# PERCEPTUAL COGNITIVE STYLES AND PERSONALITY VARIABLES RELATING TO STUDENTS' PROGRAM CHANGES AT AN INNER-CITY COMMUNITY COLLEGE

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This is to certify that the

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PERCEPTUAL COGNITIVE STYLES AND PERSONALITY VARIABLES RELATING TO STUDENTS' PROGRAM CHANGES AT AN INNER-CITY COMMUNITY COLLEGE

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ABSTRACT

PERCEPTUAL COGNITIVE STYLES AND PERSONALITY VARIABLES RELATING TO STUDENTS' PROGRAM CHANGES AT AN INNER-CITY COMMUNITY COLLEGE

By

James E. Jennings

The purpose of this investigation was to determine if students who change their program of study after college entrance differ in certain cognitive and/or personality variables from students who choose a major area of study at the time of college entrance and remain in that program. A review of the literature revealed no studies directly relating to the problem under consideration.

Two major hypotheses were formulated.

1. There is a significant difference in the mean scores on Sigel's Conceptual Styles Test between those students who change college programs and those who do not.

2. Program changers differ significantly from non-changers in their scores on the extroversion scale of the Eysenck Personality Inventory.

Several other student variables, chiefly demographic in nature, were also investigated.

The population for the study consisted of students who had completed four or more semesters at the Highland Park Community College, Highland Park, Michigan during the 1972 summer session.

Data relative to the cognitive, personality and demographic variables were analyzed by analysis of variance. The analysis and conclusions of the data yielded

variables of significant difference at the .05 level of confidence as follows:

1. The population of 128 students in this study scored significantly lower on the extroversion, neuroticism and lie scales of the Eysenck Personality Inventory than the American college norm.

2. There was no direct relationship between program change and cognitive style, as measured by Sigel's Conceptual Styles Test.

3. Those students who indicated a desire to change programs showed a lower grade point average than those indicating no desire to change.

4. Students who worked full-time scored higher on the analytic and lower on the relational scales of the Sigel Conceptual Styles Test than those students who worked only part-time or not at all. These students also: (a) had a higher grade point average, and (b) scored nearer the introversion end of the personality scale than those students who worked part-time or not at all.

The primary conclusion of this study was that students who changed programs and those who indicated a desire to change programs had some characteristics in common, i.e., they did not work, made lower grades and carried fewer credit hours. This suggests that variables other than those hypothesized in this study may be a better prediction of program change.

Implications for further research included: (a) further research to determine the appropriateness of using the American college student norm for determining personality type for the inner-city college under study, and (b) developing and refining instruments to determine the probability of college students to change programs.

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A THESIS

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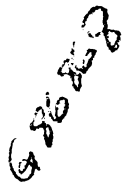

# ACKNOWLEDGMENTS

Thanks are in order to the many individuals who helped to make this study possible. In particular, I am indebted to my committee: Dr. James Nord, who inspired me to this particular investigation; Dr. Kent Gustafson, who spent so much time assisting me through the research thickets; Dr. Lawrence Lezotte, who insisted that I demand more of my research effort; and Dr. Iwao Ishino, who insisted upon correctness and precision.

Above all, I am grateful to Clara--few wives have sacrificed so much to see their husband's dream come true.

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# CHAPTER I

## INTRODUCTION

Educators in the inner-city community college have been aware for some time that many entering students are in need of guidance if they are to choose a major area of study which they will complete or in which they will earn a degree. The problem of counseling a student relative to his major area of study was well described by Whiteley[1] in her discussion on the use of rating scales, where she points out the difficulties incumbent in the use of scales as indicators of vocational or career guidance. Because of the difficulties in obtaining proper counseling, many students, especially those in the inner-city college, find themselves in programs which they do not complete. Many times students select their second college program on the basis of data no more complete than that used for their original selection. This would suggest that if the student is to obtain maximum benefit from his college experience, he should be accurately guided into a college program which he has a high probability of completing.

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[1]Mary T. Whiteley, "An Empirical Study of Certain Tests for Individual Differences," Archives of Psychology, No. 19 (August 1911), p. 79.

If the college does not properly fulfill its counseling role, many students will either withdraw from the college or make many program changes (sometimes a single student will need to make several changes before he "arrives" in the proper field). The inner-city community college especially, because of the special needs of its students, must deal with this problem if it is to effectively utilize its resources and those of the students.

At the present time many counseling decisions are based on the student's academic performance as reflected in his grade point average. But the use of academic performance as a basis for changing programs represents decision-making after the fact; this can cost both the institution and the student unnecessary resources.

Counselors should be able to assess a student's likelihood of program change before that student enters his first program. Having this information may cause the college to treat this student differently and may cause the student to treat his program differently. Perhaps a closer look should be taken at the phenomenon of program change by inner-city college students. Answers should be sought to the following questions: What are the reasons for the student's desire for change? What are the personality characteristics of the student desiring the change? If the student does have a low grade point average, does this necessarily mean that his original choice of course of study was wrong? Will a program change be beneficial for this student or the

college? Should the student leave college entirely? Does the student's desire to make a change reflect more upon the college's needs than the student's? Is it perhaps the college itself that should be changed to better serve its student body? A study of program changes by inner-city community college students could provide answers to many of these questions, thus providing assistance to both the student and institution in future planning. If needless student program changes were to decrease, institutional efficiency of student "through-put" would increase.

## STATEMENT OF THE PROBLEM

The major problem of this study centered upon two concerns. The first was an identification and assessment of the construct "program changes of inner city community college students"; the second was concerned with whether or not there was a relationship between these changes and cognitive styles, personality typology and selected demographic characteristics.

The problem of this dissertation evolved through a critical review of literature pertaining to the empirical relationship between a particular cognitive style and academic success and a particular personality typeology and academic success and adjustment to the college life style.

Since so many students do change programs at some point in their college careers, if the characteristics of

these students and/or student groups could be identified more specific measures could be taken to assist in program selection those students who are most likely to change. If these students could be identified early in their college careers, much of their own and the college's resources could be put to better use. If a student is in a program and his characteristics show him to be prone to change from that particular program, much time and money could be saved by anticipating this change.

Specifically, this investigation will be carried out to determine whether any differences (relating to program changers and non-changers) can be discerned between different perceptual cognitive styles--as measured by Sigel's Conceptual Styles Test--and/or different personality typologies--as measured by Eysenck's Personality Inventory.

## NEED FOR THE STUDY

The study of student changes of college programs is important to colleges and universities for several reasons. First, it is important because of the responsibilities of the institution to the individual student and to society. It is important to the student in that the college is responsible for providing him with as much information as possible and assisting him in maximizing its utility; it is important to society in that society has entrusted no

other institution with gathering and applying information relative to the process, content, and amount of information transfer which will occur in the college. This information will invariably affect society as a whole.

Secondly, student changes of college programs represent an indirect but general criterion of success or failure of the educational programs. That is, a high proportion of student attrition within a given program may be reflective of inadequate admission programs, inappropriate course offerings, poor orientation programs, or any number of factors resulting from institutional malfunction or the student's expanding awareness. A study of student program change may contribute to the improvement of one or more of these institutional functions.

The third, and increasingly more important need for the study of student program change is that of institutional efficiency. As increasing amounts of knowledge are required for entering occupations, placing greater strains on the information transfer system of the colleges, the efficient use of human and physical resources will become more and more important.

In diagnosing its problems, every community college faces the similar problems of understanding the nature of its task, the way in which its systems function, and the manner in which it responds to its environment. In addition, inner-city community colleges face the difficult task of regearing to serve the needs of a new clientele. Thus

it is of prime essence to enter these crucial decision-making situations with hard research data. It is generally agreed that there are many components of the regular community college which are dysfunctional for its counterpart in the inner-city.[2] Inner-city colleges, even more than other colleges, are in a constant state of change. Pressures on colleges to change have increased. These pressures are both external and internal and require decisions to guide change. The quality of these decisions will depend upon the kind of information received and the accurate analysis of that information.

Most of the student variables such as interest, self-concept, peer pressure, grade point average, etc. which are measured by generally acceptable instruments have been either beyond the control of the college, or the variables themselves have been unstable. The colleges, for example, have little control over demographic factors, or dropouts for financial reasons. However, this investigation is concerned with student variables which are relatively constant and around which the college can modify its behavior if necessary, i.e., cognitive style and personality type.

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[2]John H. Fischer, "Educational Problems for Segregation and Desegregation," in A. Harry Passow, ed., Education in Depressed Areas (New York: Teachers College Press, Columbia University, 1963), pp. 290-97.

## RATIONALE FOR THE STUDY

Several studies related to the characteristics of students who change college programs provide a rationale for the present investigation. A study by Brass[3] of students who changed schools within Purdue University revealed that students who transferred from one degree-granting curriculum to another tended to increase their grade point average after changing curricula. Moreover, a study by Fullmer[4] revealed that students who changed majors persevered longer than non-changers, and that fewer students who changed majors withdrew failing than in the non-changers group. However, other information collected on changers and non-changers which is related to academic success revealed no significant differences in the mean grade point average of the two groups; mean grade point average was not altered significantly after change (correlation of .98 before and after change); and, the non-change group scored highest on the American College of Education Psychological Examination.

A person's decision to change college programs may

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[3]Robert V. Brass, "An Investigation of Selected Personal Background Factors and Reasons Related to Students Who Change Schools Within Purdue University," Unpublished Ph.D. Dissertation, Department of Psychology, Purdue University, 1956, p. 84.

[4]D. W. Fullmer, "Success and Perseverance of University Students," Journal of Higher Education, Vol. 27 (1956), pp. 446-47.

be influenced by his cognitive style. The terms "cognitive style," "learning style," and "conceptual style" have been used somewhat interchangeably and reflect to some degree alternative models of information processing. "Learning style" may be defined as the characteristic mode of learning utilized by an individual. It implies the integration of cognitive, affective, and psychomotor processes. The characteristic proportion of these three variables in the learning process varies between individuals according to past experiences. Such variation is implicit in S-O-R (stimulus-organism-response) theories of learning where the mediating variable (O) between stimulus and response is the stored residue of past experience.[5] The cultural background of the individual may be presumed to contribute a significant proportion of the mediating past experience. Further, this past experience will contain common elements for all members of the culture. Thus, Kagan, Moss and Sigel[6] submit that there are not only individual differences in learning style, but also that there are modal cultural or group differences.

Kagan, Moss and Sigel developed this position on cognitive styles through a series of exploratory studies conducted with children and adults at the Fels Institute.

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[5]Asahel Woodruff, "Cognitive Models of Learning and Instruction," in Laurence Siegel, ed., Instruction: Some Contemporary Viewpoints (Chicago: SRA, 1967).

[6]Kagan, Moss and Sigel, "Psychological Significance of Styles of Conceptualization," Monograph of the Society for Research in Child Development, Vol. 28, No. 2 (1963).

In these early studies the subjects classified a number of stimulus pictures into groups. The subjects' reasons for forming the groups were examined, and three basic conceptual categories were defined:

> Analytic-descriptive: Concepts based on similarity in objective elements of the stimuli grouped together--for example: people who have no shoes on.
>
> Inferential-categorical: Concepts involving an inference about the stimuli grouped together, in which any stimulus is an independent instance of the group concept--for example: poor people.
>
> Relational: Concepts based on a functional relationship among the grouped stimuli, in which each stimulus depends for its membership on its relationship to other stimuli in the group--for example: a family.[7]

In subsequent research Kagan, Moss and Sigel turned to investigations of the significance of a preference for one dimension, the analytic style. Eight studies of the analytic-nonanalytic dimension were conducted. Two studies of adult men established the existence of distinct personality, perceptual and intellectual differences between analytic and nonanalytic subjects. For example, analytic men were more reluctant to be dependent upon family or friends, showed greater concern for intellectual mastery, had slightly higher I.Q.'s, strived more for social recognition, had shown in childhood more persistence in the face of problem situations, confidence in their approach to challenging intellectual tasks, and motivation to obtain achievement-related goals, and in a perceptual vigilance

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[7] Ibid., p. 76.

task analytic men exhibited greater accuracy of perception.[8]

Studies of the analytic-nonanalytic dimension in children included language and memory tasks, interpretation of ambiguous stimuli, performance in stimulus-learning tasks, and reaction time. The results of these separate studies suggested that

> an analytic style is associated with a reflective attitude, a tendency to differentiate experience, and the ability to resist the effects of distracting stimuli on ongoing behavior. The nonanalytic child tends to be impulsive, more reactive to external stimuli, and less likely to differentiate complex stimulus situations.[9]

These empirical findings were supported also by case study observation of the children at Fels Institute.

It would seem, according to the research reported in this study, that differences in cognitive styles influence differences in most types of academic behavior. The decision and process of changing major areas of study within the college is a kind of academic behavior which may well be influenced by cognitive style.

