRACT

Diminishing financial resources have decreased the availability of individual counseling and instructional services. It therefore becomes more critical to accurately identify those students most likely to need specialized treatment. The model presented here is designed to extend various socio-psychological concepts based on environmental cause from a sample population to a universe of community college students. The sample hypothesis presented was that socio-economic and demographic characteristics associated with the census block in which a student's home address is located would be reflected in his classification score from a test instrument. The steps used in the procedure are described, including data collection and computer use for data manipulation and classification. It was concluded that a universal classification scheme based on cultural variables could provide a means by which community college dropout rates might be reduced. (RN)

AN ANALYTICAL MODEL FOR EXTENDING THE CONCEPT OF ENVIRONMENTAL CAUSE FROM A SAMPLE POPULATION TO A UNIVERSE OF COMMUNITY COLLEGE STUDENTS

by

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Presented at the 51st Annual Meeting
of California Educational Research Association
November 8-9, 1972, San Jose, California

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I. INTRODUCTION

Upon considering the observed behavior of community college students in their every day academic activities, it became apparent that different students in different situations reflected varying degrees of attitudes, behavior and abilities as related to themselves, their peer group, school and society in general. That is, they react both as individuals and as group members to surrounding social environmental conditions.

Focus of the model. There are two schools of thought when it comes to considering students for educational planning purposes. Humanists regard all people as being truly individuals and consider their behavior separate from any known social-environmental conditions or peer group membership. Environmentalists like to deal with student data in an aggregated form, usually classified by some social condition or peer group membership status. Both viewpoints have certain conditions in which their parochial view is most appropriate. An example would be individual data being used for counseling situations and group data being used for district or other large area planning efforts.

Purpose of the model. Increasing student enrollments or costs of activities, such as counseling, geared to the individual student are causing budget analysts to become more aware of the costs surrounding these programs. The added problem of high and growing dropout rates is lending impetus to the question of cost effectiveness in program evaluation. Thus, some means must be sought of identifying individual differences through group data analysis, and narrowing the numbers of people needing some type of special handling or treatment. In so doing the individual treatment or analysis of all incoming clients for all difficulties is avoided and its excessive cost eliminated.

An alternative to considering a total population seems to be the construction of valid socio-economic and demographic profiles based on secondary data relative to the individual measure being considered. The purpose of the model proposed here is to illustrate how to construct such profiles using the extreme small area census data associated with the 1970 Census of Population and Housing.

The problem. The problem toward which the development of this model is directed is that certain socio-economic, or cultural-environmental, (in the broad sense of the term) groups, as defined by the construction of profiles from 1970 Census data will exhibit consistant relationships with certain traits as specified in individuals.

Research question. In developing the model the research question may be stated thus: What relationship(s) exist between characteristics of groups of individuals as measured by certain socio-psychometric instruments and 1970 census tract, block group, and or block data?

The theory. It is assumed in this model that many specific questions about individuals whose answers were previously sought by administering questionnaires or test instruments can be answered by analyzing certain universal data items common to the total population. The theory presented here is that certain socio-economic and demographic characteristics when considered together as a type of social profile can be used to predict with a significant degree of certainty a student's performance or reaction to a given test or questionnaire. This is not to say that instruments developed for determining skills, attitudes, and knowledge are culturally biased, but rather that specific culture groups have a preordained set because of their perception as conditioned by their societal role.

Hence, it is advanced that student skills, attitudes, and knowledge can be determined through the costly method of paper and pencil procedures as traditionally demonstrated, and/or they can be identified appropriately in a student, or small student group, on the basis of associating his or their house address with a "keyed" social profile.

The variables. In analyzing student populations, it is usual to measure certain characteristics of individuals by means of a score on a numerical continuum or as a member of some performance group such as high, low or medium. Thus, the main variable used to describe the differences between individuals in a sample of any given population is their assigned score. It is anticipated that these scores will demonstrate cultural homogeneity as reflected in 1970 census block data associated with their home address.

Within an ex post facto framework, this variable describing group or individual differences, on some measure, may be viewed as dependent upon the other variables set forth below. However, as will become evident to the researcher as he progresses through the implementation stage, the pattern of exploring relationships and differences leave this aspect in relatively open interpretive posture.

Sample research hypotheses. It is believed that upon examining the consistency of socio-economic and demographic characteristics associated with the census block in which a student's home address is located, that it will be found that his classification score from some questionnaire or test instrument will be reflected in a number of ways by a number of variables.