A person's decision to change college programs may also be related to his personality type. Several studies have been conducted to determine whether students in various academic areas can be differentiated according to personality type. In a study of the authoritarian personality type,

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[8] Ibid., pp. 77-78.

[9] Ibid., p. 101.

Neel[10] found that this type person has difficulty in mastering theoretical material whereas this type learns more easily where factual materials are used. It should be noted, however, that this study was based upon thirty senior medical students in one psychiatry course, and may not apply to students of different curricular backgrounds.

In a study by Middleton and Guthrie[11] attempting to delineate the personality syndromes among high and low achieving students, it was found that different groupings of personality factors can apparently be associated with different levels of achievement.

The findings of the above studies support the view, inherent in this investigation, that differences do exist between groups of students, and that students may be grouped according to these differences. They also support the view that a student's success in a given academic area of study may be related to his personality characteristics, apart from his cognitive style.

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[10]Ann Felinger Neel, "The Relationship of Authoritarian Personality to Learning: F Scale Scores Combined to Classroom Performance," Journal of Educational Psychology, Vol. 50 (October 1959), pp. 195-99,

[11]George Middleton, Jr. and George M. Guthrie, "Personality Syndromes and Academic Achievement," Journal of Educational Psychology, Vol. 50 (April 1959), pp. 66-69.

## HYPOTHESES

The following hypotheses were formulated.

Hypothesis 1. There will be a significant difference in the mean scores on the Cognitive Styles Test, of those students indicating a change in programs and those indicating no change in programs.

Hypothesis 2. There will be a significant difference in the mean scores on the extroversion scale of those students who indicate that they would change programs if they could do so without losing credit and those who indicate that they would not.

Hypothesis 3. There will be a significant difference between the mean score on the extroversion scale of students who indicate that they are not in the college program in which they started and those who indicate that they are in their original program.

Hypothesis 4. There will be a significant difference between GPA of students who indicate "none," "one," "two," and "three" changes in college program.

Hypothesis 5. There will be a significant difference in the mean GPA of students who indicate that they would change programs if they could do so without losing credit and those who indicate that they would not.

Hypothesis 6. Among the four major program groups, liberal arts, business, health and other vocational-technical, the group having the highest GPA will show the highest score on the analytic scale.

## ASSUMPTIONS UNDERLYING THE STUDY

The following assumptions are essential to this study:

1. There are differences in ways people systematically process information; these differences can be categorized.
2. Cognitive styles may be identified in behavioral terms.

3. The effectiveness of an instructional event is in direct proportion to ways in which the learner processes the information being transferred, or reacts to the stimuli contained in the event.

4. A student is expressing a type of program change behavior when he expresses a desire to change programs.

## LIMITATIONS OF THE STUDY

This study is exploratory in nature and not designed to focus sharply on any single variable which may relate to program change. Other limitations of this study fall into two main categories. The first is concerned with the type of institution from which the population was taken. Highland Park Community College is one of the oldest community colleges in the State of Michigan. The teaching staff is 85% middle class white and its student body is about 85% inner-city black. In the fall of 1971, 76.9% of the student body was enrolled in the liberal arts program. With the many other program choices available, one may speculate that there is something operating uniquely within this population to cause this high concentration in the liberal arts program. This would lead one to question whether the results would be the same if the study were conducted using a different college population.

A second limitation could be seen in the choice of population. Only those students having completed four or more semesters at Highland Park Community College were included in the sample. Only the summer school population provided data for this study. The author has no evidence

that this population has characteristics other than those found in the regular school year population; however, there were substantially fewer students enrolled in the summer session than during the regular school year.

## DEFINITION OF TERMS

Cognitive Style. The individual's preferred mode of perceptual organization and conceptual categorization of his environment. The cognitive styles referred to in this study are analytic and relational, which represent two ends of the same continuum.

Analytic. A cognitive style characterized by the tendency to differentiate elements of a stimulus complex on the basis of objective similarity of the elements. Operationally, an analytic individual will score toward the analytic pole of the Sigel Conceptual Styles Test. He shows: (a) reluctance to be dependent on his family or friends, (b) need for social recognition, and (c) concern with intellectual mastery and confidence in his approach to challenging intellectual tasks.

Relational. The polar opposite of analytic on the Sigel Cognitive Styles Test. Nonanalytic or relational individuals tend to group elements of a stimulus complex on the basis of a functional relationship between or among the elements. He shows: (a) dependence on his family and/or

friends, (b) low need for social recognition, and (c) lack of concern with intellectual mastery.

Personality Type. The individual's characteristic mode of reacting to and interacting with environmental stimuli. The two personality categories used in this study are extrovert and introvert. The introvert and extrovert represent two ends of the same continuum.

Extrovert. The typical extrovert is sociable, likes parties, has many friends, needs to have people to talk to, and does not like reading or studying by himself. He craves excitement, takes chances, often sticks his neck out, acts on the spur of the moment and is generally an impulsive individual. He is fond of practical jokes, always has a ready answer, and generally likes change. He is carefree, easygoing, optimistic, and likes to "laugh and be merry." He prefers to keep moving and doing things, tends to be aggressive and to lose his temper quickly. His feelings are not kept under tight control, and he is not always a reliable person. Such a person in this study will score above the American college mean of 13 on the Eysenck Personality Inventory.

Introvert. The typical introvert is a quiet, retiring sort of person, introspective, fond of books rather than people; he is reserved and distant except to intimate friends. He tends to plan ahead, "looks before he

leaps," and distrusts the impulse of the moment. He does not like excitement, takes matters of everyday life with proper seriousness, and likes a well-ordered mode of life. He keeps his feelings under close control, seldom behaves in an aggressive manner, and does not lose his temper easily. He is reliable, somewhat pessimistic, and places great value on ethical standards. Such a person in this study will score below the American college mean of 13 on the Eysenck Personality Inventory.

Inner-City Community College. For purposes of this study, the inner-city community college is at least 60% black; students come from high schools which are 60% black and all students commute.

Program Change. When a student changes or reports having changed from one program to a second before the first is completed, he, for purposes of this study, has changed programs.

# CHAPTER II

## REVIEW OF LITERATURE

This chapter presents a review of literature related to the study. First, consideration will be given to some student characteristics which may be related to academic success (value, attitude and personality type). Secondly, a very brief discussion of predictors of academic/vocational success will be given. Thirdly, a discussion of the reasons people change fields of study while enrolled in college will follow. Next, this chapter will include a detailed description of various models of cognitive style, with emphasis on Cohen's analytic-relational continuum which is used as the measuring scale for this investigation. In addition a review of research on cognitive styles emphasizing the differentiation in cognitive styles emerging from various cultural backgrounds will be presented. Finally, described in detail will be the personality typologies to be studied--introvert and extrovert--with emphasis on Eysenck's personality scale which is used as the personality measuring instrument in this study. Some research work in other personality types will also be cited.

## THE RELATIONSHIP BETWEEN PERSONAL CHARACTERISTICS AND ACADEMIC/VOCATIONAL CHOICE

Research studies have been conducted in an attempt to relate various student characteristics to academic/vocational choice and chances for success in the chosen field. Among these characteristics, emphasis has been given to the following factors: value, attitude and personality type.

### Value

An investigation by Warnath and Fordyce[1] revealed that significant differences in value patterns emerged on the Poe Inventory of Values (PIV) between five groups of college students divided according to major areas of study. The areas indicated were humanities, natural science, business, social science and education. This study indicated that the PIV is of definite value in differentiating between students at the beginning of their freshman year relative to their choice of major. The study revealed that students entering as business majors were low on aesthetic, intellectual, religious and humanitarian scales, but high on material values scores; humanities majors were high on the aesthetic and humanitarian scales; the natural science majors were low on the aesthetic scales but high

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[1]Charles F. Warnath and Hugh R. Fordyce, "Inventoried Values of Entering College Freshmen," Personnel and Guidance Journal, Vol. 40, No. 3 (November 1961), pp. 277-81.

on the intellectual scales. The social science and education majors did not show definitive patterns except that the education majors tended to be low on the intellectual scales and about average on the aesthetic scales. The study indicates that students within a specific major area of study tend to hold the same values as other students within that same grouping.

## Attitude

Another area of study has been concerned with the relationship between students' attitudes and choice of a course of study. The Mary Conover Mellon Foundation has supported an extensive program of study for the purpose of increasing the understanding of the learning and personality development of the student. Webster[2] reports from one of these studies that his data support the theory that substantial changes take place in the attitudes of a student during his college career. However, other research has indicated that college causes little change in a person's basic attitudes.

The stereotypic beliefs of students are probably one of the most difficult aspects of a student's attitudes to work with. Research as a whole tends to agree with

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[2]Harold Webster, "Changes in Attitudes During College," The Journal of Educational Psychology, Vol. 49 (June 1958), pp. 109-17.

the work of Frumkin,[3] which showed that stereotypy is a function of the level of education, and as the student advances in college he becomes less dogmatic. This was also shown in the study by Payne[4] who found that test-retest data using the Inventory of Beliefs and the Differential Values Inventory indicated that students became less stereotypic during their freshman year in college, and that a large number of students, both male and female, exhibit significant value changes and become less traditional upon completion of one year of college.

Personality Type

Middleton and Guthrie, as discussed in Chapter I, found that different groupings of personality factors can apparently be associated with different levels of achievement. This finding, together with the findings reported above, supports the view of this investigator that differences do exist between groups of students, and that students might be grouped according to these differences in value, attitude, and personality type.

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[3]Robert M. Frumkin, "Dogmatism, Social Class, Values and Academic Achievement in Sociology," The Journal of Educational Sociology, Vol. 34 (May, 1961), pp. 398-403.

[4]Isabelle E. Payne, "The Relationship Between Attitudes and Values and Selected Background Characteristics," Unpublished Ph. D. Dissertation, College of Education, Michigan State University, 1961, pp. 77-81.

## PREDICTORS OF ACADEMIC/VOCATIONAL SUCCESS

An idea essential to the present investigation is that if academic/vocational success or program persistence can be predicted, much time and money (both the individual student's and the institution's) could be saved by guiding the student into the program in which he will persist. A number of research studies have been devoted to the use of groups of tests for prediction of differential success in college. Horst[5] presented relatively elaborate procedures for selecting sub-tests from a large test battery which would predict relative success in a student's college curriculum. However, a subsequent study by Eells,[6] using sub-battery groups for liberal arts, engineering and commerce, led to the conclusion that separate prediction batteries for different curricular groups are of doubtful usefulness.

Another area investigated in attempting to establish predictor patterns is represented by the study done by Holland[7] in which he explored the usefulness of

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[5]Paul Horst, "A Technique for the Development of a Multiple Absolute Prediction Battery," Psychological Monographs, Vol. 69, No. 5, Whole No. 390 (1955), pp. 1-22.

[6]Kenneth Eells, "How Effective is Differential Prediction in Three Types of College Curricula?" Journal of Educational and Psychological Measurement, Vol. 21 (Summer 1961), pp. 459-71.

[7]John L. Holland, "The Prediction of College Grades from Personality and Aptitude Variables," The Journal of Educational Psychology, Vol. 51, No. 5 (October 1960), pp. 245-54.

non-intellectual factors in the development of a theory of academic prediction by the use of college grades. However, his findings appeared to be inconclusive for developing such a theory.

In another study using grades as the measure of achievement, Marshall and Simpson[8] reported that the student who comes to college with a definite vocational field in mind has an advantage over the undecided student. They found that the students who are definite in their vocational choice on college entrance rank lower in academic aptitude than those making tentative vocational choices, but the academic performance of both of these groups (as measured by grades) is definitely higher than the entering college students who are undecided as to their vocational choice. The findings of this study would suggest that a significant factor influencing academic success, and indirectly persistence in a given college program, is the student's sense of occupational direction.

## REASONS FOR CHANGE IN ACADEMIC/VOCATIONAL ORIENTATION

A number of studies have been done on why students change their major while in college. In his study of curricular changes at Purdue, Brass[9] found that the majority

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[8]M. V. Marshall and E. W. Simpson, "Vocational Choice and College Grades," Journal of Educational Research, Vol. 37 (December 1943), p. 303.

[9]Brass, op. cit.

of reasons given by the students for changing major involved interest changes, curricular preferences and dissatisfaction, and generally low grades.

A study by Pierson[10] used Michigan State University graduates who received bachelor's degrees in June 1958. This study showed that the three predominant reasons for changing majors were: (1) the extent of curricular opportunities in the university, (2) the content of courses in the original major, and (3) the requirements and opportunities in vocations related to the original choice. Pierson's post-graduation study revealed that 85% of the graduates appeared to be satisfied with their final choice. However, it should be remembered that the group studied are those students who had successfully completed a major area of study for a bachelor's degree. This does not include students who did not finish a degree program; the present study will include these. In addition, the study does not show any relationship between a student's cognitive and/or non-cognitive variables as related to the reasons for his change of major.