The following sample research hypotheses are set forth. In this example, it might be conjectured that community college students evidencing a high propensity for completing their chosen program will:

(1) live in a census block with many college educated adults
(2) live in a census block with high average income
(3) live in a census block with a moderate divorce rate
(4) live in a census block where males and females are mostly professionals
(5) live in a census block where most housing is sound

It is further hypothesized that in the example the inverses of these are true and that a high correlation exists between the negative aspects of these variables and students evidencing a low propensity for completing their chosen program.

II. METHODOLOGY AND DESIGN

This is an ex post facto research design and model applicable in its analysis and validation stages for the study differences between groups or individuals and relationships between variables. The model may be viewed as falling into the applied research area, although certain facets approach pure or basic inquiry.

The sample and procedure. The primary function of this model is to extend the results obtained from a questionnaire or test instrument administered to a sample population to the universe of that population. In the instance where the universe is a single community college, the sample is limited to enrolled students at that institution. But where the universe is composed of the student bodies of several community colleges, such as found in a multi-college district, the sampling procedure can be increased in scope to encompass them all.

Step 1. An initial instrument must be selected to discriminate between the various levels evidenced within the sample population as to skills, attitudes or knowledge. Care must be taken in making the sample selection to adequately represent the population universe to which these scores will be later generalized. It is of the ultimate importance to insure that a complete street address be included as part of the data gathered with each individual test response. This information will then be keypunched and a magnetic tape produced with student's name or preferably his identification number, classification score from the test instrument, and house address.

Step 2. Here the appropriate census block number, or other geographic code associated with the student's house address and school district must be added to the data file constructed in Step 1. Two 1970 Census tools*: (1) ADMATCH, an address matching computer program requiring (2) an ACG (Address Coding Guide) or other street reference file are used to assign appropriate census block numbers or geographic codes to each house addressed record in the data file.

Step 3. At this point, a data file having: (1) student ID, (2) questionnaire or test instrument score, (3) house address, and (4) appropriate census geographic code identifier has been produced. To this file census data best describing anticipated predictor variables will be added. As census blocks are of different size, and have different population numbers, it is necessary that interval census data be converted to ratio equivalents before adding to the data file. Since census data is also on magnetic tape, a two-step computer program is used to read the census data, convert it to ratio equivalents, and write it on the data tape.

Step 4. At this point the researcher has data on individuals derived from the instrument administered earlier. Such data might be used for practical purposes as in establishing a cut-off point for individuals designated as being in need of intensive counseling so as to help insure their success in school. Socio-economic data has also been collected for these individuals and now can be studied to find relationship between the two data sets. It is believed that such an analysis will lead to the con-

*Technical Documentation regarding 1970 Census Tools is best found in a 15 report series produced by the New Haven Census Use Study and the 1970 Census Users Guide available through the U. S. Bureau of the Census, Washington, D. C.

struction of valid social profiles that can be used in predicting future discrimination score classifications.

Discriminant analysis (or other appropriate techniques) will be used to test for existing significant correlations between test score groupings and appropriate socio-economic variables. Should such relationships fail to materialize at this point, additional research will be necessary to define more appropriate variables. However, if as anticipated, strong and significant correlations do exist between these variables and group status, the next step can be undertaken.

Step 5. This is largely a job of data manipulation and classification. It consists of analyzing all census blocks in a given area in light of the social profile analysis and correlation with the discrimination score classification completed in Step 4. Here a knowledge of types and degree of data occurrence associated with a particular discrimination score classification will be obtained. Thus, the problem has shifted from classifying individuals as to their discromination score through the administration of a particular instrument to classifying the census block in which they live based on that block's social profile. Hence, as in our example problem of identifying students with varying degrees of propensity for completing their academic program, it is no longer necessary to administer the discrimination instrument to individual students to ascertain their group classification. Rather, their address can be looked up manually or electronically in a cross referenced street guide having appropriate discrimination scores assigned to the block address.

Step 6. A final phase is required to validate the model. If a student or students have been classified on a particular discrimination score classification as described in Step 5, it should hold true that they would be similarly classified if the instrument originally used to develop the discrimination score classifications were administered directly to them.