After reporting on the literature in some of the general areas related to the present study, the focus will become the specific factors to be studied in this

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[10]Rowland R. Pierson, "Changes of Majors by College Students," Personnel and Guidance Journal, Vol. 41 (January 1962), p. 461.

investigation. These factors include two distinctly different cognitive styles--analytic and relational--and two opposite personality typologies--introversion and extroversion.

## COGNITIVE STYLE

The terms "cognitive style," "learning style," and "conceptual style" have been used somewhat interchangeably and reflect to some degree alternative models of information processing. In this study we are concerned with the information processing variables that determine the cognitive aspect of learning style. This aspect, or "cognitive style," refers to "stable individual preferences in mode of perceptual organization and conceptual categorization of the environment."[11] In this study cognitive style will also refer to the mode of perceptual organization and conceptual categorization that characterize a given cultural group.

Several models of cognitive style have been proposed. Those models discussed below describe what together appear to be a cluster of related continua rather than a single dimension. Thus, the "analytic" of Kagan is not the equivalent of the "articulated" cognitive style of Witkin, although it may be presumed that there is a tendency for

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[11]Kagan, Moss and Sigel, op. cit., p. 74.

an individual rated highly at one pole of a continuum to score near the same pole of related continua.[12] This is also the conclusion of Cohen[13] from analysis of the results of a variety of investigations conducted at the University of Pittsburgh. Cohen[14] has synthesized the models of Witkin and Kagan to form a composite of two cognitive skills: mode of abstraction and field articulation. Her composite, the analytic-relational continuum, is of particular value in this study because of (1) its relation to the demands of schooling, and (2) its correlations with a variety of cultural variables.

Thus Cohen, Witkin and Kagan have developed dichotomies of cognitive style which describe similar differences and likenesses; these three conceptualizations of cognitive style are discussed in detail below. Figure 2-1 presents a summary of how these three authors categorize the various cognitive styles.

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[12] Ibid. See also the discussion by Witkin in R. B. Dyk and H. A. Witkin, "Family Experiences Related to the Development of Differentiation in Children," Child Development, Vol. 36 (1965), pp. 21-55.

[13] Rosalie Cohen, "The Relation Between Socio-Conceptual Styles and Orientation to School Learning," Sociology of Education, Vol. 41 (Spring 1968), pp. 201-20; Rosalie Cohen, "Conceptual Styles, Culture Conflict, and Nonverbal Tests of Intelligence," American Anthropologist, Vol. 71, No. 5 (October 1969), pp. 828-56.

[14] Cohen, "Conceptual Styles, Culture Conflict, and Nonverbal Tests of Intelligence," ibid.

| Authors | Cognitive Styles | |
|---|---|---|
| Cohen | analytic | relational |
| Witkin | articulated | global |
| Kagan | analytic | non-analytic |

Figure 2-1. Three Categorizations of Cognitive Style

## Witkin's Articulated and Global Cognitive Styles

In Witkin's conceptualization, "articulation" refers to cognitive functioning which involves the ready ability to overcome an embedding context and to experience items as discrete from the field in which they are contained. A highly articulated individual is thus said to be "field independent." Operationally, an articulated cognitive style may be determined by high scores on Wechsler's Block Design and Picture Completion tests, a high score on Witkin's Embedded Figures Test, and various related measures. A well-articulated or field independent cognitive style has been empirically shown to be characterized by:

1. The individual's tendency to perceive items as clearly distinguished from their embedding context.
2. An ability to actively impose structure on relatively unstructured perceptual fields.
3. The individual's tendency to view himself as possessing an identity distinctly independent of his social environment.[15]

[15]Witkin, op. cit.

Cultural groups which foster individual autonomy in children have been found to be characterized by an articulated mode of cognitive style. Bruner[16] also emphasized the importance of an individualistic value orientation in societies with an articulated mode of cognition.

A "global" cognitive style, in Witkin's theory, is the polar opposite of articulated. Global individuals tend to perceive a gestalt. A highly global individual is said to be "field dependent." Individuals with global or field dependent cognitive styles have been empirically shown to be characterized by the tendency toward:

1. orientation by reference to the environment,
2. greater need to function as a member of a group, and
3. tendency to experience items as being an integral part of their background.[17]

## Kagan's Analytic and Non-Analytic Cognitive Styles

In Kagan's formulation "analytic" is defined as a cognitive style characterized by the tendency to differentiate elements of a stimulus complex on the basis of objective similarity of the elements. Operationally, an

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[16]J. S. Bruner and P. M. Greenfield, "Culture and Cognitive Growth," International Journal of Psychology, Vol. 1, No. 2 (1966).

[17]Witkin, op. cit.

analytic individual will score toward the analytic pole of the Sigel Conceptual Styles Test. Analytic individuals tend to be characterized by:

1. reluctance to be dependent on their family or friends,
2. need for social recognition, and
3. concern with intellectual mastery and confident in their approach to challenging intellectual tasks.[18]

The term "non-analytic," in Kagan's theory, is the polar opposite of analytic on the Sigel Conceptual Styles Test. Nonanalytic individuals tend to group elements of a stimulus complex on the basis of a functional relationship between or among the elements. Operationally, a nonanalytic individual will score toward the nonanalytic pole of the Sigle Conceptual Styles Test. Nonanalytic individuals tend to be characterized by:

1. dependence on families,
2. less concern with the acquisition of recognition goals, and
3. anxiety and dependence as children.[19]

Although no cross-cultural research on the analytic-nonanalytic continuum appears to have been conducted, its similarity to the articulated-global continuum may be noted in the above definitions. Kagan, Moss and Sigel[20] concede

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[18] Kagan, Moss and Sigel, op. cit.

[19] Ibid.

[20] Ibid., p. 79.

basic similarities between analytic-nonanalytic and articulated-global. Witkin[21] also characterizes the articulated pole as "analytic."

## Cohen's Analytic and Relational Cognitive Styles

Cohen, on the basis of the similarities noted above, and as a result of a series of research projects at the University of Pittsburgh, has grouped both models into an analytic-relational dimension.[22] Cohen's model, in addition to having important implications for the formal school, also offers an extensive categorization of the psychological and cultural correlates of analytic and relational cognitive styles. For purposes of this study the most significant function of the model is to more clearly define analytic and relational cognitive styles. The basic definitional differences are listed in Figure 2-2.

The author of this study does not suggest that all of the individual and group differences shown in Figure 2-2 have a direct and definable relationship to college program changes. The important idea to be gained here is that

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[21] H. A. Witkin, et al., Psychological Differentiation: Studies of Development (New York: John Wiley and Sons, Inc., 1962).

[22] Cohen, "Conceptual Styles, Culture Conflict, and Nonverbal Tests of Intelligence," op. cit.

cognitive differences do exist and that these differences can be measured.

| Criterion | Cognitive Styles: Analytic | Cognitive Styles: Relational |
|---|---|---|
| abstraction | stimulus-centered | self-centered |
| sensitivity to: | parts of objects | global characteristics |
| Sigel Conceptual Styles Test - Embedded Figures Test | good | poor |
| perceptual vigilance | high | low |
| reaction | reflective | impulsive |
| reaction time | greater (scanning) | less |
| related personality characteristics | nonsocial learning, independent, control over environment | social learning, dependent, sense of powerlessness |
| family group | formally organized | shared functions |
| sense of individual identity | strong | identifies with group |

Figure 2-2. Cohen's Cognitive Styles

## Related Studies

In the last ten years there has been a great deal of interest in and study of cognitive style. Although the present study concentrates on subjects immersed in American

cultures, we will review studies that explore the phenomenon in societies of Western orientation, as well as societies of non-Western tradition.

A study by Modiano and Maccoby[23] examined cognitive development and functioning of Mexican peasant children, Mexican urban children, and American urban children. They concluded that children tend to develop those intellectual skills most functional for their society. The most influential force molding the development of intellectual skills, in their opinion, was the socio-economic base of the society. They stated: "Without the intellectual equipment needed to participate viably in the economy and social institutions the individual is crippled in his ability to achieve success and often in his ability to adapt."[24] They felt their results substantiated the hypothesis of "intelligence of necessity." From an analysis of the peasant society, they found it to be demanding of ability to deal with concrete situations. In order to succeed, there is a need to be perceptive and to distinguish those changes in nature which are economically important. They found that those items commonly developed as part of the peasant's "intelligence of necessity" were as follows:

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[23] Nancy Modiano and Michael Maccoby, "Cultural and Sociological Factors Relating to Learning Development," Research in Education, ED-020 550, U. S. Department of Health, Education and Welfare (August 31, 1967).

[24] Ibid., p. 7.

1. attention to details and to the perceptual and functional attributes of items,

2. interest and skill in fine differentiation,

3. development of formal operations among older children, but always with a preference for concrete, perceptual or functional attributes rather than abstract formulations, and

4. rejection of equivalences and isolated-abstract tasks for doing violence to reality.[25]

In a later article, Maccoby and Modiano[26] correlated the mode of reasoning or cognitive style with the socio-economic conditions in greater detail. In this study they concentrated on the styles of reasoning of children aged 12 and 13. Their major hypothesis was ". . . equivalence reasoning characterizes the children of industrial workers and not peasant children, although both live within the same national culture."[27] They were able to construct a continuum with very characteristic terminal positions. At one extreme were located the group that epitomized the peasant society. Traits of this group constituted a concern with perceptible attributes and the concrete reality of objects. At the other extreme was a group functioning with an abstract frame of reference and concentrating on nominal concepts. This group was

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[25] Ibid., p. 66.

[26] Michael Maccoby and Nancy Modiano, "Cognitive Style in Rural and Urban Mexico," Human Development, Vol. 12 (1969), pp. 22-33.

[27] Ibid., p. 23.

categorized as an "industrial type" characterized by ". . . formal attributes, facility in formulating equivalences and a tendency toward moral reasoning based on reciprocity."[28]

Another area of influence on cognitive modes of operation was postulated by Hess and Shipman.[29] They argue that the structure of social system interacting with the structure of the family communication patterns shape thought and cognitive style. One of the key examples they discuss is the type of family control. Two types of control are discussed in relation to cognitive functioning. One type of control utilizes the concepts of status appeal or ascribed role norms.

> In status (position) oriented families, behavior tends to be regulated in terms of role expectations. There is little opportunity for the unique characteristics of the child to influence the decision-making process or the interaction between parents and child. In these families the internal or personal states of the children are not influential as a basis for decisions.[30]

Such control results in a cognitive style where the world is viewed as a place governed by a set of regulations and rules that is based on arbitrary decisions. Logical selection of alternative actions is missing or ruled out as

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[28] Ibid.

[29] Robert D. Hess and Virginia C. Shipman, "Early Experience and the Socialization of Cognitive Modes in Children," Child Development, Vol. 36, No. 4 (December 1965), pp. 869-86.

[30] Ibid., p. 871.

important. A restrictive environment of thought is fostered by the status control approach.

The other type of control is oriented toward persons.

> In a person-oriented appeal system, the unique characteristics of the child modify status demands and are taken into account in interaction. The decisions of this type of family are individualized and less frequently related to status or role ascriptions. Behavior is justified in terms of feelings, preferences, personal and unique reactions and subjective states.[31]

This environment permits flexibility and greater expression of personal choice which leads to a cognitive style of reflection. Thought is given to a comparison of alternatives.

The effect of environment (social organization and family structure) is clearly illustrated in the cognitive style known as Cohen's "categorization style."[32] She related formal structure of family interaction and informal friendship patterns with the relational and analytic dimensions.

Dershowitz[33] demonstrated that cultural patterns in the Jewish sub-culture of the United States influenced the

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[31] Ibid., p. 872.

[32] Rosalie Cohen, "The Relation Between Socio-Conceptual Styles and Orientation to School Learning," op. cit.

[33] Zachery Dershowitz, "Influences of Cultural Patterns on the Thinking of Children in Certain Ethnic Groups: A Study of the Effect of Jewish Sub-Culture on the Field Dependence-Independence Dimension of Cognition," Unpublished Doctoral Dissertation, New York University, 1966.

cognitive style dimension used by the children. From his study it was demonstrated that a consistent pattern of responses was elicited over tasks related to field-dependence in the Jewish community due to the attitudes, values, and child-rearing practices of the community. The greater the exposure of the child to traditional Jewish behavioral patterns, the higher the degree of field dependence.

Preale, Amir and Sharon[34] revealed through an investigation of perceptual articulation in several Israeli sub-cultures that the differential emphasis on subordination to authority and on the acquisition from individual autonomy of the environment encourages different styles. They proposed that children from Middle Eastern families would measure as more field dependent than children from families of Western origin. The authors cite several studies that reveal the Middle Eastern family as ". . . tradition oriented with an authoritarian, patriarchal structure which tends to foster subordination to authority and restriction of emotional autonomy."[35] Also, because experts on the kibbutz agree that it stimulates emotional autonomy and self-reliance, the authors hypothesized that

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[34]Ilana Preale, Yehuda Amir, and Shlomo Sharon, "Perceptual Articulation and Task Effectiveness in Several Israeli Subcultures," Journal of Personality and Social Psychology, Vol. 2, No. 2 (1967), p. 118.

[35]Ibid., p. 191.

children raised in a kibbutz would be more field independent than non-kibbutz children. The samples consisted of 88 males of Middle Eastern ethnic background contrasted with 112 of their peers of Western origin and 145 males born and raised in a kibbutz contrasted with 145 males of Western origin but raised in a non-kibbutz setting. Support for the hypotheses was obtained when the results revealed that:

(a) Subjects of Western ethnic origin achieved a higher level on four measures of perceptual articulation than did subjects of Middle Eastern origin.

(b) On two out of three measures of perceptual articulation, subjects raised in a kibbutz setting achieved higher scores than did subjects of Western background not raised on a kibbutz.

Thus all the studies cited in connection with cognitive style have attempted to tie environment with style. This is particularly true in the case of family experiences such as child-rearing practices and attitudes towards autonomy and self-reliance. It there were three points upon which most authorities on cognitive style agreed, they would probably be: that the individual's cognitive style is shaped early in life; that cognitive style remains fairly constant throughout life; and that the environment is the primary factor in the shaping of cognitive style.

## PERSONALITY TYPOLOGY

The personality typologies to be used in the present research--introversion and extroversion--are not new. The extrovert-introvert characteristics had their origin with Carl Jung around 1916.

> Jung first suggested a classification of individuals into two psychological types on the basis of the "flow of the libido." In the extrovert the flow of the libido is outward toward the object. The object contains the unconditioned value for the subject and it determines to a large extent his reactions. In the introvert, the flow of the libido is inward from the object. The unconditioned value is in the subject.[36]

Guilford and Braly point out in a study on extroversion and introversion that, while Jung may have developed and popularized the extroversion-introversion dichotomy, he should not be given the entire credit for its origin.

> As early as 1900, Stern had suggested a pair of types known as "objective" and "subjective," which he found to differ in regard to simple reaction time under sensory and motor instructions and also in their reactions in the Aussage tests. Others who wrote late concerning these same two types are Klages and Kurella.[37]

Following the descriptive phase mentioned above, the extroversion-introversion concept began to expand in many directions.

> It has been linked with physiological processes and morphology, with perceptual and cognitive behavior,

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[36] J. P. Guilford and Kenneth W. Braly, "Extroversion and Introversion," Psychological Bulletin, Vol. 27 (1930), p. 96.

[37] Ibid.

> with sociocultural phenomena, with physical and psychopathological disorders of one sort and another. Early attempts to demonstrate these relationships produced little in the way of definitive results; researchers began to doubt the validity of the construct, and in the early forties, it looked for a time as though extroversion-introversion had had its day. Like the proverbial bad penny, however, the construct has continued to turn up, notably in factor analytic studies, and over the past decade it has gradually been reinstated as an important focus in personality research.[38]

Extensive factor analytic research on extroversion-introversion has been conducted by H. J. Eysenck, who has served as professor of psychology at the University of London and Director of the Institute of Psychiatry at the Maudsley and Bethlem Royal Hospitals in London, England. His work has been a prime factor in refocusing attention on the introversion-extroversion personality construct, and will be used for the present investigation.[39]

The "thinking introvert" or "high daydreamer," based on factor-analytic studies and other correlational work in this research program[40] seems to be a person who places a relatively high priority on attending to the

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[38] Patricia M. Carrigan, "Extroversion-Introversion as a Dimension of Personality: A Reappraisal," Psychological Bulletin, Vol. 57 (September 1960), p. 329.

[39] See H. J. Eysenck, Race, Intelligence and Education (London: Temple Smith, 1971).

[40] J. L. Singer, Daydreaming (New York: Random House, 1966).

ongoing material from long-term memory, and on reconstructing this into a variety of new cognitions. Although there are individual differences in emphases on content or affect within the introverted group, the dimension seems similar to Broadbent's[41] distinction between long and short sampling. The long samplers are persons who base their estimate of a future response upon a review of all past performances; a short sampler characteristically is guided by the immediately preceding performances. Clearly there would be great differences in speed of reaction or in style of response to different information-processing tasks for persons using these two systems of approach.

From this perspective high daydreamers engage in more extended sampling of the environment, attempting to match new outside material to a greater variety of possible previously learned patterns, or reviewing and recoding a good deal of internal material. By contrast, the short processors briefly react to each new stimulus sequence, spending little time in matching and transforming. Such short sampling suggests that these persons may be less likely to develop a complex or differentiated set of associative schema. Obvious relationships to styles such as Petrie's augmentors and diminishers[42] or Gardner's focusers

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[41]D. E. Broadbent, Perception and Communication (New York: Pergamon Press, 1958).

[42]A. Petrie, Individuality in Pain and Suffering (Chicago: University of Chicago Press, 1967).

and scanners,[43] Voth and Mayman's ego-close or distant,[44] and many other perceptual styles are indicated, but these have not yet been compared to the daydreamer dimension.

Many other efforts have been made to divide the human personality into a dichotomy. In Rotter's thinking an "internal" person perceives that he is in control of his fate and that effort and reward will be correlated. An "external" person perceives that powerful others of "the system" determine how well he can do, and that rewards are distributed by such powerful others in a random fashion. Using the I-E scale, researchers have found that internal people: are more likely to make typical or rational shifts in their levels of aspiration[45]; take intermediate rather than extreme risks[46]; are more confident in their

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[43]R. W. Gardner, et al., "Cognitive Controls: A Study of Individual Consistencies of Cognitive Behavior," Psychological Issues, Vol. 1, No. 4 (1959).

[44]Guilford and Braly, op. cit.

[45]See E. S. Battle and J. B. Rotter, "Children's Feelings of Personal Control as Related to Social Class and Ethnic Group," Journal of Personality, Vol. 31 (1963), pp. 482-90; N. T. Feather, "Change in Confidence Following Success or Failure as a Predictor of Subsequent Performance," Journal of Personality and Social Psychology, Vol. 9 (1968), pp. 38-46; and J. B. Rotter and R. C. Mulry, "Internal Versus External Control of Reinforcement and Decision Time," Journal of Personality and Social Psychology, Vol. 2 (1965), pp. 598-604.

[46]See J. P. DuCette and S. Wolk, "Locus of Control and Extreme Behavior," Journal of Consulting and Clinical Psychology (1972); J. W. Julian and S. B. Katz, "Internal versus External Control and the Value of Reinforcement," Journal of Personality and Social Psychology, Vol. 8, No. 1 (1968), pp. 89-94; and S. Liverant and A. Scodel, "Internal and External Control as Determinants of Decision Making Under Conditions of Risk" Psychology Reports, Vol. 7 (1960), pp. 59-69.

abilities[47]; make better use of environmental feedback[48]; and are more likely to be social activists.[49]

The general conclusion from this research is that, in most cases, "internality" is an adaptive and positive personality characteristic while "externality" is not. While it is clear that this statement must be qualified since current research has indicated this construct to be more complex than originally thought, the above attribution of internality as being more adaptive would generally hold. It is evident, however, that a distinction must be made between different types of internality, especially for minority groups,[50] and that no simple or linear relationship

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[47]R. C. Lao, "Internal-External Control and Competent and Innovative Behavior Among Negro College Students," Journal of Personality and Social Psychology, Vol. 14, No. 3 (1970), pp. 263-70.

[48]See E. J. Phares, "Expectancy Changes in Skill and Chance Situations," Journal of Abnormal and Social Psychology, Vol. 54 (1957), pp. 339-42. See also, L. K. Ode and R. E. Vogler, "Internal Versus External Control of Reinforcement and Awareness in a Conditioning Task," The Journal of Psychology, Vol. 73 (1969),pp. 63-67.

[49]See J. R. Forward and J. R. Williams, "Internal-External Control and Black Militancy," Journal of Social Issues, Vol. 26 (1970), pp. 75-91. See also P. M. Gore and J. B. Rotter, "A Personality Correlate of Social Action," Journal of Personality, Vol. 31 (1963), pp. 58-64.

[50]P. Gurin, G. Gurin, R. C. Lao, and M. Beattie, "Internal-External Control in the Motivational Dynamics of Negro Youth," Journal of Social Issues, Vol. 25 (1969), pp. 29-63.

exists between internality and adaptive behavior.[51]

Several studies exist where special attention has been placed on differential predictability of the internal-external dimension in varying social settings. The work of Crandall and her associates[52] is a good example of such research. Perhaps the best known example of such research is the Coleman Report[53] in which the internal-external dimension was utilized as a predictor of academic performance in both black and white populations. Such research, though, is the exception rather than the rule. Perhaps more critical is the fact that even in the research cited there are certain methodological problems which restrict the generalizability of the findings.

## CONCLUSION

As can be seen from the studies cited, many investigations have been conducted or are in progress concerning

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[51]J. P. DuCette, S. Wolk and E. Soucar, "Atypical Patterns in Locus of Control and Maladjustive Behavior," Journal of Personality, in press.

[52]V. J. Crandall, W. Katkousky and V. J. Crandall, "Children's Beliefs in their Own Control of Reinforcements in Intellectual-Academic Achievement Situations," Child Development, Vol. 36 (1965), pp. 91-109; P. E. McGhee and V. C. Crandall, "Beliefs in Internal-External Control of Reinforcements and Academic Performance," Child Development, Vol. 39 (1968), pp. 91-102.

[53]J. S. Coleman, et al., Equality of Educational Opportunity, Superintendent of Documents, Catalog No. PS5.238:38001,(Washington, D.C.: U. S. Government Printing Office, 1966).

a student's attitudes, values, personality types, cognitive styles and academic aptitude. Many of these studies have used various mental measurement instruments to predict the cognitive and/or non-cognitive factors investigated. However, the use of rating scales as related to academic aptitude have not been reviewed to any appreciable extent in this chapter since the validity and reliability of the cognitive variables used in this study and background information on the personality inventory used in this study are discussed in Chapter III.

# CHAPTER III

# PROCEDURES

The material described here includes: (a) a description of Highland Park Community College, the source of the data; (b) a description of the population and procedures used in sampling and gathering additional data; and (c) a description of the instrumentation used in this investigation, including a description of scoring procedures and a description of the data analysis procedures used for the study.

## SOURCE OF THE DATA

The data for this study were collected at Highland Park Community College located in Highland Park, Michigan. The college was established by a vote of the people of Highland Park in 1917. At its inception, the college's primary function was the first two years of collegiate training. Since its founding, the college has shared housing with the high school. While the exterior of the main building is very attractive and has a "collegiate" appearance, the interior is uninspiring; some remodeled areas are very pleasant, but other areas are deteriorating.

The building is probably not adequate, in terms of aesthetic quality, space, or function, to serve the needs of students in its present form.

The college serves the City of Highland Park, an area of three square miles surrounded by Detroit and Hamtramck, but because of its location in reality serves a much broader urban community. Approximately ten per cent of the student population is drawn from the City of Highland Park, while the remaining 90 per cent come from Wayne County, and more particularly, the City of Detroit.

Between 1965 and 1971, Highland Park Community College changed from a majority white to a majority black college. In the fall of 1971, 89 per cent of the students enrolled were black. Conversely, about 80 per cent of the professional staff is white. In 1971, 76.9% of the student body was enrolled in liberal arts or transfer programs, 12% more than an "average" of 65.1% for Michigan community colleges. Yet the majority of these students do not transfer. Many are "over-tenders" (students who take an unusually long period of time to complete their programs). In 1971, in addition to liberal arts or transfer programs, the following enrollments were recorded: Business, 8.5%; Health, 6.5%; Other Vocational/Technical programs, 8.2%.[1] The sample selected for this study closely represents these population figures.

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[1]College Citizens Advisory Council, Recommendations on the Future of Highland Park College, Submitted to the Board of Education, School District of the City of Highland Park, Michigan (November 1971), p. 8.

## SAMPLE AND POPULATION

During the 1972 summer session, 1,100 students attended Highland Park Community College. It was from this population that the sample was drawn. As reported in the limitations of the study, this investigation is concerned only with those students who had completed four semesters of college work at Highland Park Community College. From official college records obtained from the counselors, a total of 158 day students and 121 night students were identified as having completed four or more semesters of work at the college and were also enrolled in summer classes. From this sub-population, 128 students were randomly selected. To ensure that acceptable sample effects were established, Lindquist's Table of Random Numbers was used to select from the 279 students who had been given pre-assigned numbers. One hundred and fifty alternates were identified in the above-mentioned manner.