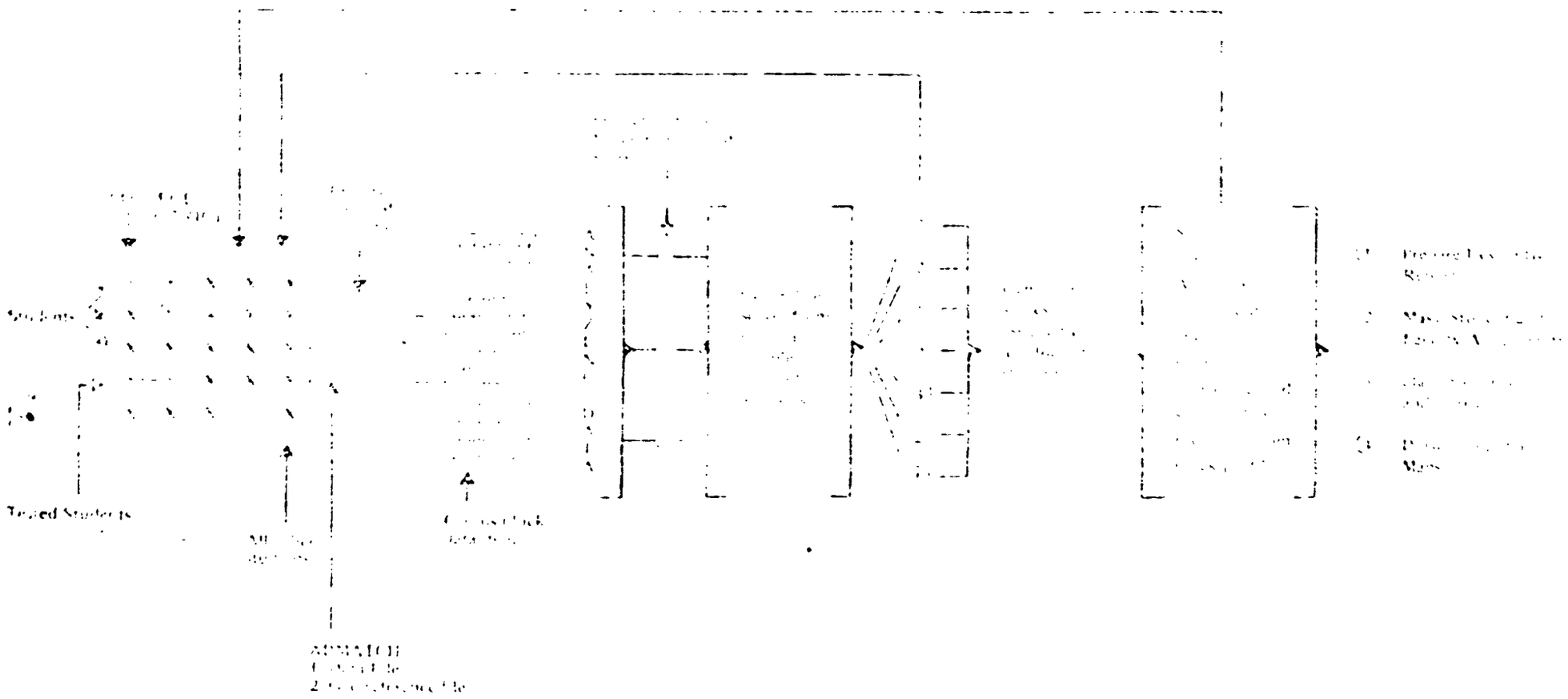
Such a test of a total district involving many colleges and thousands of students can be conducted relatively inexpensively using matrix sampling techniques. Basically this method involves administering a randomly chosen population of pre-determined size a partial set of questions, also randomly chosen from the total instrument. The process can be stratified if desired and works best with large populations.

III. CONCLUSIONS

What has been presented here is an analytical model for extending any socio-psychological concept , based on environmental cause and determined through the administration of a particular discrimination instrument, from a sample population to a universe of community college students. Interestingly enough, verbal presentation of the thesis to qualified parties has elicited strong and polar remarks. Environmentalists have stated, "You're dealing with an obviosity that's a waste of time to work with," while humanists claim, "such a study is dehumanizing to the individual, and is particularly unfair to the underprivileged or disadvantaged student."

This author believes a third, and fuller truth exists; that is that individual counseling and instructional aid on an intensive basis for all students is growing less available because of rising costs. With these diminishing services it becomes more critical to target groups of students most likely to be destined for a failure experience in school and who are in the position to profit most from specialized treatment. A universal classification scheme based on cultural variables for which data are available, if valid, would provide a means by which a great deal of wasted human resources represented in the high community college drop-out rates might be saved.

PREDICTIVE PROFILE CONSTRUCTION SCHEME



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