All initial contacts with the sample set of students were done through telephone calls. Almost all (about 98%) of the students contacted agreed to take part in the study. About 80% of those who agreed to come to one of the sessions actually came. The investigator made all the telephone calls. A large number of students either had no phone or the phone numbers on the student records were not current. For this reason, the total alternate list was exhausted. Day, night and weekend attempts were made to contact each

subject. Each subject was paid $1.50 for single sitting of 25 to 35 minutes in which both tests were administered, and other information (identified in Appendix A) was obtained.

At the time of the investigation, Highland Park Community College had no computer service for tabulating grade point averages. All GPA's used in this study were extracted by adding the total semester grade values and dividing that number by the total number of hours carried. In addition, there were two grade descriptions which could be reported with the GPA: N - no grade (for a particular class) and W - withdrawn (from a certain class). An "N" may be given to any student upon request who makes any grade lower than "C." The student may re-enroll in the class as many times as he wishes, and the new grade replaces the "N." A slightly wider range of student behavior may account for a student obtaining a "W." Under this description, a student may withdraw from a class before the end of the semester at any point and for any reason. Again, the student may re-enroll in the class and the new grade replaces the "W." This description is of particular importance in this investigation because, as stated elsewhere in this study, an assumption made by this investigator is that student withdrawal from classes is positively related to program changing within the college programs. The number of withdrawals the subjects had made was obtained from college records.

The demographic and other information taken from college records included:

1. letter grades
2. semester hours
3. number of semesters in attendance
4. number of withdrawals from classes
5. number of "N's" obtained (no credit)
6. name
7. address
8. telephone number

Information obtained from subjects included:

1. responses on Sigel's Conceptual Styles Test
2. responses on Eysenck's Personality Inventory
3. number of program changes
4. identification of subject's present program
5. sex of subject
6. work status
7. reported reason for changing programs
8. number of credits subject currently carried
9. subject's desire to change to a new program

## TESTING INSTRUMENTS

### Sigel's Conceptual Styles Test

Sigel's Conceptual Styles Test is a booklet of sixteen triads of pictures representing foods, people, animals, vehicles, furniture, and tools. For each triad of pictures, the subject selects pairs of pictures on the basis of similarity or some other relationship, and indicates the reasons for his selections. For example, in a triad composed of a straight-backed chair, a simple table, and an upholstered chair--the straight chair and the table may be paired because they are used together; the two chairs may be paired because they are instances of the same class,

"chair"; or the straight chair and table may be paired because they both lack a fourth leg or because they both appear to be made of the same material. The subject indicates as many pairs and reasons as he can in the time allotted for each. Sample test items, an answer sheet, and the instructions to the subject for the SCST are presented in Appendix B.

For this study, special SCST instructions and administration procedures were developed. The administrator and author of this study read directions to the subjects and gave an example to show the proper procedure. Three points were emphasized in the instructions: (1) there are different ways in which people see familiar objects--some ways are obvious to some people and other people may see different things; (2) there are, therefore, no right or wrong answers; and (3) this is neither a test of speed nor of productivity--the reasons given are important.

### Scoring

The SCST is scored by assigning each reason to one of four conceptual categories:

Descriptive - Part-Whole: Concepts are formed on the basis of observable physical attributes of the stimuli. The statement involves direct references to part or all of the physical stimuli themselves.
Examples: right hand raised; made of wood

Descriptive - Global: Concepts are formed on the basis of observable physical attributes of the stimuli.

However, observations are reported on the basis of inferences.[2]
Examples: cowboys; young women.

Inferential - Categorical: Concepts are formed on the basis of an inference made about the stimuli. The concepts usually name a class or category to which the stimuli are assumed to belong.
Examples: fruit; mammals

Relational - Contextual: Concepts in which two or more ideas are tied together in such a way that no stimulus is an independent instance of the concept; any stimulus derives its meaning from its relationship with the other stimulus.
Examples: a family; the man uses the tool

Each subject was assigned three scores on the basis of the numbers of responses falling into each of the three conceptual categories: descriptive - part-whole, inferential - categorical and relational - contextual.

The total number of responses produced generally varies widely among subjects. This factor was controlled by converting each subject's three scores into proportions of his total number of responses. For example, a subject giving 56 responses might have given:

28 descriptive - part-whole responses
18 inferential - categorical responses
10 relational - contextual responses.

Conversion of these three to percentages of the total would yield these three proportion scores:

50% descriptive - part-whole responses
32% inferential - categorical responses
18% relational - contextual responses.

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[2]Because further research is needed to ascertain the independence of the descriptive - global category, responses were recorded and treated separately.

The scores used in the SCST analysis were these converted proportion scores.

One important characteristic of the SCST is that a subject's scores tend to be arranged in patterns. For example, one common pattern is:

45 - 55% descriptive - part-whole responses
30 - 35% inferential - categorical responses
15 - 18% relational - contextual responses.

This pattern is also frequently observed:

25 - 35% descriptive - part-whole responses
35 - 45% inferential - categorical responses
25 - 35% relational - contextual responses.

Since each subject has three SCST scores, he cannot justifiably be classified as a "type"--for example, as an "inferential type." He is better characterized by the pattern shown in his three scores. In this study, analyses of SCST responses were performed using both the individual scores and the patterns of scores.

## Scoring Agreement

The agreement among SCST scores (a form of inter-judge reliability) is exceedingly high. Untrained scorers following the scoring rules agree on 90% of the responses they score[3]; trained scorers, who are very familiar with

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[3]M. A. Wallach and N. Kogan, Modes of Thinking in Young Children (New York: Holt, Rinehart, and Winston, 1965), p. 118.

the instrument, agree on 98%.[4]

Using this procedure, three primary types of students were identified by their response pattern-program change characteristics. These three types were: (a) polar-relational, (b) polar-analytic, and (c) mixed and middle range. When the characteristics of these types were defined by an analysis of their individual test responses, it was discovered that there were, in actuality, four primary types. The middle range response patterns, and those with mixed or conflicting response patterns on the tests of cognitive style and field articulation actually comprised two separate groups. The categories provide the basis for the chapter on the analysis and the discussion which follows.

## Reliability

When the SCST is used with children, its split-half reliability ranges from .51 to .61, depending on the age of the subjects and the test-retest reliability centers on .70.[5] With college seniors, Sigel has obtained a split-half reliability coefficient of .53 for twelve items; extended by the Spearman-Brown prophecy formula to 35 items,

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[4]N. C. Scott, Jr., and I. E. Sigel, "Effects of Inquiry Training in Physical Science on Creativity and Cognitive Styles of Elementary School Children," Report to the Office of Education, U. S. Department of Health, Education and Welfare, Cooperative Research Program (1965), p. 29.

[5]Ibid.

this coefficient is .77. Since in the present study the major concern regarding reliability was stability over time (the test's homogeneity already having been established), the test-retest reliability of the SCST over three week's time was calculated for the first 20 items of the instrument. These coefficients were then extended by the Spearman-Brown prophecy formula to the length of the original instrument (See Table 3-1). These coefficients indicated that the SCST is acceptably stable over time.

Table 3-1. Test-retest reliability coefficients for the SCST.

| | SCST Dimension | | |
|---|---|---|---|
| | Descriptive Part-Whole | Inferential Categorical | Relational Contextual |
| Reliability for 20 items | .76 | .65 | .51 |
| Extended by prophecy formula to 35 items | .85 | .77 | .65 |

## Eysenck's Personality Inventory

H. J. Eysenck, in connection with his work in the area of personality, developed a questionnaire designed to measure extroversion-introversion and neuroticism. This questionnaire was called the Maudsley Personality Inventory. The Eysenck Personality Inventory (See Appendix C) is basically the same as the MPI, with some improvements.

The Maudsley Personality Inventory has been described and evaluated by Arthur R. Jensen, associate professor of educational psychology and associate research psychologist of the Institute of Human Learning at the University of California, Berkeley, as follows:

> The MPI consists of 48 items, of which 24 are keyed to N (neuroticism) and 24 to E (extroversion-introversion). Unlike some personality inventories (e.g., the MPI), none of the items could be construed as socially objectionable; thus the inventory can be used with adolescents or adults in almost any setting.
>
> . . . . . .
>
> The MPI derives much of its importance from its theoretical underpinnings. Probably no other psychological test--certainly no other personality inventory--rivals it in psychological rationale. This is particularly true of the E dimension, which has been the subject of intensive experimental research in Eysenck's laboratory for more than a decade.
>
> . . . . . .
>
> NORMS. A great deal of normative data are presented, both for English and American subjects. The American manual presents American college norms (percentiles and standings based on 1,064 university undergraduates). Means and standard deviations are presented for 32 different groups, including various psychiatric, prison, and industrial populations, totaling over 7,000 subjects.
>
> . . . . . .
>
> RELIABILITY AND VALIDITY. Split-half and Kuder-Richardson estimates of item inter-correlations for each scale are between .75 and .90 in various samples . . . in short, the reliability of the MPI is among the highest to be found for personality inventories. The MPI has also been studied for effects of various types of "response set." These seem to be negligible.
>
> Assessment of the validity of the MPI is a complex matter. There can be little question of its factorial validity. That is to say, the N and E scales invariably have high loadings on factors considered to be indicative of neuroticism or extroversion, and there is little factorial overlap between the scales . . .

> Descriptive validity of the MPI has been adequately established by the method of nominated groups. Judges rated people on the basis of observable characteristics in terms of neuroticism and extroversion. These ratings show highly significant correlations with the relevant dimensions measured by the MPI.
>
> . . . . . .
>
> In summary, the MPI is a brief and highly reliable measure of two relatively independent factors of personality--neuroticism and extroversion. Much sophisticated research has gone into its construction, and the large body of normative data, plus the psychological theory and experimentation associated with the MPI, make it one of the most important of all personality inventories.

The EPI is composed of 57 items instead of the 48 items found in the MPI. The additional nine items are "lie" items, to be explained below. The EPI, which requires a "yes" or "no" answer for each item, contains questions such as the following: "Would you be very unhappy if you could not see lots of people most of the time?" and, "Would you say you were fairly self-confident?"

The test has three rating scales--extroversion, neuroticism, and a lie scale. The lie scale items were included to help the tester to know how truthfully the subject was responding to the questions. Twenty-four items measure extroversion (E), 24 items measure neuroticism (N), and nine items measure lie (L). For the purpose of this study, any subject who scored five or higher on the lie scale was not used. Table 3-2 shows that the neuroticism factor was balanced between the E and I subjects.

Table 3-2. The distribution of subjects on the neuroticism scale.

| | Above Twelve | Twelve and Below |
|---|---|---|
| Extroverts | 10 | 15 |
| Introverts | 11 | 14 |

The mean for the group of selected subjects was twelve. Above this mean were ten extroverts and eleven introverts. Below this mean were fifteen extroverts and fourteen introverts. Therefore, there was no significant difference between groups with regard to neuroticism.

The Extroversion Scale

The E scale, which is used in this study to select subjects, provides for a score from one to 24. The EPI norms based on 1,931 adult, normal, English subjects published in the EPI manual show the 50th percentile to fall at 14, with 10 being at the 18th percentile and 17 being at the 79th percentile. Within the basic speech course population, initial testing was done of 144 students. The results approximated a normal curve with 23 students scoring nine or lower and 25 students scoring 17 or greater. The two extreme groups fell approximately one standard deviation from the mean.

## STATISTICAL TREATMENT OF DATA

A statistical method commonly used for testing for significance of difference among means for two or more groups is the analysis of variance. The analysis of variance procedure for difference in means is based on the separation of the total sum of squares into several portions. If the mean square for the means is significantly large, the hypothesis of equal means is rejected.

An analysis of variance was made on each of the groupings for the tests of cognitive styles and personality typology in order to determine if differences existed between program changers and non-changers. An analysis of variance was also computed to determine if differences existed among the demographically grouped students.

Trends in some of the data were determined through the use of orthogonal polynomials (orthogonal comparisons). Using these tables of weights requires that:

(a) the independent variable be quantitative and its levels be equally spaced;

(b) that equal sample sizes be used in each treatment group;

(c) that the number of groups and the component of interest (e.g., linear, quadratic, cubic, etc.) be specified.[6]

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[6]Roger Kirk, Experimental Design: Procedures for the Behavioral Sciences (Brooks-Cole, 1963), pp.114-24.

Although the data computed in this study for linear trend did not follow the characteristic model for orthogonal polynomials, statistical adjustments were made to obtain reliable probability factors.

The Research Consultant Service for the College of Education at Michigan State University advised on the statistical analysis for this study. The Michigan State University Computer Service was utilized for most of the computations.

# CHAPTER IV

# FINDINGS

In the previous chapter the theoretical orientation and methodology of the investigation were set forth. This chapter reports the findings of the investigation. The initial section of the chapter is a description and analysis of (a) the general demographic characteristics of Highland Park College, and (b) the measurement of student program change behavior. This includes a section which presents a comparative analysis of the responses on the Sigel Conceptual Styles Test and the Eysenck Personality Inventory with the subjects' program change characteristics, followed with a section discussing the hypotheses formulated for this study. The hypotheses are restated in sequential order, and are followed by relevant statistical data and tests. Finally, another section presents additional relevant data derived from the questionnaire used in this study. The chapter is concluded with a brief summary of the research findings.

## HIGHLAND PARK COLLEGE: DEMOGRAPHIC DATA

Many documents are available which describe Highland Park College. However, as a basis for further discussion,

some data which compare Highland Park College with other community colleges in Michigan are given in order to formulate some basic characteristics of the college.[1]

Statement 1: Highland Park College is one of four community colleges in Michigan operating as a department of a public school district.

The other three colleges operating as departments of public school districts are Grand Rapids Junior College, Henry Ford, and Alpena. The other 25 community colleges in Michigan operate as independent community college districts.

Statement 2: Highland Park as a city represents an extremely small community college district.

The population of Highland Park, according to the 1970 census, was 35,444, a decline of 6.9% from 1960 when the population was 38,063. As an index of the ability of this population to support a community college, a special study committee of the Michigan House of Representatives recently recommended that each community college district should contain a population of not less than 100,000.

Statement 3: Highland Park's State Equalized Valuation is relatively low for the support of a community college.

The House Study Committee referred to above recommended that each community college district have a State Equalized Valuation of $500 million. The 1971 State Equalized Valuation (SEV) of Highland Park was $192 million.

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[1]Demographic data were taken from the College Citizens Advisory Council Report, op. cit., pp. 1-11.

In comparison, the SEV's of other community colleges similar in enrollment size to Highland Park are as follows:

Table 4-1. Estimated 1971-72 FYES.

| | | SEV |
|---|---|---|
| Jackson | 2150 | 562,000,000 |
| Kalamazoo | 2148 | 940,000,000 |
| St. Clair | 2200 | 616,000,000 |

Statement 4: The college is dependent upon out-of-district enrollment for continued operation.

Only 207 persons from the City of Highland Park attended the college on a full-time basis during the 1971 fall term, and only about 14% of the total college enrollment was from the city (figures do not include 176 apprenticeship students):

Table 4-2. Resident and Non-Resident enrollment at Highland Park College, Fall term, 1971.

| | Full Time | Part Time | Total |
|---|---|---|---|
| Resident | 207 | 304 | 511 |
| Non-Resident | 1455 | 1610 | 3065 |
| Total | 1662 | 1914 | 3576 |

Statement 5: Resident enrollment at the college is stabilizing.

During the past two years the enrollment of resident students has declined as follows:

Table 4-3. Enrollment of resident students at Highland Park College, 1969-71.

| Year | Number of Resident Students |
|---|---|
| Fall 1969 | 932 |
| Fall 1970 | 857 |
| Fall 1971 | 687* |

*The figure of 687 includes 511 college-level students and 167 apprentices.

This enrollment decline may be in large part due to fluctuations in apprenticeship enrollments. If we subtract apprenticeship enrollment, trends for local students would be as follows:

Table 4-4. Enrollment trends for local students (excluding apprenticeship enrollments), 1964-1971.

| Year | Enrollment |
|---|---|
| 1964 | 204 |
| 1965 | 272 |
| 1966 | 318 |
| 1967 | 350 |
| 1968 | 392 |
| 1969 | 432 |
| 1970 | 457 |
| 1971 | 511 |

Obviously, no great increase in enrollment from the local population can be expected in the future without significant

increases in financial aid or the introduction of major new programs.

Statement 6: The future of out-of-district college enrollment is uncertain.

Since 86% of the enrollment comes from out-of-district, and the major portion of outside enrollments come from Wayne County, the future of the college is directly linked to developments in Wayne County, and to decisions made by high school seniors and other citizens in the county. To illustrate this, the top ten high schools supplying students to Highland Park College in spring 1970 were as follows:

Table 4-5. High schools supplying students to Highland Park College, Spring 1970.

| High School | Number of Students |
|---|---|
| Highland Park High School | 349 |
| Cass Technical | 232 |
| Northwestern High School | 186 |
| Mackenzie High School | 175 |
| Central High School | 175 |
| Mumford High School | 156 |
| Pershing High School | 151 |
| Northern High School | 146 |
| Wilbur Wright High School | 108 |
| Martin Luther King High School | 93 |

Statement 7: Highland Park College is a predominantly Black institution.

Between 1965 and 1971 Highland Park College changed

from a predominantly white to a predominantly black college. In the fall of 1971 89% of the students enrolled were black. This phenomenon has resulted in a greater number of students attending the college from a lower socio-economic background.

Statement 8: There is a racial imbalance between students and staff.

Eighty-nine per cent of the student body is black; conversely, about eighty per cent of the professional staff is white.

Statement 9: While only about one-third of the students at Highland Park Community College actually transfer, three-fourths are enrolled in transfer programs.

Although Table 4-6 indicates that 76.9% of the student body was enrolled in liberal arts or transfer programs in 1971, the majority of these students do not transfer. Many are "over-tenders," students who stay longer in their program than the usual time required to complete that program. There is a need to examine carefully whether viable alternatives actually exist for these students who intend to transfer but do not. Table 4-6 also shows that the nursing program enrolls a higher percentage of students than the state average, but that vocational/technical enrollments are well below the state average.

Table 4-6. Curriculum of Highland Park students as compared with students at 13 Michigan community colleges, Fall, 1971.

| Curriculum | Students--Highland Park Fall 1971 | % of Students Highland Park Fall 1971 | Average % of Students, 13 Michigan Community Colleges |
|---|---|---|---|
| Liberal Arts | 2760 | 76.9% | 65.1% |
| Business | 305 | 8.5 | 12.0 |
| Health | 234 | 6.5 | 3.9 |
| Other Voc/ Tech | 298 | 8.2 | 18.9 |
| Total | 3597 | | |

Statement 10: Enrollment of women is increasing while enrollment of men is decreasing at Highland Park College.

The most significant development in enrollment between 1970 and 1971 was the increase in female attendance and the decrease in male attendance (See Table 4-7).

Table 4-7. Male and female enrollment, Fall 1970-Fall 1971.

| Category | Highland Park Enrollment | |
|---|---|---|
| | Fall 1970 | Fall 1971 |
| Full-time Men | 850 | 830 |
| Part-time Men | 1040 | 802 |
| Full-time Women | 609 | 832 |
| Part-time Women | 1059 | 1133 |
| Totals | 3558 | 3597 |

## MEASUREMENT OF STUDENT PROGRAM CHANGE BEHAVIOR

In this investigation of program changes of Highland Park College students one criterion of program change behavior was used--students were determined by the investigator to have changed programs if they reported having done so. Perhaps a more reliable method of determining program changes would have been to obtain student change data from sources more objective than student reports; a good source would have been college records. However, at the time this investigation was conducted no reliable or uniform records were kept on student program changes.

Computations of program changes were made on the basis of the subjects' responses to the following three questions on the questionnaire:

5. "Is the program which you checked above the same as you were in when you started your first semester at Highland Park Community College?"

7. "Altogether, how many times have you changed programs since you have been at this college?"

8. "If you could do so without losing credits, would you change to a new college program?"

Correlations were made to determine the consistency of responses to these questions which were constructed to indicate program changes.

The instrument also included five questions which were more demographic in nature. Subsequent analysis deals with the intercorrelations of data from the change scale and the demographic variables as well as with the two basic

measurements (the Sigel Conceptual Styles Test and the Esyenck Personality Inventory). In addition, the relationships between grade point average (GPA) and program change were investigated.

The 128 participants in the study were dichotomized into male and female subgroups (32 males, 82 females) for comparison on other critical variables. The subjects were also subdivided into three groups on the basis of work status and course load; students were classed as night and day students as well.

## Responses on the Sigel Conceptual Styles Test and the Eysenck Personality Inventory

### The Sigel Conceptual Styles Test

Overall, the 128 subjects scored higher on the analytic scale than on the relational scale. The combined high and low analytic mean scores for all subjects was 9.1. The combined high and low relational scores were considerably lower: 6.9. There were significant differences in male and female responses on the low analytic scale. Male LA mean scores were 10.3 while female mean scores were 7.6. The computed F statistic showed a significance level of .028. No significant differences occurred among any other of the 18 variables as a function of sex as was expected.

## The Eysenck Personality Inventory

As compared with the American college norm, scores of students at Highland Park College were significantly lower on the neuroticism and extroversion scales. A comparison of mean scores is shown in Table 4-8.

Table 4-8. Comparison of mean scores on the neuroticism and extroversion scales.

| | Freq. | Mean Score | | | | | |
|---|---|---|---|---|---|---|---|
| | | Neuroticism | | Extroversion | | Lie Scale | |
| | | Mean | S.D. | Mean | S.D. | Mean | S.D. |
| Highland Park College | 128 | 8.2 | 3.7 | 11.3 | 3.2 | 2.8 | 1.3 |
| American College Norm | 1003 | 10.9 | 4.7 | 13.1 | 4.1 | 3.8 | 1.7 |

Differences on neuroticism, extroversion and the lie scales between the sample and the national norms were all found to be significant beyond the .001 level.

## Hypotheses

**Hypothesis 1.** There will be a significant difference in the mean scores on the cognitive styles test, of those students indicating a change in programs and those indicating no change in programs.

On the cognitive styles test performance, this investigator found no significant difference among the students who had no changes, one change, two changes, or three changes of program. Mean scores were 9.7 for descriptive - part-whole; 9.8 for descriptive - global; 22.0 for inferential-categorical and 7.6 for relational-contextual with a P value of .06, comparing the two greatest differences in mean scores. Both extreme scores occurred on the relational end of the scale. The relational scale, however, showed much less differentiation among program changers and non-changers.

Hypothesis 2. There will be a significant difference in the mean scores on the extroversion scale of those students who indicate that they would change programs if they could do so without losing credit and those who indicate that they would not.

Students who indicated a desire to change programs scored significantly higher on the extroversion scale than students who indicated no desire to change. The 30 students who did desire to make a change showed a mean score of 12.3 and a standard deviation of 3.95, while the 98 students who did not desire to change showed a mean score of 11.0 and a standard deviation of 2.99. The computed level of significance was .05; thus hypothesis 2 is supported by the data.

Hypothesis 3. There will be a significant difference between the mean score on the extroversion scale of students who indicate that they are not in the college program in which they started and those who indicate that they are in their original program.

Question 5 asked the following: "Is the program which you listed above the same one you were in when you started your first semester at Highland Park Community College?" The responses to this question provided a strong indication of program change trends. Although 100 students indicated that their current program was the program in which they had started, 28 students did report having changed. Those subjects who reported having changed programs showed a significantly lower score on the extroversion scale of the Personality Inventory. Mean scores were 11.8 and 9.6. The level of significance was .002.

Hypothesis 4. There will be a significant difference between GPA of students who indicate "none," "one," "two," and "three" changes in college programs.

Four students indicated that they had changed programs twice. These "twice changers" showed a significantly higher GPA than those students reporting no change, one change or three changes (See Table 4-9). The four students in the "twice change" group scored 3.5 points lower than any of the other three groups on the extroversion scale. This was significant at the .005 level. Comparing their scores with the American college norms showed that

all groups had mean scores between the 38th and 51st percentiles, with the exception of the "twice changers" who scored at the 16th percentile. It should be pointed out, however, that the small number of changers in each category makes the data inadequate for drawing any conclusions.

Table 4-9. Grade point average and number of program changes.

| Number of Changes | Freq. | Mean GPA | S.D. |
|---|---|---|---|
| 0 | 77 | 2.5 | .43 |
| 1 | 42 | 2.4 | .58 |
| 2 | 4 | 3.4 | 1.86 |
| 3 | 5 | 2.2 | 2.1 |

Hypothesis 5. There will be a significant difference in the mean GPA of students who indicate that they would change programs if they could do so without losing credit and those who indicate that they would not.

An F-test of significance between means was used to determine if the computed mean scores were significantly different. Students who indicated a desire to change program showed a mean GPA of 2.3, while those indicating no desire to change had a GPA of 2.9. This difference was significant at the .01 level. In addition, students were asked if they would change programs if they could do so

without losing credits. Thirty subjects said they would while 98 said they would not. The mean GPA of the "desire to change" group was 2.2 and the GPA for the "no desire to change" group was 2.5; this was a significant difference at the .01 level. The "desire to change" group also scored significantly higher on the extroversion scale ( P .008) and somewhat higher on the relational scale. Thus the results of this research indicate that students who indicate a desire to change programs earned lower grades than students not desiring program change.

Hypothesis 6. Among the four major program groups, liberal arts, business, health and other vocational-technical, the group having the highest GPA will show the highest score on the analytic scale.

Grade point averages for students in the four academic areas were considered separately. Their mean GPA's are shown in Table 4-10.

Table 4-10. Mean GPA's and analytic scores of students in various program groups, Highland Park Community College.

| Program Group | Frequency | Analytic Mean Score | Mean GPA |
|---|---|---|---|
| Business | 16 | 12.2 | 2.66 |
| Liberal Arts | 83 | 10.5 | 2.53 |
| Health | 11 | 8.2 | 2.23 |
| Other Voc./Tech. | 18 | 7.0 | 2.20 |

The members of the business group had higher GPA's; they also had higher scores on the analytic scale. Comparing the mean scores of the business group with those of the other vocational-technical group showed a P value of .005. The business group also scored slightly higher on the extroversion scale and lower on the neuroticism scale.

## Additional Data

In addition to the data gathered relating to the hypotheses formulated during the course of this study, a number of other areas were also investigated. The questionnaire used in the present research also provided information in the following areas: (1) GPA's of males and females, (2) number of class withdrawals, (3) credit load, (4) work status, (5) the number of semesters in attendance at Highland Park Community College, and (6) whether the student was an evening or daytime student at the college.

### GPA's of Males and Females

Although a number of studies have shown a significant difference in GPA's of males and females, no such difference was found in this investigation. Males showed an overall GPA of 2.49, while the average for females was 2.47.

## Class Withdrawals

A particularly significant phenomenon observed in this investigation was that as mean scores on the relational scale increased, so did the number of class withdrawals a subject's record indicated. The total number of class withdrawals ranged from 0 to 9 (P = .0006). According to all measures and reports from college officials, class withdrawals frequently indicate that the student is having problems negotiating his academic program.

## Credit Load

Students carrying more hours produced significantly higher relational responses. This statistic does not necessarily suggest, however, that students carrying more hours have a more relational cognitive style. This statement is made on the basis that the same students made higher scores on the analytic scale than on the relational scale. Rather than cognitive style varying with credit hours carried, the total number of cognitive responses seemed to increase in proportion with credit hours. On the relational scale this difference was at the .008 level. Mean scores were 7.1, 8.4 and 12.4.

Work Status

On the cognitive styles scale, the number of responses varied in direct proportion to work status. On the analytic scale students who worked full-time had the highest mean score. On the relational scale students who did not work at all showed a significantly higher score (See Table 4-11).

Table 4-11. Mean scores on the analytic and relational scales and work status.

| Work Status | Freq. | Mean Score | |
|---|---|---|---|
| | | Analytic | Relational |
| Full-time | 58 | 12.3 | 4.3 |
| Part-time | 36 | 9.3 | 5.4 |
| Do Not Work | 34 | 7.0 | 8.0 |

Though to a less than significant level, the subjects' scores on the extroversion scale rose in proportion to work status, with students who worked full-time being highest; the mean scores were 12.8, 11.1 and 11.0.

Another work status phenomenon observed was that as the student's free time increased so did his scores on the extroversion personality inventory scale. Another finding regarding work status was that the amount of time devoted to work rose in direct proportion to the subject's

grade point average. Through the use of orthogonal comparisons a linear p of .002 was computed. Table 4-12 shows the relationship between employment status and extroversion scores, as well as the mean GPA and S.D. comparisons.

Table 4-12. Employment status, grade point average and the extroversion scale.

| Employment Status | Frequency | Mean GPA | S.D. | Mean Extroversion Score | S.D. |
|---|---|---|---|---|---|
| Full-time | 58 | 2.6 | .65 | 10.7 | 3.5 |
| Half-time | 36 | 2.4 | .38 | 11.5 | 2.5 |
| Not employed | 34 | 2.2 | .55 | 12.1 | 3.3 |
| | | Linear P = .002 | | Linear P = .056 | |

## Number of Semesters Subject Attended College

The number of semesters the subject attended college varied inversely with neuroticism scores. Another inverse relationship appeared in comparing number of semesters attended with mean scores on the analytic scale. (The total population's range of semesters in attendance at the college was from 4 to 13.) The relationship between semesters of attendance and the neuroticism and analytic scales

is shown in Table 4-13.

Table 4-13. Mean scores on the neuroticism and analytic scales in relationship to number of semesters in attendance.

| Semesters of Attendance | Frequency | Mean Score | |
|---|---|---|---|
| | | Neuroticism | Analytic |
| 4th | 57 | 9.0 | 12.1 |
| 5th | 47 | 8.2 | 10.2 |
| 6th or more | 23 | 6.6 | 4.6 |

Evening vs. Daytime Students

Computations were done comparing the 46 evening students with the 82 daytime students. Based on this investigator's observation, the night students were considerably older and more "serious minded." Day students scored significantly higher on the relational scale (P .01) and lower on the analytic scale.

## SUMMARY OF FINDINGS

The findings of this investigation were as follows: The statistical computations indicated that no significant differences existed between the response patterns of those students who (a) changed programs and those students who

did not; (b) indicated a desire to change programs and those who indicated a desire not to change programs; and (c) indicated that the program which they were currently enrolled in was the same which they started in and those who indicated that their program was not.

The Eysenck Personality Inventory showed that there are significant differences in the responses of those students who changed programs and those who did not. Those who changed scored (a) significantly higher on the extroversion scale, and (b) close to the significance level ($P = .06$) on the neuroticism scale. Those who indicated that they were not in the same program which they had started college in scored significantly higher on the extroversion scale ($P = .002$).

Table 4-14 presents a summary of the level of significance computed for each of the six hypotheses and shows whether or not the hypotheses were proved.

Table 4-14. Summary of findings.

| | Hypotheses | | | | | |
|---|---|---|---|---|---|---|
| | $H_1$ | $H_2$ | $H_3$ | $H_4$ | $H_5$ | $H_6$ |
| Level of Significance | .35 | .05 | .005 | .002 | .01 | .0005 |
| Proven | No | Yes | Yes | Yes | Yes | Yes |

Additional data obtained in this investigation revealed a strong correlation between full-time work status of subjects and more successful college behavior as measured by GPA and cognitive style. Subjects having been at the college for more semesters scored proportionally higher on the relational scale, and lower on the analytic scale.

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# CHAPTER V

## SUMMARY, CONCLUSIONS, LIMITATIONS AND IMPLICATIONS FOR ACTION AND FURTHER RESEARCH

This chapter presents a summary of the investigation and the research findings, the conclusions derived from the data gathered in the study, implications of the study, limitations of the study, and suggestions for further research.

## SUMMARY

The problem of this dissertation evolved through a critical review of literature pertaining to the empirical relationship between a particular cognitive style and academic success and a particular personality type and academic success and adjustment to the college life style.

Most of the investigations conducted in this area have focused upon cognitive style as a variable in academic success. A number of studies have been done relating cognitive style to child rearing practices, self-concept, geographic area and a host of other well defined social variables. At Oakland Community College, Dr. Hill has reported basemapping of cognitive style along a number of different dimensions with the purpose of matching student

cognitive styles with instructional modules.

The present investigation reviewed a number of research documents which reported on a relationship between various cognitive styles and academic behavior. It was logical, therefore, for this investigator to hypothesize that the type of academic behavior relating specifically to program change would vary with cognitive style, as measured by Sigel's Conceptual Styles Test. A second construct which this investigator hypothesized would vary with program change was that of extroversion, as measured by Eysenck's Personality Inventory. Because this study was exploratory in nature, a number of other variables, chiefly demographic in nature, were considered. These other variables were also hypothesized to vary with program change.

The data for this study were gathered at Highland Park Community College, one of four community colleges in Michigan operating as a department of a public school district. The student body numbers about 2,000, of which about 90% are black. A global assessment of this institution is that it is an inner-city college having most of the characteristics of an urban low-income school.

A discussion of the findings of the research study follows.

## Cognitive Styles Test

On the Cognitive Styles Test this investigation revealed no significant differences among those students

who changed programs once, twice, three times and not at all.

Eysenck Personality Inventory

On the whole, the 128 subjects in this study scored significantly different from the 1,005 students in the norms group of the American college sample for the Eysenck Personality Inventory. These differences appeared on all three scales. Subjects in this study were: more introverted, more stable and scored lower on the lie scale. In this study, students who indicated on the questionnaire a desire to change programs scored significantly higher on the extroversion scale than those students who indicated a desire not to change. Students who indicated that they were not in the same program in which they had started their college experience scored closer to the introversion end of the personality scale. The neuroticism and lie scales showed less discrimination between the former groups.

Other Findings

There was no difference in the grade point average (GPA) of students who changed programs and those who did not. Among the four major program areas, the group scores on the analytic scale of the cognitive styles test varied in direct proportion with the subjects' GPA's.

Additional findings of this investigation are as follows:

1. Data obtained in this study did not support the notion set forth in other studies that there is a difference in academic performance of males and females as measured by GPA.
2. The number of class withdrawals a subject experienced rose in proportion with his score on the relational scale.
3. The number of credits a subject carried rose in direct proportion to his total score on the Cognitive Styles Test.
4. The amount of time a student spent working while in school varied in direct proportion to his score on the analytic scale and inversely with his score on the relational scale. Students working full-time scored highest on the analytic scale and lowest on the relational scale.
5. Students who worked were more introverted and made higher grades than subjects who worked half-time or not at all.
6. Subjects who had been at the college for six or more semesters scored closer to the stable end of the neuroticism scale and produced fewer analytic responses.
7. Day students scored higher on the relational scale than night students.

# CONCLUSIONS

Some of the conclusions reached through this research are as follows.

## Cognitive Style

One of the primary theses of this study was that the cognitive style of students could be used as an indicator of college program change behavior. This investigation revealed no relationship between cognitive style and the three measures of program change. Because of the relative reliability of the Sigel Conceptual Styles Test, there is no reason to suspect that the use of a different cognitive styles test would reveal results other than those found in this study.

## Personality Typology

Most of the indicators of change used in this investigation showed that subjects who changed programs had expressed a desire to change program, or subjects who indicated that the program which they were presently in was not the same as they had started in, scored significantly lower on the extroversion scale. These findings seem contradictory to other research findings reported in this study. Based on other research, this author expected a positive correlation between high program change and high scores on the extroversion scale. This did not occur. The 77

subjects who showed no program change at all scored significantly higher on the extroversion scale. This difference was statistically significant at the .005 level. Although the subjects who did not change programs scored higher on the lie scale, this difference was not significant. The results of this study support the general hypothesis that a difference does exist between introverts and extroverts with regard to the college program change behavior these personality typologies produce. However, the program changers were more introverted than the non-changers. This was an unexpected phenomenon.

Other Findings

The variable which showed the clearest discrimination on the cognitive styles scale was work status. Students who worked full-time scored significantly higher on the analytic scale and significantly lower on the relational scale than the students who did not work at all. The students who worked full time also had a significantly higher GPA, made lower scores on the lie scale, and were more introverted. These findings indicate reliability and consistency of the two basic instruments. It is generally an uncontested notion that GPA is a good indication of successful or non-successful school behavior. A significant and negative correlation between class withdrawals and GPA was also found.

The "thinking introvert" notion is supported in

this investigation. Introversion is positively related to a higher GPA, as other research indicates.

The most significant phenomenon observed by this investigator in comparing students working full time with non-working students was that the students who worked full time scored higher on most of the scales which indicate successful school behavior and lower on the scale which indicate unsuccessful school behavior.

Subjects carrying a higher number of credits produced a higher number of responses on both scales of the Cognitive Styles Test. This would indicate that the number of credits subjects elect to carry is positively related to total number of responses on the Sigel Conceptual Styles Test. Mean scores on the analytic scale varied in direct proportion with the number of semesters which subjects had been in college. Subjects who had been in college for six or more semesters produced lower mean scores on the analytic and neuroticism scales than did the four semester subjects. The primary conclusion to be drawn from this observation is that the "over-tenders" tend to be more stable and less analytic.

The 46 night students scored higher on the analytic scale than did the 82 day students. Because the night students were, for the most part, also the students who worked full time, the conclusion was drawn that this was further indication that those students who worked full time were more analytic in their responses.

## LIMITATIONS

Technically, the results of this investigation are limited to the 128 males and females who made up the population of this study. Careful generalization may be made to other situations and populations similar to those tested in this investigation, i.e., inner city black students in an inner city community college.

Some limitations which are indigeneous to the present study are to be noted. Some advantages of including only inner city students in the sample became limiting as well. For example, no norm data has been reported for either of the two basic instruments which may be used to check for comparisons with the population under study. Furthermore, since this study was exploratory in nature, the measures used to qualify program change and other previously untested methods were employed as criterion measures.

## IMPLICATIONS FOR ACTION AND FURTHER RESEARCH

The implications for this study of inner city community college students' program changes are of two types: (a) implications for action, and (b) implications for further research.

Implications and Recommendations for Action

A number of issues relating to the problem of changing program in an inner city community college were raised in the problem statement of this investigation. A major objective of this study was to develop empirical data which have implication for action in resolving these issues.

The underlying research issue related to identifying program changes according to cognitive style and personality typology. Since no such identification was made, this investigator can make no recommendations from these findings other than the fact that cognitive style and personality typology should not be used as indicators of program change. However, other findings in this study do hold promise for decision making in the inner city community college. These findings are the basis for recommending the following:

1. Inner city college officials should not use the number of times a student changes programs as a basis for making decisions about his academic adjustment to college life. The empirical basis for this recommendation lies in the fact that (a) the analytic cognitive style (which indicates a good adjustment to college requirements) is equally distributed throughout the population of program changers and non-changers. (b) Introverts

actually changed programs more often while extroverts more often expressed a desire to change. Thus, this author concluded that there is no evidence that personality typology varies with program change characteristics.

2. Work status should be used as an indicator of academic success in the inner city community college. Data in this study show that students who work full-time made the highest grades, were the most analytic, and in general showed the best adjustment to college requirements, while students who did not work at all showed the poorest academic adjustment of the three work status groups tested.
3. Of the four major program areas at Highland Park Community College, students who complete the business program should be recommended to four year colleges as having the highest probability of success in an academic program. Empirical evidence in this study indicates that students who spend four or more semesters in the business program have developed more college success characteristics than any of the other program groups observed in this study.
4. Counselors should use the number of class withdrawals as an indication of the student's perception of a given course. The number of class withdrawals is a more valid measure because the

student has pursued his academic ability in relationship to the course requirement and expressed this perception through class withdrawal behavior. Student GPA in a given course provides no indication that the student understands the course requirements nor that he has reacted to the course. The data in this study show a definite inverse relation between GPA and the number of class withdrawals a subject experienced, and a direct relationship between class withdrawals and desire to change programs.

Implications for action in the inner city community college setting are many and varied. They range from the inclusion of new variables in the college's diagnostic instruments to large-scale change in the college's academic procedure. Before applying any research data, the college itself must determine its own goals in respect to the processing of students through programs. For example, the college must decide if its primary goal is to (a) increase its "throughput" without regard for program content or academic process, or (b) seek to match student academic information processing styles with existing programs and create new programs for processing the information content of developing and existing programs.

It may be argued by many that all program change is not a negative process--that some program change may be desirable in order to allow students to act on new

information about themselves and programs. It is the thesis of this author, however, that any change from one program to another before the first is completed represents a waste for the college, the student, or both. If a student changes programs and completes the program to which he changed, it is reasonable to assume that he does so because he has learned something about the two programs in relationship to himself which he did not know before he selected the first program. If this is true, then it would seem that the colleges should seek to develop the instruments which could provide the information the student needs to act on in selecting his program.

## Implications and Recommendations for Further Research

Implications for further research are both general and specific and have as referents both the individual and the group. In reference to the individual, further exploration into the nature of socially induced college program change behavior is appropriate. Initially, a study of how peer groups influence personality factors which influence the student's change of programs is recommended.

The whole question of mutual incompatibility of differing modes of conceptual organization is still another area which requires more exploration and clarification.

With the group as a referent, the effects of socio-conceptual styles on the persistence of groups of subjects

(who may have characteristics other than those discussed in this study) in certain programs should be investigated.

Specifically, recommendations for further research would include the following items:

1. Measuring instruments need to be developed and refined so as to measure college student proneness to change programs. Such an instrument, substituted for the crude measures of program change used in this study, would yield more conclusive results.
2. Data in this investigation showed that students who worked more hours produced proportionally more college success behavior as measured by GPA, the cognitive styles test and the personality test. Additional research needs to be done to determine which factor or factors included in work status accounts for this difference.
3. Research conducted in the present study was done to identify some characteristics of students who had changed programs. Additional research should be done to determine whether other college behavioral changes occur as a result of, or with, program change.
4. Scores of the population in this study were significantly different from the American college norm on all three scales of the personality inventory. Other research could indicate the validity and reliability of this test when used for populations

like those in this study.

5. Of the four program areas studied in this investigation, subjects in the business program produced more successful college behavior than students in the other programs. Additional research may reveal: (a) whether or not the business program produced those factors, (b) the factors in the business program which may be responsible for this success, and (c) whether or not the "success factors" can be reproduced in the other three programs.

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# APPENDIX A

## STUDENT DATA FORM

STUDENT DATA FORM

Name _____

Please mark an "X" in one of the spaces provided for each question.

1. Sex

____ male

____ female

2. Do you work:

____ full-time

____ part-time

____ not at all

3. How many credits are you carrying this semester?

____ 4 or less

____ between 5 and 9

____ between 10 and 15

____ more than 15

4. In which program are you enrolled this semester?

____ Liberal Arts

____ Business

____ Health

____ Other Vocational/ Technical

5. Is the program which you listed above the same one you were in when you started your first semester at Highland Park Community College?

____ yes

____ no

6. If the answer to the above question is "no," in which program did you start your first semester?

____ Liberal Arts

____ Business

____ Health

____ Other Vocational/ Technical

7. Altogether, how many times have you changed programs since you have been at this college?

____ 0 ____ 3

____ 1 ____ 4 or more

____ 2

8. If you could do so without losing credit, would you change your present program?

____ yes ____ no

# APPENDIX B

# SIGEL CONCEPTUAL STYLES TEST

SIGEL CONCEPTUAL STYLES TEST

INSTRUCTIONS

We know that people see groups of familiar things like these in different ways. None of these ways are better or worse than another, but the differences between people do exist; just as there are differences in the ways people think. This test examines the way you see groups of familiar things.

EXAMPLE

| Pairs | Reasons |
| --- | --- |

Put down as many pairs as you can that go together, belong together, or are related in any way, and give your reason for each chosen pair. Continue giving pairs and reasons until time is called for that page of pictures. If you run out of pairs and reasons before time is called, wait until you are told to go on to the next page. You will have a minute for each page, so you will not be rushed. Put down all the pairs that you see--don't reject a pair just because it seems obvious--it may not be obvious to someone else. It is best to put down the pairs and reasons as they occur to you.

SIGEL CONCEPTUAL STYLES TEST

SAMPLE ITEMS

2

D

E

F

5


13

O

P

R

SIGEL CONCEPTUAL STYLES TEST

ANSWER SHEET

| Page | Pair | Reason |
|---|---|---|
| 1. | | |
| 2. | | |
| 3. | | |
| 4. | | |
| 5. | | |

| Page | Pair | Reason |
|---|---|---|
| 6. | | |
| 7. | | |
| 8. | | |
| 9. | | |
| 10. | | |
| 11. | | |

| Page | Pair | Reason |
|---|---|---|
| 12. | | |
| 13. | | |
| 14. | | |
| 15. | | |
| 16. | | |

# APPENDIX C

# EYSENCK PERSONALITY INVENTORY

# EYSENCK PERSONALITY INVENTORY

FORM A

**By H. J. Eysenck**
**and Sybil B. G. Eysenck**

Name_____ Age_____ Sex_____

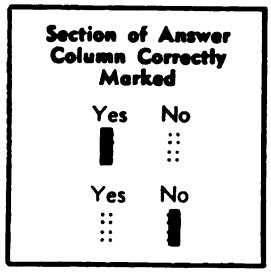
Grade or Occupation _____ Date_____

School or Firm_____ Marital Status_____

## INSTRUCTIONS

Here are some questions regarding the way you behave, feel and act. After each question is a space for answering "Yes," or "No."

Try and decide whether "Yes," or "No" represents your usual way of acting or feeling. Then blacken in the space under the column headed "Yes" or "No."




Work quickly, and don't spend too much time over any question; we want your first reaction, not a long drawn-out thought process. The whole questionnaire shouldn't take more than a few minutes. Be sure not to omit any questions. Now turn the page over and go ahead. Work quickly, and remember to answer every question. There are no right or wrong answers, and this isn't a test of intelligence or ability, but simply a measure of the way you behave.

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BOX 7234, SAN DIEGO, CALIFORNIA 92107

E N L

| | | |
|---|---|---|
| 1. Do you often long for excitement? | Yes | No |
| 2. Do you often need understanding friends to cheer you up? | Yes | No |
| 3. Are you usually carefree? | Yes | No |
| 4. Do you find it very hard to take no for an answer? | Yes | No |
| 5. Do you stop and think things over before doing anything? | Yes | No |
| 6. If you say you will do something do you always keep your promise, no matter how inconvenient it might be to do so? | Yes | No |
| 7. Does your mood often go up and down? | Yes | No |
| 8. Do you generally do and say things quickly without stopping to think? | Yes | No |
| 9. Do you ever feel "just miserable" for no good reason? | Yes | No |
| 10. Would you do almost anything for a dare? | Yes | No |
| 11. Do you suddenly feel shy when you want to talk to an attractive stranger? | Yes | No |
| 12. Once in a while do you lose your temper and get angry? | Yes | No |
| 13. Do you often do things on the spur of the moment? | Yes | No |
| 14. Do you often worry about things you should not have done or said? | Yes | No |
| 15. Generally do you prefer reading to meeting people? | Yes | No |
| 16. Are your feelings rather easily hurt? | Yes | No |
| 17. Do you like going out a lot? | Yes | No |
| 18. Do you occasionally have thoughts and ideas that you would not like other people to know about? | Yes | No |
| 19. Are you sometimes bubbling over with energy and sometimes very sluggish? | Yes | No |
| 20. Do you prefer to have few but special friends? | Yes | No |
| 21. Do you daydream a lot? | Yes | No |
| 22. When people shout at you, do you shout back? | Yes | No |
| 23. Are you often troubled about feelings of guilt? | Yes | No |
| 24. Are all your habits good and desirable ones? | Yes | No |
| 25. Can you usually let yourself go and enjoy yourself a lot at a gay party? | Yes | No |
| 26. Would you call yourself tense or "highly-strung"? | Yes | No |
| 27. Do other people think of you as being very lively? | Yes | No |
| 28. After you have done something important, do you often come away feeling you could have done better? | Yes | No |
| 29. Are you mostly quiet when you are with other people? | Yes | No |
| 30. Do you sometimes gossip? | Yes | No |
| 31. Do ideas run through your head so that you cannot sleep? | Yes | No |
| 32. If there is something you want to know about, would you rather look it up in a book than talk to someone about it? | Yes | No |
| 33. Do you get palpitations or thumping in your heart? | Yes | No |
| 34. Do you like the kind of work that you need to pay close attention to? | Yes | No |
| 35. Do you get attacks of shaking or trembling? | Yes | No |
| 36. Would you always declare everything at the customs, even if you knew that you could never be found out? | Yes | No |
| 37. Do you hate being with a crowd who play jokes on one another? | Yes | No |
| 38. Are you an irritable person? | Yes | No |
| 39. Do you like doing things in which you have to act quickly? | Yes | No |
| 40. Do you worry about awful things that might happen? | Yes | No |
| 41. Are you slow and unhurried in the way you move? | Yes | No |
| 42. Have you ever been late for an appointment or work? | Yes | No |
| 43. Do you have many nightmares? | Yes | No |
| 44. Do you like talking to people so much that you would never miss a chance of talking to a stranger? | Yes | No |
| 45. Are you troubled by aches and pains? | Yes | No |
| 46. Would you be very unhappy if you could not see lots of people most of the time? | Yes | No |
| 47. Would you call yourself a nervous person? | Yes | No |
| 48. Of all the people you know are there some whom you definitely do not like? | Yes | No |
| 49. Would you say you were fairly self-confident? | Yes | No |
| 50. Are you easily hurt when people find fault with you or your work? | Yes | No |
| 51. Do you find it hard to really enjoy yourself at a lively party? | Yes | No |
| 52. Are you troubled with feelings of inferiority? | Yes | No |
| 53. Can you easily get some life into a rather dull party? | Yes | No |
| 54. Do you sometimes talk about things you know nothing about? | Yes | No |
| 55. Do you worry about your health? | Yes | No |
| 56. Do you like playing pranks on others? | Yes | No |
| 57. Do you suffer from sleeplessness? | Yes | No |

PLEASE CHECK TO SEE THAT YOU HAVE ANSWERED ALL THE QUESTIONS.